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FORMATION OF "GREEN" ECONOMY MODEL IN THE ALTAI REPUBLIC

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Abstract

The study is aimed at the creation of a model of green economy at the level of one of the constituent entities of the Russian Federation - the Altai Republic. The relevance of the study is determined by the need to move to new economic models, the most preferable of which is "green economy" model. The article discusses the principles that must be followed during the formation of a model of "green" regional economy. The interpretation of an author of the model is proposed, which takes into account the investment process, employment, innovation and other elements. The model involves the development and implementation of a number of mechanisms. The proposed mechanisms should be based on the most rational use of the region's natural resource potential. The development of mechanisms will contribute to the development of the so-called "green" industries, many of which are present in the economy of the Altai Republic.

Keywords: Altai, agriculture, ecotourism, green economy.

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1. Introduction

The relevance of the study is determined by the need to move to new economic models, the most preferable of which is "green economy" model. According to the definition of UNEP, a green economy is seen as an economy that enhances well-being of people and ensures social justice, significantly reducing risks to the environment and its degradation (Zomonova, 2016).

The existing economic structure is characterized by such problems as: environmental pollution, exhaustive resource use, lack of economic incentives for the complete processing of production and consumption waste, poverty etc.

Despite the nearly thirty-year history of the declaration of the need for a green economy, in practice the experience of implementing the principles of a green economy is extremely small. In this regard, it is necessary to test green economy model in individual regions (Gur'eva, 2017). This will make it possible to identify objective economic, social, and institutional problems that impede the implementation of green economy model.

The research is aimed at the creation of a model of green economy through the search for the necessary mechanisms that can implement the principles of green economy at the level of the subject of the Russian Federation. This work will help identify the problems of the introduction of a green economy at the regional level and change the system of state regulation. The object of research is the potential for the introduction of a model of green economy of the Altai Republic. This is a region with a pronounced mountain landscape, which creates certain conditions for business activities.

2. Principles and Models of "Green" Economy

The important traits of green economy are as follows: efficient use of natural resources; preservation and increase of natural capital; pollution reduction; low carbon emissions; prevention of the loss of ecosystem services and biodiversity; growth in income and employment.

The green economy model takes into account three areas of activity – social, economic and environmental, each of them creates the conditions for the development of the other two (Doval & Negulescu, 2014). The interdependence of the three areas of activity is the basis for the formation of a model of green economy. The most clearly constituent models are presented in the form of a diagram in Figure 1.

As it can be seen from the diagram shown in Figure 1, first of all, the introduction of a model of green economy in the region will ensure sustainable economic growth through the creation of new types of economic activity related to the implementation of green innovations and technologies. Moreover, within the framework of green economy model, the greening process can affect various areas of activity in the region: agriculture, tourism, transport, energy, construction (Rakovskaya, Kudryashova, & Yagunova, 2015; Gabriela-Cornelia, Iudith, & Alexandru, 2015). The important direction of the influence of "green" economy model on regional development is the possibility of developing resource saving processes and ensuring resource efficiency, which will save and increase the natural capital of region (Potravnyj, Novoselov, & Gengut, 2016). This circumstance is relevant in modern conditions, when there is a depletion of natural resources, their inefficient use, the negative impact of production processes on

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the state and quality of natural resources, the high nature intensity of economy, etc. For many countries and regions the important problems are energy supply, the negative impact of energy on the environment etc. The model of "green" economy involves the development of alternative types of energy, the development of low-carbon energy, the development of principles energy efficiency (Rusu, 2012).

