Modern American Journal of Business, Economics, and Entrepreneurship
ISSN (E): 3067-7203
Volume 01, Issue 07, October, 2025
Website: usajournals.org

ISSUES OF SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT OF THE REGION IN THE CHANGING ENVIRONMENTAL CONDITIONS OF KARAKALPAKSTAN

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Abstract
The article analyzes the issues of creating a sustainable socio-economic development model in the changing environmental conditions of the Republic of Karakalpakstan. Based on the analysis of sustainable development indicators, regional characteristics and international experiences, the conceptual basis of the adaptive model is described.

Introduction

In the current global environmental changes and the changing environmental conditions in the Aral Sea region, the issue of sustainable development in the Republic of Karakalpakstan is of urgent importance. Effective use of natural resources, ensuring environmental safety and improving the standard of living of the population will determine the future future course of region.

The Karakalpakstan region is the most ecologically sensitive region of Uzbekistan. A city of Chiang Kersha, a city dedicated to the Cathedral of St. Mary's Catholic Church. Also, due to climate change, there is a need to develop adaptive strategies in the agricultural and industrial sectors. The model of sustainable socio-economic development aims to combine economic growth and environmental sustainability in such conditions.

We know that the theory of sustainable development aims to ensure the balance between society, the economy and nature. According to this concept, economic growth will only be achieved if it is combined with the economical use of resources and environmental protection.

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A system of Sustainable Development Indicators (SDI) recognized by UNCSD (UN Commission for Sustainable Development), OECD (Organisation for Economic Co-operation and Development) and Eurostat (European Statistical Agency) has been developed.

The following indicators are proposed to assess the model of sustainable development in these indicators

For example, the UNCSD indicator system – developed since 1996 and subsequently adapted to the UN Sustainable Development Goals (SDGs) 2030.

UNCSD has 4 main blocks and an indicator group:

Economic development – growth in GDP, employment, capital, energy consumption, production efficiency.

Social development – literacy, healthy life expectancy, access to drinking water and education.

Environmental sustainability – biodiversity, desertification indicators, waste, water resources management, atmospheric pollution.

Institutional stability – economic policy stability, rule of law, openness to information, and civic participation.

UNCSD recommended a total of 58 indicators. They are integrated with SDG indicators.

The OECD has developed a system of indicators to assess sustainable development within the framework of the Green Growth and Sustainable Development Framework.

The main structure of OECD indicators:

Environmental efficiency – CO_2 emissions, energy intensity, share of renewable energy, level of waste recycling.

Cost-effectiveness – the ratio of GDP to resource expenditure (eco-efficiency), energy consumption / production, investment structure.

Social welfare – an index of unemployment, income inequality, level of education, and a healthy life.

Innovation and management – research expenditures (% of GDP), share of the digital economy, environmental policy index.

The OECD indicators are mainly aimed at assessing the link between green growth, resource efficiency and prosperity.

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Eurostat (EU Indicators for Sustainable Development) is the official statistics agency of the EU, which developed the EU SDI Framework, which is based on SDG indicators.

The 10 main areas and sample indicators of Eurostat are:

1. Poverty Eradication - Proportion of the population below the poverty line (%).
2. Health and well-being - life expectancy, healthy life years, health expenditures.
3. Quality education - education coverage, dropout rate at age 18.
4. Gender equality - the level of employment of women, wage inequality.
5. Clean energy – share of renewable energy, energy efficiency.
6. Sustainable economic growth - GDP growth, unemployment, innovation spending.
7. Infrastructure and industry – digital infrastructure coverage, industrial CO_2 emissions.
8. Reduction of uneven inequality - income coefficient (Gini), social integration.
9. Eco-sustainable cities – air pollution, waste recycling, public transport.
10. Fight against climate change – CO_2 emissions, green investments, energy consumption.

A common feature of global indicators of sustainable development is their integral, integrated and adaptive nature. In the conditions of Karakalpakstan, it is necessary to localize these indicators. For this, it is desirable to use indicators such as water resources efficiency, desertification indicators, economic diversification, unemployment and migration levels, and local environmental innovations.

For Karakalpakstan, using these systems, it is possible to develop a system of national adaptive indicators. For example, theoretical approaches such as "adaptive systems", "green economy" and "investment in human capital" play an important role in modeling development processes in Karakalpakstan.

Based on the above system of indicators of sustainable development, it is possible to reflect the conceptual structure of the model for the Karakalpakstan region.

The model of sustainable development in the changing environmental conditions of Karakalpakstan consists of the following main blocks:

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1. Environmental Stability Block - rational use of water resources, salinity reduction, implementation of green energy projects.
2. Social stability block - protection of public health, improving the quality of education, creating new jobs.
3. Block of economic diversification - development of agro-clusters, processing industry and ecotourism.
4. Innovative and institutional block - integration of science, technology and digital economy into the economic system.
5. Investment block - attracting international grants and private investment.

At the same time, the shares and levels of each block are important:

- Environmental: water savings, desertification index, share of renewable energy sources.
- Social: unemployment rate, education coverage, population health index.
- Economic: growth rate of gross regional product, income from tourism, share of exports.
- Innovation: the number of research projects, share of digital services, level of university-industry cooperation.

In Karakalpakstan, we put forward the following recommendations for sustainable socio-economic development of the region in the changing environmental conditions:

1. Establishment of a regional "Green Strategy Center" and through it preparation of environmental analysis and forecasts.
2. Introduction of a system of environmental taxes and grants - development of specific mechanisms for water, waste and plastics.
3. Implement "green entrepreneurship" programs for women and youth.
4. Formation of ethno-eco-tourism zones and integration of national heritage with economic activities.
5. Establish small stations for the widespread use of solar and wind energy.

In conclusion , sustainable development indicators are important in regional policy-making. Sustainable economic growth and social welfare can be achieved by adapting them in the ecological conditions of Karakalpakstan. The proposed model is based on the harmonization of local resources and international standards.

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Creating a model of sustainable socio-economic development in the changing environmental conditions of Karakalpakstan is a system that ensures not only economic, but also social and environmental stability. This model requires the active participation of regional politics, science and society. It is based on the principles of rational use of resources, investment in human capital and innovation-driven development.

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