



Innovations as Drivers of Stable Growth of the Kazakh Economy through State Policy in Area of Eco-innovations Implementation

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ABSTRACT

One of the main tasks of the state when achieving the stable economy growth is to stimulate a growth of the energy efficiency (EE) in energy intensive sectors of economy and to form the efficient regulatory basis to decrease the energy ratio. Therefore, the main task of the state power is to provide efficient, reliable, and ecologically responsible supply of energy resources. Thus, in 2013 the Government of the Republic of Kazakhstan developed and adopted the Concept on Transferring to “Green Economy.” Its basic goal is to provide reliable, adequate and accessible energy resources for substantial social, economic, and ecologically stable growth of the country. The research conducted within this article allows to make the conclusion that at the present time the Republic of Kazakhstan has a very low level of EE. In spite of considerable positive changes in the development of innovations, in accordance with the classification of the 2015 Global Innovation Index, Kazakhstan is ranged as an inefficient innovator with a low level of investments in research and development works and low demand for eco-innovations.

Keywords: Eco-innovations, Green Technologies, Green Power Industry, National Innovational Strategy, Energy Efficiency, Energy Ratio, Resources of Renewable Energy Sector

JEL Classifications: N55, O13, P28

1. INTRODUCTION

To the extent that the Kazakh economy was recovered after the global financial crisis, the state must pay basic attention to the best ways for stimulating investments in supporting stable growth. The expansion of the economic activity of Kazakh enterprises is attended by the increasing problem related to the energy security and lack of natural resources.

One of the basic state tasks is the efficient use of natural resources, and economic subjects' performance of the activity that will allow to maintain and strengthen the quality of the environment (United Nations Environment Program, 2011). In connection with it, one of the top-priority areas of the development of the Republic of Kazakhstan is the transfer to the “green economy.”

For the Republic of Kazakhstan whose economy has been reformed in the direction of industries with a low level of value added and a high level of energy ratio, the transfer to a new model of growth based on the principles of the “green economy” is an urgent necessity for the provision of a stable growth and the growth of competitiveness in the long-term run. Ecological innovations (or “green” innovations) are among the drivers of stable development of the country on the basis of the “green economy” principles and achievement of target indicators of resource conservation (Trades Union Congress, 2014).

Eco-innovations still remain beyond basic discussions and do not play the critical role when transferring to the “green” economy. However, eco-innovations must be entirely integrated in the economy and society for the purpose of stimulating system

changes, improvement of the interrelations between the human activity and eco-systems by retargeting the production and consumption to achieve stable development of the economy and society (Eco-innovation observatory [EIO], 2013).

An eco-innovation is any novelty (a new product, business model, and process) that allows to reduce the use of natural resources, and to decrease the hazardous substances emissions during the whole life cycle (EIO, 2011a). All types of innovations can become ECO-innovations if it is possible to demonstrate their ecological advantages (EIO, 2011b).

More generally ecological innovations aim at helping to agree the task related to achieving goals of stable development with the tasks related to maintaining the national economy competitiveness (WWF, 2012). Basic areas of applying “green” technologies include energy and resource efficiency (especially in construction, industry, or transportation), renewable resources of energy, organic agriculture, as well as stable hydro-economic activity and wastes disposal management (UNECE, 2013).

Taking into account the fact that modern tendencies of the world economy development become more unstable, a clamorous necessity of system changes occurs. These changes aim at increasing the quality of the life of the Kazakh population within the ecological potential of the region. The majority of Kazakh companies still do not pay due attention to eco-innovations or the scale of the resources economy when implementing such innovations is still insufficient. The continuous tendency related to the growth of general consumption of natural resources has not yet been solved. In spite of the fact that the population more often buys organic foods, the increasing level of consuming natural resources neutralizes the positive effect from such purchases (EIO).

2. METHODOLOGY

The goal of this article is to estimate the modern state of the eco-system of the Republic of Kazakhstan and to define top-priority areas of the ecological innovations development.

In order to achieve the set task, the work solves a number of interrelated tasks:

- To analyze the indicators of energy efficiency (EE) of the economy of the Republic of Kazakhstan
- To research the dynamics of the innovational development of the country
- To define top-priority areas of the development of ecological innovations in the energy industry of the Republic of Kazakhstan
- To develop measures of the state policy to support eco-innovations.

