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Green Economy - Innovation-Based Development of Kazakhstan

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Abstract

Problem Statement: The stable growth and the shift to a green economy are two of the greatest challenges of our time. **Purpose of Study:** Formation of suggestions and recommendations for their implementation into the model of the National Strategy of Kazakhstan Sustainable Development **Methods:** Analysis of the Green economy concepts; analysis of international and State programs possibilities; country technical potential of renewable resources and energy sources assessment. **Conclusions and Recommendations:** The State initiatives such as transition to the Green Economy, formulation of the National Strategy for Sustainable Development, the Green Bridge Program and holding the International Specialized Exhibition EXPO – 2017 obviously will become the most significant steps towards the new ways of development for Kazakhstan.

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1. Introduction

Green economy being a new branch of the economic science developing during the last years has multiple interpretations. Thus, it could be defined as the branch in the economic science established during the last decades according to which the economy is a dependent component of natural environment where it exists as a part thereof. Conception of the Green economy includes ideas of many other branches of economic science and philosophy such as postmodernism, ecological economy and the environmental economy, antoglobalism, theory of international relations and many others. However, the most capacious, brief and precise definition is probably the following: UNEP (United Nations Environment Program): “The green economy is the economy which improves the welfare of people and strengthen the social equity in parallel with significant reduction of ecological and ecological resources risks”.

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The abovementioned definitions do not contain such understanding as sustainable development the concept of which was adopted during the World Summit of the States' Heads and Governments in 1992 in Rio-de-Janeiro. It is assumed that establishment of the green economy without building a sustainable development in the region, state and within interstate area is ineffective and even impossible. As per the UN experts' report "The Transition to a Green Economy: Benefits, Challenges and Risks from a Sustainable Development Perspective" the green economy concept should be considered together with wider conception of the sustainable development [1].

Practically speaking the green economy is the economy where the growth of the people's welfare and employment increase are provided owing to the state and social investments ensuring reduction of emissions and environmental pollution and stimulating effective use of energy and resources as well as preventing from any harm to biodiversity and ecosystem.

Thus, the Summit Rio+20 was intended to not only reduce hydrocarbon and other emissions it also helped to define a new way for growth, the way ensuring sustainable use of natural resources and effective economy.

In business environment the green economy attitude is of high attention. Financial funds, venture capital, governments of leading countries, businessmen and consumers are building the green economy already. Investments in energy effective technologies and natural infrastructures already pay back.

Base of the green economy or green technology (cleantech or greentech) such as new technologies or business-models offers to the investors and buyers a competitive profit together with global issues solutions. Clean technologies help to solve ecological issues through use of new innovative approaches also by changing the products, technologies and consumers' behavior significantly. Clean technologies are stimulated by purchasers' preferences and therefore, are quite successful on the markets with positive financial results.

The clean technologies market by reducing significantly or eliminating any negative impact on the environment is represented by a wide range of goods, services, processes that ensure high productivity with reduced expenses as well as more efficient and responsible natural resources use.

There are 11 segments as follows:

1. Power generation: wind, solar, hydro/marine, biofuel, geothermal power etc.
2. Power storage: fuel cells, improved batteries, hybrid systems.
3. Power infrastructure: management, transfer
4. Power efficiency: illumination in the buildings, glasses etc.
5. Transportation: transport means, logistics, structure, fuel.
6. Water and sewage: water treatment, water protection, waste water treatment.
7. Air and environment: purification/safety, emissions control, monitoring/compliance, trade and compensation.
8. Materials: nano, bio, chemical etc.
9. Production/Industry: improved packaging, monitoring and control etc.
10. Agriculture: natural pesticides, land management, aquaculture etc.
11. Recycling and wastes: wastes management and recycling

2. Problems and opportunities

Currently global market of green products and services makes \$546 billion.

The Cleantech forecasts a market share of clean technologies to be \$2 trillion by the end of 2020.

Kazakhstan has a distinct understanding of the state management assuming that promotion of the green economy is the main way and the only one in maintaining a sustainable development. Moreover, historically Kazakhstan's major ecological problems are those that other states never faced before.

In particular, Semipalatinsk nuclear polygone that was closed by the efforts of the people's movement Nevada – Semipalatinsk and the President's decree but the consequences and effect of nuclear tests still exist even now. In addition there are plenty of industrial wastes – over 23 billion ton, where 9 billion ton of anthropogenic mineral formations are the heritage from old Soviet industrial enterprises' activities that are to be disposed somehow, too.

It also includes water problems because Kazakhstan is highly dependent on border water sources. Therefore, there is a whole complex of ecological issues that are still to be resolved.

