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THE MANAGEMENT OF THE COMPANY IN THE CONTEXT OF SUSTAINABLE DEVELOPMENT: NEW CHALLENGES AND OPPORTUNITIES IN CENTRAL ASIAN COUNTRIES EXAMPLE CJSC KUMTOR GOLD COMPANY (KGC), KYRGYZSTAN

Abstract This research is aimed at determining the impact of business conditions in the context of sustainable development: new challenges and opportunities for entrepreneurship in Central Asian countries on the example of a specific enterprise, which involves identifying the relationship between business conditions, achieving sustainable development goals and using opportunities. By analyzing specific situations and studying CJSC Kumtor Gold Company (KGC) practice, the study provides insight into sustainable business management in the region.

The research methodology includes several approaches to doing business, which reflect its interpretation as purely economic activity, socially responsible activity and activity in conditions of sustainable development in compliance with the ESG principle, Environment and Sustainability Reports, Financial reports CJSC Kumtor Gold Company (KGC), Kyrgyzstan.

The work is of scientific value from the point of view of studying the analysis of environmental and economic risks on the example of Kumtor Gold Company CJSC (KGC), Kyrgyzstan.

The practical significance of the results obtained: the results of analytical work can be applied to other companies of this type.

Research results: as a result of the analysis, it was revealed that the CJSC Kumtor Gold Company (KGC), Kyrgyzstan, along with the definitions of economic problems, environmental problems are identified at each stage of the technological scheme of the product preparation process, it is necessary to have skills in determining environmental risks and economic risks.

Recommendations on the prospects of research on this topic: in the future, it is necessary to strictly adhere to the identification of both economic and environmental risks.

Keywords ESG management • Climate-responsible entrepreneurship • Sustainable development, Financial statements

JEL Codes C53 • G32 • L86 • M15 • O33 • O38 • Q56 • Q58

1 Introduction

Business is one of the driving forces of the market economy. The 2030 Agenda for Sustainable Development outlines 17 SDGs that aim to end poverty, protect the planet, and ensure prosperity for all. Businesses play a crucial role in achieving these goals through responsible practices [20].

Under the conditions of domination of the neo-liberal paradigm in economic science, the maximum support for the development of business is treated as a factor of the socio-economic development of a country. It covers the processes of an increase in the level of investment attractiveness, improvement of the quality of the business environment and level of the population's economic activity. However, together with the priorities of economic progress, the Sustainable Development Goals, including the fight against climate change, become more topical. Central Asia, consisting of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, is experiencing tremendous growth in achieving the SDG goals. This leads to new opportunities for economic development, job creation and increased welfare of the population. However, this growth also entails some challenges related to business management in the context of ESG principles.

Companies that integrate environmental, social, and governance (ESG) principles into their operations tend to perform better financially. Sustainable practices lead to improved efficiency, reduced risks, and enhanced corporate reputation [7].

Creating shared value involves addressing societal needs and challenges through business strategies. Companies can achieve economic success while simultaneously advancing social and environmental conditions [8].

Sustainable development is becoming an increasingly relevant topic for companies operating in Central Asia. One example of such a company is CJSC Kumtor Gold Company (KGC), the largest gold mining company in Kyrgyzstan.

In the context of sustainable development, companies face a number of problems that need to be taken into account when conducting their activities. First of all, these are environmental problems. Gold mining is a rather polluting industry, and CJSC Kumtor Gold Company (KGC) is faced with the task of minimizing the negative impact on the environment. The company is actively implementing modern technologies and methods that reduce emissions of harmful substances and optimize the use of natural resources [16, 17, 18].

In addition, the company also faces social problems. CJSC Kumtor Gold Company (KGC) actively works with the local population, providing jobs and investing in social programs. However, in its activities, the company is faced with protests and dissatisfaction of local residents.