The informational and empiric background of the research is based on regulatory acts and strategic documents of the Republic of Kazakhstan, analytical and statistical materials of UNECE, United Nations Industrial Development Organization, Asian Development Bank, etc., letters and decrees of the President and resolutions of the Government of the Republic of Kazakhstan,

official data of the Statistic Agency of the Republic of Kazakhstan, and materials published in scientific references and periodicals and the internet.

The work is based on the system approach, monographic and statistical methods, and comparative analysis.

3. INDICATORS OF THE EE OF THE ECONOMY OF THE REPUBLIC OF KAZAKHSTAN

After signing the Johannesburg Declaration the top leaders of the Republic of Kazakhstan officially declared the course for the stable development of the country. In accordance with the adopted “Kazakhstan 2050” strategy, by 2050 the country must enter the top 30 of the most developed states of the world. The choice of a new way of the society development was proved by the Concept on Transfer of the Republic of Kazakhstan to the Green Economy adopted in 2013. According to it, the state policy aiming at decreasing the negative impact on the environment, resources conservation, and increasing the quality of the peoples’ lives plays the key role.

In order to implement the plan of the concept events, the Republic has established the Council on Transferring to the “Green” Economy under the President of the Republic of Kazakhstan. Within the Council nine working groups have been formed according to the following areas:

- Decrease in the air pollution
- Training and forming ecological culture of the population
- Energy conservation and increase in EE
- Eco-systems management
- Water resources management
- Development of agriculture
- Wastes management, and
- Development of electric power including renewable resources of energy.

One of the key indicators of stable development is the energy ratio of the economy. It characterizes the level of the efficiency of energy consumption in the country. Based on the indicators of the energy ratio, they set quantitative goals on the increase in the EE and energy conservation. Thus, the “Energy Conservation 2020” program sets the goals to decrease the energy ratio of gross domestic product (GDP) not less than by 40% by 2020 from the level of 2008 (Decree of the Government of the Republic of Kazakhstan “On Approving ‘2020 Energy Conservation’ Program,” 2013).

Since 2012 Kazakhstan has been creating the normative framework in this area, and it has adopted a number of enactments that determine the basic requirements in the area of EE. At the present time “On Energy Conservation and Increase in EE” and “On Amending Some Enactments of the Republic of Kazakhstan on Issues Related to Energy Conservation and Increase in EE” acts and sub-legislative documents to them serve as basic documents.

Positive dynamics of the GDP energy ratio witnesses about the efficiency of the state policy related to energy conservation. According to the data of the Administration of Services and Energy Statistics of the Statistics Committee of the Ministry of the National Economy of the Republic of Kazakhstan for the period of 2010-2014, the GDP energy ratio has decreased from 1.84 TOE per USD 1000 (in prices of 2000) to 1.74 TOE per USD 1000. At the same time it is necessary to note that the decrease of the level of energy consumption has an unstable character.

The efficiency of the state policy related to energy conservation is characterized by the level of achieving the target indicators of the “Energy Conservation 2020” Republic Program. In 2014 the target level of the decrease in the GDP energy ratio as to the level of 2008 is 20%. However, this indicator has not been achieved. Moreover, the GDP energy ratio has increased as to the previous 2013. Table 1 shows the indicators on implementing the “Energy Conservation 2020” program of the Republic of Kazakhstan.

In spite of the large territory and rich natural resources, the Republic of Kazakhstan has a very low level of EE that requires several times more energy per the GDP unit than in other countries with a similar structure of economy (Figure 1). Thus, the GDP energy ratio of the Republic of Kazakhstan surpasses the energy ratio of Canada that can be compared with Kazakhstan according to climatic conditions, size of the territory and population density 4.6 times, and 4 times as compared with the Republic of Korea that has a similar GDP structure (OECD/IEA, 2015).

Partially it is possible to explain the high GDP energy ratio of the Republic of Kazakhstan by the current structure of economy that is characterized by the development of primary industries as well as high losses when transferring electricity and inefficient use of heat and electricity. These losses are the consequence of the policy when tariffs for energy resources were low and almost nobody was involved in energy conservation.

The high share of the tear and wear of the generating and electricity supply network equipment causes low efficiency of the electricity generation and comparatively high volume of losses in the power industry that makes up about 47% of the total consumption of primary energy resources.

The problem related to worsening of the technical state of equipment on enterprises of energy-intensive industries (oil and gas, metallurgic, and mining) also has a negative impact on the EE (Energy Charter Secretariat, 2014).

