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Diversification of Transit Risks of Oil Supplies Bypassing Ukraine as the Basis of Energy Security in Europe

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ABSTRACT

The article assesses and analyzes the dependence of the economic security of the European Union (EU) on the transit risks of oil, the difficulties of its transportation and diversification of its supplies. The oil transportation system of Ukraine is currently a source of high risks for the EU countries because the political and economic instability of the country does not provide confidence in obtaining the planned supply contracts. To diversify oil transit risks, the following ways were identified: Baltic Pipeline System (BPS)-1, BPS-2, Caspian Pipeline Consortium-1 (CPC-1), CPC-2. At that, the implementation of the latter will reduce transit risks to a minimum level by diversifying oil supplies from Russia to the EU countries. The use of the Druzhba Oil Pipeline and the Odessa-Brody Oil Pipeline increases the transit risks for the EU countries since they pass through the territory of Ukraine, which is characterized by political and economic instability. In the methodological part of the article, an assessment of oil consumption in the countries of Central and Eastern Europe was carried out, which had shown a slight decrease in Russian oil consumption just in some countries, while sustainable consumption in general. Oil supplies to Ukraine are significantly reduced that further increases the transit risk.

Keywords: Baltic Pipeline System, Caspian Pipeline Consortium, Energy Security, Oil Pipeline, Power Industry
JEL Classifications: Q43, Q48, F13

1. INTRODUCTION

The strategic task of the European countries is to ensure their own energy security, given their high dependence on energy supplies and the quite intricate geopolitical situation. To form the economic stability of the European Union (EU) countries, it is necessary to guarantee the reliability of oil supply, which ensures the development of the countries' industry, their national security, and a decent standard of living. Thus, the authorities perform an important regulatory function to ensure the energy security of their countries, and therefore must count up variations of the most optimal transit routes for oil and gas supply, ensuring a reliable and steady supply.

Important components in the provision of energy resources are their quality and price, which are acceptable not only for industry but also for the population. At that, the energy security analysis object will be not only the energy resources themselves but also the infrastructure that ensures their transit, as well as industrial and household equipment that allows ensuring the normal functioning of the country.

Energy security risks are divided into external and internal risks. Internal risks depend, first of all, on the political and economic activity of the country in the concerned area, on the status of the fuel and energy complex, its technical and technological deterioration, as well as the level of their service quality. Also, internal risks depend on the number of investments and investment climate, the status of energy facilities, and the presence of various types of threats to their functioning, types of innovations and the degree of their implementation, the shortage of oil products and the high dependence of the industry on them, etc.

To a greater extent, the article examines the external risks of energy security of the country, including that from the standpoint of politics and economy. Also, external risks may be caused by discriminatory actions of foreign states, their national companies, or transnational companies. From the viewpoint of external risks of oil products supplies to the EU countries, they are caused by a significant political component of the relationships, high fluctuations in the global and national markets, the likelihood of military actions, the measures of OPEC and Russia, as well as the diversification of their supplies.

The study of the risks of the economic component of energy security in the field of oil products supply is carried out by both domestic and foreign economists that is due to the fact that economic security is based on obtaining the strategically necessary amount of oil resources in conducting reproduction processes and ensuring economic and social stability in the EU countries.

The issues of diversification of oil supplies to EU countries are of concern not only to representatives of Russian science, such as Vodo and Rebrov (2007), Barannik (Barannik et al., n. d.), Adamenko (2009), Shevtsov et al. (2005), Labzunov (2017), but foreign scientists as well: Wilson (2019), Vatansever (2017), Eser et al. (2019). The works of Russian and foreign scientists, namely, Wilson (2019). Narula (2019), Melas et al. (2017) deal with the Russian factor in the European integration energy relations, the formation of energy strategy as an important factor in the development of oil supplies independence on the influence of transit risks, including politics and economic policy not only of the transit country, but also of the supplier country.

The dilemma of energy security in the world energy policy, the integration of energy systems of countries with complex interdependent economic and political platforms, the problem of ensuring energy security at the national level in the context of the development of transit routes of energy resources are considered in the works of Bernell and Simon (2016).

The impact of natural gas transportation on the demand for oil and the creation of a safe basis for oil supplies to the EU countries were analyzed in the works of Dudin et al. (2016).

The works of Gelder (2014), Korzhubaev (2005), Milov and Selivakhin (2005), Simindey (2001) are devoted to the prospects of Russian oil export in Europe.