An increase in risks connected to climate change and the quick development of the digital economy predetermine the need to supplement the indicators of the success of business activities. Business and financial goals are not considered without a focus on their influence on the SDGs and without the assessment of using the tools of the digital economy. According to this, assessment of the role of doing business for the development of climate-responsible entrepreneurship in the digital economy is a current scientific task, which is equally peculiar for countries with different levels of economic development [14].

2 Materials and Method

This research is based on different approaches to business. They cover its classical interpretation as an activity aimed at making a profit; responsible activity, which, within the framework of the main direction, also ensures the achievement of the SDGs.

This study employs a qualitative research approach to explore the challenges and opportunities faced by companies operating within a sustainable development framework in Central Asia, focusing specifically on CJSC Kumtor Gold Company (KGC) in Kyrgyzstan. The methodology consists of several key components:

A comprehensive review of existing literature on sustainable development practices, environmental, social, and governance (ESG) principles, and the economic landscape of Central Asia.

Sources include academic journals, industry reports, policy documents, and case studies of other companies in the region that have implemented sustainable practices.

An in-depth case study of CJSC Kumtor Gold Company (KGC), examining its sustainable development initiatives, environmental management practices, social responsibility programs, and governance structures.

The case study approach allows for a detailed understanding of how the company aligns its operations with sustainable development goals (SDGs) and addresses the unique challenges of the Central Asian context.

Semi-structured interviews with key stakeholders, including company executives, environmental and social experts, government officials, and local community representatives.

The interviews aim to gather insights into the practical challenges and opportunities of implementing sustainable development practices in the region.

Questions focus on areas such as regulatory compliance, resource management, community engagement, and the impact of sustainable practices on business performance.

3 Results

The climate crisis is considered one of the biggest threats not only to the economy of Central Asia, but also to life on Earth. To solve it, all countries have agreed on responsible climate behavior, which will limit global warming to 1.5°C, according to the Paris Agreement [4]. Also, the issue of achieving economic efficiency and attractiveness of the investment climate is a priority task that is implemented in national policy through national and global institutions. An important task today is to ensure the rational interaction of all the above processes for common benefit.

The integration of climate-responsible practices into business operations is becoming increasingly critical, particularly in the digital economy. Companies are now focusing on reducing their carbon footprint and embracing sustainable innovations to meet the demands of environmentally conscious consumers [2].

The transition from Millennium Development Goals (MDGs) to Sustainable Development Goals (SDGs) reflects a broader and more integrated approach to global development, emphasizing environmental sustainability and social inclusion [10].

In the Central Asian context, where the economy is heavily dependent on mining, sustainable development and fulfilment of the Sustainable Development Goals (SDGs) become particularly important. CJSC Kumtor Gold Company (KGC) in Kyrgyzstan is a prime example of a company seeking to integrate environmental, social and governance (ESG) principles into its operations. This paper will analyse CJSC Kumtor Gold Company's resource management with a focus on ESG and SDGs.

Mining activities often lead to land use conflicts due to their environmental impact. Effective management of these conflicts requires balancing economic benefits with environmental protection and social well-being [14].

Sustainable mining practices are essential to mitigate the environmental impact of resource extraction. Advanced technologies and regulatory frameworks play a critical role in promoting sustainability in the mining sector [7].

As we see the integration of CJSC Kumtor Gold Company (KGC) environmental, social and governance (ESG) reporting in the context of sustainable development.

