

DIGITALES ARCHIV

ZBW – Leibniz-Informationszentrum Wirtschaft
ZBW – Leibniz Information Centre for Economics

Lisin, Anton

Article

Prospects and challenges of energy cooperation between Russia and South Korea

Provided in Cooperation with:

International Journal of Energy Economics and Policy (IJEPP)

Reference: Lisin, Anton (2020). Prospects and challenges of energy cooperation between Russia and South Korea. In: International Journal of Energy Economics and Policy 10 (3), S. 130 - 135.

<https://www.econjournals.com/index.php/ijeep/article/download/9070/5005>.

doi:10.32479/ijeep.9070.

This Version is available at:

<http://hdl.handle.net/11159/8336>

Kontakt/Contact

ZBW – Leibniz-Informationszentrum Wirtschaft/Leibniz Information Centre for Economics

Düsternbrooker Weg 120

24105 Kiel (Germany)

E-Mail: [rights\[at\]zbw.eu](mailto:rights[at]zbw.eu)

<https://www.zbw.eu/econis-archiv/>

Standard-Nutzungsbedingungen:

Dieses Dokument darf zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden. Sie dürfen dieses Dokument nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen. Sofern für das Dokument eine Open-Content-Lizenz verwendet wurde, so gelten abweichend von diesen Nutzungsbedingungen die in der Lizenz gewährten Nutzungsrechte.

<https://zbw.eu/econis-archiv/termsfuse>

Terms of use:

This document may be saved and copied for your personal and scholarly purposes. You are not to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public. If the document is made available under a Creative Commons Licence you may exercise further usage rights as specified in the licence.



Prospects and Challenges of Energy Cooperation between Russia and South Korea

Anton Lisin*

Financial University Under the Government of the Russian Federation, Moscow, Russia. *Email: mrfoxv@list.ru

Received: 05 December 2019

Accepted: 19 February 2020

DOI: <https://doi.org/10.32479/ijee.9070>

ABSTRACT

In the past, cooperation between South Korea and the Russian Federation had been hindered by predominantly political factors. The implementation of energy resource projects was not viable due to tensions on the Korean peninsula and Russia's capabilities were limited due to sanctions against it. While projects had been fulfilled, enough of them had been left on paper, so there is hesitation in developing new strategies. But that is history. Both countries have shown interest in forming a partnership from which they can benefit. Changes in the political situation have opened a window for many new opportunities. This manuscript examines and analyzes the development of interrelations between Russia and South Korea and gives a valuation of the prospects of cooperation in the short and medium term.

Keywords: Energy Sources, South Korea Energy Policy, Resource Saving, Economic Development, Energy Cooperation

JEL Classifications: C30, D12, Q41, Q48

1. INTRODUCTION

The "Eurasian initiative" aimed to expand cooperation of both Russia and states of the Korean peninsula. Unfortunately, it was not very effective and could not overcome the obstacles that it faced. Communication between the Russian Federation and countries like South Korea was poor, which had affected the results of the initiative that lacked strict guidelines for implementing its strategies.

Furthermore, the infamous sanctions against Russia from the West had strained connections between South Korea and Russia, due to the fact that the United States of America actively cooperates with the Asian country.

However, that being said, the prospects of cooperation between Russia and South Korea are promising. The situation of international affairs has changed and the odds of close cooperation between Russia and several states have been increasing. Stereotypes and fears regarding the economy of the Russian

Federation and the remnants of the USSR are being replaced with a more pragmatic vision, which will positively translate to future economic opportunities.

2. LITERATURE REVIEW

The relations between South Korea and Russia have not always been one-sided. They have had their struggles, the effects of which are slowly deteriorating.

Bansal et al. (2013) states that South Korean businessmen have maintained the opinion that Russia has not changed its policy towards the nature of its economy since the existence of the USSR. Some believe that the country has not truly switched to a market economy. This leads Korean investors to be under the impression that their contributions for a joint project are not safe.

Experience has shown that a direct increase of Russian energy exports, while not the only measure possible, is vital for increasing future cooperation. (Bove and Lunghi, 2006; Cai et al., 2011).

Moreover, South Korea could attract more investments in infrastructure and oil and gas sector projects, which, consequently, will increase the level of trust between these countries. (Chiemchaisri et al., 2012; Gardner et al., 1993).

