



Faculty of Economics, University of Niš, 17 October 2014

International Scientific Conference

**THE FINANCIAL AND REAL ECONOMY:
TOWARD SUSTAINABLE GROWTH**

**SUSTAINABLE DEVELOPMENT OF INNOVATIONS IN
KAZAKHSTAN: ON THE WAY TO A GREEN ECONOMY**

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***Abstract:** Kazakhstan's economy has expanded rapidly over the last decade, posting one of the fastest paces of growth in the region. Kazakhstan is becoming a critical part of the emerging "New Silk road" that connects the East with Europe, Turkey and the Middle East. The paper analyses the national innovation systems, the institutional framework of innovation policy and the state of science, technology and innovation (STI) in the Republic of Kazakhstan. As a country with abundant natural resources, Kazakhstan is still facing challenges in transforming into a knowledge-based economy. The strategic course of Kazakhstan for industrial-innovative development provides necessary conditions for the elaboration and implementation of new scientific ideas and technologies. The strategy of development of Kazakhstan till 2050 together with such documents as the Strategic Development Plan up to 2020, or the State program of Forced Industrial-Innovative Development of Kazakhstan for the period 2010-2014 provide regular, necessary conditions that support the development of research, technology and innovation in Kazakhstan.*

***Keywords:** green economy, market mechanisms, innovation policy, industrial-innovative development program, technology, economic growth, national innovation system, sustainable development.*

Introduction

Kazakhstan's economy has expanded rapidly over the last decade, posting one of the fastest paces of growth in the region. Kazakhstan is becoming a critical part of the emerging "New Silk road" that connects the East with Europe, Turkey and the Middle East. The paper analyses the national innovation systems, the institutional framework of innovation policy and the state of science, technology and innovation (STI) in the Republic of Kazakhstan. As a country with abundant natural resources, Kazakhstan is still facing challenges in transforming into a knowledge-based economy. The strategic course of Kazakhstan for industrial-innovative development provides necessary conditions for the

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UDC 502/504:33(470.5)

elaboration and implementation of new scientific ideas and technologies. The strategy of development of Kazakhstan till 2050 together with such documents as the Strategic Development Plan up to 2020, or the State program of Forced Industrial-Innovative Development of Kazakhstan for the period 2010-2014 provide regular, necessary conditions that support the development of research, technology and innovation in Kazakhstan. And advantageous geographical position, regional integration initiatives and an improving business climate are three key reasons why Kazakhstan is emerging as an attractive investment destination. Learning a leading experience of other countries is not the only thing necessary for successful transition to a green economy, but the elaboration of economic mechanisms, which would take into account local conditions of market segment development. In regard to this it is necessary to work in the three following directions:

- Exploration, accumulation, filtering and adaptation of leading ideas;
- Development of the system and motivation of competitive market;
- Assistance in commercialization of projects and stimulation of Kazakhstan content.

Within the first direction, in order to study and accumulate advanced ideas it is necessary to organize continuous information stream with the professionals of this market segment. On the current stage Kazakhstan needs accredited state laboratories, which could certify foreign production in conformity with quality and the possibility to be used in climate conditions in Kazakhstan, and, by this, create foremost innovative goods.

The most effective market development can be achieved only with the help of market mechanisms, i.e. through the creation and motivation of a competitive market with a huge number of buyers and sellers. In this case the market will choose efficient projects and reject less efficient suggestions itself, as well as promote an increase of green culture, quality improvement and lowering of market value, which means a rise of purchasing power. In this direction, motivation measures towards both consumers and sellers will be effective.

The Green technologies payback issue has to be considered from two perspectives: First, green technology introduction costs have to be compared with economization from minimizing of expenditures on expansion of electrical and heat stations. Mass introduction of green technologies will decrease a necessity in capital-intensive reconstruction of heat-electrical and steam stations, and saved meanings can be used to buyers rewarding. Second, it is necessary to consider the coefficient of efficiency of land use for lands, which are not used for agriculture. Thus, not intensively inhabited desert and semiarid lands of Kazakhstan could be effectively utilized as solar farms. In this case capital expenditure could be compensated by an increase of the coefficient of efficiency of land use.

