Article

Criteria for Assessing The Effectiveness of Rural Development

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Abstract: Assessing the effectiveness of socio-economic development in rural regional systems is a promising approach. This allows for a comprehensive understanding of the complex interaction of economic and social processes, leading to more rational decision-making. This study examined data on indicators influencing the effectiveness of socio-economic development in rural areas. The functional structure of modeling the socio-economic development of rural areas, as well as the development of a block model of the structure, were also considered. Agricultural production was analyzed using linear regression models.

Keywords: Socio-economic Development, Block Model, Agricultural Sector Growth, Indicators

1. Introduction

The issue of social recreation of the town is the biggest of the issues confronting the republic and has political, social, and financial importance. This issue is particularly important within the setting of the consistent development of the provincial populace. Nowadays, the town is essentially slacking behind the city in its social improvement, and the conclusion is one - it is fundamental to discover successful ways and implies of viable arrangement to the issue of in a general sense moving forward the standard of living of the provincial populace. Only in this case will it be necessary to address the issues of further development of the region's agricultural economy. This paper investigate, to a certain degree, serves to fulfill the errands sketched out within the Declare of the President of the Republic of Uzbekistan No. UP-5853 dated October 23, 2019, Determination No. 4889 of the President of the Republic of Uzbekistan of 11.XI.2020 outlines issues of further development of the agricultural economy of the regions [1], [2], [3].

2. Materials and Methods

Criteria for assessing the socio-economic development of territories at different levels: the "quality of the population" indicator can be proposed as a criterion for assessing the development of the territory while maintaining the natural environment and production, as well as the level of material wealth. To do this, it is necessary to calculate the coefficient of the quality level of the population living in the area. The coefficient is calculated using the following formula:

$$K_H = 1 - \frac{\Delta N}{N}, \quad (1)$$

where N is the natural population growth rate in the current year.

ΔN is the number of individuals with physiological defects in natural growth.

If population growth is high, i.e. K_H (t) →1, then the average multiplication coefficient can be used to measure population quality, i.e.:

$$J_{sr}(t) = \frac{1}{N}\sum J_j(t), \quad (2)$$

where $J_j(t)$ is the intellectual coefficient of population growth belonging to the j-gender group of the population [4].

The dynamics of changes in the population quality coefficient and the average intelligence coefficient over time indicate the direction of growth and allow for timely analysis of causes and the adoption of necessary decisions, i.e., managing population growth [46/1]. The essence of the proposed criterion is that the quantity of the population and its quality should be maintained at a level that does not lead to a deterioration in the indicators of the natural habitat of humans. To implement this model, it is necessary to create a population, a natural environment, and production systems. Local and regional systems should be an integral part of such systems, as these systems are interconnected in the exchange of goods and reproduction. Based on this, a regional development model is being built. Its main condition is the preservation of the natural environment and ensuring the necessary quality of life in this area [5].

The effective implementation of these suggestions inherently necessitates creating a model system for computations grounded in a set of indicators that grant access to socio-economic information influencing the quality of life and economic development. In this context, we aimed to organize the components of territorial systems to create models of socio-economic processes [6]. Consequently, the current regions were categorized into extensive, moderate, and minor rural zones. Extensive territories encompass the areas of regions or areas (2-3 regions), while medium territories consist of administrative districts, ranges, or microzones. Small rural areas are the territories of one or more farms, regardless of the form of ownership, where different types of production of an agricultural complex or other industries are concentrated. In a few cases, little provincial territories coincide with rustic committee zones.