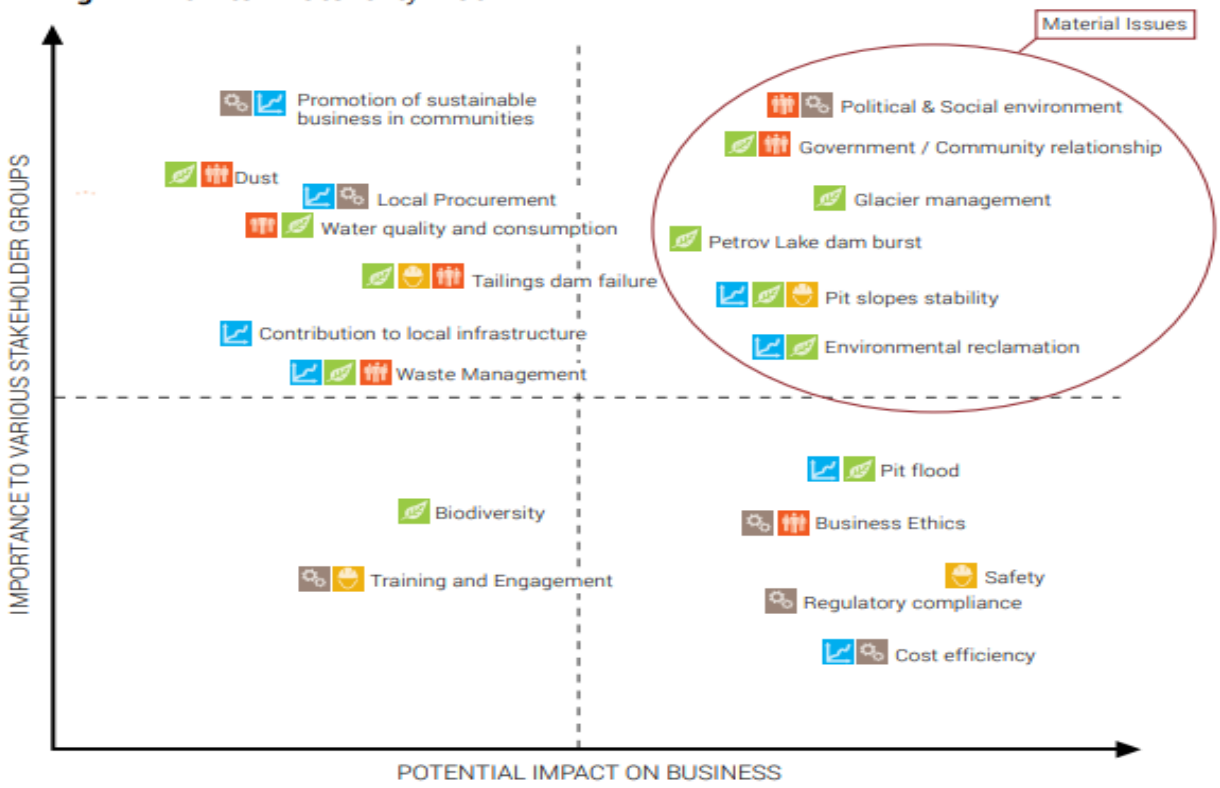
It should be noted that KGC, Kyrgyzstan is one of the many companies in our country adhering to innovative business models for sustainable development.

In order to manage the risks inherent in the company, as well as to ensure the implementation of measures to minimize them, KGC has implemented an official Risk Management System. This procedure is based on the ISO 31000 Standard and is aligned with the Concept of Corporate, Organizational and Industrial Risk Management.

ISO 31000 provides guidelines for effective risk management, helping organizations identify, assess, and mitigate risks. This standard is particularly relevant for industries with significant environmental and social impacts, such as mining [15].

As part of this reporting process, KGC has developed a materiality matrix (Figure 1.1) based on analysis of stakeholder issues and comparison with the business and operational risks described above. This matrix enables KGC to identify the connection between business activities/risks and stakeholders concerns about economic, environmental, social impacts. This helps to prioritize the social responsibility initiatives and improve transparency in communications with stakeholders. Stakeholders include groups who may affect, or be affected by KGC's actions including community members, local employees, government officials, NGOs, etc. Material issues are those considered most important by several stakeholder groups, have the ability to significantly affect our business performance,
and can be influenced by our actions.

