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Analysis and Prospects for the Development of Regional Energy Integration of the Eurasian Economic Union Countries

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ABSTRACT

In the presented paper, it is proved that a new objective trend appears in the current conditions of Eurasian region development. It will strengthen mutual cooperation between the countries of Eurasia and it will enrich regionalization process in the context of world energy markets restructuring, intensification of competition, deglobalization tendencies and other challenges of the world economy. At the same time, fuel and energy complex (FEC) is becoming the main driving force for the countries of Eurasian region and their further development. The concept of regional energy integration of the Eurasian Economic Union (EAEU) countries is offered in the paper. It's based on the strategic advantages of economic integration in relation to the fuel and energy complex. Energy potential analysis of the EAEU member countries is performed. The issues of common energy markets formation in the region are considered. The main problems and a number of uncoordinated tasks between the countries participating in integrational process in this area are highlighted in terms of common gas, oil and oil products market formation, although it is noted that development and approval stage of the Programs for such formation is mostly completed. It is expected that these markets will be fully formed by 2025. It was emphasized that energy integration is one of the most important areas for the EAEU countries development, which is expected to bring significant economic benefits in the long-term period.

Keywords: Regional Energy Integration, Common Energy Markets, Energy Potential, The Eurasian Economic Union

JEL Classifications: F02, F63, O13

1. INTRODUCTION

The current stage in the development of international economic relations is characterized by uncertainty and structural changes. The period of 2008-2019 and the beginning of 2020 was marked by series of events of various scales: The global economic crisis, fall and partial restoration of energy prices, the shale revolution, the development of military and political conflicts, and the slowdown in global economic growth. That leads to the world markets restructuring, changes in the relationship between consumers and sellers of goods, services, and, in particular, energy resources, and contributes to integration development.

In that context the priority is international cooperation between the countries and common markets formation. As a rule, partnership initially develops in specific economic spheres of strategic significance for countries, and it is assumed that in case of successful convergence some certain integration effects appear. And that give impetus to cooperation in related economy sectors, and then such effects will be obtained in other spheres.

In 2015, five countries (Russia, Belarus, Kazakhstan, Armenia and Kyrgyzstan) created a world-wide international integration association – the Eurasian Economic Union (the EAEU), which gave new incentive to international economic integration processes in Eurasia space.

Energy cooperation has been declared as unconditional priority for the EAEU development for the period until 2025, when the formation of common markets for electricity, gas, oil and oil products should be completed. Such cooperation should contribute to the formation of unified energy space, transcontinental energy corridors, should increase energy resources availability for the citizens of the EAEU member countries and their economic entities, as well as it could generally lead to more intensive economic growth and increase of well-being level of the population of the EAEU countries over long term perspective.

Energy integration is the locomotive of integration process in the region because of rich resource base, high role of fuel and energy complex (FEC) in economies of the EAEU countries, historically established community and inextricable economic ties in them.

2. LITERATURE REVIEW

Looking at experience of many regional associations, it can be noted that they are based on the process of international labor division with the greatest benefit and realization of economic interests of the participating countries. For example, the first step in European economic integration was the signing of agreement for the European Coal and Steel Association (EUSC) (Hay and Rosamond, 2002). The main vector of this process development was possibility of favorable environment creating in the European region for goods movement of metallurgical and coal industries between the countries. Such a union has become an incentive for the development of further integration processes in the European region.

At the end of the last century, integration processes were developed in the countries of the Southern Cone Common Market (MERCOSUR) in manufacturing and energy sectors. This interaction has intensified further integration in the region (Mares and Martin, 2012). A program was adopted for the economic cooperation of the countries, which goal was intersectoral specialization in strategically important economic areas, and especially in energy sector.

Theoretical studies allow us to consider integration processes development in energy sector of Eurasian region, taking into account certain specifics. It is noted that large projects have already been successfully implemented in the region, such as Electrification Plan of Russia (GOELRO) was implemented at the beginning of the last century (Dynkin et al., 2018). Special role in this program was given to energy industry, which served as a driver for the development of other industries and fields.

In connection with the EAEU formation and its reliance on fuel and energy complex, it acquires special scientific interest and theoretical comprehension of regional energy integration processes.