Another effective method of overcoming obstacles is the active investment and financing in infrastructure, which will exponentially increase export volumes of energy resources to the Republic of South Korea and increase the process of cooperation. Further investments in Eastern Siberia and the Far East will significantly increase the rates of development of cooperation with East Asian countries in general (Mikhaylov et al., 2018; Nyangarika et al., 2018).

These projects could be financed by the profits gained from energy resource trades with European states.

Unfortunately, the ongoing sanctions by the West, accompanied by low oil prices lead to declining energy exports to Europe (however, over 65% of Russian energy is exported to European states). And, therefore, other sources of profits are required to replace these losses. Finding these sources of income will lead to overcoming certain financial difficulties, implementing projects in Eastern Siberia and the Far East and the development of the partnership between Russia and South Korea (Nyangarika et al., 2019b; Nyangarika et al., 2019a).

One of the alternative ways of funding these projects of energy cooperation in Eastern Siberia and the Far East is changing the existing tax system, namely raising taxes on energy export bodies (Mikhaylov, 2018a; Mikhaylov, 2018b).

Nevertheless, reorienting to the East will take time. Objectives in this part of the world contain the construction of additional infrastructure projects and attraction of investments for their completion to raise the cooperation level with the Republic of South Korea and the transformation of the latter into one of the main importers of Russian energy resources (Lopatin, 2019a; Lopatin, 2019b).

It is also worth considering the possible creation of an effective Russian-South Korean investment platform whose resources should be aimed at developing and implementing joint energy infrastructure projects in Siberia and the Far East.

3. DATA AND METHODS

The Export-Import Bank of the Republic of South Korea (Eximbank) and the Bank for Development and Foreign Economic Affairs (Vnesheconombank, VEB) signed a Memorandum of Understanding on November 13, 2013. The aim of this Memorandum was to create an investment platform for the development of economic cooperation between the two states and promoting co-financing of the aforementioned projects (Meynkhart, 2019a; Meynkhart, 2020).

Dayong et al. (2019) is under the impression that sanctions towards Russia were a significant reason why the investment platform was not implemented to its full extent.

So, it could be argued that the state of the project, which aims to strengthen energy cooperation with South Korea in particular, will largely depend on the political relations between Russia and certain Western countries. Annulment of economic sanctions would be beneficial, resulting in full energy export to the European sector and the development of relations with Asia (Mikhaylov, 2019a; Mikhaylov et al., 2019).

However, Morris and Barlaz (2011) state the reorientation to the East, the creation of necessary infrastructure and energy cooperation with South Korea is dependent on political factors and relations, rather than financial.

Despite all of this, prospects of future cooperation are rather promising. According to a framework of Russian-Korean cooperation since 1993, the construction of a gas pipeline from Russia to South Korea through the territory of North Korea was actively discussed (Moiseev, 2017c; Moiseev and Akhmadeev, 2017).

The parties even agreed on a joint study of the project's capabilities in 2008. However, relations between the two countries of the Korean peninsula were deteriorating. Furthermore, North Korea had issues with many countries in general, which resulted in UN sanctions. So, unfortunately, the implementation of the project was not possible due to external factors (Moiseev, 2017a; Moiseev, 2017b; Moiseev and Sorokin, 2018).

According to a study by the Korean Institute for Strategic Planning (Korea Institute for Future Strategies, KIFS), there are two ways in which Russian-Korean energy cooperation could develop in the medium term. The first one involves increasing supply LNG from Russia through a project which will expand LNG plants in the Arctic (the operating OJSC Yamal LNG and construction of the first line of the Novatek plant in the Arctic LNG-2, where natural gas liquefaction will begin in 2019, and is planned to launch in the years 2022-2023) and Sakhalin-2 in the Far East. The second route of developing cooperation between Russia and South Korea involves constructing a gas pipeline passing through the territory of the People's Republic of China (PRC).

Considering all that has been said, it is evident that prospects of cooperation are engaging and realistic.

4. RESULTS

The relationship between the two Korean states historically has been unsteady. But comparison of the state of affairs from a couple of years ago to the situation now will reveal that the case currently is a lot less stressful.