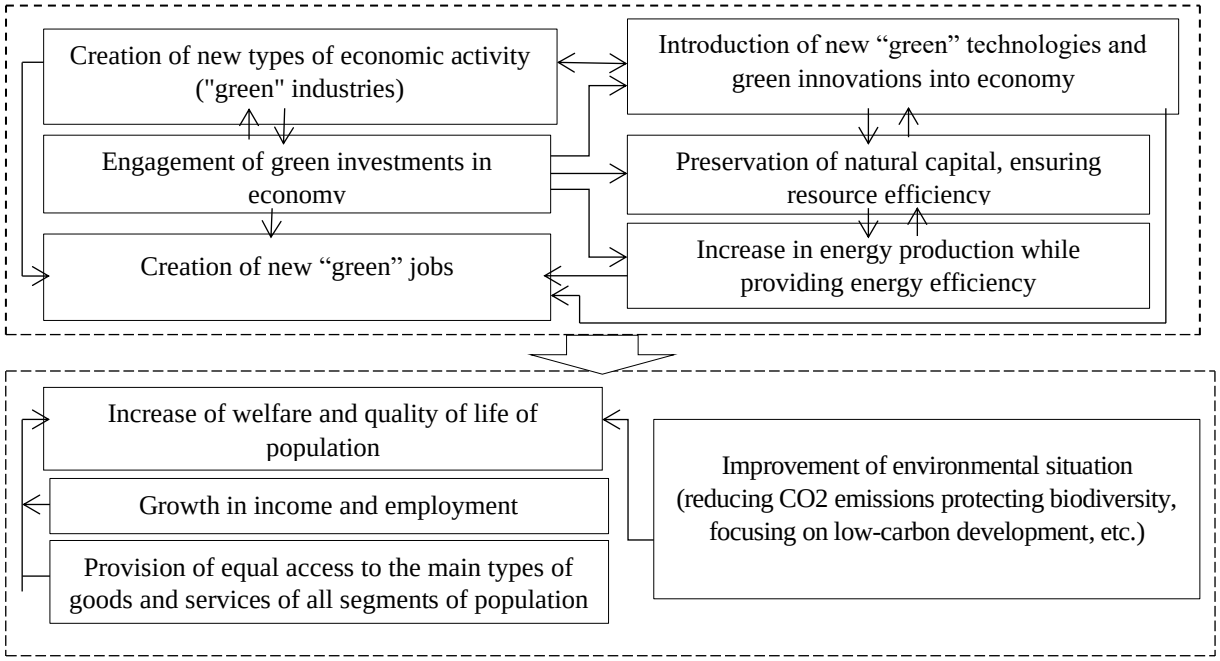

Figure 01. Main directions of influence of green economy model on the socio-economic and environmental development of the region

Another area of influence of green economy model on regional development is the provision of conditions for creating new green jobs, which in turn determines the effective employment of regional population, the growth of income and, in general, the quality of life of regional population.

Taking into account the main directions of the influence of green economy on socio-economic and environmental development of the region, the introduction and development of the model of green economy in the region should be based on the following basic principles:

- the principle of prevention, which means that during the introduction and implementation of green economy model, a preventive approach to social and environmental impacts must be ensured;
- the principle of comprehensiveness involves ensuring the interconnection of all the components of green economy model in the process of regional development;
- the principle of efficiency and effectiveness determines that the implementation and development of green economy should ensure the achievement of goals and objectives by ensuring socio-economic regional development with minimization of environmental risks and implementation of the process of resource conservation;
- the principle of unity means the coordination of actions of all the subjects of regional economy participating in the process of the introduction of the model of green economy;

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- the principle of informativity determines the transparency of information in social, environmental and economic spheres of the region, which is necessary for making managerial decisions during the introduction of green economy model.

3. Conditions for the Implementation of Green Economy Model in the Altai Republic

The Altai Republic is located in the southeast of Western Siberia, in the very center of Eurasia. The number of residents is 211 thousand people. The Republic of Altai, according to socio-economic indicators, refers to regions with a low level of economic development. Thus, in the ranking of 2017 of the socio-economic situation of the constituent entities of the Russian Federation, the Altai Republic ranks the 82th place among 85 constituent entities of the Russian Federation (in 2016 it ranked the 83rd and in 2015 it ranked the 82nd)

The Altai Republic has a rich natural resource capital represented by mineral resources, land, water and biological resources. The mineral resource base of the Altai Republic is represented by precious, ferrous, non-ferrous and rare metals, mining non-metallic raw materials (specularite, wollastonite, nephrite), combustible minerals (hard and brown coal), as well as common minerals, including underground drinking water.