An innovation directly depends on the country's level of involvement in the global market and global competition (the economy in general, regions, industries, organizations and businesses). Inability to fit within the tight budget constraints and global trends, adapt to the requirements of their potential, including price, market is a major challenge for economic players, the answer to which cannot be reduced to a linear increase of funding.

Kazakhstan's economy is heavily reliant on the country's natural resources, notably its vast oil and natural gas reserves, the extraction of which accounts for a significant portion, 18,9% of the country's annual GDP. The great wealth and development

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of the extractive industries has resulted in minimal economic diversification and has created an inflexible labour market.

In the pursuit of increasing its investment in the extractive industries, the Kazakhstan government and the private sector have failed, to place adequate importance on environmental sustainability in the country. In the conditions of development of economic integration of Kazakhstan there is a question sharply before the domestic enterprises about increasing of competitive advantages and prevalence of qualitative criteria. In this regard in economy of Kazakhstan ripened a global question of efficiency in all its forms, including resource-saving. Increase of relevance of resource-saving causes timeliness of a "green" tendency in Kazakhstan and such tendency wasn't late and didn't outstrip.

1. Industrial-Innovation Policy of Kazakhstan

Kazakhstan is an upper-middle company, according to the World Bank classification with GDP per capita of around 12.000\$ in 2012. Large and sparsely populated, the country is rich in natural resources, with very significant reserves of oil, gas, minerals. While the development of its natural resources has provided a major impetus to the recent expansion of Kazakhstan's economy, the authorities have stressed the need to develop other sources of growth and improve overall economic competitiveness. In order to support these aims, growing resources are being devoted to the modernization of the economy and the revamping of its infrastructure, seeking to facilitate economic diversification. Kazakhstan set up different institutions and developed many programs aimed at encouraging innovation and modernization. Kazakhstan has put a growing emphasis on the promotion of innovation as a driver of economic development and diversification.

Kazakhstan is becoming a critical part of the emerging "New Silk Road" that connects the East with Europe, Turkey and the Middle East. And advantageous geographical position, regional integration initiatives and an improving business climate are three key reasons why Kazakhstan is emerging as an attractive investment destination. Kazakhstan has an increasingly business-friendly environment. Kazakhstan has an increasingly business-friendly environment. The World Bank's Doing Business 2013 index ranks it 49th, up from 56th place in 2012. Overall through, Kazakhstan was named as one of the 10 economies improving the most across three or more areas of doing business between 2011 and 2012. And the World Bank has included Kazakhstan in its list of the world's 20 most attractive investment destinations (President decree, 2010). Kazakhstan in 2012 for the first time reached a historic high in the growth of innovation indicators. Positive trend is due to the successful results of the State program of Forced Industrial-Innovative Development of Kazakhstan for 2010-2014. According to the report "Global Competitiveness Report 2013-2014" of World Economic Forum, Kazakhstan has improved by one position to rank 50th this year out of 144 countries (Report, 2013). The country benefits from a flexible and efficient labor market (15th) and a stable economic environment (23rd) at a time when many countries are struggling in these areas. Kazakhstan's main challenges relate to its health care and primary education systems (97th), its lack of business sophistication (94th), and its low innovation (84th).

According to this report Kazakhstan approached the group of countries driven by innovation. Priority is given to innovative policies to encourage and promote business innovation, as well as the implementation of the technology transfer (Table 1).

Table 1. Countries/economies at stage development (Report, 2013)

Stage 1 Factor-driven (38 economies)	Transition from stage 1 to stage 2 (20 economies)	Stage 2 Efficiency -driven (31 economies)	Transition from stage 2 to stage 3 (22 economies)	Stage 3 Innovation-driven (37 economies)
Kyrgyz Republic India Ghana Bangladesh Yemen Mali andetc.	Algeria Armenia Azerbaijan Bolivia Kuwait Moldova Saudi Arabia Philippines and etc.	China Egypt Romania Thailand Tunisia Ukraine And etc.	Argentina Brazil Hungary Kazakhstan Latvia Malaysia RussianFederation Turkey	Australia Austria Germany Japan Korea, Rep. USA Norway andetc.

