



ECONOMIC ANALYSIS OF THE DEVELOPMENT OF THE INDUSTRY NETWORK IN THE REPUBLIC OF KARAKALPAKSTAN

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ABSTRACT

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This article analyzes the current state and development trends of the industrial sector of the Republic of Karakalpakstan using an economic and statistical approach. The dynamics of industrial production, structural changes, the utilization of mineral and raw material resources, innovative development, and the efficiency of industrial enterprises are assessed in an integrated manner. The analysis synthesizes the scientific findings of local economists who have studied the industrial sector of Karakalpakstan and develops scientific and practical recommendations aimed at diversifying the region's industry, expanding value-added chains, and increasing innovation-driven economic efficiency.

KEYWORDS: Industry, Economic Analysis, Industrial Production, Innovation, Mineral and Raw Material Resources, Diversification, Econometric Analysis, Industrial Efficiency.

The results of the economic-statistical analysis of the state of development and dynamics of the industrial network of the Republic of Karakalpakstan show that the strategic importance of industry in the economy of the region is increasing. Changes in the volume of industrial production, the formation of the structure of industries, the level of use of mineral resources, investment and innovative activity, and the efficiency of enterprises are manifested as interrelated factors.

The analysis shows that although the use of natural resource potential plays an important role in the republic's industry, in order to ensure the stability of economic growth, it is necessary to gradually transition from raw material-oriented production to industries creating high added value. In particular, the formation of added value chains in the region through deep processing of mineral resources, expansion of production of finished and semi-finished products is an important direction of increasing industrial efficiency.

Existing differences in the industry structure of Karakalpakstan increase the need to diversify the region's industry. In this regard, the development of food, chemical, building materials, textile, pharmaceutical, machinery and other processing industries will serve to balance the industrial structure. In this case, the economic efficiency of the development of industries should be evaluated not only by the volume of production, but also by labor productivity, the return of fixed assets, the efficiency of investments, and the volume of added value.

Innovative activity is of particular importance in the future development of the industrial sector. The introduction of modern technologies, digitalization, and the use of resource- and energy-efficient production methods will increase the competitiveness of enterprises, as well as reduce product costs and increase labor productivity. Therefore, it is advisable to statistically monitor the innovative activity of industrial enterprises and assess its impact on production results using econometric methods.

The results of economic and statistical analysis show that it is not enough to assess industrial development solely by the growth of production volumes. Determining the true efficiency of regional industry requires a comprehensive assessment of indicators such as diversification of production by sectors, the level of return on investment, labor productivity, innovative activity, export potential, resource efficiency, and value added.

On this basis, it is possible to define deepening of industrial diversification, in-depth processing of mineral resources, expansion of production of high added value products, introduction of innovative technologies, effective direction of investments and increase of production of exportable industrial products as the priority directions of development of the industry of the Republic of Karakalpakstan.

In general, the sustainable development of the industrial sector of the Republic of Karakalpakstan requires the effective use of

existing resource potential, as well as the formation of an economic model based on innovation, diversification, technological modernization and added value creation. This approach serves as an important scientific and practical basis for increasing the competitiveness of regional industry, creating new jobs, strengthening investment attractiveness and ensuring the stability of regional economic growth. The role of the industrial sector in ensuring the sustainable economic development of regions is of particular importance. In particular, it is important to conduct a deep analysis of the economic foundations of industrial development in conditions where natural resource potential, production infrastructure and labor resources are not evenly distributed across regions. The issue of industrial development in the Republic of Karakalpakstan is not only related to increasing production volumes, but also to improving the territorial and sectoral structure, efficient use of resources, strengthening innovative activity and expanding the production of high value-added products.

The economic features of Karakalpakstan's industry have been deeply studied in a number of studies by local economists. In particular, K.R. Sariev[3] economic-statistical analysis of industrial enterprises, B.S. Kalmuratov[4] to the mechanisms of managing innovative development of industry, U.Kh. Eshimbetov[5] to improve the structure of industry based on effective use of mineral resources, A.Q. Bekbosinov [6] focused on the effectiveness of managing innovative development in industrial enterprises.

N.R. Tleuov's [7] DSc study in 2026 examined the methodology for optimal regulation of the development of the food industry using the example of the Republic of Karakalpakstan and the Khorezm region from the point of view of econometrics and statistics. These approaches show that industrial development should be assessed not only by production volume, but also by its structural, resource and innovative efficiency.

Economic-statistical analysis, dynamic series analysis, structural ratios, growth rates, comparative analysis and economic generalization methods were used in the research. The dynamics of the volume of industrial production was taken as the main result indicator, and the resource, investment, innovation and structural factors affecting it were evaluated from an economic point of view.

The average annual growth rate of industrial production can be estimated by the following formula:

$$\bar{T} = \sqrt{\frac{Y_n}{Y_0}} * 100 \quad (1)$$

here:

Y_0 is the volume of industrial production in the base year;

Y_n — volume of industrial production in the reporting year;

n is the period length.

