Legal Aspects of Regulating Disturbed Land Reclamation

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Abstract. The impact of coal mining on the Kuzbass region ecosystem is studied in the article. Large-scale mining have led to land disturbance over large areas. The Coal Industry Development Program, which provides for a significant increase in production, will make the identified problem more important. In this regard, the problem of the coal industry should be solved simultaneously with the restoration of natural ecosystems through high-quality land reclamation. The existing regulatory framework for reclamation is assessed in the article. The mechanism of legal regulation of reclamation of disturbed lands at the regional and federal levels is proposed. Improving the quality of reclamation will be facilitated by the development of a strategy for the restoration of the natural environment, which would be reflected in the Concept of disturbed land reclamation.

Introduction
The natural resource orientation of the Russian economy without observing the principles of rational nature management has led to a significant extent of land withdrawal from agricultural, forestry and recreational use. The quality of the environment and the environmental situation are deteriorating in disturbed and adjacent lands. Negative impacts are accumulating and become every decade more and more destructive in environmental, economic and social aspects.

The large-scale mining operations have led to land disturbance, a change in the parameters and indicators of ecosystem elements over large areas. The consequences of such insufficiently controlled impacts are noticeably reflected in significant landscapes, the balances of ecosystems uniting a number of economic entities, including territorial ones, living conditions of the population in immense territories, the indicators of economic activity of mining enterprises themselves.

The Kuznetsk coal basin is the largest in Russia, both in terms of coal reserves and production. By 2020, it is planned to increase coal production by 43% compared to 2006. The total volume of coal production will be 250 million tons per year. More than a billion tons of rock will be extracted annually. The area of dumps will increase by 20% and reach 120-150 thousand ha. Thus, the total area of disturbed lands requiring reclamation will approximately double. All this will lead to the fact that in the Kemerovo region, where the anthropogenic impact still creates a tense environmental situation, further deterioration with unpredictable consequences is possible. To prevent irreversible consequences, it is necessary to forecast and develop environmental rehabilitation measures [1].

The extensive development of the industry of Kuzbass has led to an acute crisis in land use. [2]. Land that has been disturbed due to the activities of enterprises is characterized by low agrochemical indicators. In order to increase the humus content to that of soil that has not been subject to anthropogenic impact, a whole range of engineering, mining, reclamation, biological, sanitary and hygienic and other measures are needed that are aimed at reproducing the productivity of disturbed lithosphere plots and their rehabilitation to a state that is acceptable for post-industrial use. This set of measures is commonly referred to as the term “reclamation” [3].

The main reason for the long-term crisis in land reclamation is the lack of scientifically sound, economically feasible technologies that provide a high environmental and social effect. The choice of a method of reducing damage from land disturbance to a large extent depends on the conditions, physical
and chemical composition of the substrate and the possibility of its disposal, its self-organized vegetation capacity and the type of reclamation [4].

For the period of the Kuznetsk coal basin operation, less than 20% of disturbed lands were reclaimed [5,6].

When increasing coal production, the main environmental problem is the deterioration of the human environment. Landscapes are changing; the related processes such as soil disturbance, air pollution, water pollution, depletion of biological diversity take place. Environmental pollution and changes in environmental parameters have a slow, accumulative effect of adverse impact on human health, which manifests itself after many decades [7].

An integral indicator of the health status of the population living in coal mining regions is: an increase in the natural population decline, high levels of congenital malformations, increased background of cancer, blood system, nervous diseases, occupational diseases, high proportion of groups vulnerable to environmental impacts.

Thus, reclamation of disturbed lands is a necessary way to restore destroyed ecosystems, preserve biological diversity and increase the ecological capacity of the territory.

The research purpose
The purpose of the article is to analyze the situation of reclamation of disturbed lands, assess the regulatory framework and develop a comprehensive program for reclamation of disturbed lands in the region with an intensive impact on soil resources.

The research materials and methods
To achieve this goal, the following methods were used: analysis, generalization, comparison, abstract logical method.

The material of the study is the regulatory legal acts related to the problem under consideration; materials that describe the environmental situation in Kuzbass.

The research results and discussion
The main problems of Kuzbass are:

• high rate of industrial production and its raw material orientation;
• predominance of industries with high anthropogenic load (coal, metallurgical, chemical industries);
• formation of large areas disturbed by coal mining;
• low quality of mining and biological reclamation works;
• low rate of economic use of reclaimed land.

