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THE SOCIAL AND MARKET MECHANISM OF SUSTAINABLE DEVELOPMENT OF PUBLIC COMPANIES IN THE MINERAL RESOURCE SECTOR

Introduction

The need for the global economy to transition to a sustainable development path is no longer in doubt. There is also no question that industrial enterprises should contribute to this process. Today, the most frequently discussed matter is the extent to which private investment is required for this transition, whether it is necessary to differentiate requirements depending on the industry, what measures should be applied to enterprises that are unable to implement waste-free process chains etc. In fact, to this day no feasible path to achieving sustainability, which would suit multiple industries and help to preserve them has been proposed. Both from the point of view of preserving the ability of future generations to meet their needs, and from the point of view of economic stability of companies in the long term.

It is relatively easy to talk about sustainable development (SD) when it comes to industries which have always been “green”, such as renewable energy,

In the present time, the world’s attention is focused on issues regarding the transition of mining enterprises to a path of sustainable development, which is determined by their role in the functioning of all sectors of the economy. The numerous theories, concepts and methods associated with this transition invariably face difficulties at the stage of practical implementation which as yet have not been resolved. The main disadvantage of the existing approaches is their orientation towards forming a policy of state regulators, which contradicts the very essence of market relations. This paper proposes a different approach to ensuring the sustainability of public mining companies, based on the creation of incentives for the development of corporate social responsibility policy. The main element of the proposed mechanism is stock exchanges with enough influence and resources to promote and popularize companies striving to make their production more environmentally friendly and to maximize their social effects. The viability of the proposed approach is confirmed by the growing “green” investment market, which at present is somewhat limited in the industry but has enormous potential for further expansion, including with support from mining companies.

Key words: sustainable development, social and market mechanism, mining industry, public companies, corporate social responsibility, sustainable investments, social license, stock exchanges

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even when considering the life cycle of these technologies, where there are obvious problems at the initial and final stages [1]. These technologies also have considerable public support due to their minimal environmental impact during operation. However, current economic conditions are such that humanity depends on environmentally-destructive industries, and will be unable to replace them in the foreseeable future. Included in these “destructive” sectors of the economy are the mining and processing of minerals. The widespread practice of introducing restrictive measures against mining companies, with the aim of reducing their negative environmental impact, while it does produce results, cannot be considered as the main method of solving the problem of the transition to SD. Firstly, this is due to the fact that only large companies are able to introduce modern low-waste technologies without external support. Small businesses, on the other hand, need support to implement such capital-intensive projects. Secondly, it is impossible to organize environmentally-neutral process chains at industrial mining facilities, since working with mineral resources involves disrupting ecosystems. In this regard, further tightening of legislation could lead to unattainable environmental safety requirements [2]. Thirdly, the impact of legislation tends to vary greatly in different countries. If it is tightened in one region, we might see the migration of production capacity to the regions with more forgiving environmental standards, which we have already seen in China at the beginning of the 21st century. Of course, mining companies have significantly less mobility compared to other industries due to their dependence on a raw material source. However, regional differences in the legislation could affect the procedure for bringing sites into operation.

Despite the complexity of the issue of transferring mining companies to a path of SD, it should be recognized that this process is necessary, and that enterprises have a responsibility to the public not only in terms of supplying their products, but also in maintaining the environment outside the production process, including protecting the environment, creating jobs for the local population, ensuring decent working conditions, etc. (Fig. 1). The goal in the context of enabling this transition is to create non-discriminatory socio-economic and market mechanisms which will allow these companies to receive additional economic benefits through the implementation of socially significant and environmental projects.

This being the case, this paper proposes a mechanism of social and market interaction, aimed at creating the conditions for increasing the attractiveness of SD among mining companies through the possibility of attracting additional investments.

Theoretical foundations

The proposed mechanism is based on a combination of three concepts which have been actively developed over recent years as components of the SD theory.

ago with the stimulation of the mining industry, although today this concept

The concept of a social license to operate (SLO) emerged about 20 years ago [3] and today it is applied to a fairly wide range of industries [4]. According to [5], SLO reflects the community’s perception of the acceptability of a company and its local operations.



Fig. 1. Aspects of sustainable development of mineral raw sector companies

The prerequisites for the emergence of the SLO concept was the increasing number of conflicts between the owners of industrial facilities and representatives of the local population, sometimes leading to the suspension of production or the cancellation of planned projects usually due to their negative impact on the environment. Thus, the main condition for obtaining an SLO is a level of trust in the company, i.e. in its ability to conduct its activities while taking into account the interests of the local public. This concept is absolutely not formalized due to the uniqueness of, firstly, the implemented projects, and, secondly, the social characteristics of the local population.

