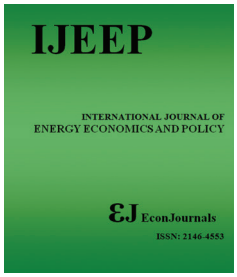

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The Comparison of the Energy Markets of the EAEU and the Scandinavian Countries: Best Practices for the Energy Integration

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ABSTRACT

The development of the common energy markets and energy market innovations is a highly discussed topic, especially through the prism of the alternative energy. The Scandinavian countries are moving in both directions, at the same time, the EAEU countries are developing a single energy market, consisting of the four main sectors by the energy resource. The stages, pace and the institutional basis of the development of these two energy integration initiatives are different, due to similar climate conditions it is logical to suppose, they can be similar in some way. The article aims at comparing these energy markets, their dynamics, challenges and the possibility of institutional exchange. The main findings of the article include the proof that the comparison of the two markets by the financial and volume indicators is impossible, still institutional exchange is possible, moreover, enables them to solve several traditionally difficult problems. The practical importance of the article comprises the offered methodology of research through the developed synergy index, the recommendations for the EAEU and the Scandinavian countries. The novelty of the article is characterized by the institutional approach to the energy market, allowing to reveal its intrinsic characteristics – the energy flow between the institutional members and the regulative framework.

Keywords: Energy Markets, Scandinavia, EAEU, Institutional Development, Development, Energetic Integration, Recommendations
JEL Classifications: P49, F02, O01

1. INTRODUCTION

The energy integration is one of the ways of solving energy problems of the countries, which do not possess enough resources to satisfy their energy needs and a mighty instrument of the expensive energy projects development. This refers primarily to the development of energy infrastructure and alternative energy. The Scandinavian countries have put a lot of effort into development of the alternative energy and try to minimize the share of hydrocarbons in their economies to the least possible level. At the same time, the biggest economy of the EAEU – Russia is one of the main suppliers on the global oil and gas markets. The problems of the two integration initiatives – the Scandinavian and the Eurasian – are hard to solve without the cooperation in the energy sphere, which in turn also has difficult issues to solve. In this aspect, the research of the possible ways of energy market development in both regions is important, as the energy markets of the Scandinavian countries and the EAEU countries can be similar due to the similar climatic conditions and the integrational processes in both regions. On the other hand, they can differ a lot because of different institutional models, they are based on.

The main aim of this article is to reveal their difference or similarity and offer ways of solving the existing problems through different measures, described in methodology. The hypothesis of the research is that in the context of integration of energy markets the adoption of the best practices of the other party may help solving the existing problems. The novelty of the article comprises the offered methodology of energy markets cooperation estimation and the developed method of energy markets cooperation synergy estimation; the recommendations on institutional exchange and the problems analysis may prove practically important for the development of the single energy cooperation strategy in the EAEU and the further development of the Scandinavian Nord Pool trading system.

2. LITERATURE REVIEW

The energy cooperation is one of the most discussed themes today, so there are a number of works and agencies, aggregating information on energy markets. Due to the research of the regional markets, we stick to the regional organizations' statistics, where it is possible (Eurasian Economic Commission, 2018), and the accurate data by the International Energy Agency (IEA, 2019). At the same time, infographics on the current situation on the energy market of Scandinavia, which allow to form a general vision of the situation, were very important on the first stage of the research, so the data by the Nordic Energy Research (2019) were used.

The key publications on the Scandinavian market analysis, which formed the basis for our research, are the following. Houmøller (2017) put forward the idea of the well-functioning liberal energy market based on the alternative energy production. Nomikos and Soldatos (2010) proved that Nord Pool has the instruments of risk-absorbing, as the price shocks on the spot market provided by Nord Pool are more predictable and consequently easier to overcome with less negative effects. Research by Cherry et al. (2005) shows the institutional model of the Scandinavian countries.

The EAEU energy market and its key problems, as well as common energy market barriers are presented in the research by Kolomeytseva and Maksakova (2019). Telegina and Khalova (2017) give attention to the interconnection between the Eurasian energy market and the Central Asian countries. The main characteristics of the EAEU energy infrastructure referred to in this article are presented in (Iakubovskii et al., 2019).

In addition to the above, we used the Nord Pool data (2019) and the legislative acts of the Eurasian Economic Commission (2016, 2018b).

3. METHODOLOGY

The methodology of this article comprises two main parts of the research. The first part allows to analyze the similarities and the differences of the energy markets of the two researched regions and is based on the mathematical estimation of the energy production and consumption by the countries researched. The analyzed figures are:

a. The volume of the market,
b. The volume of alternative energy produced,
c. The general dynamics of the energy market development,
d. The similarities and differences on the markets of different countries.