3. Results

Considering this, to represent the socio-economic growth of rural regional systems, the research created a schematic illustration of the connections among the natural environment, production, and the population. (Fig.1) [7].
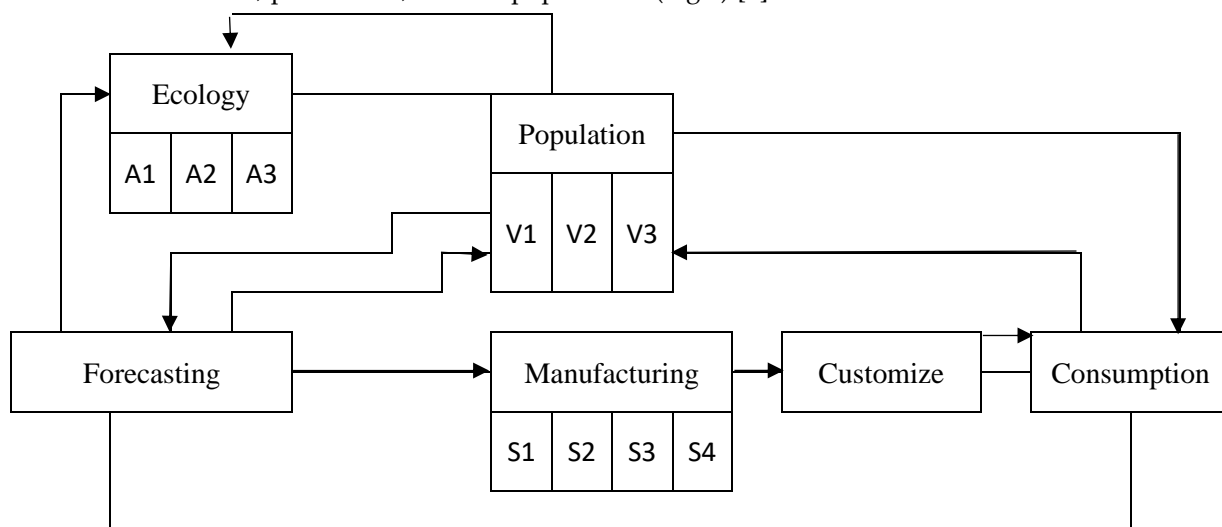
Figure 1. Socio-economic development of territorial systems a diagram of the interconnectedness of the supporting elements.

In any region, there are three interconnected systems - nature, population, and production systems. Population, as a part of nature, interacts with elements of nature and is both the producer and consumer of products [6]

According to statistics, in 2022, the population of the Republic of Uzbekistan exceeded 36.0 million people, of which 17.6 million were urban residents and 18.8 million were rural residents. The ratio of urban and rural population has stabilized since 1980 (49:51). At the same time, there is an absolute increase in them.

Life expectancy in Uzbekistan in 2022 is estimated to be 75.6 years, including 73.1 years for men and 78.0 years for women. Compared to 2010, women's life expectancy increased by 2.9 years in 2022 and men's by 2.5 years (Table 1).

Table 1. Life expectancy in Uzbekistan (in years, years).

	2010	2012	2013	2014	2015	2016	2017	2018	2019	2022
Total	73,0	73,1	73,1	73,1	73,6	73,8	73,7	71,6	75,1	75,6
Women	75,1	75,5	75,8	75,8	76,0	76,2	76,1	77,0	77,4	78,0
Men	70,6	70,7	71,1	71,1	71,2	71,4	71,3	72,3	72,8	73,1
Urban population	73,1	73,2	73,6	73,5	74,0	74,5	74,4	75,4	75,8	76,2
Women	75,7	76,0	76,0	76,2	76,8	77,1	77,1	78,0	78,3	78,6
Men	70,4	70,4	71,0	70,8	71,3	71,8	71,7	72,6	73,2	73,8
Rural population	72,7	72,8	73,1	73,2	73,0	73,0	72,8	73,8	74,2	74,9
Women	74,5	74,7	75,1	75,2	75,0	74,9	74,8	75,7	76,2	77,0
Men	71,0	71,0	71,3	71,3	71,0	71,1	71,0	71,9	72,4	72,7

Source: Compiled by the author based on data from the State Committee on Statistics.

The data in Table 1 shows that in the near future, the quantitative growth of the population of the Republic of Uzbekistan should be accompanied by "qualitative" growth. To do this, it is necessary to create a system for studying and developing demographic processes in the regions. This system measures population size (V_1), their age (V_2), gender age structure (V_3), and so on. They allow for forecasting the population's need for labor resources, food, housing, goods, and services, as well as researching their income and expenses [8].

A distinctive feature of Uzbekistan's natural environment is its hot climate, which also involves the use of irrigation. At the same time, many cultivated crops are heat-loving. Therefore, agricultural development depends on three factors: the availability of irrigated land (A_1), water resources (A_2), and the duration of the growing season (A_3) [9], [10].

The land area of the Republic of Uzbekistan is 44,832.4 thousand hectares. Of these, 26,233.3 thousand hectares are used by agricultural enterprises. In 2021, the republic consumed 52.4 cubic kilometers of clean water, of which 44.4 cubic kilometers were used for irrigation and water supply to agriculture [11], [12], [13].