Article [6], also highlights legal and political licenses (LL and PL), which also determine the procedure for implementing a project. PL is an authority that the Government gives to an organization to carry out its activities. A LL usually refers to the compliance of an organization’s activities with legal requirements [7]. At the same time, while the LL and PL instruments of influence are known and have many examples in global practice [8], in relation to both local projects and international companies as a whole, it is unclear whether an SLO can directly influence the activities of large companies. However, the indirect influence of SLO can be noted when it is transmitted through PL and LL (Fig. 2).

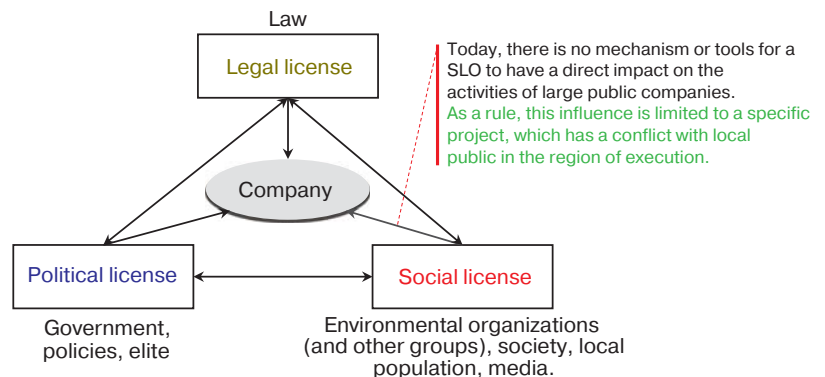


Fig. 2. Licenses to operate for industrial companies

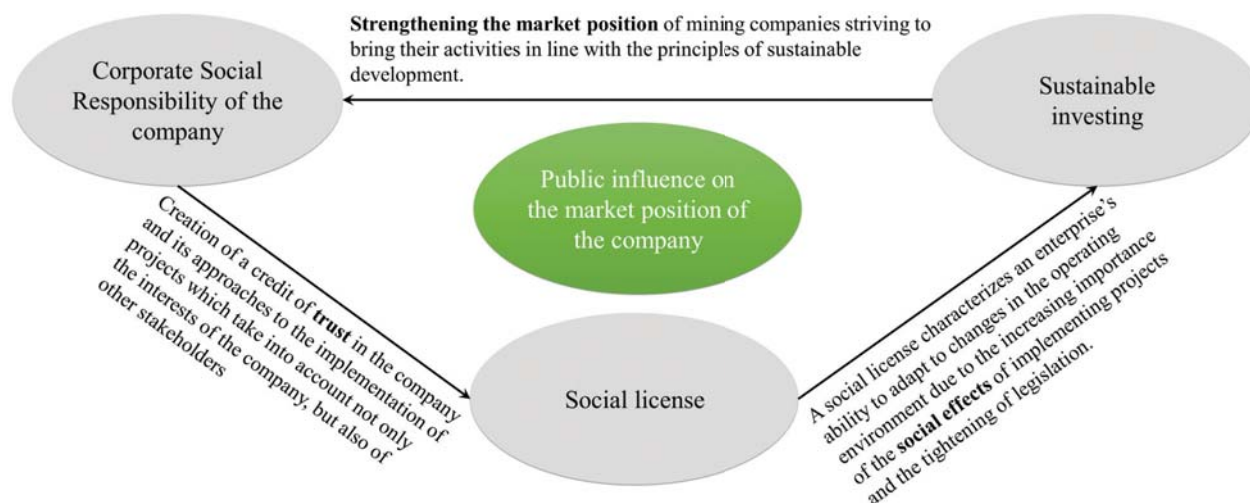


Fig. 3. The relationship between CSR, SLO and SI

As a rule, a social license to operate is considered in a local context, which is its main disadvantage to large-scale implementation. This allows large companies, which have failed in one location, to redirect funds to implement an alternative project in another location. That is, despite certain financial losses due to the failure of a particular project (minimal in the event of failure at the pre-project stage), the company does not suffer significant damage due to a deterioration in its reputation if there is no large-scale manmade disaster, as in the example of the Deepwater Horizon oil rig [9].

The concept of corporate social responsibility (CSR) has a rather long development history, during which its content has changed. Initially, this concept only covered the responsibility of companies to their owners (late 19th – early 20th century). Today, it also includes an organization's responsibility to its employees, various social groups, environmental organizations, and other public cells affected by the project [10]. In other words, it is assumed that the company should take the needs of society into consideration and cooperate to satisfy them through the effects created by the project.