The last point allows to make the conclusions, whether further mathematical analysis of the synergetic effect of the implementation of new institutions will be achieved and whether the key benefits will be of financial (if the markets' dynamics are similar) or socio-economic character (if the dynamics are different, institutions exchange will bring more benefits for consumers, ecology and regional industrial development) (Figure 1).

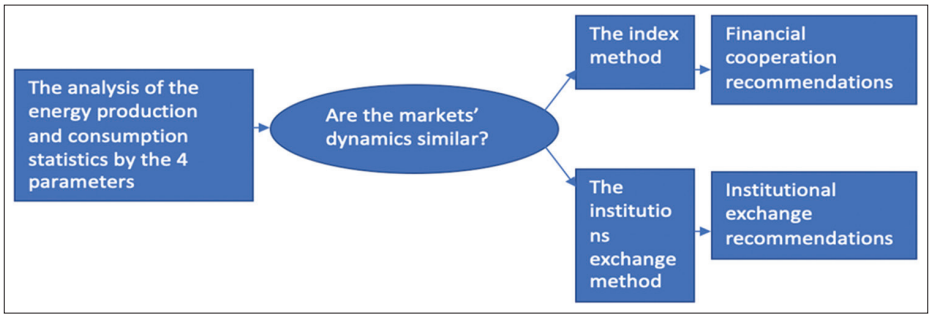
The synergetic effect is to be estimated by the method of Kirikov et al. (2017):

$$SE = \sum_{i=1}^{n} EP_i^2 - \sum_{i=1}^{n} EP_i^1 \quad (1)$$

where *EP* with index 1 is the production volume of a country before entering the union, and the *EP* with index 2 – after. We offer a modified approach, based on a number of variables: energy production, energy price and energy trade balance of a country:

$$SE = \left(\frac{\sum_{i=1}^{n} EPr_i^2 - \sum_{i=1}^{n} EPr_i^1}{AEPr_{i-1}^1} * \alpha + \frac{\sum_{i=1}^{n} EPrice_i^2 - \sum_{i=1}^{n} EPrice_i^1}{AEPrice_{i-1}^1} * \beta + \frac{\sum_{i=1}^{n} EB_i^2 - \sum_{i=1}^{n} EB_i^1}{AEB_{i-1}^1} * \gamma / 3\right) \quad (2)$$

Figure 1: Research algorithm



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where *EPr* is energy production in the period *i*, *EPrice* is energy price in the period *i*, counted as the average price of the regional energy grids of a country in the period *i*, *EB* is energy balance in the period *i*, which equals to the difference between energy exports and imports, α,β,γ are correcting coefficients, introduced in case special conditions exist – for instance, the creation of a single energy market in EAEU will be reflected by the higher alpha and lower gamma coefficient, as it will lead to higher significance of energy production in order to stimulate economic development, than exports coefficient, etc. In general, these special conditions are to be described and weighted by the same deviation of the coefficient, still we tend to weight all the parameters above equally. The *AEPr*, *AEPrice* and *AEB* are the arithmetic average calculations of the parameter up to the period, previous to the researched. We have chosen the longest possible statistics horizon (from the 1990), regretfully earlier data is unavailable. After statistically estimating the similarity of the market dynamics, in case they differ, so further mathematical evaluation of synergetic effect is impossible, we make a forecast of consumption development for the next two periods using the ARIMA method in Gretl. Then we conduct an analysis of the institutional similarities by revealing the main energy flows and the regulations vertical in the countries' energy markets models. Based on the results the analysis of key problems and the recommendations for their solution through the financial cooperation or institutional exchange (depending on the course of the study) are made.

4. RESULTS

4.1. The Comparison of the Energy Structure in the EAEU and the Scandinavian Countries

The energy production in the EAEU differs from country to country, however there are several common points in all the mentioned countries. First of all, the main energy producer and exporter is Russia, her position is buttressed by the abundancy of hydrocarbons and the high potential of electric energy generation on the thermoelectric power plants and the hydroelectric power plants, due to the high quantity of water resources (Palamarchuk, 2016). The most difficult situation is in the Republic of Belarus and the Kyrgyz Republic – they produce less energy, than they consume and are to import it from other countries of the Union. Armenia and Russia on the contrary produce more, than they consume and are able to export the electric energy resources (Eurasian Economic Commission, 2018). Unlike all the other countries, which have a zero or surplus energy balance, Russia imports a significant amount of energy resources. The alternative energy production due to the high quantity of cheaper energy resources is developing very slowly, the introduction of a system of energy intertrade between the state energy companies and the small energy producers (citizens' production of energy via alternative sources included contributes to the development of the industry in whole and the better situation with the disposable income, which in turn, contributes to the development of the national economy). In this context, the reform of the national energy system in EAEU is needed.