Fig. 1.1 Kumtor Materiality Matrix



Source: https://www.kumtor.kg [18]

As a responsible mining company, KGC has identified and adheres to the following SDGs related to their activities and the impact they have on communities: ■ Clean water and sanitation SDG 6; ■ Responsible consumption and production SDG 12; ■ Healthy lifestyle and well-being SDG 3;■ decent work and economic growth SDG 8;■ Industry, innovation and infrastructure SDG 9; ■ Partnership for sustainable development SDG 17.

It should be noted that SDG 12 "Responsible consumption and production" in its target 12.6 clearly calls on organizations, especially large and multinational ones, to apply sustainable practices and integrate information on sustainable development into their reporting cycles.

As a result of the analysis it was revealed that the company 'Kumtor', Kyrgyzstan along with the definition of economic problems, environmental problems are identified at each stage of the technological scheme of the process of preparation of products need to have the skills to identify environmental risks. A map of key environmental monitoring points is shown in Figure 2 below).

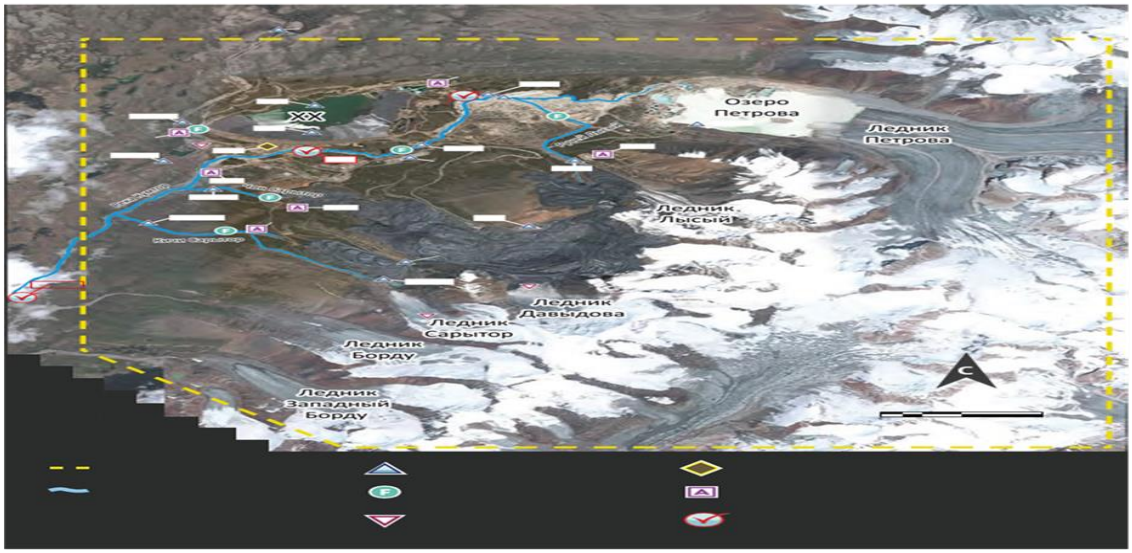


Figure 2. Map of the main environmental monitoring points
Source: https://www.kumtor.kg [18, 19]

As we see the company's environmental monitoring map, where environmental problems are identified at each stage of the technological scheme of the product preparation process, environmental risks are determined**.**

The integration of ESG (Environmental, Social, and Governance) criteria into digital business management is essential for promoting sustainability in the green economy. Big data and AI technologies provide powerful tools for monitoring and improving ESG performance, enabling businesses to make data-driven decisions that enhance their environmental and social impact [12].

The Kumtor Company, which operates in the field of gold mining in Kyrgyzstan, faces a number of problems and challenges related to sustainable development. One of the main problems is the negative impact of mining activities on the environment. The Kumtor mine is located in a mountainous area, which creates certain technical and environmental difficulties. The gold mining process uses chemicals that can pollute the surrounding water and soil. The company is actively working to minimize the negative impact on the environment through the development and implementation of advanced technologies and regular monitoring of the environmental situation.

Another problem that the company faces is social responsibility to the local population. Kumtor's activities directly affect the lives of about 3,000 local residents, including local communities.

