

IMPROVING COST ACCOUNTING FOR GEOLOGICAL EXPLORATION WORKS IN UZBEKISTAN

Izbosarov Bakhodir Ergashevich - Researcher, Kimyo International University in

Tashkent, Republic of Uzbekistan.

Abstract: The article describes the specific features of cost accounting in geological exploration, the structure of cost classification therein, and the accounting procedure. Scientific proposals and practical recommendations for improving cost efficiency in the geological field are formulated.

Keywords: Geological exploration, costs, product cost, calculation, direct costs, fixed costs, variable costs.

Introduction.

Geological exploration works (GEW) differ from other industrial sectors by their high risk, uncertainty of outcomes, and capital intensity. These characteristics require special approaches in accounting. The specific features of geological exploration works-outcome uncertainty (risk), where the funds expended do not always lead to the discovery of mineral deposits-create complexity in recognizing costs as assets (capitalization) or as period expenses. The phased nature involves design, prospecting, evaluation, and exploration stages; each stage is treated as a separate accounting object. The long-term nature, where the period from deposit discovery to its exploitation can last for years, leads to a substantial balance of work in progress. Territorial dispersion and distance, with operations conducted far from the enterprise base in desert or mountainous areas, cause a high share of transport and logistics costs. Seasonality, where works in certain regions are conducted only at specific times of the year (e.g., spring-autumn), requires a specific procedure for allocating employee wages and equipment depreciation. From this perspective, organizing and improving cost accounting in the geological field is a relevant issue.

Literature Review.

The current National Accounting Standard provides the following definition of costs: "Fair presentation requires the faithful representation of the effects of transactions, events, and conditions in accordance with the definitions and recognition criteria for assets, liabilities, income, and expenses set out in the Conceptual Framework for the Preparation and Presentation of Financial Statements (registration number 3530, July 12, 2024)" [1].

Furthermore, various aspects of costs are regulated by the following standards:

NAS No. 1 ("Accounting Policy and Financial Reporting") establishes the general principles for recognizing and disclosing costs.

NAS No. 21 (Chart of Accounts) defines how costs are reflected in accounting entries (e.g., 9400 - "Period Expenses" or 9100 - "Cost of Goods Sold").

NAS No. 24 ("Accounting for Borrowing Costs") explains the procedure for capitalizing or expensing costs related to interest and loans.

In Russia, the fundamental definition of cost is provided in PBU 10/99, which is almost identical to the Uzbek standard. FSBU 14/2022 only regulates when costs related to intangible assets are recognized as an asset and when they are written off as an expense in the profit and loss statement [2].

In Kazakhstan, according to the National Financial Reporting Standard (NFRS/NSFO), costs are defined as: "Expenses are decreases in economic benefits during the reporting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity participants" [3].

In the legislation of the Republic of Uzbekistan, particularly in the fields of accounting and taxation, there are two distinct approaches to the concept of costs:

1. According to the National Accounting Standards (NAS), expenses are decreases in economic benefits during the reporting period in the form of outflows or depletions of assets or increases in liabilities. In this context, expenses reduce the company's equity, and cases related to the distribution of capital among founders (shareholders), such as dividend payments, are not considered expenses.

2. According to the Tax Code, for calculating income tax, expenses are divided into deductible and non-deductible types [4].

A. Karimov divides costs into two types: direct and indirect costs, also noting the particular significance of conditionally fixed costs [5]. L.P. Krasnova defines costs as: "Expenses are the decrease in economic benefits during the reporting period resulting from the outflow of assets (cash, other property) or the incurrence of liabilities, which leads to a reduction in the enterprise's capital" [6]. This definition mainly classifies costs into types such as production costs (forming the cost of goods) and period costs (related to sales and administration). This approach aligns with the definitions in international standards and the national accounting system.

Numerous scientific studies and research works have been conducted in our republic on the methodology of cost accounting, analysis, and auditing. Some of these have approached costs as intellectual capital, while other economists have studied them by sector and industry.

