

UDC 622:34:332.68

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LEGAL FRAMEWORK FOR THE SUSTAINABLE ECONOMIC AND ECOLOGICAL DEVELOPMENT IN THE COAL INDUSTRY IN RUSSIA

Introduction

Approved by the Government of the Russian Federation in 2003, the Energy Strategy of Russia for the Period up to 2020 [1] became the first official national policy in the new century. The Energy Strategy of Russia for the Period up to 2030 [2] presents a new strategic development guide for the energy sector in the time of transition of the Russian economy to innovation in progress. The state-of-the-art review of the Russian coal industry will enable predicting its advancement up to 2035 [3].

Coal in the energy economy of Russia

Russia holds one of the top positions in the global circulation of natural resources and is an active party to the international mineral trades [4]. The country's position in the market of hydrocarbons is of exceptional weight [5, 6]. Russia possesses the world's second largest reserves of coal (19% of global reserves) and ensures 12% in the world commerce in terms of power-generating coal [7].

In 1990–2008 natural resources were the donor to the Russian economy; at the present day, the energy economy is going to evolve towards its objectives by stages:

1. 2008–2012: surmounting the crisis and shaping the framework of a new economy. At this stage the objective is the speedy overcoming of crunch with a view to coming up to sustainable economic growth and using every opportunity offered by the crisis for the qualitative renovation and modernization in Russian fuel-and-power sector.

2. 2013–2020: transition to innovation and generation of the new economy infrastructure. At this stage all branches of the energy economy should be embraced by extensive innovative renovation at the expense of domestic technologies, materials and equipment resulting from the active interaction between the fuel-and-power sector and industry during the first stage implementation as well as on the strength of the international cooperation.

3. 2021–2030: innovation-based economic advance. This stage provides for essential reduction of contribution of the fuel-and-energy sector to Russian economy owing to non-energy sources of innovative economic growth.

It is found that the coal industry (one of the backbones of the energy economy) in the framework of the energy strategy of Russia has a certain prospect in the energy budget up to 2030 (Table) [8].

Sustainable economic and ecological development of the coal industry in Russia can be impeded by the lack of some national-level documentation. This shortcoming should be compensated for at an early day. When elaborating measures aimed to reach the objective of the industry, a particular emphasis should be placed on formation of a regulation framework for the introduction of advanced technologies and towards commercial manufacture. The regulatory and legal framework should be in line with the criteria of ecological cleanness of the best available technologies. The increase in the coal production output and use predetermines the need for technological innovations in order to ensure transition of the coal industry to the sustainable economic and ecological development. The period of transition should be backed by the regulatory documents for the integrated assessment of the environmental impact of coal mining.

Key words: efficient nature management, mining legislation, monitoring, environmental consequences, safety, restructuring, sustainable development
DOI: 10.17580/em.2017.01.01

Predictive energy budget of Russia for the period up to 2030

Raw material	Stage 1: 2008–2012	Stage 2: 2013–2020	Stage 3: 2021–2030
Natural gas, Bm ³	528–573	592–619	656–696
Mineral oil, Mt	195–211	240–245	309–343
Coal, Mt	168–197	198–238	248–302
Non-fuel resources, Mt	117–127	130–147	163–224

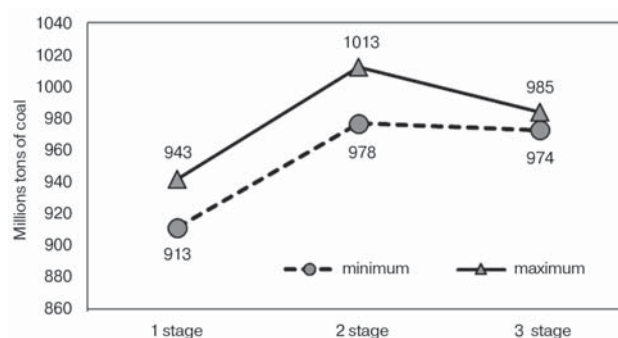


Fig. 1. Predictive history of Russian coal export up to 2030

During 22 years (1994–2016) Russian coal industry had gone through the difficult time between the systemic crisis and transition to a new functional life under the market-oriented economy. One of the goals of the coal industry restructuring was closure of unprofitable open pit and underground mines (all in all 2203 mines) [9] and modernization of the rest production [10]. According to the analyzed outcome of the restructuring, performance of the coal industry enjoyed considerable enhancement. Undoubtedly, Russia will

remain a leading player in the world market of hydrocarbons, and will actively contribute to the development in the market of power and coal [11, 12]. Export of coal will be very high up to 2030 though it will decrease in the course of time (Fig. 1).