This concept is both actively supported and subjected to extensive criticism in equal measure. This is due firstly to a rather vague understanding of its meaning [11]. Secondly, due to the lack of objective criteria for assessing it, even within the framework of one industry [12]. The presence of gaps in the concept creates the conditions for conflict. For example, a company may focus on certain aspects of its activities in its policy, while issues of high priority for a certain public group are overlooked. On the other hand, the implementation of an effective CSR policy does not always depend on the enterprise and may be exposed to many risks [13], for example, due to the need to obtain a LL or PL.

Despite this, CSR is a way which helps to establish contact between the companies' owners and society [14]. The main issue when establishing this contact is finding a balance between the capabilities and interests of the company, and the needs of society. On a local scale, this balance may be unique in each case under consideration, as shown by many studies in the field of public perception of technologies and projects [15]. At the same time, on a global scale, one can identify the key areas to attest to a company's contribution to the

development of its regions of operation and, therefore, may be used to develop a methodology for assessing the effectiveness of its CSR policy. Some examples of such areas are highlighted in the following sections.

Sustainable investing (SI) began to develop in recent decades due to increasing attention to environmental protection issues. This investment approach suggests that investments should be made in those companies and areas of activity that have a positive impact on the development of environmentally clean technologies, which will enhance the effect they create [16].

At a surface level it seems fair to say that consideration of environmental and social factors in an investment strategy brings no financial benefit to the investor [17]. However, a number of studies confirm that sustainable investment can produce a greater financial effect than investment in traditional methods [18].

This positive effect is extremely difficult to evaluate within a short time period, however, in the long term, it can have a decisive effect on the return on investment [19]. It could be explained by the influence of several factors, like a change in consumer preferences [20], tightening environmental legislation, development of governmental programs of "clean" technologies support.

The development and increased effects of SI require an expansion of the information base on companies implementing environmental innovations, which is not possible within the framework of targeted actions, for example, as part of the work of individual investment consultants that have an impact on investors, but often do not have the necessary information about the market of "green" companies [21]. A positive and illustrative example of the practical implementation of the SI concept is the issuance of a number of bonds by the London Stock Exchange, the purpose of which is to help make the economy greener and support organizations making a significant contribution to SD.

The three specified concepts form a theoretical basis for the proposed mechanism of social and market interaction (Fig. 3), which allows the transition of public trust from the mining company to its market price. That is, the establishment of the necessary connection between the public and the owners of the company.