M.K. Pardaev stated: "The cost items that form the cost of products (work, services), their dependence on production volume, and methods for evaluating their efficiency are described" [7]. According to A. Ibragimov's opinion, audit is not only a search for errors but also a process of providing reliable information about economic activities and confirming the efficiency of resource utilization.

N. Karimov's scientific research (especially in the context of banks and large enterprises) highlights the role of internal audit in risk management. He characterizes internal audit as a primary tool for preventing internal waste and strengthening internal control [8].

In the research conducted by A.Z. Avlokulov, he emphasized "the necessity of reclassifying income and expenses based not only on the National Accounting Standards (NAS) but also on the requirements of International Financial Reporting Standards (IFRS)"

and substantiated the importance of "applying a risk-based approach and systematic control methods in organizing the audit of financial results" [9].

In his monograph titled "Theoretical and Practical Issues of Cost Accounting and Analysis," A.I. Alikulov proposes a systematic grouping of costs based on their economic content, role in production, and method of calculation. Here, he demonstrates the division of costs into direct and indirect, as well as the methodological basis for including them in the cost of products. A.I. Alikulov primarily aims to show scientifically substantiated ways to increase enterprise profit through cost optimization and cost reduction [10].

Methodology.

General economic and logical methods were used when writing the article: systems analysis, induction and deduction, comparative analysis; accounting and financial analysis methods: capitalization, "Successful Efforts," impairment test; special audit and control methods: risk-based audit, sampling observation; digital and technological methods: GIS monitoring (Geographic Information Systems), Big Data and forecasting, as well as Blockchain technology.

Results and Discussion.

The history of organizing geological exploration works (GEW) in Uzbekistan and the formation of its normative-legal foundations are divided into three main periods:

1. Early geological study and the Soviet Union period (1920-1991), during which systematic geological research began on the territory of Uzbekistan.
2. The early years of independence and the legal foundation (1991-2016), after independence, the creation of the sector's national normative-legal base began.
3. Modern reforms and the new stage (from 2017 to the present), digitization of the sector and transition to market economy principles are being implemented.

In our republic, the University of Geological Sciences was established in 2020. In 2021, by Resolution PP-5083, JSC "Uzbek Geology Exploration" was established, separating the functions of state management and economic operations. In 2024, the new edition of the Law "On Subsoil" (LRU-987) was adopted, which envisages increasing investment attractiveness and transitioning to international (JORC) standards. Reforms in the geological sector of Central Asian states show that regional states have recently placed special emphasis on improving the investment climate to develop the mineral resource base. In particular, the Republic of Kazakhstan aims to increase mineral extraction by 40 percent by 2029. Incentives such as VAT exemption for financing geological exploration works and amortizing 25 percent of costs have been introduced, with plans to conduct geological and geophysical exploration over an area of 400,000 square kilometers. The Kyrgyz Republic lifted the moratorium on the prospecting and extraction of uranium and thorium deposits in 2024. International cooperation: within the framework of the "MINEX Central Asia 2024" forum held in Bishkek, investment projects with major companies like SRK Consulting and Metso were launched. Attention is increasing in the region on the exploration for critical minerals (lithium, cobalt, nickel) and rare earth elements, as this is crucial for the "Green Economy."

In developed foreign countries, the main characteristic of organizing GEW is the balance between state control and private investment. In Australia and Canada, geological reports can only be prepared by a specially licensed "Qualified Person." "Non-objection to national interest" certificates are issued to foreign investors. In Chile, consultations with local communities (Citizen Participation) are mandatory for implementing GEW, which prevents social conflicts. Strategic resources like lithium, uranium, and thorium remain under state control, with the state having a priority purchase right for their extraction.

Transitioning to international reporting standards for reserve evaluation (JORC and CRIRSCO) systems plays a crucial role. The JORC Code (Australia) is a professional practice code that classifies reserves based on geological confidence and economic viability. The CRIRSCO template sets minimum standards for publicly reporting geological exploration results worldwide, ensuring the accuracy and transparency of data when reporting to investors. It is integrated with the UN Framework Classification for Resources (UNFC), providing convenience in forming state strategies. Foreign experience shows that in GEW, not only state funding but also stimulating the private sector and evaluating reserves based on international (JORC/CRIRSCO) standards is important.