2. PROBLEM STATEMENT

External and internal risks of oil transit for the EU countries arose primarily after the collapse of the Soviet Union because different countries with different economic and political interests became responsible for the transportation of energy resources. Thus, the delivery points of crude oil were located on the borders of the countries of the Warsaw Pact bloc that led to the increase in transit risks at the time of the collapse of the Soviet Union. Newly emergent states often had interests contrary to the interests of the Russian Federation, and the period from 1991 to 2016 was characterized by a significant confrontation of interests that caused concern in ensuring the stability and security of energy resources, including oil supplies.

The main transit route of oil supplies for that period was the Druzhba Oil Pipeline, which stretched from Almetyevsk to Mozyr and was divided into two lines: northern and southern branches. The northern pipeline was laid in the territory of Belarus, Germany, Latvia, Lithuania, and Poland, while the southern pipeline passed through the territory of Hungary, Slovakia, Ukraine, and the Czech Republic. The main difficulties in the transit of oil arose with countries such as Latvia, Lithuania, and Ukraine, while in transit through the territory of the latter country, a problem of unstable oil products quality was emerging. Thus, the fraught economic and political relationships between Russia and the Baltic states as well as Ukraine caused a high transit risk.

Oil supplies from the Russian Federation to the countries of the EU, as a rule, are carried out within the framework of long-term contracts. At that, the oil price includes the following components: production cost, tax payments, transport tariff, export duty, administrative costs, income tax, and profit. However, the contract price of oil can fluctuate under the influence of a number of factors, such as:

- Political, economic, and military events that take place in oil-producing regions, such as for example the Middle East;
- Market conditions and forecasting trends in oil supply and demand for the near and long term;
- OPEC and other oil-producing countries' decision on the scope of supply;
- Actions of speculative dealers;
- Change in the price of gas and other alternative carriers;
- Innovation activities;
- Influence of natural and climatic conditions;
- Demand from industrial production;
- Publication of oil companies' statistics;
- Fluctuations in the foreign exchange market;
- Forecasts of analysts and experts.

However, the final price of Urals oil from Russia is assessed on the stock exchanges in London (International Petroleum Exchange) and New York (New York Mercantile Exchange). The contract currency is the US dollar, at that the assessment is always made only in this currency, while calculations can be made in any currency. However, as a rule, calculations are also made in US dollars to reduce transaction costs. Thus the position of the US dollar as the global reserve currency is strengthening.

At the present development stage of the oil market and interaction of its participants, the most promising direction in the calculations is the introduction of other world currencies for oil price calculations, for example, the Euro. This proposal is due to a significant increase in the US budget and trade deficit, and the strengthening of the European currency. In the case of implementing the practice of using the euro as a contract currency, the monopoly role of the US dollar will decrease significantly. However, at the moment, oil is quoted on the world markets in US dollars, while the price of West Texas oil and Brent is used as the charge indicator.

The main oil supplies from the Russian Federation to the EU countries were carried out through the territory of Ukraine. Thus, until the beginning of 2000, the Ukrainian oil pipeline transported an average of about 65 mln tons/year, with an export of about 53 mln tons. The political situation in Ukraine, and subsequent oil and gas disputes reduced oil transportation to 17 mln tons in 2014, with 15 mln tons exported. In 2018, oil transit decreased by 4.3% compared to 2017 (13.9 mln tons) and amounted to 13.3 mln tons.

This negative trend in the transit of export oil is due to the influence of strong political and economic risks, and consequently transit risks.

Predicting the growth of possible risks, the Russian Federation, since the 2000s, and especially since 2008, began to diversify transit risks through the following pipelines:

1. The Sukhodolnaya-Rodionovskaya oil pipeline connected two main oil pipelines - Samara-Lysychansk and Lysychansk-Tikhoretsk and passed through the territory of the Rostov Region. These pipelines have become shorter (by about 100 km) and more technologically advanced than the similar section passing through the territory of Ukraine that has ensured reliability and safety. It is worth noting that Russian transit tariffs are lower than Ukrainian ones, which means that the ultimate price for the supplied product for the end user has also decreased. The scope of possible transportation is up to 37 mln tons annually. The Sukhodolnaya-Rodionovskaya oil pipeline was built by Transneft at the expense of its own funds and an investment loan taken from Sberbank for the long term. This oil pipeline transits oil to Novorossiysk, and then the oil is loaded on tankers, which follow to countries, such as Italy, Romania, Greece, Croatia, Spain, and Bulgaria. Thus, the site was built, which has provided a minimum transit risk for European countries in the oil supply, as it was passing only through the territory of the Russian Federation
2. The Baltic Pipeline System (BPS-1) was commissioned in 2001 and became a link between the oil field of Timan-Pechora, West Siberian, and Ural-Volga regions with the port of Primorsk. The maximum capacity is 74 mln tons of oil/year. The purpose of construction of this oil pipeline is to reduce the transit risk when transporting oil through the Baltic states as well as to reduce transit through Belarus. Oil and oil products are supplied through this pipeline to more than 20 countries. Among them, in terms of oil transportation, the first places are held by the Netherlands, Finland, Sweden, Lithuania, and Germany, while in terms of oil products – Germany, Great Britain, the Netherlands, France, and Poland. Thus, this pipeline supplies with oil and oil products the Western European countries
3. The BPS-2 was commissioned in 2012, and became the backup line of the Druzhba Oil Pipeline, connecting it with three ports on the Baltic Sea, namely, Unecha, Andreapol, and Ust-Luga. Thus, the Russian Federation has reduced the transit risks arising from the transportation of oil through the territory of Belarus and Ukraine; in particular, reducing the need to use the South port (Ukraine) and the oil pipeline Odessa-Brody. The traffic handling capacity of this pipeline is 50 mln tons. Oil from this port is supplied to countries, such as the Netherlands, Lithuania, Sweden, Spain, Finland, Italy, Poland, Germany, as well as France, Croatia, Greece, Norway, Latvia, and Denmark
4. The Caspian Pipeline Consortium-1 (CPC-1) is a project (1999) connecting the oil field of Kazakhstan and Russia, and ensuring the oil supply to the marine terminal in Yuzhnaya Ozereyevka township, having a length of 1.5 thousand km. Potential traffic handling capacity is 67 mln tons/year. Oil exports are carried out to the Mediterranean countries, i.e., to the South of Europe.

The Russian Federation is currently actively pursuing a policy of diversifying transit risks, ensuring the oil export through its own territory as much as possible, bypassing the territory of transit countries, including Ukraine. Thus, certain sections of the Druzhba Oil Pipeline were decommissioned and their operation was limited. For example, the section of the Druzhba Oil Pipeline through Lithuania and Latvia was decommissioned and transit through Belarus and Ukraine was reduced significantly.

This long-term policy allows increasing the effectiveness of operations in the oil market, ensuring the stability, reliability, and quality of supplies to the EU countries. Accordingly, it is necessary and appropriate to carry out further diversification in terms of directions, routes, and modes of supply.

Thus, the development of the BPS-2 and the CPC-2, which will ensure the transportation of oil after the completion of all oil transit contracts, including those concerned to oil transportation to the Central and Southern countries of the EU, is becoming an urgent issue. However, oil supplies through the Sukhodolnaya-Rodionovskaya pipeline and CPC are limited by the traffic handling capacity of the Turkish Straits and may be exposed to transit risk, though lower than in Ukraine.

Oil transportation by rail cannot be a sufficient alternative to the pipeline due to economic and technical reasons.

3. METHODS

The study covered five Eastern European countries and seven Central European countries (Table 1).

Below is the calculation of the average oil consumption in the leading countries of Central and Eastern Europe, using simple arithmetic mean. Then, the reliability and typicality of the average value are assessed using variation indicators:

1. The variance is the average of the squared deviations of the oil consumption options in the leading countries of Central and Eastern Europe from their average:
$$\sigma^2 = \frac{(x-\bar{x})^2}{n}$$
2. The mean square deviation is the square root of the variance, which shows how much the individual oil consumption values deviate on average from their mean
$$\sigma = \sqrt{\sigma^2}$$
3. The variation coefficient characterizes fluctuations in oil consumption and allows comparing the degree of feature

