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ECONOMIC AND LEGAL PROBLEMS OF STATE REGULATION OF PRODUCTION AND USE OF ALTERNATIVE ENERGY IN KAZAKHSTAN

The article presents the peculiarities of state regulation of production and use of renewable energy sources in Kazakhstan under transition to "green economy". It provides a detailed analysis of legislation and practice of its application, along with the suggestions on its improvement.

Keywords: energy and environmental security; renewable energy sources; government regulation; rational use of natural resources; alternative energy; energy conservation; biofuels.

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ЕКОНОМІЧНІ І ПРАВОВІ ПРОБЛЕМИ ДЕРЖАВНОГО РЕГУЛЮВАННЯ ВИРОБНИЦТВА І ВИКОРИСТАННЯ АЛЬТЕРНАТИВНИХ ДЖЕРЕЛ ЕНЕРГІЇ В КАЗАХСТАНІ

У статті представлено особливості державного регулювання виробництва та використання відновлюваних джерел енергії в Республіці Казахстан в умовах переходу до «зеленої економіки». Проведено детальний аналіз законодавства та практики його застосування, розроблено пропозиції щодо їх вдосконалення.

Ключові слова: енергетична та екологічна безпека; відновлювані джерела енергії; державне регулювання; раціональне використання природних ресурсів; альтернативні джерела енергії; енергозбереження; біопаливо.

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ЭКОНОМИЧЕСКИЕ И ЮРИДИЧЕСКИЕ ПРОБЛЕМЫ ГОСУДАРСТВЕННОГО РЕГУЛИРОВАНИЯ ПРОИЗВОДСТВА И ИСПОЛЬЗОВАНИЯ АЛЬТЕРНАТИВНОЙ ЭНЕРГИИ В КАЗАХСТАНЕ

В статье представлены особенности государственного регулирования производства и использования возобновляемых источников энергии в Республике Казахстан в условиях перехода к «зеленой экономике». Проведен детальный анализ законодательства и практики его применения, разработаны предложения по их совершенствованию.

Ключевые слова: энергетическая и экологическая безопасность; возобновляемые источники энергии; государственное регулирование; рациональное использование природных ресурсов; альтернативные источники энергии; энергосбережение; биотопливо.

Problem setting. According to Kazakhstan's experts, the stocks of non-renewable natural resources in Kazakhstan can be exhausted within a rather limited historical period. With extensive use, according to experts, today's oil reserves in Kazakhstan will last for 70 years, natural gas reserves – for 85 years. The mining industry is on the verge of exhaustion of explored mineral deposits. Iron ore is remained for no more than 80 years, aluminum – 90 years, copper will be exhausted in 20 years already. Lead-zinc industry is guaranteed for 25 years, chrome ore – for 50 years, nickel deposits are fully utilized (Decree of Government of the Republic of Kazakhstan #60, 24.01.2008). These data show there was relatively little attention to the development of alternative energy sources in Kazakhstan until recently because of huge reserves of

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traditional energy resources. The development of alternative energy allows solving a number of strategic objectives, including energy and environmental security, rational use of traditional energy sources, implementation of international commitments. The experience of the developed countries shows that without state regulation and state support for the production and use of renewable sources the solution of the above strategic objectives is impossible. Potential reserves of renewable resources in Kazakhstan are estimated at 12 bln USD per year (Decree of Government of the Republic of Kazakhstan #60, 24.01.2008).

Kazakhstan is following a number of developed countries in the priority of the state policy as to the transition to "green economy". International community expects Kazakhstan's successful implementation of significant projects: EXPO-2017 exhibition "Energy of the future" and the partnership program "Green bridge" to promote sustainable development in Central Asia and other regions of the world (Green Bridge, 2013). Such countries of the region as Mongolia, China and South Korea have already started the implementation of their ambitious plans on "green economy", announced by the presidents of these countries. For example, South Korea invests 2% of its to GDP in the "green" sector annually, and investments of China are at the level of 1.5% of GDP expecting to grow to 2% by 2015 (Suleimenova, 2015).

In this regard, the study of legal problems in state regulation of relations in the area of supporting renewable energy sources (RES) represents both theoretical and practical interest.

Recent research and publications analysis. Kazakhstan scientists and lawyers are actively engaged and interested in environmental and energy problems N.B. Mukhitdinov (1983), N.B. Mukhitdinov and S.P. Moroz (2004), Zh.S. Yelyubayev (2010), M.K. Suleimenov (2005), O. I. Chentsova et al. (2007).