4. RESULTS OF INNOVATIONAL DEVELOPMENT OF THE REPUBLIC OF KAZAKHSTAN

At the present time Kazakhstan has a national innovational strategy and the developed national innovational system.

It is necessary to note than over the recent 5 years definite positive changes in the innovational activity of the Republic enterprises

have taken place. The number of innovation-active enterprises has increased more than 4 times, and the level of activity in the area of innovations has increased more than 2 times (Figure 2, Table 2).

In 2014, 19,404 enterprises had innovations. Only 246 innovations of them (or 1.3%) had ecological directionality (Statistics

Table 1: Indicators of performing “2020 Energy Conservation” program of the Republic of Kazakhstan

Year	Target		Actual
2008 (basic)	-		1.77
2013	- 10% as to level of 2008	1.59	1.44
2014	- 20% as to level of 2008	1.42	1.74

Table 2: Dynamics of volumes of innovational products and its share in GDP in 2010-2014

Indicator	2010	2011	2012	2013	2014
Volume of innovational products, million tenge	142.2	236.0	379.0	578.3	580.4
GDP, billion tenge	21,815.5	27,300.6	30,347.0	35,275.2	40,754.8
Share of innovational product in GDP, %	0.7	0.9	1.2	1.6	1.4

GDP: Gross domestic product

Figure 1: Energy ratio of gross domestic product of some developed and developing countries

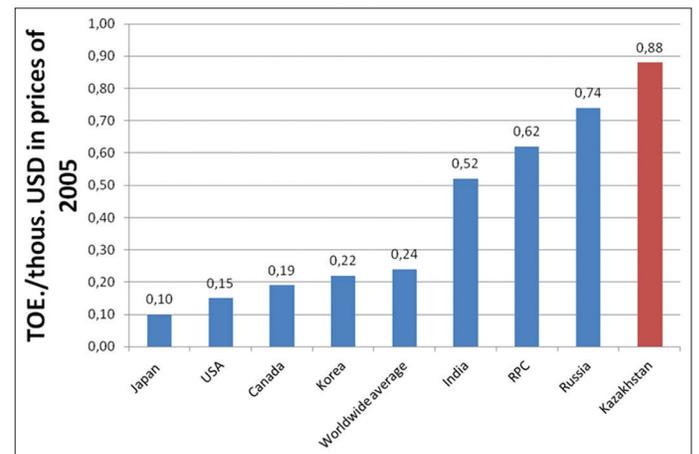
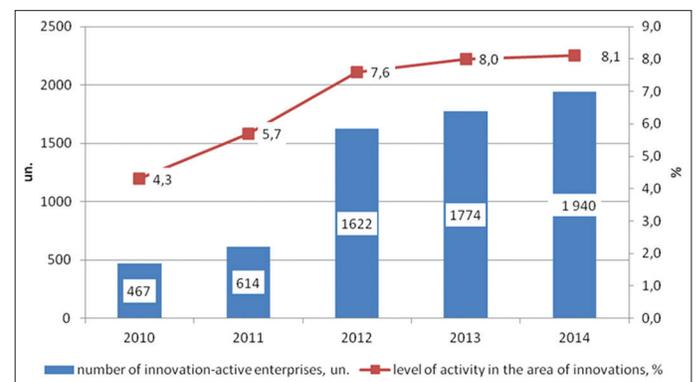


Figure 2: Dynamics of innovational activeness of the Kazakh Enterprises in 2009-2014 (Statistics Committee of the Republic of Kazakhstan 2015a)



Committee of the Republic of Kazakhstan, 2015b). During 2010-2014 the volume of the innovation products increased 4 times. Its share in the structure of the country GDP increased from 0.7% to 1.5%.

The expenditures for conducting researches and research and development works are one of the movers of ecological initiatives, i.e., they contribute to the development and wide-spread use of new types of products and production technologies that decrease the negative impact on the state of the environment as compared to the relevant alternative solutions (PwC, 2015).

Over the recent 5 years the correlation of the gross domestic expenditure on research and development/GDP ratio of the Republic of Kazakhstan has been on the level of 0.2-0.21%. This is considerably lower than the analogous indicator of other developing economies. For example, in China the level of investments in 2013 was 1.4% from GDP, and in the Russian Federation - 1.2% (UNESCO, 2015).