This is explained by the fact that North Korea and the Republic of South Korea have recently begun to approach each other, and the highest officials of these countries have been able to conduct constructive dialogue.

Considering this, if the parties are in fact able to come to a compromise through constructive dialogue, it will become

possible to build a gas pipeline through North Korean territory. The gas pipeline can be successfully constructed and launched only with the active participation of the Russian Federation and China. They will serve as guarantees of political stability. Furthermore, various financial organization, such as the International Development Bank (IDB) and the Asian Infrastructure Investment Bank (AIIB) will have to be involved in the project to reduce financial risks.

Fortunately, participating parties have been showing high levels of interest in the implementation of this project.

So, for example, discussions regarding the Trans-Korean gas pipeline were renewed during the Eastern Economic Forum in 2017. Moon Jae In and Vladimir Putin noted the importance of energy cooperation between South Korea and the Russian Federation as part of their meeting (Meynkhard, 2019b; Lopatin, 2019b).

Moreover, Russia can now develop not only bilateral cooperation, but reach a new level of trilateral economic cooperation due to the easing of tensions between the Republic of South Korea and North Korea. This also contributes to the direction of foreign policy of the current South Korean President Moon Jae In, which is based on strengthening cooperation with the Russian Federation and North Korea, especially in transport logistics (Jaramillo and Matthews, 2005).

One of the main tasks of the President's foreign policy is involving North Korea in tripartite cooperation projects in order to bring the state out of economic isolation (Figures 1 and 2).

Appropriate measures have been taken by both sides recently, which allow to continue the process of implementing the Trans-Korean gas pipeline and beginning its construction. The political course of the current President of the Republic of South Korea, Moon Jae In, contributes to the promotion of this project. His policies

are oriented towards implementing multilateral projects which incorporate North Korea. So, in July of 2018, Gazprom turned to KOGAS with a proposal to conduct a comprehensive study of the aspects of constructing the Trans-Korean pipeline. Currently active preparatory work is underway with the South Korean parties led by KOGAS (Denisova, 2019; Denisova et al., 2019).

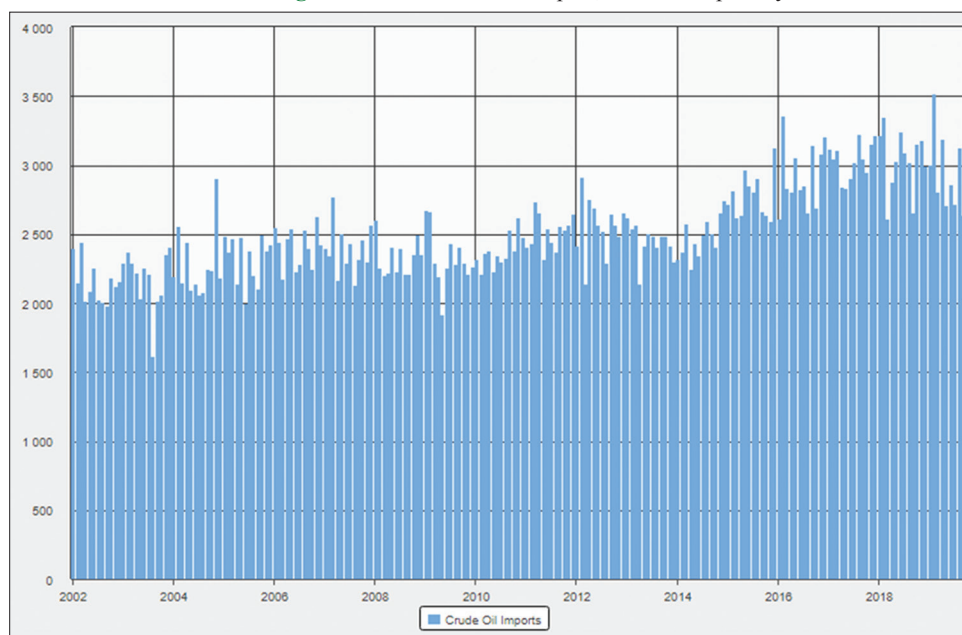
There are also obstacles that are persistent in all potential areas of cooperation. These are the conditions in which both the governmental and private sides of South Korea have to do business and cooperate: bureaucracy, audit and tax reporting standards, customs, procedures, technological standards and copyright protection.