Experts and ecologists alarm us about the global climate change consequences such as lack of water, drought, desertification that might happen within 20-30 years in Kazakhstan. Development of the green economy would allow reducing these risks and threats. However, the state and economy should develop anyway. Therefore the green economy is to be developed and not only to prevent the expected ecological changes. It is not just an idea, it is a

clear action plan and moreover, there is no other way to solve these kinds of problems. The main purpose of the green economy is to increase welfare and quality of life of the population.

During the last years the ideology of sustainable development was transformed into the regional management strategies, programs and methodologies tested in many states. Concepts are based on globally recognized conceptions and principles of sustainable development reflecting the world experience in implementation of the XXI century Agenda (adopted on the UN Sustainable Development Conference in Rio-de-Janeiro on June 3-14 of 1992): Ecological expanse; Biotic regulation and economic value of ecosystems; Human and social capital; Intersectoral, regional and global partnership; Strategic evaluation and planning; Corporate and integrated management; Well-balanced personal and public interests and other.

Indicators of sustainable development are the following: level of unemployment, migration of the population, demography, GDP per capita, indicators of development of industry and agriculture, ecology and health of the population.

Establishment of the National Strategy for Sustainable Development will allow the movement towards the model designed to reduce poverty, improve life quality of the population, ensure ecological safety and to create the conditions for further long-term transformation of the state economy, i.e. model integrates the green economy and the sustainable development by defining a **new way for development of Kazakhstan**. However, connecting economic, social, institutional and ecological aspects of the sustainable development is the main condition to ensure national security as well as the main aspect in protecting vital interests of the state and the public.

It should be noticed that the model of the National Strategy for Sustainable Development serves as a foundation for long-term Strategy Kazakhstan 2050 proposed by the President of the state in his address in December of 2012. It's no coincidence that this strategy is distinguished by its approach to solving economic tasks which includes totality of enforced material potency build-up and improved quality of life in Kazakhstan [2].

Serious support for establishment of the model of the National Strategy for Sustainable Development will be the Green Bridge Program. It was developed subject to requirements to integrate the efforts of regional processes in the field of environmental protection and development under coordination of the UN ESCATO and EEC to preserve ecosystems common to Eurasian region and to strengthen internal potential under the framework of the Zhasyl Damu (Green Development) National Program and also proposed as Astana initiative on the 6-th Conference of Ministers on Environment and Development of Asian and Pacific Region.

The Green Bridge Program's tools are the projects designed to create the conditions and infrastructure to expand an access to green technologies and investments. The Green Bridge Program implementation may involve the projects in the field of renewable power generation, production of clean products that are to be applied also during construction of social facilities. In Kazakhstan unlike in Europe 90% of land resources are not contaminated by chemicals and pesticides, therefore, there is still a possibility for cultivating clean products and foodstuff of high value and demand on the International markets. With the help of such projects as the Green Bridge our framers will get help in producing valuable products and in purchase of new technologies.

The Green Bridge Program is offered by our state as effective tool accomplishing the existing programs with the elements like relation with real economy sector, investments and technologies, green economy methods by developing new green business branches and creating long-term and stable basis through the state and international political reforms, creation of legal, economic and institutional conditions.

Global Energy-Ecological Strategy ensuring scientific approach and assessment of energy welfare for all the states and regions with no damage to globally significant ecosystems and no anthropogenic impact on the climate change processes is significant supplement to the Green Bridge Program. The Program is designed to implement the green investment projects of the states with any political structure and level of economic development.

Alike other programs this Partnership Program provides active participation of the state as well business sector along with international, nongovernmental and scientific organizations. Relation with a real sector of economy and business projects may lead to multiplicative and mutually beneficial effect and give the partners the possibilities to apply their tools developed earlier in practice.

The Partnership Green Bridge Program has no donor states and beneficiaries. The movement goes in two directions: one is the ecologically clean products and the other is the green products produced according to green technologies. Leading states should provide on gratis the turn-key advanced green technologies packages. In turn the developing countries should provide favorable conditions for attracting the green technologies and investments. All the states-partners provide free markets for the green goods produced according to the green technologies.

It should be noted that the Program activities are extensive: three-quarter of the world population, over 1 billion

of poverty, almost 90% of greenhouse gas emissions, significant ecosystems and energy and natural resources. That means that the new technologies possibilities, best and successful experience, creation and producing the new green products and service markets are quite significant.

However, the Program ensures the maintenance and restoration of interregional globally significant ecosystems and imparts regional nature to green business projects.