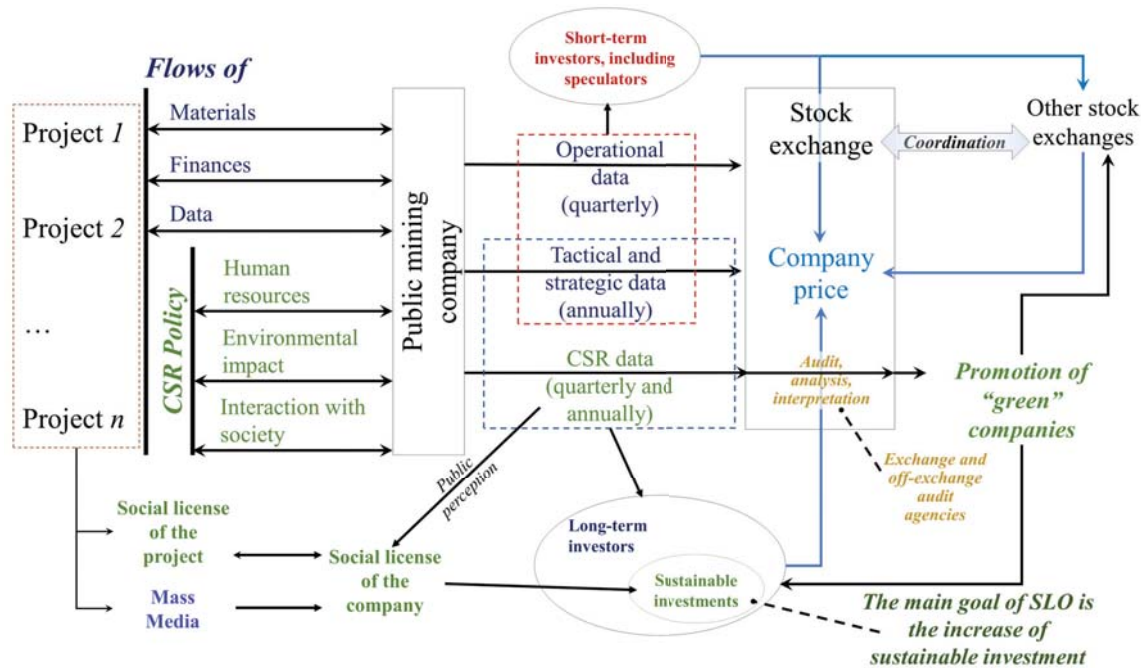


Fig. 4. Social and market mechanism of SD in mining companies

Social and market mechanism for SD in the mining industry

It is obvious that today no national or international structure has the amount of information needed to carry out any objective assessment of the CSR development level of mining companies, including the impact of their activities on the environment. This, among other things, is connected with a lack of motivation for companies to share such information [22], since environmental damage is currently associated with the need to shut down the enterprise and switch to “alternative clean technology”. However, experts agree that mining is the basis for the functioning of any sector of the national economy, and therefore, mining companies should be differentiated by their contribution to reducing and preventing potential environmental damage caused by their activities. This requires the assistance of the companies themselves through the provision of comprehensive information about their activities [23].

For these purposes, it is proposed to social and market mechanisms which will allow to attract additional investment in those companies which have an effective CSR policy and are striving to comply with SD principles. A diagram of the proposed mechanism is shown in Fig. 4.

The proposed mechanism is based on a system for collecting, analyzing and auditing information on the effectiveness of CSR policies implemented by each company in three key areas:

1. Environmental impact. Each industry requires its own criteria for assessing standard quantities of emissions. There is also a need for consideration of a gradual tightening of the criteria with consideration for the availability of technologies and the time required for their implementation. The share of spending on the implementation of environmentally-friendly projects in the total cash flow of the company also plays an important role.
2. Assessment of CSR should include, but not be limited to, the following indicators:

- the proportion of workers from the local population, taking into account the total population of the region of operation;
- the proportion of engineering specialists from among the population of the country in which the company’s project is being implemented;
- the ratio of the median salary of the company’s employees (divided into top management and working staff) and the median salary in the region where the project is being implemented;
- the amount of funding aimed at creating a social environment for employees;
- the amount of funding aimed at developing regional infrastructure;
- production safety indicators, including injury rates.

3. Staffing, or staff development, as an integral part of the long-term and sustainable functioning of the company. This aspect is one of the most controversial, since there are objective difficulties with accurately assessing the impact of the quality of personnel on the company’s operations. In addition, the problem of staff quality assessment is also extremely comprehensive. Despite this, there is no doubt that the level of qualification of mining workers determines the effectiveness of a companies’ operations, and therefore, these data should be open to potential investors.

A well-known international practice in a number of industries is the professional accreditation of employees by assigning a certain level of qualification to them, in accordance with international standards. There is no such international system in the mining industry, but the need for it is becoming ever clearer. Its implementation is possible through the International Competence Center for Mining-Engineering Education under the Auspices of UNESCO, created in Russia, which is already creating the necessary infrastructure for the accreditation of mining employees, awarding them the title of “Professional Mining Engineer” (Fig. 5). The introduction of such system will allow to identify qualification groups of employees based on



Fig. 5. Procedure for awarding the international status of “Professional Mining Engineer”

common international standards. At the same time, universities should play a significant role in this system, since they are responsible for the knowledge acquired by their graduates, regardless of the general educational standards adopted in the region of study.

It must be emphasized that the creation of a transparent accreditation system for employees of mining companies is one of the factors, which determines trust from the public. In other words, the confidence in high qualification of company’s employees will reduce fears about the potential risks of the project [24].

With this assessment system, it will be possible to use the following indicators as criteria for the quality of personnel:

- the share of specialists awarded the title of “Professional Mining Engineer”;
- the ratio of engineering staff and workers;
- the composition and qualifications of company management;
- the amount of funding aimed at training and recruiting personnel;
- the availability of a system of incentives for upgrading qualifications.

The potential testing site for the proposed mechanism is also significant. The London Stock Exchange, which has

shares of more than 160 mining companies (the leader by this indicator) with a total capitalization of around 450 billion USD, seems to be the most preferable. Furthermore, within the framework of this exchange, as mentioned earlier, there have already been instances of issuing “green” bonds, therefore, there is no need to develop a procedure for introducing a similar mechanism from scratch (Fig. 6), although passing through some stages, such as creating specialized auditing agencies and developing promotional activities for companies will still be required. It will also be necessary to predict how different exchange platforms will interact, since without this share prices will be set according to differing principles, which will result in mass speculation, for example, arbitrage trading.