![Fig. 1. Coal production in the Russian Federation [10]](image)

The main coal mining enterprises in the Kemerovo region are located heterogeneously and concentrated mainly in the center and in the south of the region. The administrative areas can be divided into 3 categories according to the coal mining rate and the technogenesis impact degree [8]:

• High rate of industrial production and its raw material orientation;
• Predominance of industries with high anthropogenic load (coal, metallurgical, chemical industries);
• Formation of areas disturbed by coal mining;
• Low quality of mining and biological reclamation works;
• Low rate of economic use of reclaimed land.
I - intensive technogenesis areas (Belovsky, Leninsk-Kuznetsky, Guryevsky, Prokopyevsky, Novokuznetsky, Kemerovsky, Yaysky);

II - trans-border technogenesis impact areas (Yashkinsky, Izhmorsky, Topkinsky, Krapivinsky, Industrial, Mezhdurechensky);

III - “reference” areas outside the technogenesis impact zone (Mariinsky, Tyazhinsky, Tisulsky, Yurginsky, Chebulinsky, Tashtagolsky).

The current state of the I-th group and partially the II-th group of areas of the Kemerovo region can be classified as emergency ecological zone or ecological disaster zone and indicates the exhaustion of natural environment resources [9]. The situation is aggravated by the fact that 70% of the population lives in areas of intensive technogenesis, which negatively affects such an indicator as “quality of life”.

Nevertheless, Coal Industry Development Programs and Strategy of Socio-Economic Development of the Kemerovo region for the period until 2035 provide for further growth in coal production. From 2011 to 2018, coal production increased from 336.7 to 439.3 million tons (Fig. 1)

More than 60% is Kuzbass coal.

![Fig. 2. Development of the coal industry production capacity and the creation of new coal mining centers [10]](image)

For the period 2012-2018, 8 underground mines, 8 open-pit mines and 7 concentration plants were commissioned in the Kemerovo region. Moreover, the environmental targets indicated in the Coal Industry Development Program are either on the upper limit or do not meet its requirements (Table 1).

| Target indicator                                      | According to the Program for 2016-2020 | Real value |
|-------------------------------------------------------|----------------------------------------|------------|
| Specific discharge of polluted wastewater into water bodies, m³/t of output | 0.7 – 0.8 | 0.86 | 0.84 | 0.71 |
| Contaminated wastewater discharge rate of total discharge, % | 70-60 | 76.1 | 75.2 | 69.2 |
| Water cycle ratio | 0.8-0.85 | 0.78 | 0.78 | 0.80 |
| Specific emissions of air pollutants, m³/t of output | 2.4-2.5 | 2.6 | 2.7 | 2.5 |
| The rate of emission of air pollutants in the total amount of generated pollutants, % | 45-55 | 58.5 | 58.8 | 69.4 |
| Land reclamation rate of annual land disturbance, % | 65-70 | 18.7 | 19.0 | 5.5 |
| Specific waste generation, t/t of output | 5.8-5.9 | 8.4 | 8.8 | 9.7 |
| The rate of waste disposal in external dumps,% of generated waste | 35-40 | 47.2 | 51.2 | 42.4 |
| The share of integrated use of production waste, % | 13 | 52.2 | 54.6 | 53.5 |

Table 1. Target indicators of the subprogram “Environmental safety” of the Coal Industry Development Program and performance in 2016-2018 [10]
Especially negative are the trends towards the formation of disturbed lands (Fig. 3).

Fig. 3. Area of disturbed and reclaimed land [10]

The dynamics of indicators in the field of land conservation is negative. The area of annually disturbed land is growing rapidly. Over the past 6 years, it has grown 2.5 times. The area of annually reclaimed land remains low and lags far behind the targets set by the Coal Industry Development Program of Russia for the period until 2030. In 2018, the rate of reclamation amounted to 5.5% of the annual disturbance, and the lowest indicator for the last year - 1.6% - was in Kuzbass.

The data presented show that with an increase in coal production, the area of disturbed land is many times higher than the rate of reclamation. This may be due to at least 2 reasons:

1- this is land disturbed by newly commissioned enterprises that do not yet have disturbed lands to be reclaimed;
2- the opportunity for nature users to look for loopholes in the framework of existing legislation and not to implement these measures or to implement them to a lesser extent.

This determined the need to assess the regulatory frameworks of land reclamation.

The legal basis for the need for reclamation is laid, first of all, in the Constitution of the Russian Federation. It determines the federal structure of Russia and, consequently, the current system of Russian legislation, including the environmental one. A number of federal acts have been adopted, which require a review of regional environmental legislation. This is, first of all, the Land Code, the Tax Code, the Budget Law, the Code on Administrative Offenses, the Federal Law "On Environmental Protection", the Federal Law "On the delimitation of state ownership of land", the law "On Mineral Resources" and others.