The area of irrigated arable land in Karakalpakstan is 418.8 thousand hectares. In the Khojeli district, 21.2 thousand hectares of agricultural land, or 48.8%, is irrigated land, of which 19.7 thousand hectares are arable land.

As noted above, the further development of agriculture and, consequently, the provision of food, material and social well-being of the population depend on the state and volume of land and water resources [14]. Therefore, they should remain suitable for the normal life and activities of people living in this area. Human impact on the natural environment should not exceed its capabilities, i.e., it is necessary to prevent heavy burdens, especially in rural areas, with industrial enterprises, unorganized agriculture, population migration, shortages of water resources, etc. All of this requires finding optimal

ways to utilize natural resources that present generations pass on to future generations without wasting their value [15]. To do this, it is necessary to create systems for monitoring the condition of irrigated lands (measuring groundwater levels, soil humus reserves), regulating wastewater and controlling irrigation regimes, and measuring FAP. All these measures simultaneously contribute to increasing the yield of fields, saving costs per unit of output, and improving their quality.

Therefore, in the context of cotton fiber production stabilization, it is necessary to transition to an optimal structure of agro-industrial production with the organization of deep processing and the production of finished goods. This, in turn, leads to the solution of problems related to ensuring employment for the rural population and ensuring family income. Based on this, in the production and consumption system, the production of final products per person (C_1), land units (C_2), material resources (C_3), as well as the income of the population and families (C_4) should be measured and managed.

Table 2. Analysis of key economic growth indicators of the Republics of Uzbekistan and Karakalpakstan, as well as the Khojeli district.

Networks	January-December 2022					
	Republic of Uzbekistan		Republic of Karakalpakstan		Khojeli District	
	Billion soums	Growth rate, %	Billion soums	Growth rate, %	Billion soums	Growth rate, %
Industry	367078,9	100,7	14144,8	104,1	483,7	108,5
Consumer goods	119159,8	103,6	2818,3	110,0	218,9	107,2
Agriculture, forestry and fisheries	224265,9	103,0	10443,7	102,5	528,6	105,0
Fixed capital investments	202000,1	91,8	8167,4	80,4	200,2	112,0
Construction works	87823,8	109,1	3785,9	101,5	224,1	107,0
Retail turnover	194843,5	103,2	6604,6	102,4	667,1	101,7
Total services	218853,5	102,3	6508,9	105,9	302,4	105,2
Export, million USD	15127,7	86,6	363,4	84,3	3,9	145,5
Imports, million USD	21171,5	87,2	176,3	65,6	2,5	31,8

Source: data from the Department of Statistics of Khodjeli district.

4. Discussion

Analysis of the socio-economic development of the Khojeli district shows that the Khojeli district occupies a significant place in the economy of the Republic of Karakalpakstan. The district was established in 1927. Currently, 124,300 people live in it. A total of 7 villages, 18 mahallas and 64 rural settlements operate in the district.

According to the Department of Statistics of the Khojeli District, the level of product production in the region last year was particularly high compared to the Republics of Uzbekistan and Karakalpakstan (Table 1.2). At the same time, imports are decreasing (31.8%), while exports of products are increasing (145.2%).

5. Conclusion

The experience of developed foreign countries shows that industry plays a significant role in the country's socio-economic development. From this perspective, analyzing the volume of industrial production produced in the Republic of Karakalpakstan and districts by comparing inter-district and district indicators with city indicators, tracking the dynamics of the volume of industrial production per capita, is of great importance in determining the priority tasks and growth points of the regions. In turn, in January-December 2022, industrial production in the Khojeli district amounted to 483.5 billion soums, this figure amounted to 3.4% of the total industrial production of the

Republic of Karakalpakstan. We can observe that the volume of industrial production produced in the district amounted to 3,891.4 thousand soums per capita, or 108.1% compared to the corresponding period of 2021.

Also, the production of consumer goods in the district amounted to 204.2 billion soums, which constituted 7.2% of the total production of consumer goods in the Republic of Karakalpakstan. We can observe that the production of consumer goods per capita in the district amounted to 1,653.0 thousand soums, or 101.3% compared to the corresponding period last year.

Thus, considering the points mentioned, the nature-population-production system is influenced by a multitude of factors that dictate the condition of the natural environment, the production level of material goods, and the income and expenditures of the population. Examining and predicting these factors entails carrying out multiple tasks aimed at creating strategies for the socio-economic advancement of regional systems.

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