In the World Economic Forum GCI (Global Index of Competitiveness of the World Economic Forum), Kazakhstan joined the group of countries inspired by ‘management efficiency’ and ‘innovations’ along with such countries as Brazil, Malaysia, Turkey, Russia and others.

By 2016, GDP per capita in Kazakhstan is expected to reach US\$15000, compared with the current level of over US\$12000- and the country will be classified by the World Bank as “high income company”. All in all, these are significant achievements for a country that only became independent over 20 years ago.

Innovation policy in Kazakhstan plays a great role in Kazakhstan’s economic strategy. There is a clearly stated policy objective to move from a resource-based to a knowledge-based economy, using earnings from the oil, gas, and mineral sector to facilitate diversification and modernization (Kuchukova, 2010). A major challenge for innovation policies in Kazakhstan is the weak domestic demand for innovation, which reflects the structural characteristics of the economy and the dominance of extractive industries.

2. Investment Climate

The 2010-2014 state program on accelerated industrial and innovative development was established to promote stable and well-balanced economic growth. The program targets diversification of the economy and improved competitiveness by developing priority sectors and supporting industrial development (President Decree, 2010).

And industrialization map is the key mechanism used to implement the program. The Government and the business community work together to identify specific projects that meet the program’s requirements and plot them on the industrialization map. Currently the industrialization map includes 779 projects, which have a combined value of KT 11.2t (US\$74.7b). These projects will create approximately 220,000 jobs during their construction period and around 181,000 jobs when they are put into operation. Contribution of these projects to GDP in 2012 is 1.3% (Caputo *et al.*, 2002).

Results for the first three years (2010 to 2012) of the program:

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- Number of projects put into operation: 537
- Total investment: KZT 2.1t (US\$ 14b)
- Jobs created: 57,000.

The main programmatic document is the State Programm for Accelerated Industrial Innovative Development (SPAIID) 2010-2014, part of the Development Strategy 2020 that was approved in 2010 and covers 2010-2020. In addition to the SPAIID, the Development Strategy 2020 includes a Health Programme, Education Programme, Language Programme and others (Table 2). SPAIID has 13 sectoral programmes and ten functional programmes. It builds on earlier measures and includes regional development plans and sector plans.

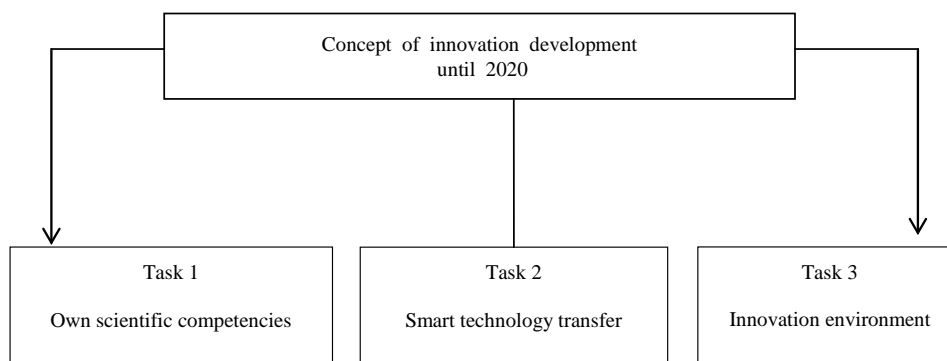
In accordance with the provisions of the SPAIID, the Ministry of Industry and New Technologies is in charge of elaborating the intersectoral plan for scientific-technological development until 2020. The priorities identified in this plan are reflected in the criteria used for access to different mechanisms of support (grants, consulting services, business incubation). Innovation grants in Kazakhstan are:

1. Grant for industrial research;
2. Grant for supporting of high-tech goods production at the initial stage of development;
3. Grant for patenting abroad or in regional patent organizations;
4. Grant for technology transfer;
5. Grant for technology commercialization;

In the frame of state program 'Performance 2020'

6. Grant for training of technical staff abroad;
7. Grant for attraction of highly qualified foreign professionals;
8. Grant for attraction of consulting, design and engineering organizations;
9. Grant for implementation of management and production technologies.