In general, despite the presence of a number of problems, both financial and bureaucratic, energy cooperation is promising and both parties are interested in its development. Russia and South Korea are both looking into creating institutional frameworks necessary for legal consolidation of cooperation, multiple agreements, memoranda and plans.

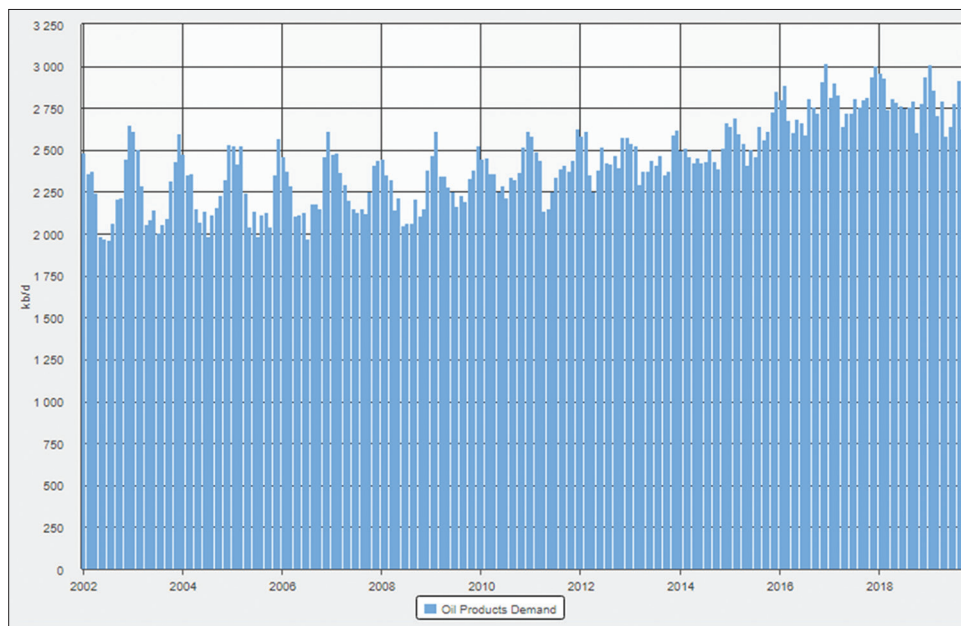
In the past, projects of energy cooperation, infrastructure and general investments had not been fully implemented due to anti-Russian sanctions or a temporary economic recession. However, as we have discussed, prospects for the future are promising and the obstacles that had stood in the way of a partnership are being overcome.

The current administration of the Republic of South Korea, headed by President Moon Jae In, is guided by his proposed "new northern policy," which includes establishing beneficial interrelations with the Russian Federation and North Korea. Moreover, the involvement of the latter in tripartite energy infrastructure cooperation projects, such as the Hassan Rajin railway project, the construction of the Trans-Korean Railway and aforementioned

Figure 1: South Korea oil import, kilobarrels per day



Source: South Korea Energy Ministry

Figure 2: South Korea oil demand, kilobarrels per day

Source: South Korea Energy Ministry

gas pipeline, will be a determining factor in establishing strong interrelations between South Korea and its northern neighbor.

Therefore, the odds of significantly expanding energy cooperation and, consequently, political and socio-cultural cooperation, between the Russian Federation and the Republic of South Korea are higher now more than ever when considering the balancing of relations with North Korea.

In this regard, Russian companies and ministries can take even more steps to support the implementation of all the plans that have been outlined. This will also help attract further investments in multilateral projects. Overall, there will be even more investment opportunities, which will reinforce the country's investment climate and grow the economy exponentially.

In addition, joint oil, gas, and related infrastructure projects can be supported by the government and be under its control, which will make the work even more effective (Table 1).

Regularly held meetings at different levels of representatives of oil, gas, transport and construction companies with representatives from relevant ministries, departments and divisions will result in the successful monitoring of the implementation of projects. Furthermore, creating new platforms for interactions and formal and informal meetings about individual projects, in addition to the existing Russian-Korean IPC, will substantially increase the benefits of cooperation.

Informal meetings in particular will be helpful, as they are necessary for developing friendly relationships that will build strong connections between partners.