The EAEU energy infrastructure is relatively highly developed. The reason for this is the Soviet heritage of a single energy system, which connected all the former republics of the USSR, in addition to this, its quality is quite enough for the functioning of the key regions and cities, which are the main energy consumers, but it is far from perfect from the point of view of economic development of the rural regions and the regions, not possessing their own energy generation facilities, this situation especially harms the depressive regions of the EAEU countries, which is often met in the Russian economy (Iakubovskii et al., 2019).

On the other hand, the energy infrastructure of the EAEU covers several countries of Central Asia, for instance, Uzbekistan and partially Mongolia, which are not members of the EAEU, in addition to that, the massive implementation of the hydro energy plants in Kazakhstan and Tajikistan (for instance, on the Syrdarya river) can lead to the serious lack of water resources in Uzbekistan, so the development of energy resources in the EAEU countries affects the countries from Central Asia (Nandalal and Hipel, 2007).

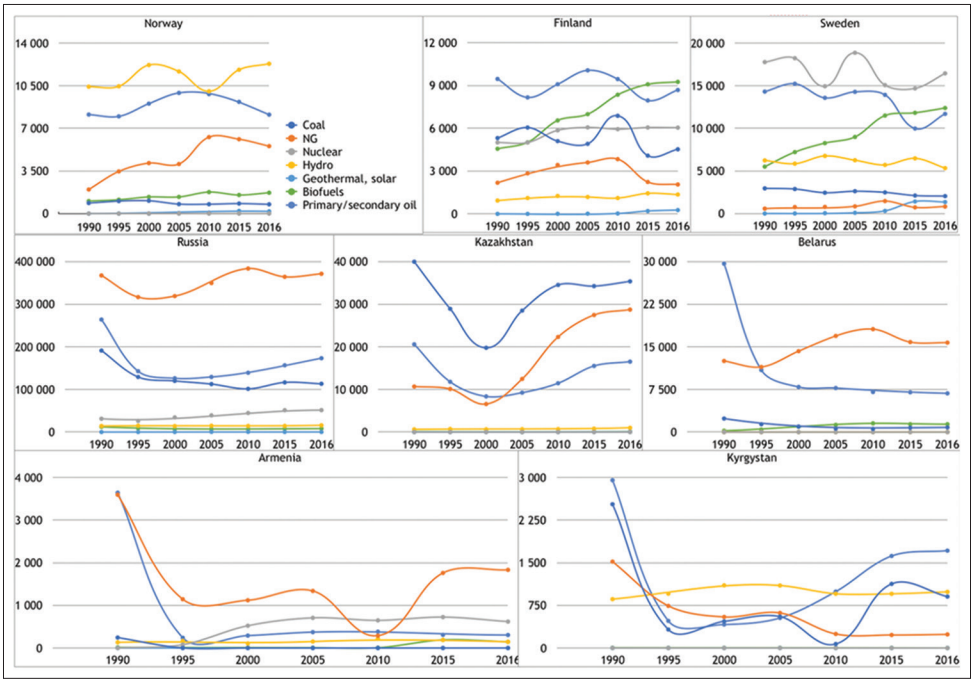
The Scandinavian countries researched are Sweden, Norway and Finland, due to the research of the common market, several other European countries will be mentioned.

It is remarkable that Norway has rich oil resources, still it sticks to the Scandinavian model of energy consumption. It is characterized by the high level of renewables, and is adaptive – the participating countries produce a lot of energy from the alternative sources – ranging from 32 to 79% (Nordic Energy Research, 2018), but all through the best suitable sources, for instance, in Finland and Sweden the main alternative source are biofuels, while in Norway these are the water resources, which is explained by the distribution of the forests and the rivers on the peninsula. The legislative system after a long reform in the researched countries support this distribution too, which clearly demonstrated the high level of institutional development of the Scandinavian countries.

The Scandinavian economies depend on oil and gas as the main deal of vehicles in the countries run on hydrocarbons. The program of the main Scandinavian vehicle concern – Volvo to transfer half of its vehicles to electrodrives by the 2024 (Matousek, 2019) seems too optimistic. These trends demonstrate the willingness of the Scandinavian countries to transfer their energy system to the renewables, which differs them from the EAEU countries.