Table 2. Innovation development tasks until 2020 (Report, 2012)



Kazakhstan's vast natural resource base is its key asset, according to investors. The country ranks 12th in the world in terms of oil reserves and 19th for natural gas reserves, making it one of the world's top 15 oil-producing countries. At present, Kazakhstan is a leading global producer of coal, copper, zinc, bauxite, uranium and chrome ore.

The oil and gas sector has been the cornerstone of Kazakhstan's growth, with its share of the country's GDP growing steadily from 3.7% in 1997 to 14.7% in 2006, and up to 25,8% in 2011. Oil production stood at 79,2 million tons in 2011. The development of new oil fields and an increase in production capacity will enable it to produce 130 million tons of oil by 2020. Such progress would position Kazakhstan among the world's top five oil-producing nations. The country's natural gas production stood at 40 billion cubic meters in 2012, an increase of 2% from 2011. It aims to increase production to 110 billion cubic meters by 2030.

Similarly, the mining and metals industry plays an important role in Kazakhstan's economic growth, accounting for approximately 27% of Kazakhstan's GDP. The country has 30% of the world's reserves of chrome ores, 25% of manganese ores and 10% of iron ores. It is the 3rd-largest producer of titanium in the world, 7th in zinc production and 13th among global iron ore producers. With only 10%-15% of Kazakhstan's explored reserves currently in operation, its metals and mining industry has huge potential for further growth. In 2010, the Government included the mining sector in the state program on accelerated industrial and innovative development. Manufacturing activity in Kazakhstan is concentrated on oil and gas, chemicals, metals, equipment and tools, and construction material. Recently, there has been a shift in this trend. Competitive labour costs and improving business environment, along with a rising domestic market, have encouraged a number of global companies to set up manufacturing projects in the automotive, chemicals, pharmaceuticals, and defense and steel sectors.

Investors continue to perceive Kazakhstan as a treasure trove of natural resources, while they also value some knowledge-based, high-value add sectors that hold considerable promise. The Kazakhstan Government remains committed to reducing the country's dependence on extractive industries and developing a more balanced, knowledge-driven and investor-friendly economy. It continues to improve the competitiveness and productivity of priority sectors, such as agriculture and agro-processing; construction and construction materials; oil refining and support services; metallurgy; chemicals and pharmaceuticals; transportation; automotive; telecommunication; biotechnology; and alternative energy.

The country's competitive geographical location at the junction of Asia, Europe and the Middle East enables access to the rapidly growing markets of Russia, India and China, creating unique opportunities for investors and local companies.

During the period from 1993 to December 30, 2010 in Kazakhstan's economy attracted 126.6 billion U.S. dollars of foreign direct investment. According to statistics of the National Bank of Kazakhstan, the structure of involvement of investors in the economy of Kazakhstan for the period is as follows: Netherlands -27.1 billion dollars (21.8 % of total investments), the U.S. - 20, 3 billion dollars (16.1 %), United Kingdom - \$ 10.4 billion (8.2%), France – 7,4 billion (5.9%), Virgin Islands - \$ 6.7 billion (5.3%), Italy - 5300000000 U.S. (4.2%), China - \$ 5 billion (4%). In addition, large enough countries investing in the economy of Kazakhstan are Russia (3.7%), Canada (3.6%), Switzerland (3.3%) and South Korea (3.1%). Shares of other countries are not significant and are not more than 3%. Total number of countries that have invested in the economy of Kazakhstan exceeds the list in more than 116 countries.

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In the context of the current global conditions, Kazakhstan's stable macroeconomic, political and social environment, coupled with its rapid growth comparative safety and good returns on investment. According to the World Economic Forum's Global Competitiveness Report 2012-2013 ranks Kazakhstan's macroeconomic stability 16th out of 144 economies (Table 3).