Some authors emphasize that “unique” conditions have developed in the post-Soviet space, especially in terms of common electricity market creating and developing in the EAEU countries (Zemskova, 2018; Perskaya, 2020; Pastukhova and Westphal, 2018). It is also noted that the Union has great energy potential, it has common

inherited energy system, comparable common technological and technical standards, it has a cross-bordered infrastructure and capacities, etc. According to experts the formation of common energy market will allow obtaining a large number of advantages for countries, such as possibility of energy flows using, energy capacities redistributing, balancing, and also phasing out obsolete equipment from enterprises funds, competitiveness rising of the EAEU as a whole (Sopilko et al., 2020).

Some experts consider energy integration in the Union region in the context of energy security (Cherp and Jewell, 2014; Myasnikova et al., 2019), which means an ability to protect member countries from lack of energy resources and energy shortages. The main goal of this approach is the formation of a single energy space on the principles of sustainability.

It should be highlighted that today different types of electricity markets having been already operating in the EAEU countries. Kurbanaliyev and Drogovoz in their study (2016) offer a conceptual approach to the development of common electricity market in the EAEU, based on the formation of supranational electricity market without significant reform of national markets. It is noted that globalization of energy markets, especially in Asia, can have a significant impact on the trends in supply and demand of fuel and energy resources. Moreover, the logistical factor becomes more and more important in the world and regional trade (Telegina and Khalova 2017; Gillessen et al., 2019).

It's obvious that today different types of markets have been already operating in the EAEU countries. It's considered that these aspects also directly effect on developmental character of energy integration in the EAEU.

In recent years serious work to understand the basic principles, mechanisms and conditions of energy integration has been carried out by a number of major domestic scientists, mainly by scientific teams with the guidance of Telegina et al. (2019). Energy integration experience and single energy space formation in the European Union is studied in details, as well as conceptual vision of the goals, objectives and forms of energy integration in the EAEU is presented. The following components of energy integration are highlighted:

Technical integration (rational integration of many technical facilities into a single complex for production, transmission, distribution and consumption of energy).

Technological integration as combination of individual technologies into a single technological chain (from energy production to its consumption) and the formation of single technological space on the basis of individual energy systems.

Functional integration, which can ensure the unity of goals, criteria and procedures harmonization, the implementation of all functions and processes aimed at goal achieving.

Organizational integration provides the interaction of participants and their concerted actions to their goal achievement.

Information integration, which supplies single integrated approach to creation and maintenance of informational base of energy metasytem.

Software integration allows using of coordinated and interconnected complex of models, algorithms and programs to ensure the overall functioning of all system components.

Some experts note that today there are objective backgrounds for globalization in energy sector, two of them are distinguished. It's market factor – constant increase in energy demand in such developing countries as China, India and others (Meynkhard, 2020); technological factor – existing innovative technologies in energy sector in developed countries (renewable energy technologies, deep-sea mining, etc.) (Nazarova et al., 2019).

It is advisable to make more detailed analysis of regional energy integration in the EAEU space, taking into account all existing development backgrounds.

3. METHODOLOGY OF THE RESEARCH

Currently, Eurasian Economic Commission (2019) has identified the main directions of energy sector development in terms of common energy markets formation of the EAEU countries. Created markets should be opened for participation of energy companies of the EAEU's countries, have special architecture involving direct interaction between business entities in terms of extraction, processing and transportation of energy resources. And the trade in these markets should be realized on exchange platforms or under direct contracts.

In accordance with the goals set by the EEC, common energy markets formation in the Union will contribute to the sustainable development of economies, citizen's well-being increasing, as well as energy security strengthen and competitiveness growth of goods produced in the EAEU on the world market. All of these can make a significant contribution to strengthening the integration foundation of the Union and helps to become a powerful factor in the development of the Eurasian region as a whole.

It should also be kept in mind that energy resources can be classified in the global energy market as own and acquired. The predominance of own or acquired resources in the country's energy balance determines its role in integration association as net consumer or as net producer of energy resources. This, in turn, determines the necessity, scale and forms of energy resources redistribution within the framework of energy integration in accordance with general distribution mechanism. In our view the effective redistribution of energy resources enhances energy security within entire integration association (Figure 1).

