

# Current Parameters of Investments in the Mining Industry

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**Abstract.** The article presents some aspects of the research related to changes in the organization of various components that support the activities of mining companies. ESG factors, requirements, directions of impact are presented, recommendations for bringing companies in line with this concept are given. The key positions of investors when making investment decisions from the point of view of modern non-quantitative criteria are analyzed. The impact of digital transformation on the performance and investment attractiveness of mining companies has been established.

## 1 Introduction

An important factor in the creation and further development of companies is financial support in conditions of limited sources, against the background of a variety of their types [1], the required compensation and availability. Despite the fact that the investor, creditor and owner are guided by the efficiency of the provision of funds and the growth of their well-being, in recent years the social component of the decisions made has become of particular importance. The business is moving from the quantitative path of development to the qualitative parameters. The modern approach to the funding of mining companies is responsible investment or the investor's consideration of ESG factors that affect the environment, have a social effect, as well as factors that are associated with corporate governance (Tab. 1).

**Table 1.** ESG factors.

Factors	Directions
Environmental	Changes in climatic conditions, the impact of pollution, waste, greenhouse gases, depletion of natural resources, green spaces, drinking water supplies, energy efficiency, renewable energy sources, climate adaptation, environmental protection

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Social	Regional development, working conditions, gender composition of workers, labor protection, social guarantees, affordable housing, construction of social, educational, medical institutions, production safety, public organizations.
Governing / Corporate Management	The strategy of the companies, the goals of the company, agency relations, the interest of the parties, the level of competence, anti-corruption.

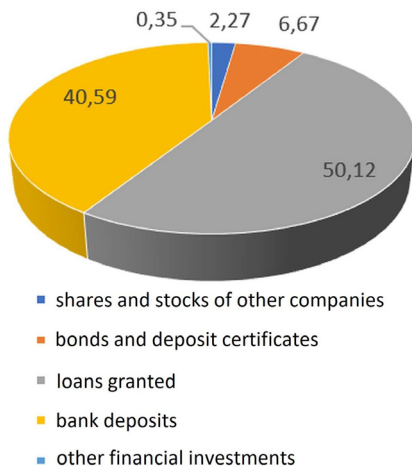
ESG financing is an investment in the future, since it is precisely the provision of social and environmental responsibility that reflects the priority areas for the development of society, in accordance with which health and open communication are the key to the sustainable development. The solution of environmental problems was and remains an urgent problem, primarily for the mining industry. ESG finance is developed in the context of financial market integration and innovative, responsible corporate governance. Innovation and a conscious focus on ESG have enabled mining companies to become more efficient, green, socially responsible and therefore sustainable despite fluctuating business environment.

## 2 Materials and Methods

Decision-making on investments is subjective and depends on the investor's risk appetite, focus on fast and high income or moderate long-term, on the methods used to assess the investment attractiveness of the company and the project. [2-5] When assessing the investment attractiveness, methods based on the analysis of the financial condition, the value of companies, the determination of discounting indicators, the calculation of maximum need for funds, operational and financial leverage, investment duration, internal rate of return, ratings, backmarking, can be applied. R/S analysis, simulation, game theory, expert review, assessment of the compliance of project goals with the prospects of the business environment – all these methods for assessing investment attractiveness are diverse, and the indicators used are variable. For example, the terms and approaches to determining the discount rate are not unambiguous.

The activity of large investors in the equity market in 2020 had a significant asymmetry towards less risky assets, in particular, financial investments of organizations that are not small businesses. In Russia in 2020, more than 50% of money transfers in financial market were provided loans and about 40% were bank deposits. The market for debt and equity securities in aggregate occupies no more than 10%. (Fig. 1).

The direct factors contributing to the growth of investor activity include, first of all, a positive discounted free cash flow, an increase in the efficiency of using the fixed and current assets of companies, an increase in the efficiency of marketing activities, flexible pricing, tracking and regulation of the cost of raw materials, an increase in the manufacturability of production, introduction of environmentally friendly technologies and quality control systems, increasing the competence of personnel and labor productivity, improving management. Also the implementation of modern software and information systems, internal communication, development of a strategy for improving the business reputation and image of the company can be added to this list.



**Fig. 1.** Activity of large investors in the capital market in 2020 in Russia, %.

The mining industry is capital intensive with a predominance of fixed assets in the property structure. Meanwhile, there is a downward trend in capital investment, which is largely a consequence of COVID-19 crisis. The dynamics of investments in fixed assets in actual current prices are shown in Fig. 2.



**Fig. 2.** Dynamics of investments in fixed assets of mining and processing industries in Russia.

Investments in fixed assets of manufacturing are 5-8.5 times higher than investments in mining. The maximum volume of investments was reached in 2018, and then there is a decrease in investment activity, which is largely predetermined by the market's reaction to COVID-19.

ESG projects are governed by global international, national, interregional, regional and sectoral legal regulations and priorities. The main guidelines are interaction reporting documents developed by the IRWG (The Impact Reporting Working Group). About 785 companies from around the world support these recommendations.

The participants in the process are the government and the non-government sectors. The state acts as the main regulator, expert, investor. On March 3, 2021, the President of Russia instructed the Government, together with the Bank of Russia, until September 1, 2021, to develop an action plan to reduce the risks of a possible negative impact on the Russian economy and financial markets due to a decrease in demand from global capital market participants for assets with high climatic risks, after that – ensure its implementation with a report every six months.

The private sector includes analysts, researchers, appraisers, rating companies, stock exchanges, investors, banks and parabank organizations, insurance and leasing companies, borrowers, consumers of financial services. The tools for assessing the risks and effectiveness of ESG projects are credit ratings, indices, indicators, benchmarks, methods, analytical materials, studies, polls.