Table 3. Kazakhstan's rating on macroeconomic environment (Report, 2013)

Macroeconomic environment	Kazakhstan's rating	Score
2012-13	16	6.1
2011-12	18	5.9
2010-11	26	5.3
2009-10	59	4.7

Source: The Global Competitiveness Report 2012-2013, WEF

To unlock its growth potential, Kazakhstan must do more to make international investors aware of its strengths. To bring about sustainable and balanced growth, it is critical for the Government of Kazakhstan to reduce its reliance on the oils and gas sector.

Kazakhstan has made considerable progress towards the establishment of a market economy and the provision of an attractive climate for foreign investment. During the decade, Kazakhstan has ranked among the countries attracting the most investment per capita globally. Macroeconomic stability and growth potential contribute to investors' confidence (Alzhanova, 2013). Despite the global financial crisis resulting in a noticeable slowdown, the Kazakh economy bounced back relatively quickly, growing by 7.5% in 2011. In 2008-2009, during a severe economic crisis, Kazakhstan still managed to attract 39,3 billion \$ in foreign direct investment. As of June 2012, foreign investors had invested a total of 150 billion dollars in Kazakhstan, primarily in the oil and gas sector.

3. Economic Mechanisms of Transition to Green Economy

The green economy is the economy covering a package of measures on resource-saving. Need of development of green economy is caused by a global problem of resource-saving and global strategic planning. In our opinion, today the "green" tendency of Kazakhstan is timely, it wasn't late, also as well as it didn't outstrip.

The 90th years of last century many domestic enterprises were created and developed more often on the principles of the quantitative criteria which basis it was probably put since a planned economy. Steady growth of economy of 1997-2007 indulged the domestic enterprises and also not strongly stimulated to production efficiency. The state measures of support of domestic producers were provided by 10-30 percentage bonus, competitive advantage before the import production. However in the conditions of development of economic integration of Kazakhstan there is a question sharply before the domestic enterprises about increasing of competitive advantages and prevalence of qualitative criteria. In this regard in economy of Kazakhstan ripened a global question of efficiency in all its forms, including resource-saving (Program, 2010). Increase of relevance of resource-saving causes timeliness of a "green" tendency in Kazakhstan and such tendency wasn't late and didn't outstrip. Till today the world market of green technologies

was in search and wasn't completely created, that is couldn't offer production providing criterion the price quality. And under such circumstances expense of the domestic enterprises by expensive green technologies wasn't justified. Till today introduction of green technologies continues to remain capital-intensive actions. However such European programs as "1 euros = 1 Watt" promote availability and a wide circulation of green technologies.

For the last years in Kazakhstan it is accepted a number of measures for increase of energy efficiency and to resource-saving. We passed from "heat regulation by a window leaf" to heat regulation by modern automated thermal points, thereby completely refused the Soviet elevators on a heat supply. Modern automated thermal points allow to regulate heat giving depending on temperature on the street, and also by smaller giving of heat on sunny side, by smaller giving of heat on average floors.

At the domestic enterprises the international ISO 18001, 50001 standards and others are taking root. The enterprises which have introduced system of power management on the ISO 50001 standard have an objective opportunity to reduce costs for consumption of energy resources and to reduce emissions of carbon dioxide in environment.

The ISO 50001:2011 standard is System energy management being a fundamental base for creation of effective and modern power management on industrial, trade, both other enterprises and the organizations.

And most important is an announcement the winner of competition of the city Astana venue EXPO-2017 with subject Green economy – Energy of the future. It is known that the main subject EXPO-2017 "Energy of the Future" which includes New power strategy of energy saving and the energy efficiency, aimed at reduction of power consumption by 10% by 2015 and 25% by 2020 and development of alternative power engineering and renewables.

For successful transition to green economy it is necessary to study the best successful practices of other countries and to develop the economic mechanisms considering local conditions of development of a market segment, in this regard, we consider necessary to conduct work on the following three directions:

- 1) Studying, accumulation, filtration and adaptation of progressive ideas;
- 2) Development of system and motivation of the competitive market;
- 3) Assistance in commercialization of projects and stimulation of the Kazakhstan contents.