The problems of the use of the mineral resource base of the republic are as follows:

- the lag in the growth of proven reserves from the volumes of their repayment in the bowels due to the lack of funds for the reproduction of the mineral base;
- the understudy of the geological and technological features of mineral deposits;
- the lack of assessments of the geological and economic profitability and environmental consequences of mineral development in modern conditions;
- the majority of mineral reserves are located in the territories not disturbed by economic activity, and the large-scale development of them and their involvement in economic turnover may negatively affect environmental safety.

The important component of the natural capital of the Altai Republic is its land resources. The most valuable part of the land potential is agricultural land, the total area of which at the beginning of 2018 was 1791.1 thousand hectares or 19.3 % of the total land fund of the republic. The main problems of using the land potential of the republic include:

- a significant part of the agricultural land of the Altai Republic is negatively affected by modern geological processes. Currently, 104.2 thousand ha of agricultural land are affected by various types of erosion in the region. At the same time, the fragmentation of farmland of the republic negatively affects the possibility of anti-erosion treatment of soils, increasing their fertility, plant protection, drainage and reclamation, etc.
- At present, overgrazing remains the main factor changing the appearance of natural vegetation cover in separate, most intensively used territories, located, as a rule, near settlements of the Republic;
- the sown area is 98.3 thousand ha of the entire area of arable land assigned to agricultural organizations and peasant farms, and the remaining area of arable land is used for unproductive

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hayfields and pastures. The area of arable land of about 2.7 thousand hectares is currently overgrown with shrubs and low forests.

One of the most important components of the natural capital of the Altai Republic is its water resources. The hydrographic network of the republic has more than 20 thousand watercourses with a length of more than 60 thousand km and about 7 thousand lakes with a total area of more than 700 km^2. The largest rivers are the Katun and Biya, which form the Ob River – one of the largest rivers in Siberia. The largest lake Teletskoye with a water mirror area of 230.8 km^2 and a maximum depth of 325 meters.

The main problems of using water resources of the republic are as follows:

- A feature of recent years of water withdrawal is that only a third have water licenses and only a few of them report for water withdrawal among the numerous tourism industry enterprises operating water bodies (wells, springs);
- The main environmental problem of water disposal is the low degree of sewerage in the settlements of the republic. Currently, a centralized sewage system operates only in the central part of the city of Gorno-Altaysk.

The important place in the structure of natural capital is occupied by forest resources. The total forest area of the forest fund of the Republic of Altai at the beginning of 2017 amounted to 5060.3 thousand ha, including the area covered by forest of 3693.2 thousand ha. The main causes of weakening of forest stands are insect damage, forest diseases, forest fires and adverse weather conditions; non-pathogenic and anthropogenic factors affect it to a lesser extent.

4. Purpose of the Study

One of the acute problems of the socio-economic development of the Republic is energy supply. The territory of the Altai Republic is included in the power system of the Altai Territory and the Altai Republic, which is part of the Unified Energy System of Siberia.

Due to the long extent, with a relatively small consumption of electric energy per capita, the capital productivity of the electric grid of the Republic remains extremely low. In physical terms, the capital productivity of the networks (as the supply ratio to the length of the networks) for 2017 amounted to only 65.8 thousand kWh / km per year. Accordingly, taking into account a very high level of losses in the networks, when almost a fifth of the electricity supplied to the network at the borders of the territory does not reach consumers, the cost of transport and distribution of electric energy is very high. As a result, more than 2/3 of the costs that make up the final tariffs for electricity for consumers are accounted to its transmission, distribution and sales within the Altai Republic.

5. Research Methods

Until 2015, the Republic of Altai did not generate electricity on its territory, with the exception of ten small diesel power plants, wind farms and two small hydro power plants with a total capacity of 1.3 MW, designed for local power supply of facilities in remote and distant settlements in mountainous areas of the republic, not connected to the general energy system of the Altai Republic. Solar power plants in the Altai Republic were put into operation in 2015–2017. At the end of 2018, two Kosh-Agach solar

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power plants with a capacity of 5 MW each, one Ust-Kansk solar power station with a capacity of 5 MW, one Ongudai solar power station with a capacity of 5 MW and Maiminsky solar power station with a capacity of 20 MW were available in the Altai Republic.