The electric power generation in the Scandinavian countries is partly transferred to the level of housings due to the system of energy stock – Nord Pool (Centre of Energy Partnership, 2019). The energy infrastructure enables the housing to sell the surplus of their energy resources to the state energy operators on the prices, which are regulated by the Nord Pool system in accordance with the current and projected consumption and production. This allows to create a stable and cheap alternative energy production and consumption system, which will not have the problems, which provoked critics of the early alternative energy initiatives with their main issues – high price, unstable production, heavy maintenance of the infrastructure and the high toxicity of their components production and utilization (the last issue remains). Hence, it seems, that the energy infrastructure in Scandinavia is highly developed,

Figure 2: Energy production by country by the source of energy (in ktoe)



Source: Developed by the author, based on IEA data

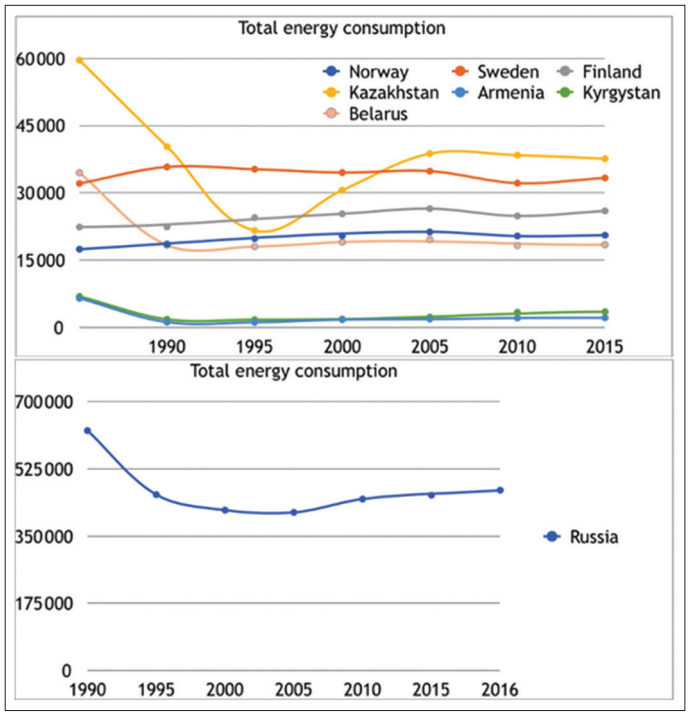
which is not quite true. One of the key issues, that the countries face on their way to transferring energy market to the renewables is lack of infrastructure, connecting the minor power generating facilities and the energy system in general (Schuh et al., 2012). For instance, the hydropower in Norway is presented not only by the power plants, but by mini hydro power plants that have a big potential for development (Idsø, 2017). Their connection into one infrastructure is a matter of serious additional investments in the development of infrastructure, these investments are attractive to the foreign investors as they have a significant return rate and often stimulate the economies of other countries, which participate in the Nord Pool initiative through the stock mechanisms, letting the energy prices to fall because of higher energy supply. All in all, the energy infrastructure of the Scandinavian countries is suitable for their energy model.

For future analysis it is important to compare the structure of production and use of the energy resources by the researched countries (Figures 2 and 3).

The next step of the research is to prove that the energy consumption in the chosen countries will grow. In this case, the further development of the more energy effective technologies is reasonable. In the opposite case, no new technologic solutions are needed, due to the fact that the negative external effects of energy production will fall due to the decrease in the production. The results of the forecast are presented in Figures 4 and 5.

The analysis of the figures allows to make several important conclusions, some of which were stated above – the tendencies to enlarge the share of alternative energy production in Scandinavia, the abundancy of conventional energy resources in EAEU and energy market structural differences in Scandinavian countries. The other key findings are:

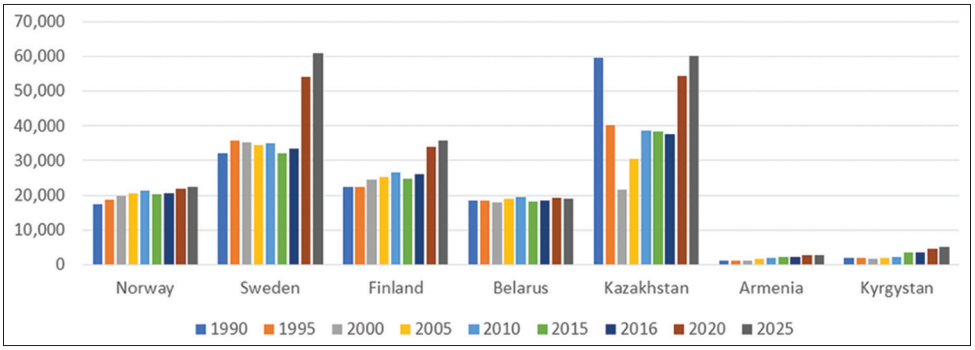
Figure 3: Total energy consumption by country (in ktoe)



Source: Developed by the author, based on IEA data

1. The consumption of energy resources in all the researched countries is growing since 2000.
2. The demand for energy resources (volume of the market) of the Scandinavian countries is relatively constant and small, compared to other European economies.
3. The energy production in the EAEU countries has faced a significant decrease in the beginning of the 1990-s, just as the energy consumption. The only exception is Russia, which did

Figure 4: Energy consumption forecast for the researched countries (except Russia), in ktoe



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not face such a severe economic decrease and the destruction of the value-added chains on the territory of the former USSR.