It should be noted that legal problems of energy security are paid much attention by foreign scientists. On these issues a number of textbooks, manuals, scientific articles are published by J.E. Hickey et al. (2000), M.M. Roggencump and A. Ronne (2000), B. Barton (2004), P.G. Lakhno (2001, 2003, 2004).

Key research findings. Global trends in energy policy require a flexible and well-coordinated organization of country's energy complex activity, hence its state regulation, which has its own characteristics. In economic literature, government regulation of the economy is seen as purposeful, coordinating process of management impact of the government on individual segments of domestic and foreign markets through micro- and macroeconomic regulators in order to achieve balanced growth of the total economic system (Petrov and Knish, 1999).

In 2009, Kazakhstan adopted a special law "On supporting the use of renewable energy sources" (Law of Kazakhstan # 165-IV, 4.07.2009), in which goals, objectives and forms of state regulation in the field of alternative energy are reflected. The main objective of this activity is the creation of favorable conditions for the production of electrical and thermal energy from renewable sources to reduce energy intensity of the economy and the impact of the production of electric and thermal energy on the environment by increasing the share of renewable energy in the production of electrical and thermal energy.

Currently, renewables development has been identified as one of the priority directions of the industries formation of the "economy of the future", defined in the

State program on forced industrial-innovative development (SPFIID) on 2010–2014 (State program # 958, 19.03.2010).

Based on the goals and objectives of state regulation of RES one can say that on the one hand, the state aims to solve the problems of energy supply through alternative energy sources, and on the other, to reduce greenhouse gas emissions. In this area of the Directive of European Union on renewable energy (RED 2009/28/EC) has set a target to reduce the consumption of primary energy resources by 20% to 2020. The Republic of Kazakhstan, as the owner of large hydrocarbon reserves, has not remained aloof from the EU initiatives, and moves with the times, developing its production of alternative energy. Strategy "Kazakhstan 2050" outlines Kazakhstan's commitments in this area, namely to provide at least half of the total energy consumption in the form of alternative and renewable energy (Strategy of Kazakhstan 2050, 2012).

The law on support for the use of RES outlined the main directions of state regulation in this area, where the main tool is the creation of favorable conditions for the construction and operation of objects using renewable energy sources and their effective integration into the unified power, thermal system and the market of electric and thermal energy. The following direction relates to the stimulation of production of electrical and thermal energy with the use of renewable energy sources and with the introduction of legal persons, engaged in design, construction and operation of these objects, their investment preferences. Another important thing is the assistance to the implementation of international obligations of Kazakhstan to reduce greenhouse gas emissions (National report On integration Of the "green growth" tools in the Republic of Kazakhstan, 2010).

The law provides a number of measures to support renewable energy. The first is the priority of allocation of land plots for construction of objects of renewable energy sources. Local authorities should reserve land for this purposes to promote the development of entrepreneurship in this area. Along with this, the law supports the sale of electricity and (or) thermal energy generated by the objects using renewable energy sources. In Kazakhstan the financial center for RES support is established in order to regulate the relations with energy producing companies (Decree of Government of the Republic of Kazakhstan # 876, 5.08.2014). It concludes contracts on sale and purchase of electric energy with the energy producing companies that use RES and are in the list of energy-producing organizations that use it for the period of 15 years, and carries out the purchase of electrical energy generated by the objects, using RES within a period not exceeding the term of the relevant fixed rate.

The policy of "green tariff" is widely practiced in the world. The idea of preferential tariffs has been implemented in the US in 1978, when the President Jimmy Carter signed the National energy law and the Law on regulation of public utilities (Harris and Navarro, 1999; Hirsh, 1999). The purpose of these laws was to encourage energy conservation and the development of new types of energy resources, including renewable energy sources such as wind and solar energy (Harris and Navarro, 1999). In Kazakhstan the green tariff law was introduced in 2013, in 2014 the government of Kazakhstan approved the procedure, conditions and forms of its definition (Decree of Government of the Republic of Kazakhstan # 27, 27.03.2014). Fixed tariffs are approved by the Government for such types of RES, as solar energy, wind, hydrody-

namic, water energy, the energy generated by biogas. It is entitled every 3 years to adjust the levels of previously approved fixed tariffs.