Nevertheless, during 2010-2014 the aggregate expenditures for research and development in the Republic of Kazakhstan increased 1.9 times. It witnesses about the growing demand for the products of the research and development work.

Among Central Asian countries the Republic of Kazakhstan is the only country where business makes at least some contribution to the research and development. In absolute terms for 2010-2014 the expenditures of the entrepreneurial structures in research and development increased 3 times. The share of business in the total volume of expenditures for research and development increased from 31.2% in 2010 to 49.3% in 2014.

In 2010-2014 the expenditures for research and development works in the area of “green” growth increased 2.2 times. For the considered period this indicator has multidirectional dynamics. Expenditures for research and development in the area of “green growth” considerably increased in 2011-2012. They considerably decreased in 2013. In 2014 expenditures for research and development in the area of environmental protection as compared to the previous year increased by 30.5% and made up 4095.7 million tenge (Figure 3, Table 3).

The patent activity in the area of eco-innovations in the Republic of Kazakhstan demonstrates positive dynamics: The number of the issued certificates, licenses, and patents increased from 243 units in 2010 to 343 units in 2014. It can witness about the actual acceleration of the innovation activity in the area of green technologies.

In accordance with the “Worldwide Innovational Index 2015” International Report, the Republic of Kazakhstan belongs to regional leaders of innovations amount Central and Southern Asian countries and occupies position 82 in the rating of the Worldwide Innovational Index 2015, between India and Sri Lanka (Dudin and Frolova, 2015).

At the same time it is necessary to note worsening of positions by 3 points as compared to the previous year. Besides, at the present time the Republic of Kazakhstan is one of ineffective innovators with the innovations efficiency coefficient being <0.71. Figure 4 shows indicators of the innovations efficiency of the Republic of Kazakhstan as compared to some developed and developing countries.

It is necessary to note that until now the demand for eco-innovations in the Republic of Kazakhstan has remained weak. It is expressed in the lack of state “green” purchases, subsidizing tariffs for energy and water, and weak regulating norms and standards.

5. DEVELOPMENT OF RENEWABLE ENERGY (RE) SECTOR – TOP-PRIORITY AREA OF ENERGY INNOVATIONS

The eco-innovational policy of the Republic of Kazakhstan is considered as a subdivision of the national innovational policy. Common goals of the research and development in the Republic of Kazakhstan are defined in the State Program of Industrial and Innovational Development for 2015-2019 (Order of the President of the Republic of Kazakhstan “State Program of Industrial and Innovational Development of the Republic of Kazakhstan for 2015-2019”).

This program sets a number of system measures on forming and developing sectors of the “new economy” including the development of renewable resources of energy, and transfer to

Figure 3: Dynamics of expenditures for research and development in the area of environmental protection of the Republic of Kazakhstan in 2010-2014, milliil tenge (1 USD = ~350 tenge)

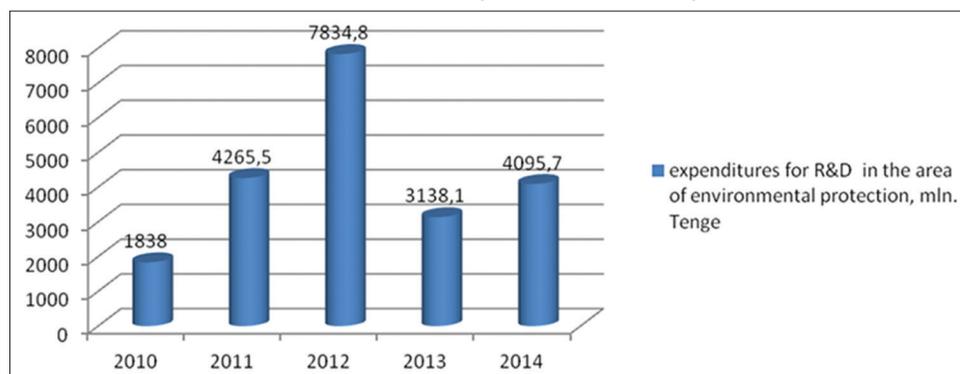
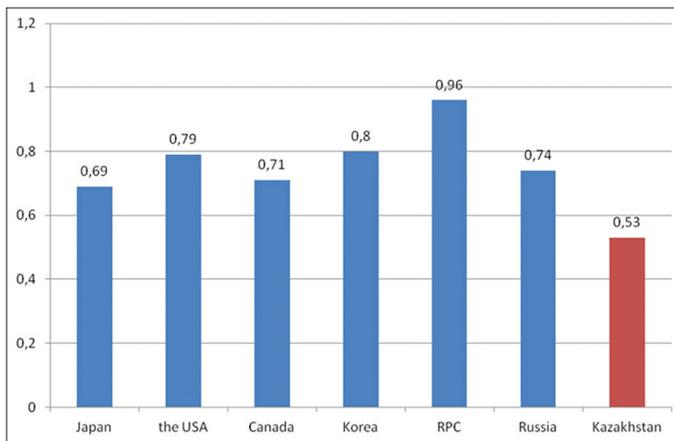