4. The energy consumption in all the researched countries will grow, consequently, the demand for the resources will grow too. The natural limits of the conventional resources are to be expanded by the use of alternative energy sources.
5. The energy markets of the Scandinavian and the EAEU differ a lot and the further research is rather to be done through the prism of institutional development of the sphere, than through mathematical modelling.
6. The EAEU markets are similar in their dynamics, just as the Scandinavian markets, so the further energy integration is possible in both regions.

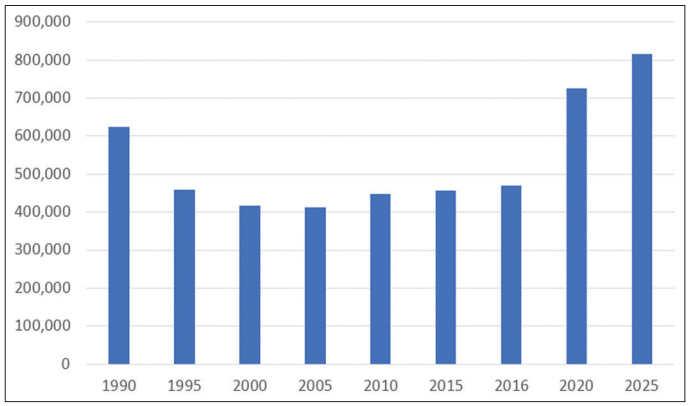
The next step of the research is the comparison of the institutions of the energy markets in the researched countries and revealing the spheres, in which the countries can use the experience of the other party.

4.2. The Single Electric Energy Market for the EAEU – the Evidence from Scandinavia

The single energy market in the EAEU is a very important idea for the future economic integration of the Union. The basis for the common market creation in the vision of the Eurasian Economic Commission is the division of the energy market into oil market, gas market, other hydrocarbons market and the electric energy market, which is to be formed first of all the mentioned. According to the Decision No. 20 of the Supreme Eurasian Economic Council dated December 26, 2016 (Eurasian Economic Commission, 2016), in 2018 the common market of electric energy was to function fully, but its realization is in progress on the stage of paperwork (the last disagreements were settled in March). The other three parts of the common energy market are hard to make common due to one of the key disputes in the EAEU. Russia does not want to be the only donor of financial resources, so it strives to sell its energy resources to the EAEU countries on the global prices, while the other countries expect special conditions of energy resources trade, especially significantly lower prices (Kolomeytseva and Maksakova, 2019). All in all, this leads to disintegrational tendencies in the EAEU. It is notable that the institutional organization of the markets of the EAEU countries is similar (Figure 6).

The organization of the oil and gas markets is similar, due to the process of oil refinery one additional level is added – midstream operators.

Figure 5: Energy consumption forecast for Russia, in ktoe



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For the Scandinavian countries, the scheme is slightly more complicated, because it includes more levels of interaction between the final customers and the energy suppliers (Figure 7). In addition to that, the Scandinavian energy market is less vertically integrated and less state regulated. The vertical institutionalization of the EAEU energy markets makes them much easier to regulate and to control, still their economic effectiveness for the consumers is significantly smaller due to the inflexible model of interaction between the individual customers, industry and the energy producers/suppliers, making some of the regions of the EAEU countries unattractive for the industrial development due to the high prices of energy. Lately the same situation of the deep misunderstanding between the government and the producers, and consequently the customers is forming in the Russian oil and gas industry, where the tax maneuver is gradually being changed to the natural resources extraction tax, in this way cutting down the profits of the oil refinery companies, selling the majority of their products on the national market, forcing the refinery industry to export its products on the foreign markets, while the national market needs its products in order not to endanger national economic sustainability (Byers Jr., 2017).

At the same time, Scandinavian energy market can be treated as the market of the Nord Pool countries, which include the UK, Germany, Netherlands and the Baltic countries, so it is institutional structure is aimed at the cooperation between the different institutional structures of the market and the mutual transfer of energy between the different grids, which makes it very attractive for the institutional reform for the EAEU countries.