There is one more measure of state support – targeted assistance. The state provides its individual customers with targeted assistance in the amount of 50% of the cost of installations using renewable energy sources with the total capacity of not more than 5 kilowatts. It is paid after the installation of renewable energy sources and its operation (Decree of Government of the Republic of Kazakhstan # 703, 26.06.2014). The legislator in this case considers only individual consumers who consume electricity and (or) thermal energy from the object using renewable energy sources, working in the autonomous mode in non-electrified villages or settlements where centralized electricity is not economically feasible. These are remote communities, and peasant (farmer) households mostly.

In Kazakhstan, measures of support are applied also at connection of RES objects. Newly built RES objects, as well as reconstructed ones regardless the period of putting into operation connect to the nearest point of electrical or thermal networks of electricity transmission organizations, relevant by class or voltage parameters of the heat transfer into the total heating network. Energy transmission organization provides unimpeded and non-discriminatory definition of the nearest point of electrical or thermal networks, corresponding by class or voltage parameters of the heat transfer in the general system and connection of facilities using renewable energy sources.

Problems of legal regulation of energy saving and energy efficiency improvement. A logical step in promoting the transition to "green economy" and solution of the problems of energy conservation was the adoption of a special law aimed at promoting energy efficiency activities in Kazakhstan (Law of Kazakhstan # 541-IV, 13.01.2012). According to this law, energy conservation is the implementation of organizational, technical, technological, economic and other measures aimed at reducing the amount of used energy resources. There are several arguments in favor of the implementation of such measures to improve energy efficiency. First, such events in many cases are cost-effective, i.e. the value of energy savings exceeds the costs on their implementation (Antonov, 2014). In fact, Kazakhstan can reduce the energy demand in its major energy-consuming sectors by additional 10% till 2030 and 15% till 2050 as compared to the baseline scenario, which will result in the reduction of GDP energy intensity by 35% until 2030 and 50% by 2050 compared to the 2010 level (UNEP Report, 2009). Secondly, energy efficiency can reduce capital costs: for example, depending on the sector of power generation energy efficiency measures can save from 6 to 15 bln USD (Decree of President of the Republic of Kazakhstan # 577, 30.05.2013).

Thirdly, an important argument is to minimize the impact on the environment, as reduced energy consumption means the reduction of CO₂ emissions and other pollutants. On the way of energy efficiency there is a number of serious obstacles: inefficient tariff and pricing policies, underdevelopment of local production and high costs of imported energy-efficient building materials, fragmented market, limited access to financing, lack of awareness on energy management, lack of skills and regulatory mechanisms. Kazakhstan needs to overcome these barriers on the way to its energy efficiency (Economic Overview MEP, 2012).

Implementation of energy saving policy provides the organization of a complex of different activities, including technical regulation, balanced tariff policy and pricing, application of economic stimulus measures, including the use of energy-saving equipment and materials. Along with this, authorized state agencies carry out regulatory functions to ensure proper maintenance of the law on energy saving and energy efficiency improvement.

There are legal restrictions on the acceptance of new objects and payment for consumed energy. For example, p. 1 item 8 of the act establishes a requirement that construction projects and objects, consuming energy resources, provide for the mandatory use of energy-saving materials, installation of meters of energy resources, automated systems of heat regulation. Also the projects of apartment houses impose the mandatory use of energy efficient materials, installation of metering devices of thermal energy and individual metering of electrical energy, hot and cold water, gas, and devices-controllers in heating systems, automated systems of heat regulation. According to article 11 of the law planned and constructing (reconstruction, capital repair) buildings, structures, objects must meet the requirements of energy saving and energy efficiency. The implementation of the requirements on energy efficiency at the commissioning of buildings, structures, objects is entrusted with developers (Decree of Government of the Republic of Kazakhstan # 1181, 11.09.2012).

With the adoption of this law in Kazakhstan, there is the state energy register as a body systematizing information on the entities of public energy use. This information hasn't been processed before. The registered entities are entrepreneurs and legal persons consuming energy in the volumes equivalent to 1500 or more tons of fuel per year, as well as public institutions and state-owned enterprises, limited liability partnerships, joint stock companies, including national managing holdings, national holdings, national companies, member or shareholder of which is the state, as well as subsidiaries, affiliates and other legal entities affiliated with them in accordance with the legislative acts of the Republic of Kazakhstan (Decree of Government of the Republic of Kazakhstan # 143, 18.02.2013). For the inspection of the requirements' implementation on energy saving and energy efficiency energy audit and energy expertise are carried out (Decree of Government of the Republic of Kazakhstan # 1784, 29.12.2012).