In order to manage the risks inherent in the company, as well as to ensure the implementation of measures to minimize them, KGC has implemented an official Risk Management System. This procedure is based on the ISO 31000 Standard and is aligned with the Concept of Corporate, Organizational and Industrial Risk Management.

Key trends in the mining industry include the adoption of digital technologies, increased focus on sustainability, and enhanced risk management practices. These trends are reshaping the industry's approach to resource management and stakeholder engagement [8].

The DPE Index is based on four key pillars: Connectivity, Digital Skills, Regulation, and Entrepreneurial Ecosystem. These pillars encompass the critical aspects necessary for a robust digital platform economy, from infrastructure and human capital to regulatory frameworks and entrepreneurial activities [1,2,3].

KGC is the largest private sector employer and taxpayer in the Kyrgyz Republic. In 2019 KGC operations accounted for 9.8 % of GDP and 20.8% of aggregate industrial output.

In 2023, payments to the budget of the Kyrgyz Republic in taxes, contributions to the Social Fund of the Kyrgyz Republic and other mandatory payments under the 2009 Restated Investment Agreement (RIA) amounted to USD 196.1 million (KgS 17.2 billion) [19]. The results KGC's contribution in taxes, payments to Funds and mandatory payments for 2023 in Table 1.

Table 1 Kumtor's contribution in taxes, payments to Funds and mandatory payments for 2023.

Kumtor's contribution in taxes, payments to Funds and mandatory payments for 2023

Taxes, payments to Funds and other mandatory payments of KGC	**2023**	**2023**	**2022**	**2022**
	USD thousands	**KgS thousands**	**USD thousands**	**KgS thousands**
Gross Proceeds Tax (13%) *	116 284	10 206 311	127 011	10 580 568
Annual amount for the growth of the mineral resource base – *including*	29 618	2 632 282	204 330	16 849 049
Annual amount for 2021 (balance including advance payment in 2021)	-	-	8 449	711 827
Annual amount for 2015-2020 (additional charged)	-	-	155 818	12 845 912
Annual amount for 2022	-	-	40 062	3 291 311
Contribution to Issyk-Kul Development Fund (1%) *	8 389	735 773	9 647	800 813
Income tax	733	64 731	-	-
State social insurance contributions	24 276	2 129 437	25 076	2 113 661
Taxes and fees (income tax, non-resident income tax, VAT, customs payments, etc.)	5 599	492 446	6 307	529 765
Payments to Social Partnership for Regional Development Fund (0.4%) **	1 597	138 537	3 858	320 325
Environmental payments and contributions to the Environmental Protection Agency	310	26 561	310	26 288
Payments to Nature Development Fund **	1 542	134 251	3 700	301 763
Contributions to Tenir-Too Naryn Region Development Fund (0.6%)	5 033	441 464	3 099	262 226
Fee for the use of surface water resources of the Kyrgyz Republic	2 717	239 278	4 353	367 212
Total:	**196 096**	**17 241 071**	**387 690**	**32 151 670**

Source: https://www.kumtor.kg [17, 18]

Based on KGC's 2023 data, consider several key aspects: financial planning, environmental responsibility and social commitments:

Financial planning. Tax liabilities and payments: KGC paid 116,284 thousand USD in the form of general income tax, which is 13% of gross profit. Total tax payments and contributions to funds totalled USD 196,096 thousand.

Investments in resource base development: In 2023 KGC invested USD 29,618 thousand in mineral resource base development, which is significantly less than in 2022 (USD 204,330 thousand). This may indicate the completion of major investment projects or a revision of the strategy.

Environmental Liability. Environmental payments: Payments to the Environmental Protection Agency totalled USD 310 thousand in 2023, which is the same as in 2022. This indicates the stability of the company's environmental commitments.

Natural resource use fees: In 2023, KGC paid USD 2,717 thousand for the use of surface water resources, which is less compared to 2022 (USD 4,353 thousand). This may indicate the implementation of more efficient water utilisation methods.