Figure 6: The institutional organization of the electric energy markets in the EAE

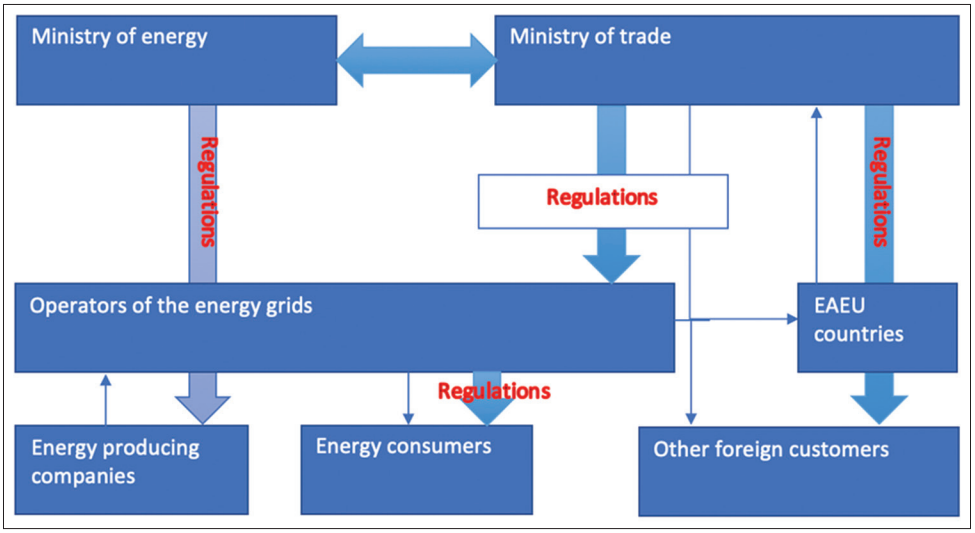

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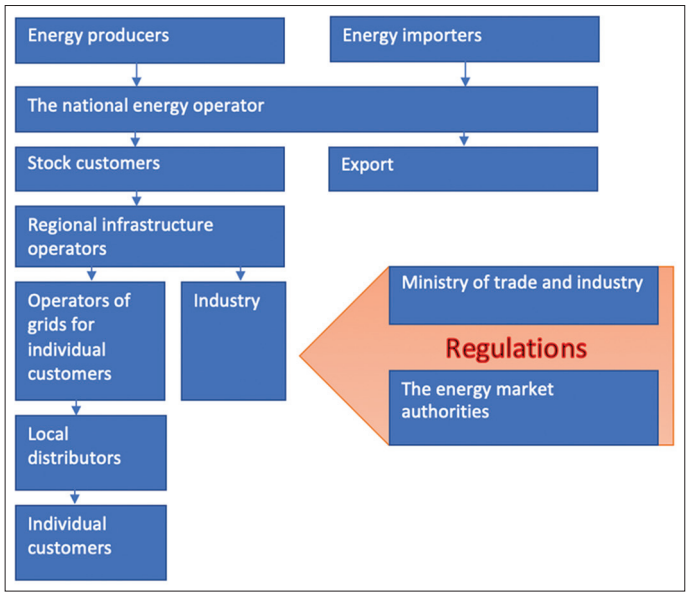
Figure 7: The energy market institutional organization in the Scandinavian countries



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The institutional comparison of the EAEU and the Scandinavian energy markets allows to conclude, that due to their differences, and strong and weak points they can serve as the two success models to provide problems solutions for the other one.

5. DISCUSSION

The development of the single EAEU energy market is the key priority for the Eurasian Commission, however there is a number of problems:

- Lack of institutional mechanisms of effective market regulation,
- Low level of interconnections between the consumer and the energy authority,
- Low level of alternative energy in the energy production structure,
- Energy deficit regions, not attractive for the industry.

The main issues, which the Scandinavian countries face are:

- Lack of energy infrastructure density, not enabling the far away little energy producers to integrate in energy network properly,
- Low volume of energy market.

The institutional exchange is possible due to the fact, that none of the weak points are repeated in the two lists. The key features EAEU can adopt are the following.

1. The energy market of the EAEU is growing, in addition to that it affects the countries, neighboring to it. The first point of institutional exchange is the incorporation of the alternative energy sources in the strategy of the single energy market development. This strategy will allow to solve the problems with negative external effects with neighbor countries as it will serve to proliferate the Eurasian energy infrastructure and connect them to the single energy stock exchange, giving way to a more responsible hydro energy use by the Central Asian countries. This point will allow to make a base for the implementation of the second measure (Helping to solve the third problem).
2. The introduction of the bidirectional energy trade – the individual customer or the industrial customer can sell the surplus of its energy to the energy grid. This, in turn will stimulate the alternative energy development (Solving the second and third problem).
3. The Nord Pool is a mighty instrument of international energy trade. It is a good idea to diversify the functions of the Eurasian Development Bank and create an energy stock exchange on its base. The main difference will be that this stock exchange will be controlled by the government authorities thoroughly, which suits more to the vertically integrated model of energy distribution in the EAEU (Serving to solve the first problem).