Table 3: Dynamics of expenditures for research and development in the Republic of Kazakhstan in 2010-2014

Indicators	2010	2011	2012	2013	2014
Internal and external expenditures for research and development, million tenge	46,079.6	58,716.0	68,460.4	73,949.9	86,572.9
GDP, billion tenge	21,815.5	29,379.8	32,193.8	37,085.3	40,754.8
Share of expenditures for research and development in GDP, %	0.21	0.20	0.21	0.20	0.21
Expenditures for research and development in the entrepreneurial sector, million tenge	14,363.0	29,826.3	27,184.2	27,944.3	42,713.4
Share of the entrepreneurial sector in total expenditures for research and development, %	31.2	50.8	39.7	37.8	49.3
State sector, million tenge	19,612.7	17,934.7	19,892.0	19,478.1	20,900.2
Share of the state sector in total expenditures for research and development, %	42.6	30.5	29.1	26.3	24.1

GDP: Gross domestic product

Figure 4: Indicators of innovations efficiency (Cornell University, INSEAD, and WIPO, 2015)



green power industry that allows to decrease greenhouse gas emissions.

Clean energy is a very important issue for Kazakhstan and Central Asia, as a whole, where it requires special urgency (Kuznetsova, 2013). In 2015 14 projects related to RE resources (RER) with the total capacity of 119.9 MW were put into operation in Kazakhstan. As on the beginning of 2016 in Kazakhstan there are 48 enterprises that use electricity from renewable resources of energy with the total capacity of 251.55 MW.

It is planned within the concept on the transfer to the “green economy” implemented in Kazakhstan that by 2020 the share of the electricity produced from renewable resources of energy must achieve 3% of the total volume of the electricity production, and above 10% by 2030.

The leading experts of the country think that a 15-20% contribution of the green power industry to the total energy balance in Kazakhstan is quite an achievable indicator within the nearest decades. According to the data of BP Statistical Review even now in many countries the share of renewable resources in the total volume of electricity generation exceeds 20%. Thus, for example, in Denmark 57% of the electricity comes from renewable resources, and 30% - in Portugal. As for large European Union countries, the share of renewable resources of energy makes up 26% in Spain, 24% in Italy, 23% in Germany, and 18% in Great Britain (British Petroleum, 2015).

Basic segments of the RE in the Republic of Kazakhstan include hydraulic power industry, energy of the wind and sun (photovoltaics), low-carbon biofuel, and geothermal resources.

By 2020 the country plans to implement 106 projects in the area of RER, including 34 projects of wind stations, 41 small hydraulic power stations, 28 sun stations, and 3 biogas units.

According to the forecasts of Bloomberg New Energy Finance, starting since 2018-2019 RER will be able to develop without subsidies subject to the subsidies are cancelled in relation to the mineral fuel, and the growth of the number of sun and wind energy units is attended by not less dynamic progress in the development of energy storage (batteries) and allocation (networks) technologies (Bloomberg Company, 2015). The latter requirement will strengthen the research intensity of the RER area even more and increase its importance as a factor of the innovational development of power industry and economy as a whole (Russian Academy of Sciences, 2015).

Taking into account high research and capital intensity of “green” energetic technologies, it is necessary to consider the process of transformation of the energy system of the Republic of Kazakhstan as a combination of two types of innovations of the innovational development:

- Innovations aiming at the accelerated increase in EE and decrease in energy ratio of economy on the basis of using informational and communication technologies, including intellectual electric grids.
- Innovations aiming at the accelerated implementation of renewable resources of energy, as well as new technologies related to energy storage and carbon capture and storage. The key factor that defines the tempos of innovations within this trend will become a considerable decrease in the prime cost of RER that is required for their mass implementation.