Social commitments. Social insurance contributions: In 2023 KGC contributed 24,276 thousand USD to state social insurance, which shows a slight decrease compared to 2022 (25,076 thousand USD). The Company also contributed USD 5,033 thousand to the Tenir-Too development fund of the Naryn region.

The results of KGC's analysis show that the company demonstrates a high degree of responsibility in the management of non-renewable resources. The decrease in tax and investment payments in 2023 may indicate the completion of major projects and revision of strategy. At the same time, stable environmental and social payments indicate that the company remains committed to the state and society.

Applying similar methods in other regions of Central Asia can help improve resource management and increase the sustainability of companies, which in turn will contribute to the achievement of the Sustainable Development Goals.

4 Discussion

Based on the received results, we can state that the interaction of approaches characterizing business from the position of economic results, environmental sustainability, and social responsibility is crucial for fostering long-term stability and growth. Specifically:

Economic Results: The integration of robust financial management practices, such as effective tax planning and strategic investment in resource development, is essential for ensuring economic viability and competitiveness. The observed reduction in investment in mineral resource base development and tax payments could indicate either the completion of major projects or the need for strategic realignment. Continuous monitoring and adjustment of financial strategies are necessary to maintain economic health.

Environmental Sustainability: Effective environmental management, as demonstrated by KGC’s efforts in monitoring and mitigating ecological risks, is fundamental to reducing the negative impact of mining activities. The stable levels of environmental payments and reduced fees for water resource usage suggest improvements in environmental practices and resource efficiency. Companies must prioritize the adoption of advanced technologies and practices to minimize their environmental footprint and adhere to sustainability standards.

Social Responsibility: Maintaining social responsibility through fair labor practices, contributions to local development funds, and support for community welfare is critical for building positive relationships with local stakeholders. KGC’s ongoing commitment to social obligations, despite minor fluctuations, reflects a dedication to enhancing the well-being of

affected communities. Companies should continue to engage with local populations and address social impacts proactively.

5. Conclusion

In summary, the interaction of economic, environmental, and social approaches not only helps manage risks and enhance performance but also contributes to achieving broader sustainability goals. This holistic approach supports the creation of a more resilient and responsible business model, which is essential for thriving in today's complex and interconnected global environment.

The analysis of KGC's operations clearly demonstrates the importance of an integrated approach to management, including economic efficiency, environmental sustainability and social responsibility. The results of the study allow us to draw several key conclusions:

Integration of Approaches: Effective integration of economic, environmental and social strategies is critical to achieving long-term business sustainability. KGC has successfully demonstrated how integration of ESG (environmental, social and governance) principles helps manage risks and improve overall business performance.

Cost effectiveness: Strategic financial planning and investment in resource base development play a key role in ensuring the economic health of the company. While lower investment and tax payments in 2023 may indicate the completion of major projects, it is important to monitor changes and adapt strategy to maintain competitiveness and growth.

Environmental sustainability: Active implementation of advanced technologies and environmental risk management methods allows us to significantly reduce the negative impact on the environment. Stability of environmental payments and reduced costs for water resources use testify to the positive results of the company's environmental initiatives.

Social responsibility: Ongoing support of social programmes and engagement with local communities strengthens the company's reputation and contributes to the social development of the region. Despite slight fluctuations in social payments, KGC continues to fulfil its obligations to the community, which emphasises the importance of social responsibility.

Overall, KGC's experience illustrates how the integration of economic, environmental and social factors can contribute to achieving sustainable development and effective resource management. The application of similar approaches in other Central Asian companies can lead to improved investment climate and social stability, as well as support sustainable development goals in the region.