Legal entities, obtaining a certificate of accreditation in this activity, have the right to energy inspections and audits.

As noted above, currently the main purpose of state regulation in the field of RES, energy saving and energy efficiency improvement is the creation of favorable conditions for the development of these activities. Legally in Kazakhstan there are measures of state support, such as:

- promotion of the use of energy-saving equipment; assistance in the implementation of educational activities and information support of activities in the field of energy saving and energy efficiency improvement;
- implementation of a comprehensive energy efficiency plan; research works in the field of energy saving and energy efficiency, including the financing of development of methodological and normative-legal basis in the field of energy saving and energy efficiency improvement;

- disposal of mercury-containing energy-saving lamps, been in use by the population; creation of training centers for retraining and improvement of professional skills of personnel involved in energy audit and (or) examination of energy saving and energy efficiency, as well as creation, introduction and organization of energy management system;

- assisting owners of residential houses (residential buildings), residential (apartments) in paying for activities aimed at ensuring energy saving and energy efficiency in accordance with the legislation of Kazakhstan on housing relations.

Some legal aspects in the regulation of production and turnover of biofuel. In different countries of the world in order to replace traditional fuel biofuels produced from raw materials of biological origin are used. The uniqueness of this type of fuel is that released by burning carbon dioxide has the primary atmospheric origin, and it can again be assimilated by plants, which in future will become a source of new fuel ethanol. The main advantages of bioethanol are the following: bioethanol – 100% organic material, 100% biodegradable; much less toxic combustion, especially when compared with conventional hydrocarbon fuels on emissions of oxides of heavy metals and sulfur; carbon-neutral fuel. As they grow, plants used for production of bioethanol, absorb as much carbon dioxide (CO₂) as emitted by burning (Suleimenova, 2015).

According to experts, Kazakhstan possesses significant bioenergy resource. In Kazakhstan a sustainable source of biomass for energy production can be wastes from agricultural production, crop production of technical nature, as well as the surplus of food commodities. It is estimated that the annual animal and poultry wastes on dry weight is 22.1 mln tons (from cattle – 13 mln tons, sheep and goats – 6.2 mln tons, horses – 1 mln tons), of which 8.6 bln m³ of biogas can be taken.

Available resources of crop production (cellulose resource – 9 mln tons, the free amount of grain – 1.9 mln tons, low-quality wheat that goes to feed cattle – 1 mln tons, seed – 1 mln tons), allows without discrimination to food industry organize the production of over 4 bln liters of biofuel per year (Nurushev et al., 2013).

Apart from agricultural wastes (the energy potential of 3.9 J), we should pay attention to the problem of solid wastes, which is becoming one of the most pressing economic and environmental problems. The use of bio-energy potential of municipal solid waste (MSW) (1.31 J) will effectively solve the problem of solid waste disposal, reducing environmental damage from the collection of organic waste and the greenhouse gases (carbon dioxide, methane and nitrous oxide) (Momynaliev, 2010).

In order to develop this branch of RES use in Kazakhstan the law "On state regulation of production and turnover of biofuel" was adopted (Law of Kazakhstan # 351-IV, 15.11.2010). The main tasks of state regulation in this area are the reduction of emissions into the atmosphere, the development of production and turnover of biofuel. For this purpose, the state determines the marginal production capacities for biofuels production. These amounts are set by the Government resolution as of 2011. For example, in 2011 it was 2870, and in 2014 it was 3220 mln liters of biofuel. These figures indicate an increase of production capacities of biofuels production. The negative side of this production may be the threat to food security because it uses raw materials. Therefore, quotas on raw materials are used for processing into biofuel. The final decision is taken by the Government on the basis of the information of

authorized and local executive bodies, as well as analysis of monitoring data with regard to cropping patterns, production and processing, as well as the availability of stocks of a specific type (or types) of food raw materials planned to be used for biofuel production

For the development of biofuel market, the government supports the production and turnover of biofuel by funding studies on the priority directions of this market development. In our opinion, this measure of government support is not enough and we need to think about a complex of more effective economic measures. The law focuses attention on the control functions of the state. Unfortunately, the main goal has not been achieved – to contribute to the solution of environmental problems – due to the lack of specific tools and forms of regulation of biofuel production, with the emphasis on the achievement of favorable environmental outcomes. Therefore, it is necessary to develop a mechanism of environmental regulation for biofuels production.

