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PROSPECTS FOR THE UTILIZATION OF NATURAL MINERAL RESOURCES IN THE REPUBLIC OF KARAKALPAKSTAN

***Abstract:** The territory of the Republic of Karakalpakstan is known for its abundance of various mineral raw materials. These mineral resource reserves are noteworthy for their promising prospects. From the very first explorations conducted in these territories, large deposits of mineral wealth were discovered. These mineral resources are considered plentiful, both in terms of their variety and their geological reserves. According to their importance in the national economy and their areas of application, these mineral resources can be classified into fuel and energy, metallurgical, chemical, construction, and food-related categories.*

***Keywords:** natural resources, mineral resources, natural wealth, mining, construction, ore.*

INTRODUCTION

The main objective of this article is to further intensify the industrial use of mineral resources in the region by studying the geographical location, natural conditions, and natural resources of the Republic of Karakalpakstan.

- To identify the types and reserves of mineral raw materials located in the territory of the Republic of Karakalpakstan;
- to carry out the classification of mineral raw materials distributed throughout the territory of our republic;

Most types of mineral resources are located in the territory of the Republic of Karakalpakstan for the development of heavy industry sectors, especially mining, and the building materials industry. For example, the Tebinbulak titanium-magnetite ore deposit is considered a promising deposit. Based on sulfate-magnesium salt deposits, the production of sodium sulfate, table salt, and metallic

magnesium is possible. Ultimately, this will create opportunities for the widespread development of the chemical and metallurgical industries. The republic also has abundant mineral resources to organize the large-scale production of building materials. This opens up opportunities for organizing construction and installation work at a number of gas, oil, and other deposits discovered in the Ustyurt region. Thus, the discovery of various raw material resource reserves creates opportunities for the industrial development of Karakalpakstan

MAIN BODY

The project to build a mining and metallurgical complex based on the Tebinbulak deposit in the Karauzak district is highlighted as one of the promising measures. Raw material reserves of 1.1 billion tons have been identified in this deposit. According to preliminary estimates, it is planned to mine 33 million tons of ore per year to produce 1.5 million tons of iron

The mining and metallurgical complex will have a production capacity of 900 thousand tons of rebar, 225 thousand tons of wire, and 375 thousand tons of angles, channels, and other types of products per year. This will substitute a significant amount of imports and contribute to the sustainable development of the industry. It is expected to provide employment for over 3 thousand people here. It is planned to export 35 percent of the products.

The technological regulations have been developed for the entire technological process, from mining to the production of steel products. These technical documents define the optimal technological mode, the sequence of technological operations, the assurance of quality product output, safe operating conditions for production, and compliance with environmental protection requirements. Previously, it was noted that this project envisaged the use of buried/submerged technology, which stands out for not polluting the environment, unlike blast furnaces. Despite the low iron content in the ore, the selected technology envisages the extraction of vanadium slag as a high value-added product. The payback period of the project is 8 years.

The project involves the TÜV NORD GROUP — a major consulting and engineering company, “DMT Group” (Germany), the Montanuniversität Leoben (Austria), Ruhr University Bochum (Germany), SGA (Germany), K1MET (Austria), ARP (Austria), ALS (Ireland), as well as the business consultant ILF Consulting Engineers (Germany). To obtain an independent expert opinion on the technology adopted in the project, the TOMS Institute (Irkutsk, Russian Federation) conducted three-stage technological research on ore beneficiation from January to September 2020. The results reconfirmed the possibility of iron ore beneficiation with the production of a concentrate containing over 67% iron. The research was carried out on a mineral sample weighing 2.7 tons, selected by the international company “SRK Consulting” (Canada).