In our opinion, it is possible to suggest further development of ideas connected with energy integration in the EAEU region in the context of regional energy integration concept. Theoretical justification for further expansion of energy integration process in the EAEU countries and neighboring countries of Central Asia and the Far East can be offered for consideration.

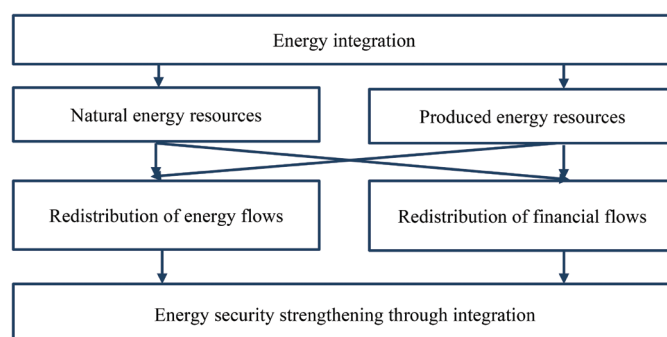
The main background of the concept is based on the fact that energy integration provides participating countries with a number of unique and strategic opportunities and advantages (Figure 2).

The first advantage is increasing of energy security level and sustainability of integrated energy systems, such as trunk electric networks and gas piping systems, which rise reliability and security level of electric power supply to consumers. For example, in the framework of isolated energy systems, or in poorly integrated electric power systems, emergency shutdown of some generating or transmitting capacities, or change in mode of their operation, is likely to lead to the damage of adjacent systems and subsequent cascading blackouts of consumers.

On the contrary, in case of appearance of electric system with high integration level, the availability of reserve capacities and high coordination level between electric power zones allows avoiding such negative consequences. Modern Unified Electric System of Russia (UES of the Russian Federation) can be an example of highly integrated system in which even breakdowns of some elements will not lead to collapse of the entire system. However, such efficient arrangement of power grids is customary only for few regions of the world.

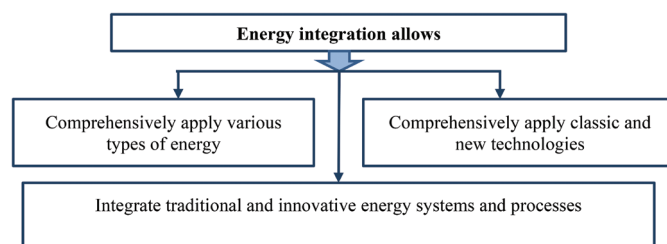
The second advantage is higher production efficiency of electric and thermal energy, more flexible possibilities for energy system balancing, higher performance coefficient of generating plants due to the rational use of maneuverable and low-maneuverable generation capacities within a single energy space. It provides significant economic benefits, since it allows reducing the cost of resources per unit of generated electricity and to increasing the

Figure 1: The mechanism of energy resources redistribution in the process of energy integration



Source: Compiled by the authors.

Figure 2: Opportunities provided by energy integration



Source: Compiled by the authors.

service life of both generating plants and network infrastructure due to their more balanced loading during the periods of decline and peak consumption.

The third advantage is increased ability to deploy various types of generating capacities within electricity system. Different types of capacities are defined by complementary characteristics. The most stable and reliable is such energy system, in which both highly maneuverable and low maneuverable capacities are represented in sufficient quantities, as well as generating facilities of various installed capacities. Today the most advanced electric power systems allow to control the loading of various capacities types and the distribution of generated electricity in large geographic areas. This, in fact, was implemented within the framework of unified electric power system of the USSR and is partially preserved in the UES of the Russian Federation.

In view of all the above, it is possible to formulate comprehensive definition of regional energy integration. It is a process of mutual technological and economic ties forming between fuel and energy complexes of the countries of regional association, which contributes to formation and development of spatial distributed energy systems and improves economic and energy efficiency of fuel and energy complex, provides higher availability of energy and energy carriers for consumers and strengthens energy security of the countries.

Such an approach requires regional energy integration, detailed analysis of available resource potential of the EAEU countries and the determination of main vectors for the development of these processes in the context of integration.