To date, land reclamation is carried out in accordance with the recently adopted Decree of the Government of the Russian Federation of July 10, 2018 No. 800 “On the implementation of land reclamation and conservation” [11], which defines the rules for land reclamation and conservation. These rules establish the procedure for land reclamation and conservation that is applied to land and land parcels.

The conceptual framework includes some definitions, such as [11]:
"land degradation" - the deterioration of land quality as a result of the negative impact of economic and (or) other activities, natural and (or) anthropogenic factors;
"land conservation" - measures to reduce the land degradation rate, prevent its further degradation and (or) the negative impact of disturbed lands on the environment, carried out upon termination of the use of disturbed lands;
"soil layer disturbance" - removal or destruction of the soil layer;
"disturbed lands" - land whose degradation has led to the impossibility of its use in accordance with the intended purpose and permitted use;
"land reclamation" - measures to prevent land degradation and (or) restore its fertility by bringing land into a condition suitable for use in accordance with the intended purpose and permitted use, including by eliminating the effects of soil pollution, restoring the fertile soil layer and creating protective forest plantations.

However, the new legislation did not improve reclamation of disturbed lands. This is especially true for intensively mining regions, which include the Kemerovo region.

For further regulation of reclamation of disturbed lands, the adoption of new regulations is necessary. The solution to this problem is unlikely to be successfully implemented in the traditional way. As modern foreign legal practice shows, the problem of creating legal mechanisms in order to reclaim disturbed land and prevent its formation is further considered as one of the components of a larger problem - the problem of natural resource management. The possibility of implementing these principles and tasks as fully as possible is possible when adopting a set of laws at the federal and, as a consequence, regional levels that would make land reclamation inevitable.

In our opinion, one of the ways to solve these problems is a comprehensive approach, reflected in the development of the natural environment restoring strategy, which would be reflected in a Concept of disturbed land reclamation. The analysis of the regulatory legal acts of the Kemerovo region on the studied issues showed the lack of an integrated regional approach. Over the past five years, environmental legislation on reclamation of disturbed lands has not been renewed. Several parliamentary hearings, meetings of the Public Chamber of the Kemerovo region, meetings of the Public Council at the Department of Natural Resources and Ecology of the Kemerovo region administration were held; however, the proposals made are of a recommendatory nature only and have no legal force. So, for example, in 2018, there are any materials related to the problem under consideration neither in the laws of the Council of People's Deputies of the Kemerovo region, nor in the resolutions and orders of the Governor of the Kemerovo region, nor in the decisions and orders of the Board of the Administration of the Kemerovo region, nor in the orders of the Department of Natural Resources and Ecology of the Kemerovo region.

The concept is known as a certain way of understanding, interpreting any phenomena, the main point of view, the guiding idea for their coverage, leading idea, and constructive principle of various activities. From this it is clear that the implementation of the concept must be inextricably linked with the development of an appropriate program.

Part of the problem of improving the environmental situation is provided for in Program 2035 [12]:

“In the field of environmental safety, the most important task is to reduce the negative anthropogenic impact on land resources and reclaim soil cover, namely:

1. Normative increase in the mandatory volume of land reclamation.
2. Promotion of the land reclamation program at the federal level.
3. Reduction in coal production in the Kuzbass agglomeration zone.
4. Refusal to mine a number of mineral deposits in areas with high environmental and recreational capacity”

In addition, the Plan of Measures for Socio-Economic Development of the Kemerovo region until 2024 [13] stipulates the need for reclamation of 27 areas of disturbed land.

The Concept of disturbed land reclamation should be aimed at creating the demand for reclaimed land with the inevitability of its implementation.

The inevitability of work on reclamation of disturbed lands should be achieved by high rents for land plots, which would force the tenant to quickly return the worked-out and reclaimed plots to the lessor. The demand for reclaimed land should be provided by various reclamation types - the creation of arable land, hayfields, pastures, forests, lakes, the formation of landscape parks, etc., that is, obtaining as a result of reclamation such an environment and objects that would be actively involved in economic use, which practically does not occur at present.

The cost of reclamation is determined by many factors, including the cost of reclamation work and the maintenance of the reclaimed territory after the completion of work. In turn, these factors depend on the site location, which determines its market value, its natural features and form of use after the completion of reclamation work.

Today, only solid state subsidies for reclamation will allow solving the problem of disturbed lands in the Kuzbass, since many enterprises that disturbed lands no longer exist at present, and private companies are trying in every possible way to reduce the costs of reclamation. Therefore, it is not surprising that now in Kuzbass, in the absence of state subsidies for reclamation, coal companies have to use the
cheapest forms of reclamation, which is a simple way of planting trees and shrubs on the surface of dumps.