Table 1

Comparative Analysis of Normative-Legal Documents Regulating Geological Exploration Works (GEW)¹.

Comparative criteria	Law of the Republic of Uzbekistan "On Subsoil" (2024)	Code of the Republic of Kazakhstan "On and Subsoil Use	Australia and Canada (JORC / NI 43-101 systems)
Mechanism for granting rights	Transparent selection through electronic auctions (E-auksion).	The "first-come, first-served" principle.	Based on competitive selection or agreement with the landowner (Exploration License).
Reserve estimation standard	A complete transition from the old GKZ system to the CRIRSCO and JORC standards is mandated.	The mandatory implementation of KAZRC (the national standard based on CRIRSCO).	JORC (Australia) and NI 43-101 (Canada) are the world's most prestigious standards.
The institution of responsible persons	The institute of the "Competent Person" has been legally established.	The PONEN Association of Independent Experts approves the reports.	Only the signature of an internationally certified Qualified Person is recognized.
Stages and duration of mineral exploration	For exploration — 5 years (with an option to extend for up to an additional 5 years).	For exploration — 6 years (up to 15 years for rare metals).	Flexible durations depending on the project type (typically 2-5 years).
Environmental and	Establishment of a	Strict environmental	ESG (Environmental,

social responsibility	fund for reclamation is mandatory (Liquidation Fund).	insurance and social obligations to local communities.	Social, and Governance) standards are a key requirement for investors.
Data transparency	A portion of geological data is open and digitized (National Database).	All data is digitized through the "Infrastructure Data Center."	Most data is open and available online to any investor.
Technogenic waste	Specific rights for the utilization of mining waste (slimes, tailings) have been granted.	Waste can be extracted as a separate type of mineral raw material.	Tax incentives for recycling and the circular economy.

As a result of recent reforms, Uzbekistan's system has transitioned from an "administrative-command" model to an "investment partnership" model. From Kazakhstan's experience, adopting the aspect of 100 percent digitization of data is considered beneficial, rather than the "first-come, first-served" principle. In the Australian and Canadian model, the primary focus is placed not on state control but on transparency before the stock exchange and investors (JORC).

This serves to expand Uzbekistan's mineral resource base not only through the state budget but also through active private investment. It reflects 5 main priority directions that should be integrated from international experience into national legislation.