In the next few years grandiose cooperative tripartite projects will be possible due to the establishment of inter-Korean dialogue.

Communication between the Republic of South Korea and North Korea is significantly increasing the probability of implementing compelling ventures. This will also undoubtedly increase the supply volume of energy resources in South Korea and attract more investments in the development of the Far Eastern region and Eastern Siberia especially.

Although unfortunately, it is difficult to judge further development of energy cooperation after the end of Moon Jae In's presidency. This is explained by the fact that South Korean presidents often radically change the course of national policies with the aim of avoiding the criticism that their predecessors were subjected to and fulfill their election promises.

That being said, the policies that were implemented by the previous President will remain as one of the key components of future policy, considering that the state is almost 90% dependent on imports of energy resources and they are vital to ensure the functioning of the national industry and economic growth.

Therefore, it can be assumed that subsequent administrations of the Republic of South Korea will be interested in strengthening and deepening energy cooperation with the Russian Federation.

Regarding the latter, the authors do not see any obstacles that could prevent the development of energy cooperation with South Korea in the short, medium and long term.

Moreover, given the anti-Russian mood of the West, the course reorientation to the East will not be curtailed, but, on the contrary, will be actively realized.

Now the Russian government and oil and gas corporations can continue to initiate negotiations to reinforce the fact of creating and implementing joint energy projects with South Korea.

Table 1: Russian oil producers and transneft throughput, megabarrels per day

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Days in period	365	364	366	365	365	365	366	365	365	304
Rosneft production	2,27	2,30	2,34	3,13	3,82	3,78	3,78	3,77	3,88	3,54
Rosneft exports	1,08	1,18	1,21	1,59	1,88	1,95	2,01	2,03	2,13	2,24
LUKOIL production	1,80	1,61	1,69	1,71	1,73	1,71	1,66	1,63	1,64	3,10
Transneft exports	0,56	0,48	0,49	0,41	0,39	0,45	0,44	0,42	0,41	0,40
TNK-BP production	1,44	1,46	1,45	0,72	0,00	0,00	0,00	0,00	0,00	0,00
Transneft exports	0,63	0,59	0,60	0,27	0,00	0,00	0,00	0,00	0,00	0,00
Surgutneftegas production	1,19	1,22	1,22	1,23	1,23	1,23	1,23	1,21	0,91	1,21
Surgutneftegas exports	0,51	0,54	0,53	0,58	0,51	0,60	0,52	0,59	0,45	0,65
Gazprom Neft production	0,60	0,60	0,63	0,64	0,67	0,51	0,75	0,79	0,79	0,79
Gazprom Neft exports	0,27	0,25	0,24	0,16	0,15	0,14	0,20	0,20	0,15	0,18
Tatneft production	0,52	0,53	0,52	0,53	0,53	0,36	0,57	0,58	0,59	0,60
Transneft exports	0,33	0,31	0,24	0,23	0,17	0,21	0,24	0,29	0,22	0,22
Slavneft production	0,37	0,36	0,36	0,34	0,32	0,31	0,30	0,31	0,18	0,06
Slavneft exports	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00
Rusneft production	0,26	0,27	0,28	0,25	0,17	0,18	0,14	0,14	0,14	0,14
Rusneft exports	0,10	0,11	0,11	0,09	0,06	0,05	0,04	0,05	0,05	0,04
Gazprom production	0,27	0,30	0,31	0,34	0,32	0,20	0,15	0,00	0,00	0,00
Gazprom exports	0,01	0,01	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01
Bashneft production	0,28	0,30	0,31	0,33	0,36	0,37	0,43	0,41	0,32	0,37
Bashneft exports	0,06	0,07	0,09	0,08	0,10	0,11	0,12	0,00	0,00	0,00
Novatek production	0,07	0,08	0,08	0,09	0,09	0,09	0,13	0,15	0,15	0,16
Novatek exports	0,00	0,00	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01
Small producers production	0,74	0,82	0,79	0,90	1,00	1,13	1,38	1,58	1,62	1,66
Small producers exports	0,20	0,17	0,22	0,21	0,22	0,27	0,28	0,34	0,29	0,33
Total production	10,09	10,25	10,34	10,47	10,52	10,67	10,91	10,93	11,11	11,24
Total exports	3,75	3,71	3,75	3,63	3,5	3,8	3,88	3,94	3,72	4,08

Source: Russia Energy Ministry

5. CONCLUSION

Based on the analysis of various sources and literature and the application of various research methods the authors of this manuscript were able to comprehensively study the topic of energy cooperation between the Russian Federation and the Republic of South Korea for the period from 1991 to 2018 (An et al., 2020).