4. EXPO – 2017

Significant importance for development of Kazakhstan has also the International Specialized Exhibition EXPO – 2017 venue selected on November 22, 2012 by secret vote on the 152-nd General Assembly of the International Exhibitions Bureau in Paris. Potential of renewable power and natural gas in Kazakhstan is quite high. The state is able to generate 20% and 40% of power from natural gas by 2030 and 2050 relevantly. Commercial proven reserves of gas in Kazakhstan - 3,5 trillion m³ and this puts the state in a range of ten leaders in the world. Possible energy saving during its generation and transportation phases reaches 40%, in the consumption sector it is up to 50–60%. Increased energy efficiency and energy saving is the most effective and less capital-intensive direction in solving the energy-related issues.

Technical potential of renewable resources and energy sources based on wind energy is equal approximately to 1 trillion kW/h per year, and it is 25 times higher than volume of consumption of all fuel and energy resources of the state. Potential of solar energy is equal to 1 trillion kW/h. Preferable areas for installing solar energy facilities are the following: Aral area and South Regions of Kazakhstan suffering from lack of electricity. Total potential of small HPS' (unit capacity bellow 10 MW) is 8 billion kW/h. Summary hydraulic potential of Kazakhstan including big HPS' is equal to 62 billion kW/h per year where the economically efficient generation is equal to 27 billion kW/h [3].

The Government of the state assuming that the EXPO – 2017 is a big chance to support the state in development of the green economy, submitted to the President for approval the Order № 436 on establishment of the state commission for preparation and conduction of the International Specialized Exhibition EXPO-2017 with the following topic: Future Energy, on November 26, 2012.

According to official data the area and general features of the exhibition project are being defined. During 5 years it is planned to build on approximately 113 ha where a Pavilion Complex will take 25 ha and the rest 88 ha will be used for the auxiliary infrastructure such as parking, restaurants, hotels etc. Exhibition area is included in perspective plan of the capital and the options for using the area after the exhibition are already defined. This place is called "EXPO-2017 City". The area will be equipped with cameras helping 2 billion internet-users throughout the world to see and watch the event (Digital EXPO project). Also the area will be under free access Wi-Fi cover. After the International Exhibition it is planned to build a Museum of Science and Scientific Research Center to be given to the Nazarbayev University in future.

It is assumed that over 100 states of the world and approximately 10 International Organizations will participate in the EXPO-2017. According to optimistic forecasts the exhibition will be able to host 5 mln guests during the whole period of the event. However, it will be required to solve the issues related to improvement of the transport infrastructure quality.

Astana set a challenge by defining the EXPO-2017 as a prestigious event which may influence positively on political image of the state. However, no major economic effect is expected so far. Currently a rational approach to attraction and implementation of innovative projects for qualitative changes in energy sector including the development of alternative energy sources and new methods of transportation is being developed.

5. Conclusions and Recommendations

Thus, these state initiatives such as transition to the Green Economy, formulation of the National Strategy for Sustainable Development, Green Bridge Program and holding the International Specialized Exhibition EXPO – 2017 obviously will become the most significant steps towards the **new ways of development for Kazakhstan**.

Also, the experts consider that inclusion in the model of the National Strategy for Sustainable Development of the following will be useful:

- ensure personnel, skills and knowledge sufficiency including proper training of engineering and technical and management personnel;

To achieve this it is necessary to take the steps in the following directions:

- training of the sufficient number of engineers in the field of environmental protection and resources efficiency;
- industrial training and retraining of the existing engineers, representatives of government agencies and farmers.

One more important condition is to train the public in the field of ecoculture and environmental protection. To do so the following is required:

- build a responsible and thrifty attitude to energy water and other natural resources use, adopt a habit of separate collection of domestic wastes for further recycling purposes;
- include the comprehensive topics related to the environmental protection in curriculums of educational organizations. That would help to educate the young generation to treat the natural resources with due care and it will ensure additional benefit;
- undertake an extended communicational campaign and educational programs to increase the awareness of the population in the field of resources use and in ecological issues. Such measures should ensure change of the behavioral model of the population relating to use of heating and cooling, waste disposal and water use systems.
- launch the targeted support of the R&D ensuring establishment of ecologically clean technologies and investments for their implementation;
- modify the ecological taxation system assuming changing the focus from taxes to the workforce, taxes on everything what is harmful for the environment;
- change the state purchase policies that are to support production of ecologically clean products and production methods matching the principles of sustainable development;
- provide the state investments in the infrastructure in accordance with the sustainable development principles – construction of energy effective structures, building public transport means, renewable energy and natural capital;
- introduce the pricing in accordance with the sustainable development principles including waive of ineffective subsidies, evaluation of natural resources in monetary terms.

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