In the first direction for studying and accumulation of progressive ideas it is necessary to organize a continuous information stream with professionals of this market segment. Here can be effective – visit by the interested government bodies and business structures of foreign thematic exhibitions, the international conferences and round tables. By means of such actions Kazakhstan will be able to declare itself as about the serious potential consumer of green technologies who in the conditions of world financial fluctuations could cause interest in the European and American producers. Considering that in 2017 Kazakhstan has to show to the world community no successful application, but successful development of green technologies therefore already now we have to be aimed for the best of the best. Therefore at this stage the state accredited laboratories which could certify foreign production on compliance to quality and possibilities of application in

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climatic conditions of Kazakhstan and the more so severe climatic conditions of the city Astana and by that to carry out function of a filtration are necessary for Kazakhstan and to render assistance, to make recommendations about production adaptation. That is Kazakhstan has to receive science waste, and the advanced innovative products.

All of us understand that it is possible to reach the most effective development of the market only by means of market mechanisms, that is by creation and motivation of the competitive market at which there will be a huge number of sellers and buyers. In this case the market will choose effective projects itself and to cut less effective offers, and also will be promoted increase of green culture, improvement of quality and decrease in market cost, that is by increase of consumer ability. In this direction it is effective measures of motivation as consumers, and sellers.

The motivation of consumers can be carried out with the help:

- organizations of the prize-winning competitive nominations "Best Green Hotel", "Best Green Restaurant", etc.;
- granting possibility of realization of excessively developed energy in city networks;
- at the first stage compensation of part of expenses of the consumer by the state by application of the differentiated tariff for using energy from city networks. Thus the priority purpose has to remain - increase of green culture, and the state has to define accurately production list, which cost the state will partially compensate for avoidance of mass penetration on the market of irrelevant production. It will be possible only production of a domestic production;
- similar to Europe to buildings of a class of energy efficiency and depending on a class to differentiate assignment of a tariff for energy consumption from city networks;

At the first stage it was possible in a directive way to start applying green technologies on social objects and the large industrial enterprises for stimulation of suppliers and competition development.

Many offered technologies aren't effective today from the point of view of payback, but in our opinion as this direction anyway has to develop, the state has to take the first step, that is finance pilot projects. And further at development of the competitive market the market already will regulate the prices itself, and the prices will fall as a result of a dumping of competitors, and then green technologies become effective and paid back.

Learning a leading experience of other countries is not the only thing necessary for successful transition to green economy, but elaboration of economic mechanisms, which would take into account local conditions of market segment development. In regard to this it is necessary to work in the three following directions:

- Exploration, accumulation, filtering and adaptation of leading ideas;
- Development of the system and motivation of competitive market;
- Assistance in commercialization of projects and stimulation of Kazakhstan content.

Within the first direction, in order to study and accumulate advanced ideas it is necessary to organize continuous information stream with the professionals of this market segment. On the current stage Kazakhstan needs accredited state laboratories, which could

certify foreign production on conformity with quality and possibility to be used in climate conditions of Kazakhstan, and, by this, create foremost innovative goods.

The most effective market development can be achieved only with the help of market mechanisms, i.e. through creation and motivation of competitive market with huge number of buyers and sellers. In this case the market will choose efficient projects and reject less efficient suggestions itself, as well as promote an increase of green culture, quality improvement and lowering of market value, which means a rise of purchasing power. In this direction motivation measures towards both consumers and sellers will be effective.

Today numerous technologies suggested are not effective from payback point of view, but, we think, as this direction has to develop anyway, the government has to make a first step, in particular, has to finance pilot projects. Further, by development of a competitive market, the market will regulate prices itself, and prices will become lower as a result of rivals dumping, and green technologies will become effective and payback.

Green technologies payback issue has to be considered from to perspectives:

First, green technologies introduction costs have to be compared with economization from minimizing of expenditures on expansion of electrical and heat stations. Mass introduction of green technologies will decrease a necessity in capital-intensive reconstruction of heat-electrical and steam stations, and saved meanings can be used to buyers rewarding.