The article identifies and analyzes methodological and institutional foundations of such cooperation, determines the problems that hinder deepening of cooperation, as well as the current political situation in the Republic of South Korea and the Russian Federation. Furthermore, the complementary nature of their economies draws conclusions regarding the development of energy cooperation in the short and medium term (Zubakin et al., 2015).

The study examined various theories and concepts, from different points of view; it explains the logic and behavior of states when

making decisions whether to cooperate or not to cooperate in the energy sector, as well as analyzed the official positions of the states under consideration in relation to the energy situation in the country, and prospects of energy cooperation in particular (Milbrabdt et al., 2014; Morgan and Yang, 2001).

Based on the analysis, cooperation is based on the existence of certain interdependencies between states. In other words, in the case of the Russian Federation and the Republic of South Korea, this is interdependence along the axis exporter-importer (An et al., 2019a; An et al., 2019b; An et al., 2019c; An et al., 2019d).

REFERENCES

- An, J., Dorofeev, M., Zhu, S. (2020), Development of energy cooperation between Russia and China. *International Journal of Energy Economics and Policy*, 10(1), 134-139.
- An, J., Mikhaylov, A., Lopatin, E., Moiseev, N., Richter, U.H., Varyash, I., Dooyum, Y.D., Oganov, A., Bertelsen, R.G. (2019c), Bioenergy potential of Russia: Method of evaluating costs. *International Journal*