As we know, today there are interesting scientific developments and the experience of other countries in this field. Historically, the most common form of biofuel is biomass of different types of crops, trees, agricultural wastes. World consumption of biodiesel, produced from vegetable oils, has grown over the past 2 years by 2.5 times – from 2 bln liters in 2003 to about 5 bln liters in 2005. By 2020 the volume of its production can reach 24 bln liters (Bolotov and Bakenova, 2007).

In Brazil, the most actively developed is the market of bioethanol from sugar cane. The program of bioethanol use was initiated during the oil crisis of the 1970s years. In 2005 sales of cars that use ethanol as fuel, amounted to 53.6% of the total number of new cars sold in Brazil (Barbosa, 2008).

Currently, Australia, Thailand, Mexico and India start their programs of biofuels introduction. The United States actively adopt Brazilian experience in promoting the development of alternative fuels. Since the early 1990s Brazil is developing the technology of power plants based on gasification of woody biomass for gas turbine (BIG/GT). Practical use of biogas in the world began in the early XXth century. And today, many countries have national programmes on the development of the technology of anaerobic digestion of biomass, aimed at solving the problems of energy supply, provide fertilizers, sanitation and other purposes. The world's first program on the development of biogas technology was adopted in India in 1962. China began the implementation of such a program of the anaerobic digestion technology of organic material in 1969 (Geo-Economic Atlas of World Energy, 2011).

In India, basic and applied research is conducted mainly at the Research center for biochemical engineering in Indian Institute of Technology. The problems of the development, research, standardization and popularization of installations in India are studied by Khadi and Village Industries Commission (KVIC). The program is based on the development of technologies of processing of cattle manure through universal biogas plants, the so-called "Gabor type" intended for individual farms (Geo-Economic Atlas of World Energy, 2011).

Thus, biofuel production for Kazakhstan is strategically important, both from the perspective of solving the energy efficiency problems and also solution of a number issues of social and environmental nature. Our country should strengthen scientific research and support industrial innovative activities in the field of renewable

energy. In Kazakhstan, there is the law on state support of industrial innovative activity and the State program on forced industrial innovative development of Kazakhstan for 2010–2014. These documents contain general provisions on innovations, not detailing with the details of the bio-industry development. The law on bio-fuels does not cover this issue either. In this regard, we note that the reference and the general nature of many of the norms and provisions of our legislation often hamper effective solutions to many strategic objectives. Along with this, there is no awareness in solving problems with the use of renewable energy. In this regard, we should strengthen the explanation of our legislation among population, which should become an active participant in this field.

Conclusions. Effective and rational use of renewable resources and energy in Kazakhstan is necessary for:

- sustainable development and conservation of the country's competitiveness;
- conservation of non-renewable natural resources, reduction of anthropogenic pressure on the environment and reducing greenhouse gases;
- introduction and widespread use of the best low-waste and resource-saving technologies in industries and agriculture;
- improving the socioeconomic and environmental situation in the regions and cities of Kazakhstan by reducing pollution and improving access to energy resources.

The common thing for all countries with a dynamic economy based on renewable resources is the policy encouraging the use of renewable resources through the development of relevant industries, scientific, educational programs, support of investments, creation of favorable customs and tax regimes, the provision of benefits during the implementation of the most efficient technologies, promotion of exports and other measures. Today encouraging the use of renewable energy sources, as proclaimed by Kazakhstan, is the declaration of intents. However, for settlement of relations in this important sphere a number of significant benefits is already offered, which can in the future make the projects involving renewable energy sources attractive for investors. Obviously, there is further need for serious legislative work improvement. In particular, relevant tax and customs benefits for such projects are needed. The study of Kazakhstan legislation and state regulation of production and turnover of biofuel showed the absence of effective measures on state support for biofuels production. In this area forms and methods of international cooperation, aimed at ensuring favorable conditions for Kazakhstan biofuel export markets, should be strengthened. Along with this, there should be a study of the global market technologies of biofuel production to determine the most efficient and the best kinds in the Republic provide brand-building for Kazakh biofuels at international market.

Public participation and awareness provides opportunities for effective implementation of support for renewable energy, that's why we need to actively engage citizens, non-government and other public institutions to introduce the culture of economic consumption of water, reduce the use of traditional fuels, develop of renewable energy sources.

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