Table 1: Analysis of natural gas consumption in Eastern Europe

Countries	Natural gas consumption (bln cubic meters)					Average natural gas consumption (bln cubic meters)	σ^2	σ	v
	2013	2014	2015	2016	2017				
Austria	4.06	32.50	17.80	12.80	19.60	17.35	86.42	9.30	53.57
Germany	26,330.00	29,605.00	34,375.00	36,507.00	38,679.00	33,099.20	20,481,287.40	4525.63	13.67
Greece	6,316.00	3,815.00	4262.00	4,852.00	5458.00	4940.60	778,950.24	882.58	17.86
Denmark	1,627.00	4,409.00	4443.00	3206.00	6399.00	4016.80	2,475,776.96	1573.46	39.17
Spain	8,424.00	6,439.00	7445.00	7011.00	7929.00	7449.60	478,596.64	691.81	9.29
Poland	28,362	25,611	25,149	2,6149	28,589	26,772.00	2,039,953.60	1428.27	5.33
Portugal	502.00	98.00	588.00	1,810.00	2578.00	1115.20	862,236.16	928.57	83.26
Romania	1792.00	1560.00	3912.00	4495.00	4971.00	3346.00	1,977,178.80	1406.12	42.02
Serbia	6.36	148.00	250.00	106.00	135.00	129.07	6,121.51	78.24	60.62
France	6436.00	6139.00	6,096.00	8254.00	8511.00	7087.20	68,440.56	261.61	3.69
Czechia	4007.00	3766.00	4,070.00	3451.00	4187.00	3896.20	2,540,738.96	1593.97	40.91
Ukraine	16,627	15,261	12,171	13,136	13,526.00	14,144.20	7,555.33	86.92	0.61

Calculated by the authors according to the Russian federal customs service (n. d.)

Table 2: Oil exports from Russia to Central and Eastern European countries in 2013-2017

Figures are SIPRI Trend Indicator Values (TIVs) expressed in thousands of tons								
Countries	2013	2014	2015	2016	2017	Total	a_0	a_1
Germany	26,330.00	29,605.00	34,375.00	36,507.00	38,679.00	165,496.00	33,099.2	3160
Greece	6316.00	3815.00	4262.00	4852.00	5458.00	24,703.00	4940.6	−67.9
Spain	8424.00	6439.00	7445.00	7011.00	7929.00	37,248.00	7449.6	−41.8
Poland	28,362.00	25,611.00	25,149.00	26,149.00	28,589.00	133,860.00	26,772	99.2
Romania	1792.00	1560.00	3912.00	4495.00	4971.00	16,730.00	3346	929.3
France	6436.00	6139.00	6096.00	8254.00	8511.00	35,436.00	7087.2	626.5
Ukraine	16,627	15,261	12,171	13,136	13,526.00	70,721.00	14,144.2	−832.7

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

variation. When the variation coefficient is <35%, the studied set is considered homogeneous, while the average oil consumption is considered to be reliable and typical.

$$v = \frac{\sigma}{\bar{x}} \times 100$$

Analysis of oil consumption in Central and Eastern Europe has shown a fairly stable consumption with a slight decrease in demand for individual time periods. The only exception to these countries is Ukraine, which shows a tendency to reduce demand for Russian oil, which is primarily due to the political component in the relations between these two countries. For the rest of the countries, the result means that in the future, European countries will need to purchase Russian natural gas. However, it is worth noting that the data on oil consumption of countries, such as Austria, Denmark, Portugal, Romania, Serbia, and the Czech Republic show an essential spread in consumption over the years. This is reflected in the excess of the variation coefficient over 35%, which means that it is impossible to build a potential trend.

Thus, it is possible to build an oil consumption trend for countries, such as Germany, Greece, Spain, Poland, Romania, France, and Ukraine (Table 2).

Using the linear trend formula, it is possible to identify the trend for the following years:

$$Yt = a_0 + a_1 t$$

Accordingly, the parameters of the linear trend can be calculated as follows:

Table 3: Calculation of the linear trend parameters of oil exports from Russia to Germany

Figures are SIPRI Trend Indicator Values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	26,330.00	−52,660	4	26,779.2
2014	−1	29,605.00	−29,605	1	29,939.2
2015	0	34,375.00	0	0	33,099.2
2016	1	36,507.00	36,507	1	36,259.2
2017	2	38,679.00	77,358	4	39,419.2
Total	0	165,496.00	31,600.00	10.00	165,496.00
2018	3	-	-	-	42,579.2
2019	4	-	-	-	45,739.2
2020	5	-	-	-	48,899.2
2021	6	-	-	-	52,059.2

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

$$a_0 = \bar{y} = \frac{\sum yt}{\sum t^2}$$

$$a_1 = \frac{\sum yt}{\sum t^2}$$

Based on the above formulas, it is possible to calculate the parameters of the linear trend and build a trend for 2018-2021 for various countries. The corresponding supply dynamics are presented in Tables 3-9.