A feature of the projects of the mining industry, as an investment object, is a number of positions. First, projects require high capital costs; second – one of the decisive factors in making a decision on a project is the availability of transport and energy. Third – the production of the mining industry is accompanied by a high level of hazards and a complex of risks of a different nature (technical, technological, infrastructural, socio-ecological and others). Financial risks are associated with high volatility in prices for certain commodities, including due to the volatility of the national currency, inflation, the discount rate of the Bank of Russia, dependence on the cost of services of "natural monopolies" – tariffs for rail road, electricity. In addition, the fixed assets prevailing in the assets of the companies are specific for each production and have little liquidity.

### 3 Results and Discussion

An important parameter in ESG implementation is the fact that investments are sources of financing, which can be both internal and external. External sources of financing include government funds, financing of national projects, closed-end mutual funds, equity, green bonds, social bonds, loans, insurance, leasing and other financial market products. "Green" projects is the investment projects of companies producing goods, works, services, that do not harm the environment, as well as investment projects in the development and implementation of "green" technologies. Investments in environmental protection measures are investment projects of companies that are aimed at ensuring activities in the field of environmental management, reproduction of natural resources and environmental protection.

The most open and reliable information about projects is the basis for making an investment decision [3]. The share of investor companies that disclose information on green projects, financing and results is very small. For example, in ferrous metallurgy the maximum share of open information is 16.7%, in non-ferrous metallurgy – 6.7%, and in coal industry – 8.33%. It should be noted that even if information is available, its part will be limited, primarily financial [6-10]. In particular, out of a number of green projects discussed below, data on the amount and sources of funding are presented only in two cases (Tab. 2)

**Table 2.** ESG mining projects in Russia.

Company / Project	ESG Result
SUEK, coal industry / air protection (USD 11 million)	8.55 million cubic meters of methane is utilized, the level of dust formation decreased by 49%, the content of suspended and soluble substances in wastewater decreased by 12%, 397 hectares of land were reclaimed.
"SDS-UGOL" Kemerovo region / conservation of biological diversity	IICS (Integrated Information and Computing System) assessing the ecological state of a coal mining region, technical devices operating on solar batteries, wastewater treatment plants, accounting for the natural capacity of the region, land reclamation, greening of sanitary protection zones, electronic initiation of explosions, monitoring of environmental parameters during blasting operations.

JSC Russian Coal / ensuring environmental safety of the work performed	A set of environmental measures, improvement of the environmental situation, waste disposal, control over emissions of pollutants, reclamation of disturbed lands, prevention of endogenous fires, etc.
ALROSA / environmental protection (FB – 5.506 billion rubles and RB – 71.6 million rubles)	Waste accumulation and storage sites, technologies for reuse and disposal of production and consumption waste; dry storage of tailings.
OK Rusal / Implementation of the Ecological Soderberg technology (USD 250 million)	A system for automatic feeding of raw materials into electrolyzers, modern automation systems, innovative and most efficient gas removal systems from electrolyzers, mechanization of labor. Reduction of emissions is expected by 3.5 times

The actual problem of mining companies is the extraction of minerals using the most efficient methods and at the same time not causing environmental damage to the region in which they are located [11-12]. As the data in Tab. 2 show, projects can be classified according to different parameters, since the results of their implementation will improve the environmental situation in industries and in the regions.

Another promising area that contributes to the improvement of ESG factors is the digital risk-based transformation of production management. Integrated management system – a digital company – is more attractive to investors. The mining industry is tending towards digitalization, both of separate production, marketing and financial processes, and full-scale coverage by means of transition to cloud and platform environments. Examples of such a transition are SUEK (Siberian Coal Energy Company), Vorkutaugol, a member of the Severstal-Resurs group (raw materials division of the Severstal holding), Metinvest, Norilsk Nickel and others.

Openness of information, risk reduction, compliance with ESG requirements contributes to the growth of companies' attractiveness not only for investors, but also for other counterparties. The assessment of the investment attractiveness, creditability and financial potential of companies is facilitated by modern software products, robotic systems and artificial intelligence, ranging from the simplest ones integrated into the accounting system, for example, Project Expert, COMFAR, Alt-Invest, etc., to SAP EPR, SAP 4 HANA, SAS, etc.

## 4 Conclusion

Based on the results of the study, the author made a number of following conclusions.

1. ESG investments in the mining industry are associated with the following problems:

- environmental protection, provision of biodiversity, ecosystem services, management of water resources, waste and mine tailings [1], air pollution and purification, noise absorption, conservation and renewal of energy, adaptation and elimination of the consequences of climate change (carbon footprint, greenhouse gas), hazardous emissions and substances, as well as the closure of mines;
- ensuring social guarantees and development of workers in the mining industry and the entire region as a whole, guaranteeing human rights and responsible land use, resettlement of the population, vulnerability of certain categories of the population and workers, health and safety of workers of various categories;
- responsible corporate governance, compliance with legal norms, ethics, anti-bribery and corruption, ensuring transparency of activities and reporting.

2. The solution to these problems should be aimed at bringing companies into compliance with the ESG model, for this it is recommended:

- to introduce strict measures on emissions into the environment, to monitor the indicators of environmental friendliness of production, to carry out actions to improve the adjacent territories, etc.;
- improve working conditions, carry out measures to check compliance with safety measures, conduct questionnaires among employees, monitor the health of each employee, first of all, who are most at risk when working in hazardous areas;
- the systems of recruitment, responsibility and labor incentives should be revised.

3. In recent years, digital transformation has led to the creation of new systems for organizing and managing production, which has significantly increased the efficiency of production, reduced the likelihood of risk situations, information about the activities of companies and reporting has become more transparent and open. All this undoubtedly increases the investment attractiveness of mining companies.

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