4. RESULTS AND ANALYSIS

Energy sector of economy is one of key sectors of economic development of the EAEU countries. Therefore, it is efficient to maximize existing resource potential using of oil and gas, coal, nuclear and transport industries as a locomotive for further successful development of integration processes in the region. Energy should play a stimulating role in the development of other economy sectors, especially knowledge-based and high-tech.

For this purpose, it would be advisable to analyze the existing potential in energy sector of the EAEU.

The share of fuel and energy complex in GDP structure of the EAEU countries is about 17%, and in total industrial production, the share reaches one third – 33% (Eurasian Economic Commission, 2019). The main producers, net exporters and consumers of energy resources in the EAEU are Russia and Kazakhstan. The rest of the EAEU countries are net importers of energy resources. In general, the Eurasian Economic Union has the most significant energy potential in the world without any exaggeration.

About a quarter of all proved world mineral reserves are concentrated on the territory of the EAEU countries, including 40% of world gas reserves, 25% of world coal reserves, 20% of world oil reserves and more than 20% of world uranium reserves.

In 2017, Russia possessed 85.7% of total oil production in the EAEU, and 14.0% were in Kazakhstan. Between the period of 2015-2017 oil production grew by 3.6% in Russia, by 6.3% in Kazakhstan. In Kazakhstan there was a temporary decrease in oil production in 2015-2016 due to delay of industrial development starting of Kashagan oil field. Price decrease and temporary excess of crude oil in the world market had also negatively impacted on oil industry of Kazakhstan during this period. In Russia, a slight decrease in oil production in 2017 was due to production restrictions introduction as part of the “OPEC +.”

Main facilities for petroleum products production are located in Russia, Kazakhstan and Belarus. In 2017, the EAEU countries produced 314.3 million tons of oil products, 89.5% of them came from Russia. The production of petroleum products has decreased since 2014 by 6.7 million tons of oil equivalent (2.3%) in Russia, by 3.7 million tons of oil equivalent (16.9%) in Belarus, by 1.0 million tons of oil equivalent (6.5%) in Kazakhstan. The decrease in oil refining in Russia is associated with the phased implementation of “tax maneuver” (Federal Law of 03.08.2018 No. 301-FZ), in Belarus it’s connected with restrictions introduction on the re-export of oil products produced from Russian oil.

The consumption of oil and oil products steadily increased during the period under review in the EAEU and by 2017 the total demand reached 217.7 million tons of oil equivalent (4.1% higher than in 2014). In 2017 net oil exports from Russia reached 320.1 million tons of oil equivalent (14.3% growth compared to 2014), it reached 86.1 million tons of oil equivalent (3.9% increase) from Kazakhstan (Table 1).

The EAEU countries import oil for refining and oil products for their own needs mainly from Russia. In 2017, gasoline, diesel fuel and fuel oil (1.8 and 1.2 million tons) were delivered from Russia to Kazakhstan and Armenia, gasoline and diesel fuel (960 and 940 thousand tons) were delivered to Kyrgyzstan and Belarus (Eurasian Economic Commission, 2019) (Table 2).

Until the end of tax maneuver in 2019-2024 export of crude oil and petroleum products from Russia is subject to export customs duty calculated on the basis of world prices for crude oil. Crude oil supplies from Russia to Belarus under the current regulatory regime are exempted from customs duties. In Kazakhstan, payment of export customs duty for crude oil export is not provided. Kazakhstan has repeatedly imposed a ban on petroleum products imports from Russia in order to protect the interests of their own oil companies in 2014-2018.

By the end of 2017, gas production in the EAEU countries reached 754.8 billion cubic meters, 93.1% of total production has been produced in Russia (Table 3).

In Russia gas production has increased by 36.5 billion cubic meters (5.4%) since 2014 due to the development of new gas fields on Yamal Peninsula. In Kazakhstan the volume of gas production in 2017 had increased by 11.4 billion cubic meters compared with 2014 (12.4%) and reached 50.6 billion cubic meters. It’s 6.7% of all production in the EAEU. Associated gas is mostly produced

from oil fields. There are only few gas fields in Kazakhstan: More than 70% of explored reserves of free gas are concentrated in the Karachaganak field.