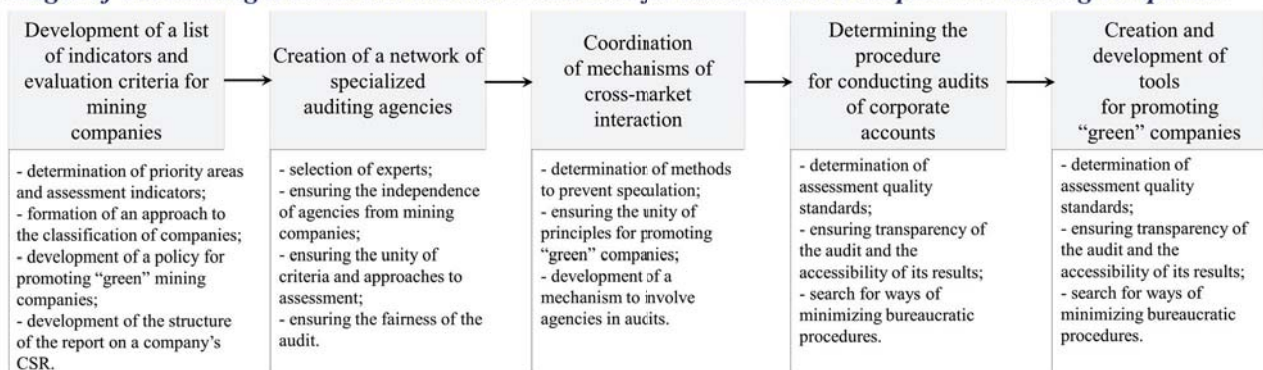
There are two reasons why long-term investors should pay attention to “sustainable” mining companies. Firstly, within the foreseeable planning timeframe, minerals will be in demand by the world economy, regardless of the stages of economic cycles and unforeseen shocks. Secondly, evidence of a company’s compliance with SD principles will indicate that it is not subject to strict fiscal measures. That is to say that the company will continue to carry out its activities with minimal risk of unforeseen damage associated with environmental impact, since in the next decade there will be a significant tightening of regulations on industrial production and, particularly to encourage reductions in carbon intensity [25, 26].

Conclusion

Mining companies play a fundamental role in the global economy, since they serve as a resource base for almost all other sectors of production. Despite this, mining and mineral processing projects are not exempt from the need to accept a SD approach in the near future. Given the nature of their work, this process is extremely science- and capital-intensive, and cannot be initiated solely through a compulsory fiscal policy from national and international regulators.

Without adequate measures to stimulate the industry to make this transition, the only way for mining companies to survive will be to migrate to regions with relatively lower

Stages of introducing a social and market mechanism for sustainable development in mining companies



Implementation of the proposed mechanism

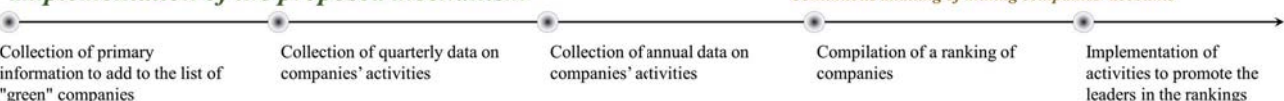


Fig. 6. The procedure for developing and implementing the proposed mechanism

environmental standards. Although today it may seem that no country would implement such a policy in the future, this could all change due to the possibility of obtaining significant tax deductions by having enterprises operating on their territory. Similar processes have already been observed in global practice, and can enhance in the future. As a solution to the problem of stimulating mining companies to develop environmentally-friendly technologies and increase their level of CSR, this paper proposes a social and market mechanism for the SD of mining companies, which will attract additional investment to those implementing environmentally-friendly technologies, and have a visible social effect. In this regard, it must be emphasized that the traditional view of the stock exchange as a simple trading platform has run its course. Today, the stock exchange should be considered as an intermediary, helping companies to attract additional investment. An example of this can be seen in London.

The development and practical implementation of the mechanism proposed in this article requires global interdisciplinary research, involving almost all possible mining project stakeholders, from the local public of regions of operation to international organizations. At the same time, its viability has already been confirmed by similar initiatives carried out in other industries.

The limitation of the proposed approach is that it focuses on the direct influence of a SLO on the value of the company, while the mechanism of market pricing itself is much more extensive and may include, for example, the indirect influence of a SLO through third parties. Also, the proposed mechanism is aimed only at public companies whose shares are quoted on the stock exchange, while there are many small enterprises which do not publicize enough detailed reports. However, given the upward trend in the capital intensity of such projects, it seems logical to expect an increase in the number of public companies whose shares are quoted on the stock exchange.

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