4. RESULTS

Analyzing the data of the above Tables and those obtained in the construction of the trend, one can conclude about fairly

Table 4: Calculation of the linear trend parameters of oil exports from Russia to Greece

Figures are SIPRI trend indicator values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	6316.00	−12,632	4	5076.4
2014	−1	3815.00	−3815	1	5008.5
2015	0	4262.00	0	0	4940.6
2016	1	4852.00	4852	1	4872.7
2017	2	5458.00	10,916	4	4804.8
Total	0	24,703.00	−679.00	10.00	24,703.00
2018	3	-	-	-	4736.9
2019	4	-	-	-	4669
2020	5	-	-	-	4601.1
2021	6	-	-	-	4533.2

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

Table 5: Calculation of the linear trend parameters of oil exports from Russia to Spain

Figures are SIPRI trend indicator values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	8424.00	−16,848	4	7533.2
2014	−1	6439.00	−6439	1	7491.4
2015	0	7445.00	0	0	7449.6
2016	1	7011.00	7011	1	7407.8
2017	2	7929.00	15,858	4	7366
Total	0	37,248.00	−418.00	10.00	37,248.00
2018	3	-	-	-	7324.2
2019	4	-	-	-	7282.4
2020	5	-	-	-	7240.6
2021	6	-	-	-	7198.8

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

Table 6: Calculation of the linear trend parameters of oil exports from Russia to Poland

Figures are SIPRI Trend Indicator Values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	28,362.00	−56,724	4	26,573.6
2014	−1	25,611.00	−25,611	1	26,672.8
2015	0	25,149.00	0	0	26,772
2016	1	26,149.00	26,149	1	26,871.2
2017	2	28,589.00	57,178	4	26,970.4
Total	0	133,860.00	992.00	10.00	133,860.00
2018	3	-	-	-	27,069.6
2019	4	-	-	-	27,168.8
2020	5	-	-	-	27,268
2021	6	-	-	-	27,367.2

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

Table 7: Calculation of the linear trend parameters of oil exports from Russia to Romania

Figures are SIPRI trend indicator values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	1792.00	−3584	4	1487.4
2014	−1	1560.00	−1560	1	2416.7
2015	0	3912.00	0	0	3346
2016	1	4495.00	4495	1	4275.3
2017	2	4971.00	9942	4	5204.6
Total	0	16,730.00	9293.00	10.00	16,730.00
2018	3	-	-	-	6133.9
2019	4	-	-	-	7063.2
2020	5	-	-	-	7992.5
2021	6	-	-	-	8921.8

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

Table 8: Calculation of the linear trend parameters of oil exports from Russia to France

Figures are SIPRI trend indicator values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	6436.00	−12,872	4	5834.2
2014	−1	6139.00	−6139	1	6460.7
2015	0	6096.00	0	0	7087.2
2016	1	8254.00	8254	1	7713.7
2017	2	8511.00	17,022	4	8340.2
Total	0	35,436.00	6265.00	10.00	35,436.00
2018	3	-	-	-	8966.7
2019	4	-	-	-	9593.2
2020	5	-	-	-	10,219.7
2021	6	-	-	-	10,846.2

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

Table 9: Calculation of the linear trend parameters of oil exports from Russia to Ukraine