Problem formulation on legal regulation of environmental issues of coal mining

The increment in coal production output and use calls for a legal framework for technological innovations toward the long-term enhancement of coal mining efficiency.

The progress in the coal industry of Russia will need a foreign partnership support, thus, it is of the current concern to develop normative legal documents in accordance with the international standards. The basis can be the Federal Law on Technical Regulation enacted in 2002 [13]. This law should be complemented with a special package of normative and technical documentation focused on the sustainable economic and ecological development in the coal industry in Russia. Such development is connected with low-waste (or non-waste) and ecology-friendly technologies of coal mining and dressing at the reduced scope of work on restoration and preservation of natural environment.

On implementing that approach, there are some national-level defects as many standards are absent: register of the approved nomenclature of indexes mandatory for the environmental pollution monitoring and recording of specific (hazardous) pollutants both in a mining area and in the adjacent (boundary) terrain; document database developed within the unified methodological framework to ensure adherence to the environment quality standards as well as revision of the standards in case of change in conditions (either deterioration or improvement); approved normative standards on maximum allowable concentrations of toxic emissions enabling flora and fauna stability.

Problem analysis and solving

The absence of the unified system of economic and environmental standards in the country is assumed a constraint for harmonic social, economic and ecological advance in the life support system. Without such standards pegged to a territory and geography, it is impossible to implement an efficient control over nature preservation, conservation and efficient use of natural resources as well as recovery of the environment.

The introduction of a package of documents in the form of the system of economic and environmental standards should be an important component to the strategy of economic and ecological security with the concurrent implementation of the functions of the environment protection and efficient nature management in the mineral mining industries.

The present article authors think the system of norms for maximum allowable emission and maximum permissible discharge currently in force, based on the calculated critical ecosystem load with respect to health standards has some shortcomings:

- the industry standards omit indexes that could be useful in the objective estimation of influence exerted by specific objects and territories on the environment;
- many indexes characterizing quality of the environment are disparate (or difficult to collate) due to the absence of unified determination procedures for such indexes;
- no procedural rules with the listed indexes for ranking technologies based on the optimality criterion for coal mines are fixed;

- the environmental standards for treatment facilities and equipment are absent and so are the model ecological norms for pollutant emission volumes for different mines subject to the applied technologies;

- no developed standards exist for adverse effect exerted by harmful substances and production on health and nature (greenhouse gas, heat pollution etc.);

- there is no integrated international bank of data on the environment quality standards in force in the countries of the world.

Russia exercises a different approach to setting standards of detrimental effects as against the advanced countries of the world (USA, Germany, France). In the latter case, the permissible emission (discharge) volume is regulated by the technical standards divided into two groups: for the best advanced and the current technologies. It is almost generally agreed, especially in Europe, to recommend new mine planning based on the standards set for the advanced technologies. The terms of the standards set for the current technologies should be limited by the time of the mine reconstruction onset. In case of the noncompliance with the set emission (discharge) volumes as per the standards for the current technologies, the administrative measures extend up to complete closure of production. The reasonable adaptation of Russian regulatory structure to the international standards will promote technological integration of Russia into the world community.

Presently, it is impossible to make a comprehensive list of federal executive authorities that bring into effect separate environment-connected functions in Russia. There are three inter-industry bodies of a specific expertise in the field of setting the environment protection standards: Ministry of Natural Resources and Environment, (including Rosgidromet, Rostekhnadzor, Rosvozdoresursy, Rosnedra), Ministry of Health and Social Development and Ministry of Agriculture.