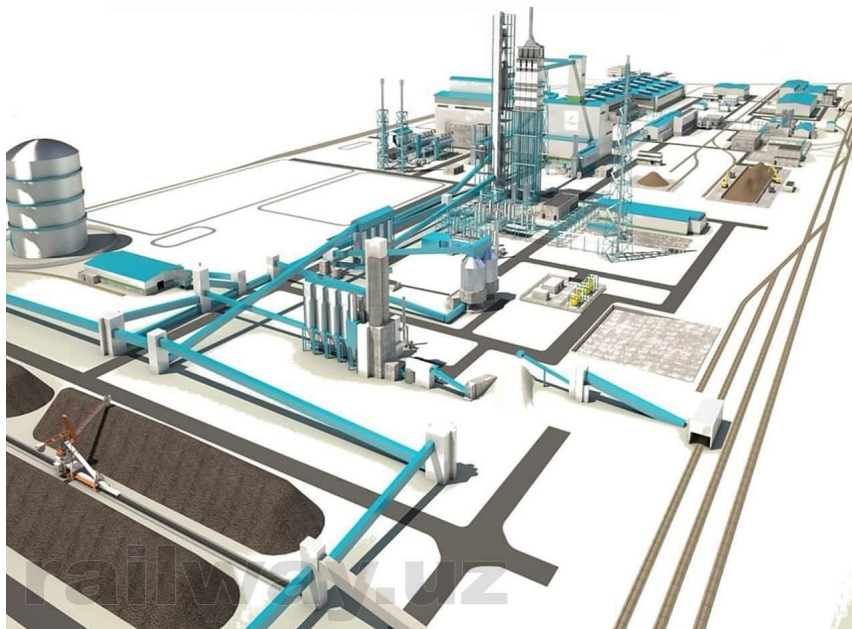


Figure 1. Investment project of the mining and metallurgical complex to be built on the basis of the Tebinbulak titanomagnetite ore deposit.

To implement this investment project, a deep study of initial data and a cost-benefit analysis were carried out. This allowed for the evaluation of the economic viability and feasibility of the project. Based on the results obtained, specialists developed a Bankable Feasibility Study (BFS) in accordance with international standards. In turn, this makes it possible to elaborate measures for attracting investments to implement the subsequent stages of this project's development.

Just as the Aral Sea previously supported our people, it continues to help us even after its environmental crisis. Oil and natural gas fields are being discovered in its dried-up aquatorium. According to geological survey data from Uzbekistan's 'Uzbekneftegaz', China's 'CNPC International', the Republic of Korea's 'KNOC', and Russia's 'Lukoil'—which are part of the 'Aral Sea Operating Company' multinational consortium established to explore oil and gas fields in Uzbekistan—it is estimated that the Uzbek section of the Aral aquatorium holds 2 billion tons of oil and 2 trillion cubic meters of natural gas reserves. This accounts for 31% of the oil and 40% of the gas reserves of all Central Asia

In the search for and extraction of oil and gas resources on the Ustyurt Plateau and in the Aral aquatorium, the National Holding Company 'Uzbekneftegaz' is collaborating with Russia's 'Gazprom' and 'Lukoil', China's 'CNPC', as well as South Korea's 'KNOC' and 'Kogas'. Based on recommendations from geologists, in collaboration with local specialists, well No. 5 was drilled to a depth of 4,305 meters to evaluate the oil and gas potential of the Lower Jurassic deposits in the area of the 'Lower Surgil' field, revealing several promising layers in the well section.

As a result of testing carried out in the depth interval of 4,100 to 4,305 meters (exceeding 200 meters), an industrial-scale flow of natural gas with a daily volume of 700,000 cubic meters was achieved. Furthermore, preparatory work has been launched to drill the next exploration well, No. 6, in the area of the 'Lower Surgil' field. This year, it is planned to organize operations across 16 wells in the Ustyurt region, complete over 47,000 meters of drilling, and ensure an increase in reserves by 10.0 billion cubic meters of natural gas and 300,000 tons of gas condensate by the end of the year.

CONCLUSION

One of the primary reasons for the richness of Karakalpakstan's territory in mineral resources is directly linked to its geological structure and the historical evolution of its relief. Construction materials are widely found in the Sultan Uvays,

Jumirtov, Porlitov, Kusxanatov, and Beltov hills, as well as on the Ustyurt Plateau and across the sandy dunes of the Kyzylkum Desert.

Our proposal is that, taking into account the richness of the territory of the Republic of Karakalpakstan in various mineral resources, the following should be regarded as a primary task: further accelerating large-scale geological mapping, geophysical and geological surveys, and drilling operations to increase the number of industrial enterprises in districts possessing mineral reserves; establishing a comprehensive service sector around them; transforming these districts into industrially developed hubs of our republic; providing employment and improving the living standards of the population of the Republic of Karakalpakstan living under environmental crisis conditions; and developing Karakalpakstan into one of the most industrially advanced regions of Uzbekistan. Furthermore, it envisages exporting the natural resources of Karakalpakstan and utilizing the generated revenue to launch new industrial sectors through the development of nanotechnologies and computer technologies.

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