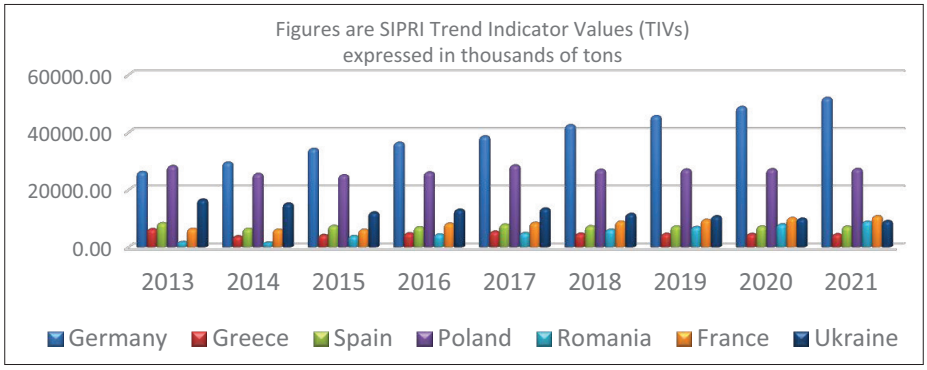
Figures are SIPRI trend indicator values (TIVs) expressed in thousands of tons					
Years	t	y	yt	t^2	Yt
2013	−2	16,627	−33,254	4	15,809.6
2014	−1	15,261	−15,261	1	14,976.9
2015	0	12,171	0	0	14,144.2
2016	1	13,136	13,136	1	13,311.5
2017	2	13,526.00	27,052	4	12,478.8
Total	0	70,721.00	−8327.00	10.00	70,721.00
2018	3	-	-	-	11,646.1
2019	4	-	-	-	10,813.4
2020	5	-	-	-	9980.7
2021	6	-	-	-	9148

Calculated by the authors according to the Russian Federal Customs Service (n. d.)

stable oil consumption in the countries of Central and Eastern Europe. In countries, such as Spain and Romania, for example, there is a slight decrease in consumption, primarily due to the increase in oil supplies from Russia to China. However, for other countries, such as Germany, France, and Poland, there is a tendency to increase oil supplies. Thus, one can state the stability of oil consumption in the European market, which means the importance of reliability and regularity of oil supplies from Russia. The key trend is shown by oil supplies to Ukraine, which is actively declining, thereby causing the lack of additional motivation to upgrade the oil pipeline infrastructure and the desire to ensure the sustainability of transit supplies (Figure 1).

It is worth noting that in the last quarter of 2018, Rosneft has significantly increased oil supplies to Asia, ahead of the scope of supply to Europe. However, in the first quarter of 2019, the situation changed to the opposite: oil exports to Europe increased to 16 mln tons, while oil export to Asia decreased to 15.9 mln tons (Figures 2).

Figure 1: Oil exports from the Russian Federation to Central and Eastern Europe in 2013-2017



Source: Developed by the authors on the basis of the above statistical data

Figure 2: Comparative dynamics of Rosneft oil exports to Europe and Asia

Source: Petlevoy (2019)

Such changes could be caused by certain factors. So, the decrease in the scope of supplies to Asian countries may be due to the planned repair of the oil refinery plants. So, at the beginning of spring, the repair was started in Tuapse refinery plant with a capacity of 12 mln tons/year.

The increase in the scope of oil supplies to Europe can be explained by the fact that the Urals grade oil was traded with a premium in the port of Augusta (Italy), and in the port of Rotterdam (Netherlands), the cost of oil was sometimes higher than the standard price.

However, it is worth noting that the Eastern direction is more attractive due to higher prices. At the same time, Europe is a balancing market, which accounts for the bulk of spot supplies, unlike the Chinese market, where oil goes at a price specified in long-term contracts. So, the increase in oil supplies can be explained by changes in market conditions. This trend can be maintained with the growth of oil production under agreements with OPEC countries.

5. DISCUSSION

At the moment oil pipelines Sukhodolnaya-Rodionovskaya, BPS-1, BPS-2, and CPC-1 are not loaded to full capacity. Thus, for the EU countries, the transit risk of shortfall of the oil scope of supply paid by the contract, or receipt of the paid oil scope of inadequate quality increases considerably. As a result, the Russian Federation is actively seeking to reduce the scope of oil transportation through the territory of Ukraine. Nevertheless, the EU countries may face problems concerned with oil supplies in the near future that will result in a supply contract crisis.

Accordingly, oil production through the Sukhodolnaya-Rodionovskaya, BPS-1, BPS-2, and CPC-1 pipelines will not only reduce transport risks, but also the price of the oil contract that in turn will affect the ability to support the industry development in Europe, and hence, economic stability in the region.

However, the Ukrainian authorities seek to ensure the transit of oil through their territory, including transportation of Iranian oil. This project would allow Ukraine to influence the decline in revenues from Russian oil exports to Europe.

To implement this project, a number of negotiations were held, including meeting in Tehran with the Ambassador of Ukraine, which resulted in the adoption of the Memorandum of understanding and cooperation in the field of energy and petrochemical industry. In 2016, Ukraine has already prepared proposals on the supply of Iranian oil to Slovakia and the Czech Republic through its territory. At the same time, Ukraine assumed all transit risks under mutual obligations of Iran to provide energy supply to Ukraine. Such deliveries can be carried out by sea through the port in Odessa, and then through the Odessa-Brody oil pipeline, or by rail.