This approach makes it possible to assess the long-term trend in industrial production independently of one-year changes. According to SIAT data of the National Statistics Committee of the Republic of Uzbekistan, the volume of industrial production in the Republic of Karakalpakstan amounted to 4,265.7 billion soums in 2016, reached 13,981.3 billion soums in 2020, 17,791.1 billion soums in 2023, and 29,094.0 billion soums in 2025[2].

Between 2016 and 2025, industrial production increased by almost **6.8 times**. According to estimates, the average annual growth rate in nominal terms during this period was approximately 23.8%. However, when interpreting this indicator as real industrial growth, it is necessary to take into account price factors. Therefore, the physical volume index is an important additional indicator in assessing industrial development.

In January-March 2026, enterprises of the Republic of Karakalpakstan produced industrial products worth 7,580.9 billion soums, and the physical volume index of industrial production was 107.4%. In January-June 2026, this indicator reached 107.5%. This indicates that the positive growth trend in industrial production is continuing.

At the same time, the growth of the industrial volume does not automatically mean that its economic efficiency has increased. Therefore, when assessing the industrial sector, it is advisable to use indicators such as labor productivity, return on investment, fund efficiency, level of localization, export potential, and value added, along with production volume.

The first important factor in the development of Karakalpakstan's industry is the effective use of mineral resources. U.Kh. Yeshimbetov's research[5] focused on improving the sectoral and territorial structure of industry, forming new industrial clusters, and utilizing the industrial potential of regions based on the development of local mineral resources. The OJSC data indicate that, based on these approaches, proposals have been developed to form clusters specializing in ferrous metallurgy and construction materials in the Karauzak district and the chemical industry in the Chimboy district.

Second important factor is innovative development. B.S. In the study of Kalmuratov [4]. industry innovative development management mechanism efficiency increase strategy work developed A.Q. And Bekbosinov [6]. industry in enterprises innovative development management efficiency Karakalpakstan Republic for example research reached So, the territory in the industry innovations current to do only technological renewal not, but management efficiency and enterprise of competitiveness important factor as assessment necessary.

Third factor — structural diversification. Industry one how many to the network too much outside connected to stay outside markets, raw materials prices and demand to changes relatively area of the economy sensitivity increases. Therefore for in Karakalpakstan raw material initial again work with without limitation, ready and high added valuable products work to release chain shaping to the goal suitable.

Fourth factor — econometric modeling and forecasting. N.R. A study by Tleuov [7]. industry networks optimal in order from econometric and statistical methods in comparison of use the importance shows. This point of view out of sight Karakalpakstan industry in management work to release to the extent impact making investment, labor resources, the main funds, innovative activity and export volume like factors many based on a factorial regression model assessment possible:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \quad (2)$$

this on the ground:

Y — industry product work to release volume;

X₁ — main to capital investments;

X₂ — labor resources;

X₃ — main funds value;

X₄ — export volume;

ε — in the model to account not received factors effect.

What is this model factor industry work to release the most strong impact showing quantitative assessment and prospective industry size forecasting possible gives.

Research results Karakalpakstan industry in development "resource → investment → innovation → re performance → added value → export" chain shaping the importance shows.

In our opinion, it is advisable to form an integrated industrial development index across regions to assess the effectiveness of industrial policy. It can include indicators of industrial production growth, labor productivity, investment activity, innovative activity, exports and added value. In this case, it is advisable to evaluate industrial enterprises not only by production volume, but also by resource efficiency, innovative activity and the ability to create added value.

Also, the location of processing enterprises in regions rich in mineral resources, the development of industrial clusters, and the improvement of transport and logistics infrastructure serve to reduce the territorial imbalance of the industry. Research conducted in our country on the building materials industry also found effective directions in the use of local raw materials, innovative clusters, approaches based on labor productivity, and econometric forecasting.

In short, Karakalpakstan In the Republic industry work to produce last in years noticeable growth to the trend owner in 2025 industry products work to release the volume is 29,094.0 billion soums reached of 2026 first in the middle industry work output physical volume 107.5 % of the index what did both positive dynamics continue what is being done shows [2].

However, it is not enough to assess industrial development solely by the growth of production volumes. The sustainability of a region's industry is determined by its structural diversification, resource efficiency, innovative activity, return on investment, labor productivity, and export potential.

As a result of the study, it was suggested that deep processing of local mineral raw materials, development of industrial clusters, introduction of innovative technologies, production of high value-added products, expansion of the type of exportable products and improvement of industrial policy based on econometric forecasting are the priority directions for the development of Karakalpakstan industry.

Thus, the future development efficiency of Karakalpakstan's industry depends not on a mechanical increase in production volumes, but on a qualitative transformation of industrial potential, strengthening cooperation between sectors, and expanding local value chains.

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