Thus, the development of the RE sector is the most technologically difficult area of energy innovations. At the same time the implementation of innovations in the area of the RE and other “green” technologies will allow to create the terms and conditions for high quality transformation of regional production infrastructure, accelerate modernization, and contribute to the transfer of the economy of the Republic of Kazakhstan to the course of stable growth.

6. MEASURES OF STATE POLICY TO SUPPORT ECO-INNOVATIONS

As a response to global ecological challenges, the Government of the Republic of Kazakhstan must support innovational projects in the power industry on the basis of eco-system approaches. In order to improve functioning of the national innovational system and to implement “green” innovations in the energy complex of the Republic of Kazakhstan, it is necessary.

- To improve the framework terms and conditions to run business and support “green” development
- To develop measures in stimulating the demand for eco-innovations
- To expand the range of financial instruments that support eco-innovations
- To develop measures that support and stimulate private investments in ecological innovations
- To complete the process of creating the integral national innovational system.

The indicators of eco-innovations will hardly become considerably better without high quality improvement of framework terms and conditions. In order to successfully implement the innovational policy, it is necessary to create favorable conditions for the improvement of the business environment in the following areas:

- Carrying out legal reforms in the area of eco-innovations
- Forming the human capital
- Creating terms and conditions for the development of competition, and
- Development of financial markets.

6.1. Legislation Improvement

Today in the Republic of Kazakhstan legal reforms in the area of eco-innovations are extremely urgent. Efficient protection of proprietary rights, including intellectual rights, is favorable for attracting private and foreign investments, developing entrepreneurship, and implementing innovations. Besides, the creation of firm legislative basis for long-term concession agreements is an important condition for the participation of foreign investors in the area of energy infrastructure and transfer of technologies within the state and private partnership (SPP).

Forming human capital must be improved according to the following areas:

- Formation of functioning mechanism related to the concentration of the scientific thought, developments, innovational solutions, and their relation to the production including based on technological platforms.
- Creation of terms and conditions and provision of opportunities to eliminate the current disbalance in the personnel of the required qualifications and the system of their training in accordance with the strategic tasks of the energy industry.

In order to form functioning mechanism related to the concentration of the scientific thought, developments, innovational solutions, and their relation to the production including based on technological platforms, it is necessary to take the following measures:

- To develop measures stimulating companies that implement innovations
- To attract investments in the energy complex of the Republic of Kazakhstan, and transfer knowledge and new technologies in the area
- To create large engineering and project centers together with the leading foreign companies
- To increase the level of involvement of the personnel of the energy complex in the development of innovational projects, and
- To form industrial professional communities.

In order to create terms and conditions and provide opportunities to eliminate the current disbalance in the personnel of the required qualifications and the system of their training in accordance with the strategic tasks of the energy complex industries of the Republic of Kazakhstan, it is necessary.

- To create industrial educational clusters under the principles of network interrelation and on their basis to train personnel, organize production practice, and offer guaranteed employment at enterprises that enter the clusters
- To create the anticipatory system of personnel training for the energy industries
- To form the state order in education in accordance with the needs of the energy complex by using the state informational system, and
- To define the interdepartmental forms of interrelation of all participants on the creation of the required terms and conditions for the preparation and professional development of engineering and technical personnel for industries of the fuel and energy complex.

6.2. Creation of Terms and Conditions for the Development of Competition

Competition causes innovations. Taking into account slow restructuring of large state enterprises, it is important to decrease their market power with the aid of efficient competitive policy especially in the sectors that are not subject to external competition. Under conditions of competition companies have strong stimuli to implement innovations.

6.3. Development of Financial Markets

Taking into account the importance of financing for innovational start-ups and urgency to insure innovational programs, measures on the development of the financial market must be included in the structure priorities of the policy of the Republic of Kazakhstan. Before the financial market works efficiently, the government must additionally finance new enterprises in the form of subsidies.

6.4. Stimulating Demand for ECO-innovations

Top-priority tasks of the state government in this area include:

- Implementation of the “green purchases” mechanism
- Implementation of modern energy efficient and economic standards as well as construction standards and infrastructure parameters of stability.