4. The creation of a single energy price base, which is to be regulated by the new energy stock exchange and these prices to be implemented in all the regions, corrected just by the centrally developed coefficients, aimed at stimulating the development of industry in the energy deficit regions (The fourth problem to be solved by this measure).
5. Tax stimulation of the little energy producers in the mentioned regions, so that the energy supply is made bigger (Aimed to stimulate the previous measure to solve the fourth problem).

The Scandinavian countries can adopt several solutions of the EAEU infrastructure in order to overcome some of their problems, still, it is necessary to mention that some of the named problems have no obvious solution through the measures proposed in this paper.

1. The EAEU energy infrastructure is based on the single energy infrastructure of the Soviet Union, which had one serious advantage – the balance of energy production and consumption. Nuclear energy was thought acceptable to use, when Norway refused to use it and other countries have concerns about its safeness. Hence, it is obvious, that the far away little energy producers are to supply the local population or to sell their energy abroad if it is possible. In the first case, they are to be supported by the national energy operators and the energy infrastructure built so that the local energy supply becomes equal to the energy demand, in case it exceeds it, no additional assistance is to be provided to the local energy producers and their expenses for the foreign or domestic energy trade are to lie on their own budgets (Aimed at the first problem to be solved).
2. Low volume of energy market is caused by the relatively low (compared to Central Europe) population density, low industrial demand for energy and high volume of alternative energy consumed in the economy. While the EAEU energy grid is to be proliferated to the former USSR countries in Central Asia, inheriting the same energy infrastructure as the EAEU countries, the Scandinavian countries are to expand their trading systems to other EU countries, creating another circuit of the European integration – the energetic. It is necessary to add, that all its members should have the equal positions – they are to be allowed both to produce and to sell energy (Aimed at solving the second problem).
3. The energy consumption growth forecast for Sweden allows to suppose, that the low energy market volume problem will be solved by itself due to the faster growth of consumption, than production, especially taking into account the fact that alternative energy production is changing slower, than that of conventional (Aimed at solving the second problem).

These measures will stimulate the solution of the problems, they are not the all-in-one instrument, so it is necessary to develop the energy industry in both regions, following a long-run cooperation strategy, based on the Nord Pool trade for Scandinavia and the creation of a single energy market in the EAEU.

6. CONCLUSION

The energy markets of the EAEU and the Scandinavian countries differ a lot, especially in the sphere of the development dynamics. Due to this, direct cooperation between the Scandinavian countries and the EAEU in the sphere of energetics is impossible. There are several social and technological problems that are intrinsic to both models of energy markets. These problems arise from the institutional organization of the Scandinavian energetics and the EAEU process of energy market integration. These problems can be solved by the cooperation in the sphere of institutional exchange. The main points of this cooperation are:

1. Technological cooperation – the EAEU imports the institute of intrastate and international energy stock exchange trade, while the Scandinavian countries import the energy infrastructure model, based on the falling marginal efficiency of energy unit, exceeding the local consumption of energy (the more local producers there are, in case their supply exceeds the local demand, the less assistance the energy authorities should provide in their energy trade).
2. Social development models' implementation through the energy sector – the EAEU countries should begin to act in the sphere of development of the energy trade with their citizens and encouraging them to use alternative energy sources, while the Scandinavian countries should concentrate on expanding the limits of their energy trade system to the whole territory of the EU, providing the countries with equal opportunities in the sphere of energy trade.
3. The international aspect of institutions exchange is to be implemented by the EAEU countries (the previous aspect comprises both social and international cooperation aspects for the Scandinavian countries) is presented by the cooperation in the sphere of energy distribution with the Central Asian states and providing the ground for the further international cooperation in the region in the sphere of eco-responsible energy production.

The general track of cooperation between the EAEU and the Scandinavian countries does not suppose any cooperation on the government level. It is important to notice, that the official cooperation exists in both integrational processes, which leads to another conclusion – the effectiveness of the official cooperation in the energy sphere inevitably affects the efficiency of the institutes implementation, so the Eurasian Economic Commission has to act more decisively in the energy cooperation sphere in order to form effective national energy markets of the member-countries.

REFERENCES

Byers, J.R Jr. (2017), Russian Energy Efficiency. Can Extraction Tax Policy Improve Energy Intensity? Available from: https://www.eu.spb.ru/images/centres/ENERPO_RC/Reports/2017-07-03_Russian_Energy_Efficiency.pdf. [Last accessed on 2019 Jun 20].