It is worth noting that the key buyers of Iranian oil are countries of Asia-Pacific Region, such as Japan, South Korea, India, and China, which in turn are gradually reducing the demand for Iranian oil. This means that Tehran is profitable to open access to the market of the EU countries.

Nonetheless, Iranian oil has low competitiveness compared to Russian oil. For example, 80 thousand tons were delivered through

the port of Odessa to Mozyr oil refinery (Republic of Belarus). Belarus made this purchase to eliminate the shortage of oil from Russia, which comes duty-free. Poland also showed interest in this transaction. However, subsequently, the Republic of Belarus and Poland abandoned these plans, as the transit risks were high. The second reason was the high price of Iranian oil, which in 2016 cost 344 US dollars per ton, while Russian oil cost 304 dollars.

Ukraine itself is forced to buy Iranian oil only for political reasons. For example, in the first half of 2017, Ukraine purchased 500 thousand tons of oil at a price of 420 US dollars, which exceeded the cost of Russian oil.

For the same reasons, Ukraine buys oil from Azerbaijan and Kazakhstan, trying to ensure the loading of the Kremenchuk oil refinery plant. However, to load all refineries located in the territory of Ukraine, it is necessary to ensure the uninterrupted supply of crude oil, as well as to modernize the refineries themselves.

Thus, in order to transport Iranian oil at cheap rates, Tehran needs to invest in the infrastructure of both the pipeline and the port. At that, currently, the traffic handling capacity of the Odessa-Brody oil pipeline is about 15 mln tons. This allows transporting oil to countries such as Slovakia, Hungary, and the Czech Republic. However, at the moment this oil pipeline is unprofitable. Also, the program of oil supplies from Azerbaijan to the Czech Republic for the refinery became a loss-making project.

In general, for Iran, this project does not look very attractive, because the delivery path is too long since it involves transportation by land, then by sea, and then again by land. In addition to economic risks, this project is accompanied also by political risks, including those initiated by the opposition of the interests of the United States and Iran. Under these circumstances, Ukraine cannot replace the transit of Russian oil by another option.

At the end of 2018, the scope of oil production increased by 10 mln tons or 200 thousand barrels/day. This result was obtained despite the enforcement of the transaction with OPEC. Nevertheless, oil supplies from Russia to the EU countries decreased by about 16% that was caused by the change of orientation to China, whose import of Russian oil yet in 2016 has increased by 45%. The Russian Federation overtook Saudi Arabia by 1.5 mln tons with exports of 52.5 mln tons and 51 mln tons, respectively. Thus, countering the diversification of transport risks can force Russia to continue focusing on China, while reducing the scope of oil supplies to Europe.

In general, in 2019, it is expected to produce about 555 mln tons of oil, while 288 mln tons will be sent for internal processing, and the rest of the oil production will be exported.

Based on the findings of the International Energy Agency (IEA) and possessing one of the world's key oil reserves, the Russian Federation can meet the oil needs of the EU economies. Thus, mutually beneficial cooperation between the EU and the Russian Federation ensures stable and safe oil supplies on a long-term basis.

6. CONCLUSION

At the moment, the EU states seek to neutralize the impacts of transit risks, perceiving positively the development and loading of such oil pipelines as Sukhodolnaya-Rodionovskaya, BPS-1, BPS-2, and CPC-1. The supplies of oil through Druzhba Oil Pipeline crossing the territory of Ukraine is subject to a high level of risk, in case of limiting the capacity utilization of the above pipelines. Especially in the risk zone are the countries of Eastern Europe, in which the level of economic and energy security is reduced under the influence of significant fluctuations in the economic and political system of Ukraine.

In the Methods section, the trend of stable oil consumption by European countries was noted, which means that it is necessary to ensure the regularity of oil supplies. Changes in the political system of Ukraine complicate the construction of long-term plans for stable management of the oil transportation system of the state. At the same time, the worn-out infrastructure, and the lack of investments in modernization increase the technical risks of transit, while the lack of stable solvency increases the economic threat.

Diversification of risks is an important component for the economic and energy security of European countries, which determines the importance and relevance of continuous monitoring of oil supply problems in the future.

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