6.5. Implementing the Practice of “Green” Purchases

In various countries understanding of the importance of the “green” purchases program and the wish to comply with the established

ecological criteria constantly grow. Many experts think “green” purchases to be an efficient instrument in the stable development of the state. “Green” purchases in European countries are based on ecological requirements that are specified by the state to “green” products and relevant criteria of eco-marking of Type I (EE, use of secondary resources, etc.).

Demanding from suppliers to provide the goods that comply with ecological criteria and efficiency parameters, the organizations that participate in the “green” purchases program can not only provide themselves with high quality goods and forecasted expenditures but also indirectly make suppliers and producers of various groups of goods develop their product lines in a more energy efficient and ecological direction. The efficient work of “green” purchases systems is based on the obligation to comply with a number of ecological requirements that is provided in various countries of the world. The government of the Republic of Kazakhstan must develop and legislatively fix obligatory ecological requirements and the system of criteria for estimating ecological characteristics of the purchased goods and services.

Ecological standards are established for the purpose of stimulating eco-innovations. Such standards are established particularly in the area of energy and resources efficiency. Nevertheless, standards are a stimulus, and can have a positive impact on innovations only in case they are reconsidered in time.

One of the actual tasks of the Republic of Kazakhstan as the state that have chosen the course of ecological and highly efficient development is to implement “green construction” technologies. The development of the national standard of “green” construction can stimulate the Kazakh market of ecological technologies and building materials by encouraging the demand for more ecological and economic buildings (Chutukova, 2015).

At the present time the country is developing the “Omir” national standard of certifying technologies and building materials. According to the standard developers, it must contribute to the implementation of the ecologically “friendly” mechanisms in the construction and designing, and the development of a minimum set of simple rules and criteria, to start with. The compliance with these rules and criteria will allow to make the step forward in comparison with what is observed in the construction industry today.

At first, the standard will cover the aspects that are the most urgent when constructing new facilities. Such moments include the development of the register of “green” building materials, increase in the economy of water resources, internal micro-climate in premises, energy efficient infrastructure, improvement of the system of public transport, and improvement of the wastes processing system.

According to the experts, the implementation of “green” standards will increase construction expenditures. However, in the construction pay-off period they will considerable decrease due to the reduction of operational expenditures. In order to implement green technologies and materials in the construction area, it is necessary to create economic and organizational stimuli.

The implementation of mechanisms related to stimulating building owners is an important moment. Such practice is widely applied abroad. In Europe there are programs. In accordance with them building owners that actively work in compliance with “green” standards can get subsidies, and be released from various taxes. In this context the experience of Byelorussia is interesting. The state established a definite limit of energy consumption by buildings. If this ratio is exceeded, the construction company is assessed. The obtained funds are paid to a special fund that invests them in the development of energy efficient technologies. In case the building owner manages to achieve the best indicators, during the next construction the state provides it with preferences, for example, selecting the land.

The Government of the Republic of Kazakhstan must pay close attention to the development of measures to support and contribute to the distribution of eco-innovations. The governmental authorities must consider the issue related to introducing definite mechanisms and instruments that encourage and contribute to the establishment of relations between the parties in interest.

One of the main tasks of the state is to decrease risks for private investors that invest funds in ecological projects. In order to decrease risks, various industrial funds or incubators can be created for private investors. Stable Development Technologies of Canada, Clean Energy Alliance in the US, and Ecological Technological Business Incubator in Korea may serve as an example.

Financial instruments that support eco-innovations can be expanded due to:

- Implementing the scheme of grants to support research and development in the area of innovations.

The system of grant support of ecological innovations aims at assisting small- and medium-sized enterprises that developed the product that has a low impact on the environment or business process that provides more efficient use of resources or materials. Using the system of grants, it is possible to finance both specific energy efficient equipment (for example, according to the technological list) and innovational projects associated with the increase in the EE.

The grant can be established as a fixed amount or as an interest from the investments that have been made. Since the system of grants is rather expensive for the state budget, the Government of the Republic of Kazakhstan can create a special fund (probably, under the conditions of SPP) that finances grants for research and development of new technologies in the area of eco-innovations.

- Expanding credit programs of banks of the Republic of Kazakhstan.

Although in the Republic of Kazakhstan the operations on credit lines to support nature protection purposes (particularly, in the area of RE sector and EE) have already been made for 10 years, financing of stable power industry still remains on the initial level. The lack of information about the pay-off terms of various investments and relatively low price of energy in the Republic of

Kazakhstan are serious barriers to the formation of the demand for the “green” financing.