Centre of Energy Partnership. (2019), Scandinavian Trading Platform, the Nord Pool, is Divided into a Company that Combines Electric Power Markets and a Company-operator of the Electricity Exchange. Available from: https://www.cepconsult.com/news/scandinavian-trading-platform-the-nord-pool-is-divided-into-a-company-that-combines-electric-power-markets-and-a-company-operator-of-the-electricity-exchange. [Last accessed on 2019 Jun 20].

Cherry, J., Cullen, H., Visbeck, M., Small, A., Uvo, C. (2005), Impacts of the North Atlantic oscillation on Scandinavian hydropower production and energy markets. Water Resources Management,

19(6), 673-691.
Eurasian Economic Commission. (2016), Decision No. 20 of the Supreme Eurasian Economic Council Dated December 26, 2016 On the Programme for the Formation of a Common Electricity Market of the Eurasian Economic Union. Available from: https://www.docs.eaeunion.org/docs/en-us/01415044/scd_11042017_20. [Last accessed on 2019 Jun 20].
Eurasian Economic Commission. (2018a), EAEU Countries Energy Statistics 2015–2017. Available from: http://www.eurasiancommission.org/ru/act/energetikaiinfr/energ/energo_stat/Pages/default.aspx. [Last accessed on 2019 Jun 20].
Eurasian Economic Commission. (2018b), Decision No. 18 of the Supreme Eurasian Economic Council Dated December 6, 2018 On the Formation of a Common Gas Market of the Eurasian Economic Union. Available from: https://www.docs.eaeunion.org/docs/en-us/01422604/scd_07122018. [Last accessed on 2019 Jun 20].
Houmøller, A.P. (2017), Scandinavian experience of integrating wind generation in electricity markets. In: Jones, L.E., editor. Renewable Energy Integration. Cambridge: Academic Press.
Iakubovskii, D., Komendantova, N., Rovenskaya, E., Krupenev, D., Boyarkin, D. (2019), Impacts of earthquakes on energy security in the Eurasian economic union: Resilience of the electricity transmission networks in Russia, Kazakhstan, and Kyrgyzstan. Geosciences, 9(1), 54-62.
Idsø, J. (2017), Small scale hydroelectric power plants in Norway. Some microeconomic and environmental considerations. Sustainability, 9(7), 1117.
IEA. (2019), Statistics. Available from: https://www.iea.org/statistics/?country=BELARUS&year=2016&category=Energy%20consumption&indicator=TFCbySource&mode=chart&dataTable=BALANCES. [Last accessed on 2019 Jun 20].
Kirikov, I.A., Kolesnikov, A.V.E., Listopad, S.V., Rumovskaya, S.B. (2017), Method for measuring synergy effect in hybrid intelligent multiagent systems. Sistemy i Sredstva Informatiki, 27(3), 99-111.
Kolomeytseva, A.A., Maksakova, M.A. (2019), Integration potential in energy sector: Eurasian economic union case. International Journal of Energy Economics and Policy, 9(2), 174-181.
Matousek, M. (2019), 40 Electric Cars You'll See on the Road by 2025. Available from: https://www.businessinsider.com/electric-cars-that-will-be-available-by-2025-2018-1. [Last accessed on 2019 Jun 20].
Nandalal, K.D.W., Hipel, K.W. (2007), Strategic decision support for resolving conflict over water sharing among countries along the Syr Darya river in the Aral Sea basin. Journal of Water Resources Planning and Management, 133(4), 289-299.
Nomikos, N.K., Soldatos, O.A. (2010), Modelling short and long-term risks in power markets: Empirical evidence from nord pool. Energy Policy, 38(10), 5671-5683.
Nord Pool. (2019), Day-ahead Overview. Available from: https://www.nordpoolgroup.com/maps/#/nordic. [Last accessed on 2019 Jun 20].
Nordic Energy Research. (2018), The Nordics: Similar but Different. Available from: https://www.nordicenergy.org/figure/similar-but-different. [Last accessed on 2019 Jun 20].
Nordic Energy Research. (2019), Indicators. Available from: https://www.nordicenergy.org/indicators. [Last accessed on 2019 Jun 20].
Palamarchuk, S. (2016), Status of electric power sector reform in Russia. International Journal of Energy Economics and Policy, 6(4), 663-671.
Schuh, B., Dallhammer, E., Damsgaard, N., Stewart, E.N. (2012), Infrastructure for Renewable Energies: A Factor of Local and Regional Development. Available from: http://www.europarl.europa.eu/thinktank/en/document.html?reference=IPOL-REGI_ET(2012)474556. [Last accessed on 2019 Jun 20].
Telegina, E.A., Khalova, G.N.O. (2017), Eurasian economic union and Asian countries energy super-ring: Cooperation outlook. Mirovaya Ekonomika i Mezhdunarodnye Otnosheniya, 61(4), 50-59.