Overall gas consumption in the EAEU countries had decreased by 5.8 billion cubic meters (or 1.1%) for the period 2015-2017. In Russia gas consumption decreased due to the effects of economic crisis in 2015, as well as due to warm conditions in winter months. It was restored to the level of 475.9 billion cubic meters only by 2017. In Kazakhstan gas consumption had increased for 4.0 billion cubic meters m (12.4%) in 2015-2017. In Belarus gas consumption had decreased (by 1.6 billion cubic meters, or by 7.6%) and in Armenia (by 0.4 billion cubic meters, or by 18.1%).

Table 1: Key indicators of oil industry in the EAEU countries during 2014-2017, million tons

Country/year	2014	2015	2016	2017
Oil production				
Armenia	0,0	0,0	0,0	0,0
Belarus	1,7	1,7	1,6	1,6
Kazakhstan	84,3	82,7	81,3	89,6
Kyrgyzstan	0,1	0,1	0,1	0,1
Russia	528,7	536,3	548,6	547,9
The EAEU, total	614,7	620,8	631,6	639,2
Petroleum products				
Armenia	0,0	0,0	0,0	0,0
Belarus	22,2	23,3	18,8	18,4
Kazakhstan	14,6	13,5	13,5	13,7
Kyrgyzstan	0,1	0,3	0,7	0,8
Russia	288,1	283,6	281,5	281,4
The EAEU, total	325,0	320,7	314,5	314,3
Oil and oil products consumption				
Armenia	0,4	0,3	0,3	0,3
Belarus	8,0	6,8	6,3	6,3
Kazakhstan	12,5	14,9	15,9	15,8
Kyrgyzstan	1,5	1,7	1,8	1,9
Russia	186,2	185,9	191,8	193,4
The EAEU, total	208,7	209,6	216,1	217,7
Net exports of oil				
Armenia	0,0	0,0	0,0	0,0
Belarus	-26,4	-27,5	-21,4	-21,3
Kazakhstan	82,9	81,7	78,0	86,1
Kyrgyzstan	-0,1	-0,3	-1,1	-1,1
Russia	280,0	306,3	322,7	320,1
The EAEU, total	336,5	360,3	378,3	383,9

Source: According to Eurasian Economic Commission, 2019

Russia and Kazakhstan export gas to markets of the EAEU countries and to the third countries. Export orientation level of gas industry (calculated as the ratio of net export to gas production) was 32% for Russia and 25% for Kazakhstan. Net gas exports had significantly increased in Russia (by 40.5 billion cubic meters, or by 21.7%) and Kazakhstan (by 6.2 billion cubic meters, or by 93.5%) for 2015-2017.

In Armenia and Belarus gas demand is almost completely covered by supplies from Russia, Kyrgyzstan's demand is recovered by Kazakhstan. Mutual deliveries are made between Russia and Kazakhstan: From Kazakhstan to Russia in order to provide raw materials for the Orenburg gas processing plant, from Russia to Kazakhstan for gas supply to the northern regions of the country that do not have communication with the main gas producing regions (Table 4).

Coal production had increased by 41.3 million tons (or 11.7%) compared to 2014 in the EAEU countries mainly due to Russia's contribution. In Russia coal production had increased by 45.9 million tons (16.4%). At the same time, in Kazakhstan coal production had decreased by 5.3 million tons (by 7.2%) (Table 5).

In Russia coal consumption had increased by 16.0 million tons (10.5%) for 2014-2017 compared with the results of 2014. In Kazakhstan coal consumption was characterized by unstable dynamics and amounted to 50.0 million tons in 2017, it was 4.6 million tons (8.4%) less than the level of 2014.

Net coal export from the EAEU countries in the reporting period had increased by 33.6 million tons (23.8%) according to the level of 175.2 million tons in 2017. Russia is the largest exporter of coal in the EAEU, providing all net export growth. Coal export from Kazakhstan was stable at the level of 16-19 million tons.