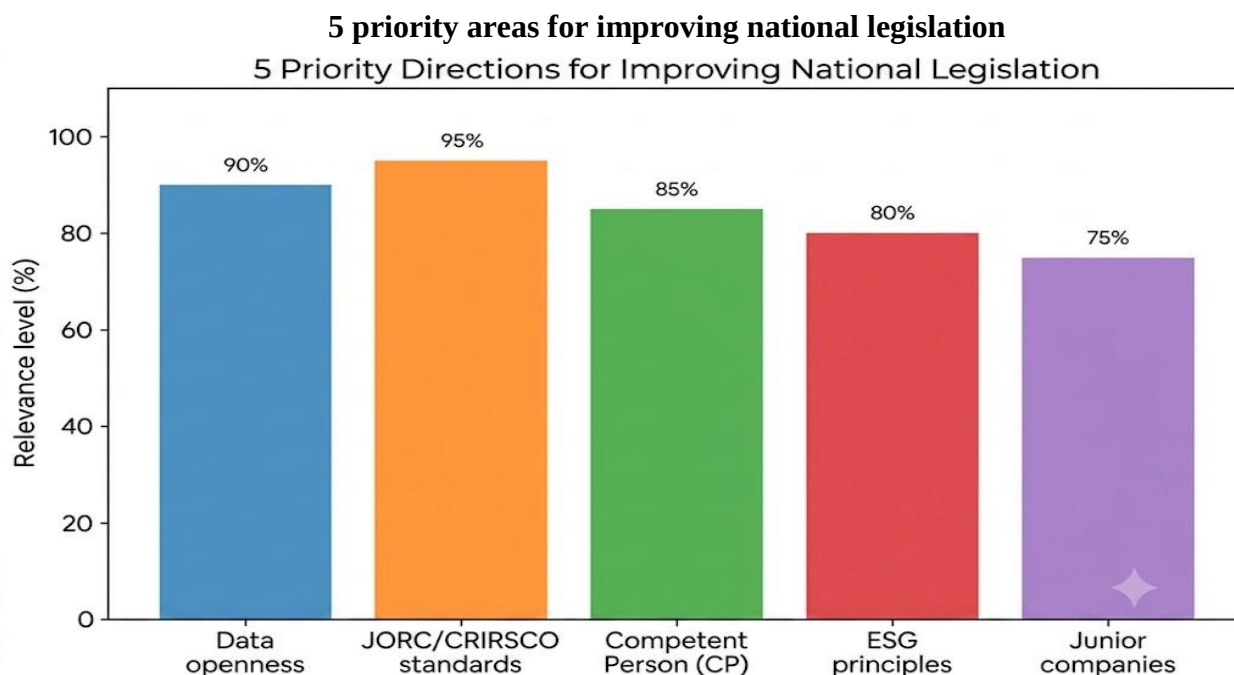


Figure 1. The main directions for integrating international experience into national legislation for the mineral resource base.

Research conducted on geological exploration works demonstrates that the following aspects are of critical importance:

1. **Digitalization and Openness:** Transferring geological data to an online platform based on the "Big Data" principle. This reduces the investor's pre-exploration costs by 20-30%.

2. **International Standards:** Transitioning to the JORC Code enables the listing of local deposits on the London or Toronto stock exchanges.

3. **Human Capital (CP):** Reports must be certified not by a state body, but by a professionally qualified geologist bearing personal responsibility. This reduces corruption and improves quality.

4. **ESG Strategy:** The environmental footprint minimization of exploration works and their benefit to the local community are key conditions for attracting international grants and "green" investments.

5. **Junior Companies:** Providing incentives to small, mobile geological companies can accelerate the rate of discovering new deposits.

In the geological sector, gold extraction amounted to 129.1 tons, coal extraction reached 6.7 million tons, and a total of 7.2 billion US dollars in investment was attracted to the sector. Of this, 3.58 billion dollars was directly utilized by the Ministry of Mining Industry and Geology and major enterprises (AGMK, NMMC). Exports of mining products amounted to nearly 1.8 billion US dollars.

Table 2

Distribution of investments in the mining and geology sector³.

Name of the organization	Investment volume (\$ million)	Flagship project
JSC Almalyk Mining and Metallurgical Complex (AMMC)	1940	Development of the "Yoshlik-1" deposit (\$4.6 billion project).
JSC Navoi Mining and Metallurgical Company (NMMC)	789.6	39% production increase and modernization.
Ministry of Mining Industry and Geology of the Republic of Uzbekistan	572	Expansion of the mineral resource base.
State Enterprise "Navoiyuran" (SE "Navoiyuran")	126	Expansion of uranium reserves.

Future plans and forecast indicators in the geological sector can be observed from the following data:

- In 2025-2026, the main emphasis is placed on digitizing the sector and extracting strategic metals essential for the "green economy."

- Investments: In 2025, an additional 1 billion US dollars in direct investment is planned to be attracted for geological and mining projects.

- Increasing production volumes: Bringing coal extraction volumes to 10 million tons, increasing kaolin production by 50%.

- Metals: JSC "Uzbekistan Technological Metals Combine" envisages producing 818 tons of molybdenum and 240 tons of tungsten concentrate.

- New capacities: The launch of the 3rd copper processing plant (MBF-3) at Almalyk MMC and a new casting and rolling complex at the Uzbekistan Metallurgical Plant is expected.

In the coming years, the following innovative solutions will be introduced in the geological sector:

The "Geomonitoring" system will be established for remote monitoring of subsoil use and control via aerospace imagery. Digital geology: all primary geological data, maps, and reports will be converted into digital format. NMMC plans to issue an additional 500 million US dollars in Eurobonds on the international market in 2025.