In the course of the transition to a model of a green economy, the important prerequisite is the characterization of the environmental situation in the region. In general, the environmental situation in the Republic is recognized as rather favorable (Bobylev, 2012). Thus, according to environmental and economic ratings, the region is steadily among the ten most prosperous. However, a number of environmental problems can be distinguished:

- the increase in the level of air pollution in the republic by automobile transport, which, along with boiler houses, is becoming one of the main sources of pollution;
- tourism infrastructure objects (camp sites, recreation centers etc.) present a specific environmental impact factor of the Altai Republic, which are characterized by environmental violations such as illegal logging and damage to trees and shrubs, non-compliance with requirements for the protection of water bodies from pollution and depletion, non-compliance with requirements in the field of waste management and in the field of land legislation;
- The increase in the volume of municipal waste in the absence of waste processing facilities in the region.

The above mentioned features and problems in the socio-economic and environmental development of the Altai Republic necessitate the introduction of a number of mechanisms of the transition of a region to green economy model.

6. Mechanisms of “Green” Economy

For the development of priority “green” sectors of economy, effective mechanisms and tools must be identified. Within the framework of “green” economy model at the regional level, all the mechanisms can be grouped both by purpose and by priority directions of “green” economy. Thus, the main types of mechanisms of the “green” economy include:

1. The mechanism of legal regulation of relations in the sphere of green economy is a unified system of legal means with the help of which a comprehensive regulatory impact on relations in the sphere of the green economy is carried out. The main tools of this mechanism include legal norms, enforcement acts, contracts, legal obligations, legal liability, etc.

2. The economic mechanism is an interconnected set of financial and economic forms and methods of influencing economic relations and processes that take shape in green economy model. The main tools of this mechanism include pricing and tariff setting tools, a system of taxes and fees, including “green” (environmental) taxes and fees, government benefits (subsidies, tax benefits, loans, etc.), investments, including green investments, and other tools.

3. The institutional mechanism is a system of relationships between participants in green economy model, based on formalized rules (restrictions), conditions and features of their interaction, aimed at the provision of the corresponding processes in green economy model. Institutional tools are aimed at the organizational processes of the transition of regional economy to the model of “green” economy.

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Within the framework of "green" economy model at the regional level, all mechanisms can be grouped into priority areas of "green" economy:

- the mechanisms for rational land use in agriculture and forestry;
- the mechanisms for the processing and disposal of waste;
- the mechanisms to stimulate the development of alternative energy;
- the mechanisms for rational consumption of resources and provision of resource efficiency.

The development of mechanisms will necessarily require the selection of industry priorities in the development of the regional economy (Jeločnik, Ion, Jovanović, & Popescu, 2015; Lyzhin, 2016). The main sectors of the regional economy that contribute to the greening of the entire economy include:

1. Green agriculture (organic agriculture).
2. Forestry.
3. Sustainable water management.
4. Fishing industry.
5. Alternative energy.
6. Tourism development.
7. Waste management and disposal.

The effectiveness of the developed mechanisms for the development of "green economy" at the regional level is determined by the degree of achievement of the results, subject to the development of priority "green" sectors of economy. The effectiveness of the model is characterized by socio-economic and environmental consequences of its implementation, taking into account the effectiveness of economic, institutional and legal mechanisms to ensure the transition to a green economy.

7. Conclusion

For the regions similar to the Altai Republic, namely, having significant environmental potential for national economy, but with a low level of economic development, the transition to "green economy" may become a strategic priority. For this reason, it is necessary to form a model of green economy at the regional level, taking into account the socio-economic and environmental conditions of development. The implementation of the model will require the development of mechanisms that should take into account the fact that there are a number of industries having the greatest opportunities for green growth and the creation of green jobs. The interdependence of the development of these industries creates a solid foundation for the formation of an effective, rather than a declared, model of green economy.

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