Gross electricity production in the EAEU had increased by 47.4 TW-h (3.9%) and had reached 1272 TWh for the period 2014-2017. Russia accounted for 86.3% of all electricity generated in the EAEU by the end of 2017 (1097 TWh), Kazakhstan – 119 TWh (9.4%), Belarus – 35 TWh (2.7%). Electricity production had increased in all EAEU countries, except Kyrgyzstan for the period under review. Gas generation predominated in the EAEU

Table 2: Mutual supplies of oil and oil products to the EAEU in 2017, thousand tons

Oil					
	In Armenia	In Belarus	In Kazakhstan	In Kyrgyzstan	In Russia
From Kazakhstan	0	0,065	0	0	0,8
From Russia	0	24	0	0,04	0
Petrol					
	In Armenia	In Belarus	In Kazakhstan	In Kyrgyzstan	In Russia
From Belarus	0	0	0	0	40
From Russia	130	140	1230	470	0
Diesel fuel					
From Belarus	0	0	0	0	100
From Kazakhstan	0	0	0	5,9	18
From Russia	140	800	520	490	0
Fuel oil					
From Russia	970	0	85	0	0

Source: According to Eurasian Economic Commission, 2019

Table 3: Key indicators of gas industry in the EAEU countries in 2014–2017, billion cubic meters

Country	2014	2015	2016	2017
Gas production				
Armenia	0,0	0,0	0,0	0,0
Belarus	0,2	0,2	0,4	0,4
Kazakhstan	39,2	41,9	42,8	50,6
Kyrgyzstan	0,0	0,0	0,0	0,1
Russia	666,8	658,1	682,4	703,1
The EAEU, total	706,4	700,2	725,7	754,2
Gas consumption				
Armenia	2,4	2,2	2,1	1,9
Belarus	21,3	19,9	19,8	19,7
Kazakhstan	32,6	34,5	35,5	36,6
Kyrgyzstan	0,3	0,3	0,3	0,3
Russia	483,7	457,2	470,8	475,9
The EAEU, total	540,2	514,0	528,4	534,4
Net gas export				
Armenia	-2,4	-2,2	-2,1	-1,9
Belarus	-20,9	-19,6	-19,4	-19,3
Kazakhstan	6,7	7,2	10,0	12,9
Kyrgyzstan	-0,2	-0,3	-0,3	-0,2
Russia	186,7	198,0	211,7	227,2
The EAEU, total	169,8	183,1	199,9	218,7

Source: According to Eurasian Economic Commission, 2019

Table 4: Mutual gas supplies to the EAEU in 2017, billion cubic meters

Supply direction	From Kazakhstan	From Russia
In Armenia	0,0	2,3
In Belarus	0,0	19,5
In Kazakhstan	–	10,0
In Kyrgyzstan	0,2	0,0
In Russia	13,3	–

Source: According to Eurasian Economic Commission, 2019

Table 5: Key indicators of coal industry of the EAEU countries in 2014–2017, million tons

Country/year	2014	2015	2016	2017
Coal mining				
Armenia	0,0	0,0	0,0	0,0
Belarus	0,0	0,0	0,0	0,0
Kazakhstan	73,6	69,5	63,4	68,3
Kyrgyzstan	1,0	1,0	1,3	1,7
Russia	279,4	295,0	307,1	325,3
The EAEU, total	354,0	365,5	371,8	395,3
Coal consumption				
Armenia	0,0	0,0	0,0	0,0
Belarus	1,2	1,1	1,0	1,1
Kazakhstan	54,6	50,5	46,9	50,0
Kyrgyzstan	1,7	1,7	2,3	3,0
Russia	153,3	171,7	165,3	169,3
The EAEU, total	210,9	224,9	215,4	223,5
Net coal export				
Armenia	0,0	0,0	0,0	0,0
Belarus	-0,8	-0,6	-0,6	-0,6
Kazakhstan	18,8	19,3	16,5	18,4
Kyrgyzstan	-0,8	-0,8	-0,9	-0,7
Russia	124,2	126,0	140,1	158,1
The EAEU, total	141,5	143,8	155,1	175,2

Volumes of production, consumption and net export of coal are reduced to caloric value of 6,000 kcal/kg. Source: According to Eurasian Economic Commission, 2019

Significant amount of electricity production also fell on coal generation (205 TWh, or 18.9%), as well as nuclear power plants and hydroelectric power stations (206 TWh, or 16.2% each).