The future plans of Uzbekistan's geological sector are defined within the framework of the "Uzbekistan - 2030" strategy and the Strategy for the Development of the Mineral Resource Base for 2026-2030. These plans are directed toward increasing the flow of investment, digitization, and expanding reserves of strategically important metals.

Investment and economic forecasts (2025-2030): Uzbekistan plans to attract a total of over 9.4 billion US dollars in investment for geological exploration works by 2030.

Table 3**Information on investments attracted to geological exploration⁴.**

Indicator	2024 (Actual)	2025 (Forecast)	2030 (Target)
Total investments	\$7.2 billion (Previous data)	\$8.5 billion+	\$9.4 billion+
Size of the economy (GDP)	\$100 billion+	7.7% growth	\$200 billion
Level of digitization	Initial	60%	100%

Strategic directions for the next five years in geological exploration works:

- Increasing mineral reserves: rapidly expanding reserves of hydrocarbon (oil and gas), ferrous metallurgy, and mineral raw materials essential for the economy's driver sectors.

- Transformation and digitization: digitizing the management system at sector enterprises, creating a unified database of geological data, and applying artificial intelligence technologies.

- "Green" economy: reducing environmental impact in geological exploration works and utilizing energy-efficient technologies.

- Major projects and production plans: uranium extraction - "Navoiyuran" SE will continue developing new deposits within the framework of the investment program until 2030.

- Ferrous metallurgy: a strategy for the development of the sector will be elaborated by 2030, which will expand the utilization of local iron ore reserves.

- Gas and oil: investment projects for prospecting new hydrocarbon deposits and modernizing existing ones will be implemented to ensure an uninterrupted energy supply for the domestic market.

- Throughout 2025, a special program of measures for retraining and upgrading the qualifications of sector personnel will be carried out. Priority will be given to training specialists capable of working according to international standards (JORC and others).

The implementation of these plans will contribute to Uzbekistan entering the top 50 countries in the Global Innovation Index by 2030. Geological exploration works (GEW) differ from other industrial sectors by their high risk, uncertainty of outcomes, and capital intensity. These characteristics require special approaches in accounting. The specific features of geological exploration works-outcome uncertainty (risk), where the funds expended do not always lead to the discovery of mineral deposits -create complexity in recognizing costs as assets (capitalization) or as period expenses. The phased nature involves design, prospecting, evaluation, and exploration stages.

Each stage is treated as a separate accounting object. The long-term nature, where the period from deposit discovery to its exploitation can last for years, leads to a substantial balance of work in progress. Territorial dispersion and distance, with operations conducted far from the enterprise base in desert or mountainous areas, cause a high share of transport and logistics costs. Seasonality, where works in certain regions are conducted only at specific times of the year (e.g., spring-autumn), requires a specific procedure for allocating employee wages and equipment depreciation.

The procedure for reflection in accounting: there are mainly two international approaches to reflecting GEW costs in accounting, on which national practice also relies. Grouping and recognition of costs: GEW costs are usually accumulated in accounts 2010 "Primary Production" or the specialized 0800 "Capital Investments" (if recognized as an asset).

Direct costs: drilling operations, geophysical surveys, field workers' wages, materials and fuel used. Indirect (overhead) costs: laboratory analyses, depreciation of specialized equipment, expedition management expenses. Capitalization procedure (according to IFRS 6): according to international standards and updated national rules, exploration costs can be accounted for using two different methods. The Successful Efforts method: only costs related to promising deposits are capitalized as an asset (0890 - "Capital Investments in Intangible Assets"). Costs of unsuccessful (dry) wells are charged to the loss of that period. The Full Cost method: all exploration costs, regardless of outcome, are accumulated as an asset and subsequently added to the cost of extracted products as depreciation.

Reflection in accounting accounts:

When materials are consumed: Dt 2010 (GEW object) - Kt 1000.

When wages are accrued: Dt 2010 - Kt 6710.