In many countries of the world, when taking investment decisions, banks more and more often take into account initiatives in the area of eco-innovational and stable development. Special credit lines are created for the enterprises that implement ecological and social innovations. The basic resource of long-term financing of “green” investments (especially in the area of energy and resources efficiency) in the Republic of Kazakhstan includes credit lines of International Financial Institutes (IFI). Credit lines of IFI facilitate access to long-term financing, and make loan conditions more acceptable.

At the present time the Republic of Kazakhstan works with two IFI in the area of ecological financing. In 2008-2009 the European Bank for Reconstruction and Development (EBRD) opened two credit lines in the amount of EUR 29 million for Kazakhstan. The EBRD makes its financing according to two basic areas: EE and small projects in the area of RE sector. In the first case loans can be provided to the housing sector, micro-, small- and medium-sized enterprises and large companies, depending on the situation in a specific local market. Local financial institutes credit their clients from the raised funds.

The European Investment Bank provides ecological financing for three projects related to the change of the climate. At the present time there are three credit lines to the following banks: The Bank of Development of Kazakhstan (EUR 120 million), Kazakh Sberbank for SME for measures related to softening the consequences of the climate change or adaptation to them, and the target credit for the “Kazagro” managing holding in the amount of EUR 120 million to finance climatic projects.

At the same time mechanisms related to the development of cooperation in the area of ecologic financing of the Republic of Kazakhstan with other IFI (IFC, World Bank EBRD, Asian Bank for Development, NEFCOKfW, and OeEB) are developed weakly.

For the purpose of ecological financing, local banks of the Republic of Kazakhstan must develop efficient credit products that use funds of IFI.

Stable market of ecological crediting is possible only if local banks have an access to financing without constant support due to preferential credits of international organizations. For this, it is necessary to develop internal markets of debt financing that provide acceptable rates and terms for potential client segments.

Ecological crediting is the most efficient when it is smoothly integrated in the current operational structures and processes but to a definite sense separated from basic bank operations. The matrix structure with the double line of subordination is optimal. This is when they work with the credit product in the area of EE separately but within a wider direction related to crediting SME or the housing sector.

For the efficient use of the target credit line, it is required to have a serious portfolio of promising projects. Probably, Kazakh banks

must develop projects with clients themselves, or with the aid of external consultants financed by IFI.

Support of private investments in ecological innovations (research and development and commercialization).

Raising private funds for financing of research and development related to nature protection is one more actual directions of the state policy.

Economic instruments that support eco-innovations include all instruments of the policy related to fiscal, financial and other economic stimuli and anti-stimuli.

Tax benefits are among efficient economic instruments that stimulate the involvement of private investments in eco-innovational projects.

When developing measures of the state policy in the area of stimulating investment activity in the energy complex of the Republic of Kazakhstan, it is necessary to provide the opportunity to use several types of tax benefits during the implementation of eco-innovational projects.

- Tax deduction - Expenditures for implementing the measures on increasing EE can be deducted (entirely or partially) from the tax base. Relevant investment expenditures cover mainly expenditures for purchasing energy efficient materials or equipment
- Tax and customs benefits - They will allow to release buyers from paying customs fees or taxes for import of eco-efficient equipment.

The creation of the national crown-funding platform in the Republic of Kazakhstan can be one of the efficient ways to attract investments for eco-innovational projects. These associations of separate investors and companies have got a considerable impulse over the recent years. Examples of such platforms are Green Fundraising or Green VC.

In order to complete the process of creating the integral national innovational system, purposeful political efforts according to the following areas are required:

- Conducting a campaign on informing the society for the purpose of strengthening the responsibility for the required changes between the key participants of the eco-innovational activity
- Contributing to strengthening the institutional potential by carrying out consultations with basic parties in interest, and
- Statistics of national data of research and development, and green innovations must be considerable improved and brought into compliance with the world statistical standards.

7. CONCLUSION

One of the most important areas of the technological modernization of the economy of the Republic of Kazakhstan is the development of ecologically clean technologies. The central core of such technologies includes innovations in the energy industry aiming

at a decrease in the energy ratio and transfer to energy efficient low-carbon economy.

The implementation of the innovational and research and technology potential of the RERs is the urgent necessity, because they are applied in a number of economic areas. In other case in 20-30 years the Republic of Kazakhstan, like many countries of the world, will suffer serious problems of energetic and technological nature.

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