In the EAEU countries, electricity production at nuclear power plants had significantly increased (by 22.6 TWh, or 12.3%) due to the commissioning of new power units in Russia. Electricity production at wind farms and solar power plants increased from 0.3 TWh in 2014 to 5.5 TWh in 2017. The consumption of biomass and other types of fuel for electric power industry needs decreased slightly, while other types of generation showed weak growth (not more than 4%).

In Armenia, its own energy production is based on the power generation of nuclear power plants and hydroelectric power plants, providing <1/3 of the country's needs. Armenian nuclear power plant is only one in the region. It was put into operation in 1980 and stopped in 1989 after the Spitak earthquake. In 1995, in connection with the most acute energy crisis in Armenia, operation of one of two power units of nuclear power plant with 440 MW was resumed. Nowadays, it generates more than 70% of the whole electricity produced in Armenia, and the period of its operation was extended by 10 years until 2026 with the support of the Russian company "Atomtsehergo JSC."

Lack of own energy resources and small volumes of electricity production at the Armenia's existing nuclear power plants and hydroelectric power stations make it highly dependent on Russian energy supplies (including uranium raw materials for nuclear power plants).

The basis of Armenia's energy strategy is electricity generation development at its own sources (construction of small and medium-sized hydroelectric power stations, as well as new nuclear power plant construction) and provision of additional gas supplies from Iran. Potential risks for Armenia include interruptions in energy supplies from Russia and Iran (for various reasons), risks associated with the operation of obsolete nuclear reactor in seismically dangerous zone, and the difficulties of conducting market reforms in presence of exclusive energy suppliers.

In mutual electricity trade between the EAEU countries, electricity flows are of the greatest importance:

Between the UES of Russia's Center, where the main generating facilities of PJSC Mosenergo are located, as well as Ryazan and Cherepovets State District Power Plants of PJSC OGC-2, and Belarus.

Between the UES of Urals, where Surgutskaya State District Power Plant –1, Troitskaya, Serovskaya State District Power Plants of PJSC OGC-2 are located, and Kazakhstan.

Between the UES of South, where Adler TPP, Stavropol and Novocherkasskaya State District Power Plants of PJSC OGC-2 are located (the launch of Grozny State District Power Plant was also expected in 2019), and Kazakhstan.

electricity generation structure (597 TWh, or 47% of the total generation in 2017).

PJSC “INTER RAO” is an electricity operator of export and import from Russia’s UES.

5. DISCUSSION

There is no doubt that in energy integration development significant role is played by the fact that each country participating in integration association has its own unique energy potential. Energy potential of countries depends on large number of factors, primarily it’s the availability of natural resources that can be used to generate energy.

The results of analysis indicate that the EAEU countries have sufficient energy potential, developed infrastructure and other opportunities for the further successful development of energy integration processes. The integration processes have reached high level of institutional development in the EAEU by 2020. Under the EAEU Treaty, countries are developing long-term mutually beneficial cooperation in energy sector, pursuing coordinated energy policy and phasing the formation of common energy markets.

The consensus of the EAEU countries on the issue of electricity market was reached on April 20, 2019, when the last disagreement over the intentions to maintain tariff protection of government monopolies was overcome. Free energy supplies from countries with lower prices threaten Russian companies with regulated tariffs (they grow by 4% per year in Russia) with loss of market shares, and the necessity to perform transit supplies in the opposite direction with decrease in profitability. As a result, the scheme to enter common electricity market will be two-stage for companies. Firstly, energy companies will have to obtain the approval of national regulators. And then, this requirement will be removed only after signing agreement on common gas market, tariff and organizational balancing of the market under new conditions. Development and adoption of the EAEU documents in gas and oil sectors is planned after the formation of regulatory framework for electricity industry.

But at the same time, there are some contradictions that arose in the process of joint activities despite the emerging vector of common energy market development in the EAEU region, adopted documents and agreements reached between participating countries, (Khasbulatov, 2017; Butorina, 2016). On the one hand, this is geopolitical factor that includes various kinds of controversial issues, for example, in the framework of so-called triangle “Russia – Belarus – Armenia,” and on the other, economic interests of the members. One of the reasons for the disputed relations between the EAEU member countries is the pricing policy in energy field.