Upon completion of the stage and submission of the geological report, if the result is positive: Dt 0400 (Intangible Asset - exploration assets)

- Kt 2010/0800.

If the result is negative: Dt 9430 (Other Operating Expenses)

- Kt 2010.

Environmental and restoration obligations: a distinctive aspect of GEW is the obligation to reclaim (restore to its original condition) the land area upon completion of work. A reserve must be formed for this in accounting:

Dt 2010 - Kt 8910 (Reserve for Future Expenses)

In GEW accounting, the primary emphasis is placed on accurately tracking costs for each object (well or area) and correctly defining the criteria for recognizing them as assets.

Conclusion and Recommendations.

The results of the analysis conducted indicate that in order to increase investment attractiveness and ensure efficiency in the geological sector of Uzbekistan, it is advisable to continue work in the following directions:

First, Openness and digitization of geological data (experience of Australia and Kazakhstan) - storing geological data not only in the state fund but also presenting it openly to investors in the form of online interactive maps. This enables risk assessment before the commencement of exploration works. Full transition to CRIRSCO and JORC systems for reserve calculation - abandoning the national GKZ (State Reserves Commission) classification and adopting the JORC Code, recognized by international stock exchanges, as the single mandatory standard. This will increase the value of local deposits on the international market.

Second, Development of the "Competent Person" (CP) institute – establishing independent professional associations of geologists and granting them the authority to certify reports. This involves a transition from state control to a system of professional responsibility (experience of Canada and Australia).

Third, Legislative strengthening of environmental and social obligations (ESG) – introducing not only technical but also ESG (Environmental, Social, and Governance) standards for subsoil users. This will elevate work with local communities and environmental restoration activities to the level of international requirements.

Fourth, Stimulating small and medium-sized geological exploration (Junior) companies – expanding tax incentives in legislation for the initial high-risk exploration stages. Introducing special financial and legal regimes for "Junior companies," as is done abroad. Economically incentivizing the use of technogenic deposits – simplifying normative documents for the reprocessing of old mine waste (Circular Economy) and thereby supporting the principles of "Green" geology.

References:

1. Law of the Republic of Uzbekistan "On Accounting." April 13, 2016. No. LRU-404.
2. Tax Code of the Republic of Uzbekistan. January 1, 2020. <https://lex.uz/docs/4674902#4684083>
3. Resolution of the President of the Republic of Uzbekistan No. PP-4611 "On additional measures for the transition to International Financial Reporting Standards." February 24, 2020. <https://lex.uz/docs/4746047>
4. "Presentation of Financial Statements." IAS 1 (International Accounting Standard). Official translation - 2022. Paragraph 108.

5. "Conceptual Framework for Financial Reporting" under International Financial Reporting Standards. Official translation - 2022.

6. National Accounting Standard of the Republic of Uzbekistan (NAS No. 1) "Presentation of Financial Statements and Accounting Policy." <https://lex.uz/docs/7050497>

7. Order of the Ministry of Finance of Russia dated 06.05.1999 N 33n "On Approval of the Accounting Regulation PBU 10/99 'Expenses of the Organization'" (Registered with the Ministry of Justice of Russia on 31.05.1999 N1790).

8. On Approval of the National Financial Reporting Standard. Order of the Minister of Finance of the Republic of Kazakhstan dated January 31, 2013, No. 50. Registered with the Ministry of Justice of the Republic of Kazakhstan on February 8, 2013, No. 8328.

9. Ibragimov A.K., Umarov Z.A., Khotamov K.R., Rizaev N.Q. International Financial Reporting Standards in commercial banks:a tutorial. - T.: Economics and finance, 2019. -305b.

10. International Financial Reporting Standards in commercial banks:textbook. (2nd remastered edition) / A.K.Ibragimov, Z.A.Umarov, K.R.Khotamov, N.Q.Rizaev.- T.: "Economics-finance". 2020.-560b.

11. Ibragimov A.K., Marpatov M.D., Rizaev N.Q. Accounting in banks based on International Financial Reporting Standards. Tutorial. T.: Finance, 2010. -272B.