Creation of an integrated system of the environment quality standards in Russia is only possible in case of:

- all-round introduction of legal and information framework of the environment quality standards;
- development and introduction of the concept on long-term environmental regulation and standardization of the environment quality;
- development of a national program with the provision of reassessment of health standards;
- introduction of regional-level system of the environment quality standards with respect to nature, climate and man-made burden intrinsic for a specific region;
- development and introduction of unified classifiers for the environmental impact of economic activity objects and the aftereffects per regions (federal districts);
- appointment of a special national executive authority to coordinate operation of executive bodies on all levels in order to ensure environmental protection compliance and ecological security.

The maintenance of the legal framework for the environmental quality standardization should be considered a top priority in view of the recessionary events in economy and the state policy of national energy and ecology security. The proposals and grounds discussed in this article were recommended in a new edition of the Federal Law on Environmental Protection of Russia (article 1, 68, 80.1 — addenda on accumulated environmental damage) [14].

It would be expedient if the Government of the Russian Federation charges:

- the relevant executive authorities to develop a concept of the system of ecological ranking and environmental quality stand-

ardization with regard to the global recession and, based on that, a federal targeted program of ecological regulation of the environment quality;

— the federal agencies and ministries to include R&D projects with the topic of ecological regulation of the environment quality;

— the subjects of the Russian Federation to make proposals to the RF Government on generation of regional-level system of the environment quality standards with respect to nature, climate and man-made burden intrinsic for a specific region and its prospects for mineral mining up to 2030.

For some time past, the uncertainty and risks in the global market development have been essentially elevating, including the aftermath of the international financial crisis, menace of deficient energy supply in the post-recession period, and quite ambiguous prospects for international negotiations on the issues of the environment and climate change policies. On the other hand, the increasingly more understanding and support is rendered to the efforts aimed to enhance the long-term stability of fuel and energy markets and global ecological safety to be ensured without harming any nation interests. This tendency found representation in the decisions and recommendations made at 2006 Saint-Petersburg Group of 8 Summit.

Some regulatory and instructional documents on the environmental protection for the coal industry to transit to ecology-friendly technologies could be developed by the related science. Unfortunately, the only since 1948 All-Union Research and Designs Institute for the Environment Protection in Coal Industry (VNIIOStugol) was reorganized. In 2016 its successor became the Inter-Industry Research, Design and Production Institute of Fuel-and-Power Sector Ecology — MNIEKO TEK. The goals and objectives of the institution are shaped based on business interests.

Some countries approve special industry-related codes, for example 1958 Oil Code and 1965 Mining Law (Mexico), 1966 Mining Code and 1967 Oil Code (Argentina). The Department of Geosciences task group on jurisprudence of exploration, development and use of mineral wealth at IPKON Institute of RAS suggests the legislative development by enacting the Mining Code of the Russian Federation. Such unified legal act will create a uniform legal field in the mining industry in the form of the systematized statutes on subsoil use, will frame an efficient structure of the public-private partnership control in the area of mineral exploration, development and use, and will assist in strengthening and improving cooperation with the other branches of law.

Conclusion

The efficient performance of the environment quality standardization system based on the calculated limiting ecosystem loads with respect to the health standards in Russia is only possible upon introduction of the legal and information framework [15]. In the capacity of the high-priority normative legal documents of the national level (considering predictions for the period up to 2030), out of the required set of regulations and standards, the present article authors propose to develop and introduce:

— Ecological safety code for coal mining;

— Guidelines on prevention, localization and elimination of ecological aftereffect of natural and induced crisis situations in coal mining regions, including factors of large-scale closure of open pit and underground mines;

— Environmental standards for coal mining technologies and equipment toward stability and safety of coal-producing regions;

— Technical regulations for introduction of geodynamics and environment monitoring to ensure safe living environment in the areas of miner's towns and settlements;

— Guidelines for obligatory use of procedures and maps of geodynamically hazardous areas in design practice with a view to preventing direct loss due to geodynamically hazardous events;

— Unified lists of contents for information and analysis systems of integrated ecological monitoring in coal mining regions in Russia.

The long-term national economy policy aimed at diversification of the economy structure and to reduce the national dependency on the export of natural resources is only possible within the relevant scientific and legal framework.

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