Second, it is necessary to consider the coefficient of efficiency of land use for lands, which are not used for agriculture. Thus not intensively inhabited desert and semiarid lands of Kazakhstan could be effectively utilized as solar farms. In this case capital expenditure could be compensated by an increase of the coefficient of efficiency of land use.

At successful realization of objectives before us there will be a question sharply about the Kazakhstan contents, therefore by the third direction it is determined by us - assistance in commercialization of projects and stimulation of the Kazakhstan contents. Here the state has to give support by soft loans, tax and other investment preferences. In present conditions of the Customs union the customs duties which can stimulate leading foreign producers who work to open the productions in the territory of the Republic of Kazakhstan.

Conclusion

For Kazakhstan it is essential not only to focus on industrial innovation, but also to complement them with suitable innovative business models (i.e., a combination of technological innovation and business innovation). Current investors are much more aware of the country's environment and are willing to explore further possibilities in the market. Conversely, Kazakhstan needs to change the widely held perceptions of potential new investors. Most seem not to have Kazakhstan on their investment radar or remain unaware of the country's attractive features, locations and sectors that present opportunities for growth. To overcome this motivation, it is essential that the Kazakhstan Government intensifies its efforts to communicate the country's potential to the rest of the world. The future attractiveness of Kazakhstan remains central to the Government's efforts to diversify its economy, reduce regional disparity, and improve the innovation and entrepreneurial

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climate. Even in a challenging global environment, the message can get through that Kazakhstan is building a solid framework for moving up the value chain and is developing a welcoming business culture that is conducive to innovation and growth. Kazakhstan's government acknowledges the need to diversify its economy, and is promoting initiatives and policies to improve knowledge-based industries so that they become more competitive.

Kazakhstan has the opportunity and potential to improve its capacity to innovate, and join the world leaders in innovation. Towards achieving this, Kazakhstan should ensure the effectiveness and coherence of all the constituent elements of the National Innovation system. Ensuring the market economy with a dynamic innovation capacity requires not only sound government policies and tools, but also private sector initiatives. Being a young market economy, Kazakhstan has strong potential, and should give special attention to effective partnership between public and private sector for generating an environment conducive to a functional knowledge-based economy. In order to move up the value chain and ease dependence on natural resources, Kazakhstan should develop and enhance the competitiveness of its knowledge-based and non-extractive sectors. With input from the corporate sector, the Government should better define and identify clusters that are competitive. It can work with private sector players and strategic foreign partners that have the requisite knowledge-intensive technology and know-how.

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SUSTAINABLE DEVELOPMENT OF INNOVATIONS IN KAZAKHSTAN: ON THE WAY TO A GREEN ECONOMY

Rezime: Kazahstanska privreda se naglo razvila u prethodnoj deceniji, postigavši jednu od najbržih stopa rasta u regionu. Kazahstan postaje ključni deo “Novog puta svile” koji povezuje Istok sa Evropom, Turskom i srednjim istokom. U radu se analiziraju nacionalni sistemi inovacija, institucionalni okvir inovacione politike i stanje nauke, tehnologije i inovacija u Republici Kazahstan. Kao zemlja sa obilnim prirodnim resursima, Kazahstan se i dalje suočava sa izazovima u transformaciji ka ekonomiji zasnovanoj na znanju. Strateški pravac Kazahstana ka industrijski inovativnom razvoju obezbeđuje neophodne uslove za izradu i implementaciju novih naučnih ideja i tehnologija. Strategija razvoja Kazahstana do 2050. godine zajedno sa dokumentima kao Strateški razvojni plan do 2020. godine, ili Nacionalni plan industrijsko-inovativnog razvoja Kazahstana za period 2010-2014. godine obezbeđuje regularne, neophodne uslove koji podržavaju razvoj istraživanja, tehnologija i inovacija u Kazahstanu.

Ključne reči: zelene ekonomije, tržišni mehanizmi, inovaciona politika, industrijsko-inovativni razvojni program, tehnologija, ekonomski rast, nacionalni inovacioni sistem, održivi razvoj.