As noted above, domestic needs for hydrocarbon energy carriers of Armenia and Belarus are provided by supplies from Russia at below market prices. For example, Belarus purchased Russian gas at price \$ 127 per 1000 m³ (Rosstat data), and Armenia within \$ 165 per 1000 m³ (for reference, the average gas price in Europe in 2018 and 2019 was about 200-250 US dollars per 1000 m³). At the same time, the price of gas supplied to Kyrgyzstan from Kazakhstan amounted to about 195 US dollars per 1000 m³.

At the same time, the average actual export price of Russian oil in 2019 (as of June) was \$ 466.2 per 1 ton, and the average price of Kazakh oil on the foreign market in 2019 was \$ 460–470 US per 1 ton. It should be noted that the world market price for “Urals” oil for the same period was 479.5 US dollars per 1 ton (data from the RF Ministry of Finance). It can be emphasized that the average price of oil imported to Belarus from Russia was 364 US dollars per 1 ton (Belstat data), which was almost 20% lower than Russian export oil price and 25% lower than the world one.

Controversial issues are integral part in the integration processes development. These issues must be resolved taking into account the geopolitical and economic factors of the EAEU member countries, which will allow them getting integration effects in future.

It is necessary to highlight the problems that are currently presented in economy and energy system of all the EAEU member countries. General problems of economy sectors should include: high degree of depreciation of fixed assets (depreciation of fixed assets reaches 70% and more in some sectors); significant material and energy intensity of manufactured products; low susceptibility to innovation; technological backwardness and low labor productivity; lack of staffing with high qualifications; lack of investment, etc. We can also note the obsolescence of infrastructure and production assets in the context of growing needs of domestic market, insufficiently high level of energy efficiency, organizational and technical difficulties with the creation and implementation of new equipment and technologies, limited internal competition, insufficiently favorable investment climate, etc. The internal energy markets of the EAEU member countries remain narrow, low in terms of consumption and fragmented. There is no single investment space. Rules and principles of government regulation significantly vary in different countries. Penetration scale of the EAEU members companies into the global energy market does not correspond to infrastructure and resource potential that they have.

6. CONCLUSIONS

Despite the existing problems, there is awareness of common geopolitical and economic interests of Russia, Belarus, Kazakhstan, Kyrgyzstan and Armenia at governmental level of the countries. Clear integration vector has been chosen and it’s supported by the presence of close common cultural and economic ties. The key areas of integration processes should include unified transport and energy infrastructure development, unified legal framework, and common energy markets (economies of scale, neighborhood effects, lower costs for the production of material resources, synergies), which, in turn, will strengthen production ties and ensure sustainable energy development of participating countries and provide safety of the whole region.

In this regard, the EAEU member countries will face the following tasks:

Priority development of energy sector, as of its strategical importance for economies of the countries and because it is the basis for other economy sectors growth.

Energy infrastructure development, as strategically important issue in long-term development, which is the basis of Eurasian energy integration aimed at sustainable growth achievement, both at economic and social aspects.

Energy security ensuring of the EAEU region, based on reliable access to energy resources, as well as guaranteed sales and transit volumes.

As practical recommendations, it is proposed to consider the possibility of gas consumption growth as effective and environmentally friendly source of energy for electric and heat generation, districts gasification level increasing and pipeline network developing. Using of oil as a fuel is offered in oil production and oil refining fields. It should be combined with highly efficient oil refining. In turn, the refining process having high added value will contribute to high technologies development, and the products will be more competitive both in the EAEU and in the world market. It also requires joining forces in nuclear energy field which contributes to the development of peaceful use of nuclear energy by member countries, common energy policy formation, coordination of decision-making in this industry, its stability improvement, and also conducting research and development for innovative technologies introduction.

Successful implementation of energy integration will lead to powerful growth in energy sector production, activation of investment and cash flows within the EAEU, and more available access to energy for consumers. It should also be emphasized that energy integration will positively affect the social sphere. First of all, due to industry development, numerous jobs will be created in the EAEU regions. On macroeconomic scale, the generation of large profit flows will make it possible to redistribute and use these funds across the entire region to invest in other industries, carry out R and D, develop innovation and generally economic growth.

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