References

1. Acs, Z.J., Szerb, L., Song, A., Komlosi, E., & Lafuente, E. (2021). The digital platform economy index 2020. Global Entrepreneurship and Development Institute. URL: https://thegedi.org/wp-content/uploads/2020/12/DPE-2020-Report-Final.pdf Accessed: 25.01.2023
2. Adieva, A.A., Samieva, K.T., Khalilova, M.K., Tokareva, O.B. (2023) **Conditions of Doing** Business for the Development of Climate-Responsible Entrepreneurship in the Markets of the Digital Economy on the Example of Developed and Developing, Smart Green Innovations in Industry 4.0. New Opportunities for Climate Change Risk Management in the "Decade of Action". Cham, 2023. C. 51-58.URL: **https://doi.org/10.1007/978-3-031-45830-9_6**
3. A.B. Karbekova and K.T. Samieva, Imbalances in Food Security of the World Countries as a Problem of Sustainable Agricultural Development Sustainable Agriculture, Environmental Footprints and Eco-design of Products and Processes. 2022. - T.2., 191-199, https://link.springer.com/book/10.1007/978-981-19-1125-5

4. Burck, J., Hagen, U., Höhne, N., Nascimento, L., Bals C. (2021). Climate Change Performance Index – CCPI. Results 2020. Germanwatch, NewClimate Institute & Climate Action Network. URL: https://newclimate.org/sites/default/files/2019/12/CCPI-2020-Results_Web_Version.pdf Accessed: 25.01.2023
5. Eccles, R.G., Ioannou, I., & Serafeim, G. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance. Management Science, 60(11), 2835-2857
6. Deloitte. (2020). Tracking the Trends 2020: The Top 10 Issues Transforming the Future of Mining. Deloitte Insights.
7. Mudd, G.M. (2010). The Environmental sustainability of mining in Australia: key mega-trends and looming constraints. Resources Policy, 35(2), 98-115.
8. Porter, M.E., & Kramer, M.R. (2011). Creating Shared Value. Harvard Business Review
9. Scalet, S. & Kelly, T. (2010). CSR Rating Agencies: What is Their Global Impact? Journal of Business Ethics, 94, 69-88. https://doi.org/10.1007/s10551-009-0250-6 URL: https://www.researchgate.net/publication/227016775_CSR_Rating_Agencies_What_is_Their_Global_Impact Accessed: 25.01.2023
10. Skagerlind, H. (2020). The Power of Indicators in Global Development Policy: The Millennium Development Goals. https://doi.org/10.1017/9781108763493.005
11. Sachs, J.D. (2012). From Millennium Development Goals to Sustainable Development Goals. The Lancet, 379(9832), 2206-2211.
12. Samieva, K.T., Saenko, I.I., Menshchikova, V.I., Smetanin, A.S.ESG Management of Digital Business Using Big Data and Artificial Intelligence (AI) in Support of the Green Economy in Russia and Central Asia Environmental Footprints and Eco-Design of Products and Processes, 2023, Part F1766, https://link.springer.com/chapter/10.1007/978-3-031-46525-31
13. Sachs, J.D. (2012). From Millennium Development Goals to Sustainable Development Goals. The Lancet, 379(9832), 2206-2211.
14. Hilson, G. (2002). An overview of land use conflicts in mining communities. Land Use Policy, 19(1), 65-73.
15. International Organization for Standardization (ISO). (2018). *ISO 31000: Risk Management - Guidelines*. ISO
16. WBG (2021). Doing Business 2020. Comparing Business Regulation in 190 Economies.URL:https://documents1.worldbank.org/curated/en/688761571934946384/pdf/Doing-Business-2020-Comparing-Business-Regulation-in-190-Economies.pdf Accessed: 25.01.2023
17. WBG (2022). Business Enabling Environment (BEE). URL: https://www.worldbank.org/en/programs/business-enabling-environment Accessed: 25.01.2023
18. CJSC Kumtor Gold Company. (2023). Environmental and Sustainability Report 2015-2023. Kumtor Gold Company.
19. CJSC Kumtor Gold Company. (2023). Financial Report 2015-2023. Kumtor Gold Company.
20. United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. UN.