- of Energy Economics and Policy, 9(5), 244-251.
- An, J., Mikhaylov, A., Moiseev, N. (2019d), Oil price predictors: Machine learning approach. *International Journal of Energy Economics and Policy*, 9(5), 1-6.
- An, J., Mikhaylov, A., Sokolinskaya, N. (2019a), Machine learning in economic planning: Ensembles of algorithms. *Journal of Physics: Conference Series*, 1353, 012126.
- An, J., Mikhaylov, A., Sokolinskaya, N. (2019b), Oil incomes spending in sovereign fund of Norway (GPFNG). *Investment Management and Financial Innovations*, 16(3), 10-17.
- Bansal, A., Illukkuptiya, P., Singh, S.P., Tegegne, F. (2013), Economic competitiveness of ethanol production from cellulosic feedstock in Tennessee. *Renewable Energy*, 59, 53-57.
- Bove, R., Lunghi, P. (2006), Electric power generation from landfill gas using traditional and innovative technologies. *Energy Conversion and Management*, 47(11-12), 1391-1401.
- Cai, X., Zhang, X., Wang, D. (2011), Land availability for biofuel production. *Environmental Sciences Technology*, 45(2), 334-339.
- Chiemchaisri, C., Chiemchaisri, W., Kumar, S., Wicramarachchi, P.N. (2012), Reduction of methane emission from landfill through microbial activities in cover soil: A brief review. *Journal Critical Reviews in Environmental Science and Technology*, 42(4), 412-434.
- Dayong, N., Mikhaylov, A., Bratanovsky, S., Shaikh, Z.A., Stepanova D. (2019), Mathematical modeling of the technological processes of catering products production. *Journal of Food Process Engineering*, e13340. DOI: org/10.1111/jfpe.13340.
- Denisova, V. (2019), Energy efficiency as a way to ecological safety: Evidence from Russia. *International Journal of Energy Economics and Policy*, 9(5), 32-37.
- Denisova, V., Mikhaylov, A., Lopatin, E. (2019), Blockchain Infrastructure and growth of global power consumption. *International Journal of Energy Economics and Policy*, 9(4), 22-29.
- Gardner, N., Manley, B.J.W., Pearson, J.M. (1993), Gas emissions from landfills and their contributions to global warming. *Applied Energy*, 44(2), 166-174.
- Jaramillo, P., Matthews, H.S. (2005), Landfill-gas-to-energy projects: Analysis of net private and social benefits. *Environmental Science and Technology*, 39, 7365-7373.
- Lopatin, E. (2019a), Methodological approaches to research resource saving industrial enterprises. *International Journal of Energy Economics and Policy*, 9(4), 181-187.
- Lopatin, E. (2019b), Assessment of Russian banking system performance and sustainability. *Banks and Bank Systems*, 14(3), 202-211.
- Meynkhard, A. (2019a), Energy efficient development model for regions of the Russian federation: Evidence of crypto mining. *International Journal of Energy Economics and Policy*, 9(4), 16-21.
- Meynkhard, A. (2019b), Fair market value of bitcoin: Halving effect. *Investment Management and Financial Innovations*, 16(4), 72-85.
- Meynkhard, A. (2020), Priorities of Russian energy policy in Russian-Chinese relations. *International Journal of Energy Economics and Policy*, 10(1), 65-71.
- Mikhaylov, A. (2018a), Pricing in oil market and using probit model for analysis of stock market effects. *International Journal of Energy Economics and Policy*, 8(2), 69-73.
- Mikhaylov, A. (2018b), Volatility spillover effect between stock and exchange rate in oil exporting countries. *International Journal of Energy Economics and Policy*, 8(3), 321-326.
- Mikhaylov, A. (2019), Oil and gas budget revenues in Russia after crisis in 2015. *International Journal of Energy Economics and Policy*, 9(2), 375-380.
- Mikhaylov, A., Sokolinskaya, N., Lopatin, E. (2019), Asset allocation in equity, fixed-income and cryptocurrency on the base of individual risk sentiment. *Investment Management and Financial Innovations*, 16(2), 171-181.
- Mikhaylov, A., Sokolinskaya, N., Nyangarika, A. (2018), Optimal carry trade strategy based on currencies of energy and developed economies. *Journal of Reviews on Global Economics*, 7, 582-592.
- Milbrabdt, A.R., Heimiller, D.M., Perry, A.D., Field, C.B. (2014), Renewable energy potential on marginal lands in the United States. *Renewable and Sustainable Energy Review*, 29, 473-481.
- Moiseev, N. (2017a), Forecasting time series of economic processes by model averaging across data frames of various lengths. *Journal of Statistical Computation and Simulation*, 87(17), 3111-3131.
- Moiseev, N. (2017b), p-Value adjustment to control type I errors in linear regression models. *Journal of Statistical Computation and Simulation*, 87(9), 1701-1711.
- Moiseev, N. (2017c), Linear model averaging by minimizing mean-squared forecast error unbiased estimator. *Model Assisted Statistics and Applications*, 11(4), 325-338.
- Moiseev, N., Akhmadeev, B. (2017), Agent-based simulation of wealth, capital and asset distribution on stock markets. *Journal of Interdisciplinary Economics*, 29(2), 176-196.
- Moiseev, N., Sorokin, A. (2018), Interval forecast for model averaging methods. *Model Assisted Statistics and Applications*, 18(2), 125-138.
- Morgan, S.M., Yang, Q. (2001), Use of landfill gas for electricity generation. *Practice Periodical of Hazardous, Toxic, and Radio Waste Management*, 5(1), 14-24.
- Morris, J.W., Barlaz, M.A. (2011), A performance-based system for the long-term management of municipal waste landfills. *Waste Management*, 31(4), 649-662.
- Nyangarika, A., Mikhaylov, A., Richter, U. (2019a), Influence oil price towards economic indicators in Russia. *International Journal of Energy Economics and Policy*, 9(1), 123-130.
- Nyangarika, A., Mikhaylov, A., Richter, U. (2019b), Oil price factors: Forecasting on the base of modified auto-regressive integrated moving average model. *International Journal of Energy Economics and Policy*, 9(1), 149-160.
- Nyangarika, A., Mikhaylov, A., Tang, B.J. (2018), Correlation of oil prices and gross domestic product in oil producing countries. *International Journal of Energy Economics and Policy*, 8(5), 42-48.
- Zubakin, V.A., Kosorukov, O.A., Moiseev, N.A. (2015), Improvement of regression forecasting models. *Modern Applied Science*, 9(6), 344-353.