

AP14872003 “Improving the geological and economic assessment of mining and metallurgical enterprises in the context of their compliance with international trends and digital reform” – p.m. Issatayeva F.M.

Relevance:

The relevance of the study is based on the increasing role of the fuel and energy complex of emerging markets in the decarbonization of the economy. In the context of the designated energy transition, the features of the transformation of industrial enterprises in Kazakhstan using digital technologies are updated as the most important tool for increasing efficiency in the context of increasing competition in the global Mineral Resources Global Market. The authors' long-term research has identified the most significant factors limiting the activities of enterprises in this direction. External - aggravating risks of information security, prevention of leakage of geological and industrial information, investment and innovation risks of sustainable development (level of competition, availability of technology and capital, development of legislation, uncertainty of the economic situation). Internal - difficulties in changing transformable in-house processes and a low technical level of production, expressed in insufficient digital maturity of current processes and a low level of development of automated process control systems, the complexity of integrating new technologies into in-house and organizational processes, low return on investment, limited liquidity. There is a lack of new competencies in mastering digital technologies, managing innovative projects, building partnerships, and strengthening international positions. Despite the introduction of new technologies and means to ensure their safety, geodynamic risks in mining continue to increase.

The project purpose:

Based on the generated factual database on geological and economic indicators and characteristics of Kazakhmys Corporation LLP deposits, to develop an information and analytical system for geological and economic assessment of the enterprise through digitalization of key business processes, allowing to model production situations, increase efficiency and transparency of management.

Expected and achieved results:

For 2024

The algorithms of the Information and Analytical System program have been systematized. IAS for geological and economic assessment of Kazakhmys LLP can be used to collect, store, analyze and visualize data related to geological resources and economic activities of the company. A conceptual information and analytical system of geological and economic assessment of Kazakhmys Corporation LLP has been developed. This can help the company make more informed decisions about exploration, mining and processing of minerals and data processing. Work is also continuing on the systematization and development of management solutions to strengthen the financial and economic condition and increase the investment attractiveness of Kazakhmys Corporation LLP. Using a CRM system to manage customer relationships. Implementation of an ERP system for business process management.

List of publications:

In 2024, the results of the study were published in 1 article in the Scopus database of at least 50 (fifty) and 2 articles recommended by the CQAFSHE:

1. F. M. Issatayeva, G.M. Aubakirova, A.D. Maussymbayeva 1, L.I. Togaibayeva, V. V. Biryukov ,E.Vechkinzova / Fuel and Energy Complex of Kazakhstan: Geological and Economic Assessment of Enterprises in the Context of Digital Transformation / Energies 16(16),6002, pp. 2-23) DOI 10.3390/en16166002. Percentile 82.

- 2 articles by CQAFSE:

1. F.M. Issatayeva, G.M. Aubakirova, A.D. Mausymbaeva, R.K. Madysheva / Evaluation of the efficiency of digital solutions in the mining sector/ “News of NAS RK. Series of Geology and Technical Sciences”, 2024.-2(464).- pp.91-113.

DOI: 10.32014/2024.2518-170X.396. <http://www.geolog-technical.kz/assets/20242/91-113.pdf>.

2. G.M. Aubakirova, F.M. Issatayeva, S.K. Mazhitova, L.I. Togaibayeva “Decarbonization of the mining and metallurgical sector: the experience of Kazakhstan” // Scientific journal “Bulletin of the University “Turan” 2023 No. 4(100), pp. 54-69. doi.org/10.46914/1562-2959-2023-1-4-54-69

1 monograph was published: Issatayeva F., «Improving the geological and economic assessment of mining and metallurgical enterprises in Kazakhstan» Karaganda: Publ. House NPJSC «Abylkas Saginov Karaganda Technical University», 2023.-121 p. ISBN 978-601-355-190-6.

1 thesis was published in the International Conference: Aubakirova G.M., Issatayeva F.M. “Digitalization of the mining and metallurgical sector of Kazakhstan, the current state of economic systems: management, development, security” Collection of scientific papers of the IV International Scientific and Practical Conference on December 8-11, 2023, Tver, p. 12.



Figure 1 – Conducting research by scientists of the G&ME Department within the framework of a scientific project

Research Group:

1. Isataeva Farida Muratovna – scientific supervisor, PhD, Head of the G&ME Department.

The Hirsch index is 4;

Researcher ID -

Author ID – 57214246924;

ORCID - 0000-0003-0337-1539 <https://orcid.org/0000-0003-0337-1539>.

2. Aubakirova Gulnara Muslimovna – Responsible Executive, Professor, Doctor of Economics of EE&M Department.

The Hirsch index is 4;

Researcher ID -AAB-5682-2021;

Author ID - 893146;
ORCID - 0000-0003-0337-1539.

3. Mausymbaeva Aliya Dumanovna - Candidate of Technical Sciences, PhD of the G&ME Department.

The Hirsch index is 7;
ResearcherID: E-2038-2015;
Author ID: 57144628100;
ORCID - 0000-0002-7214-8026.

4. Baidavletova Irina Vladimirovna - Assistant of the G&ME Department
ORCID - 0000-0002-8609-0531.

5. Abdullina Aigerim Kaiyrzhanovna - PhD, Senior lecturer at the MDD Department
The Hirsch index is 1;
Researcher ID – 58479871700;
ORCID - 0000-0003-0483-2798.

Information for potential users:

The results of the study will be used in conducting a geological and economic assessment, taking into account Kazakhstan's transition to the international system of standards for reporting on mineral reserves CRIRSCO; the developed algorithm of the Information and Analytical System program for geological and economic assessment of the enterprise will increase the scientific and technical validity of decarbonization strategies of the enterprise, accelerate the implementation of projects according to ESG standards.

Scope of application:

First of all, the project is aimed at creating and implementing an information and analytical system (IAS) for Kazakhmys Corporation LLP, which will be used to collect, store, analyze and visualize data related to the company's geological resources and economic activities. This will allow the company to make more informed decisions on exploration, production and processing of minerals. In addition, the results of the project will contribute to increasing the scientific and technical validity of decarbonization strategies and accelerating the implementation of projects according to ESG standards (environmental, social and corporate governance). The system will also integrate digital technologies and innovations, improving the efficiency and transparency of management, as well as strengthening the financial and economic condition and investment attractiveness of the enterprise.

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