At the state level, it is necessary to develop a national policy for the development of the coal industry and implement a number of measures for state regulation of the management of this industry:
- to increase the economic independence and economic responsibility of the regions in the field of environmental management and environmental protection by improving natural resource legislation at the center and regions;
- to accelerate the adoption of federal laws on pollution charges and on mandatory environmental insurance;
- to use licensing agreements and licenses, which are an important tool of the state in the process of managing mineral resource use, to solve environmental problems in regions with a developed mining industry;
- to tighten the state environmental control in the field of production and economic activities of the enterprise by conducting environmental monitoring, environmental impact assessment, environmental audit, environmental insurance and other administrative and legal forms of state control in the field of nature management and environmental protection;
- to carry out audits of all applicable federal natural resource legislation in order to ensure environmental safety in regions with intensive exploitation of natural resources [14].

The proposed measures that should be implemented at the federal level in order to solve the environmental problems of the coal mining region are relevant for all subjects of the Russian Federation with intensive mining.

Currently, pollution charges do not perform incentive functions to solve existing environmental problems. Pollution charge refers to non-tax revenues of budgets of different levels, and therefore the formation of territorial environmental funds through charges. Enterprises and regions have lost a sustainable source of financing environmental protection measures. As a result of the low rate of modern pollution charges, the economic efficiency of environmental protection measures, as a rule, has negative values. The prolonged absence of a federal law on pollution charges weakens the legal support of paid relations on the basis of “the polluter pays” principle. In general, the imperfection of the legislative base in the field of nature management and environmental protection reduces the efficiency of state regulation in this area.

Environmental legislation, in accordance with Article 72 of the Constitution of the Russian Federation, is formed as the subject of joint jurisdiction of the Russian Federation and the constituent entities of the Russian Federation, which is also recorded in the federal law “On Environmental Protection” and other legislative and regulatory acts of the Russian Federation and constituent entities of the Russian Federation in the field of environmental protection.

Administration of the Kemerovo region in the Program of Economic and Social Development of the region for 2005-2010 provided for a change in the structure of the regional economy in favor of the processing industries that produce final products, which is an objective condition for the sustainable development of the region. However, along with the creation of new processing industries, it is also necessary to invest in the modernization and technical re-equipment of existing mining companies. In order to maintain a balance of interests of the state and the region when pursuing environmental and economic policies, priority should be given to all-Russian interests, and the federal center must provide the region with appropriate support in resolving environmental problems using different instruments of the economic and legal mechanism.

To improve the environmental situation in the region, it is necessary:
- to develop and implement a modern system for monitoring the environmental safety of the region (create a network of stationary monitoring sites);
- to ensure a change in the attitude to environmental problems of the owner-mineral resource user, which should be not only socially, but also environmentally responsible (reduction of negative environmental impact should be a prerequisite for increasing production at existing enterprises);
- to develop an environmental management system with subsequent certification of products in accordance with GOST (State Standard) ISO 14000;
- to seek compliance with environmental legislation, licensing agreements with mineral resource users at the municipal government level.
The development of certain areas, for example, the development of the processing industry, is partially reflected in Program 2035 [12].

Environmental-friendly development of new coal mining technologies can be carried out by forces and means of the coal companies themselves or by their order. The development of holistic technologies for policies aimed at solving environmental problems should be the content of the federal target program for the development of the coal industry of the Russian Federation.

The problem of reclamation of disturbed lands is extremely urgent for the Kuzbass coal industry, and therefore, under the current legislation in the Kemerovo region, it is necessary:

- to conduct a public examination of the program for reclamation of disturbed lands and adopt it by the legislative assembly of the region;
- to develop and put into effect a mechanism for collateral (insurance) payments upon the allotment of a land plot for works related to land disturbance;
- to create a non-profit fund for reclamation of disturbed lands;
- to develop and adopt a regional target program for reclamation of disturbed lands;
- to develop and introduce advanced coal mining technologies in production, which will ensure the reduction of the land consumption of mining operations.

Findings
An unfavorable soil disturbance situation has developed in the region as a result of coal mining; the rate of disturbance being many times higher than the rate of reclamation. Further growth in coal mining makes this problem more urgent. Environmental legislation in the field of reclamation of disturbed lands allows owners to find law loopholes. The proposed Concept of disturbed land reclamation will allow for an integrated approach to development and reclamation of natural resources.

Conclusion
Reclamation of land disturbed by coal mining should be the most important responsibility of companies engaged in this activity. Given the fact that since the 90s, as a result of the bankruptcy of companies, large areas of abandoned non-reclaimed land have formed, and the rate of disturbance has outstripped and still outstrips the rate of reclamation, the amount of land to be reclaimed continues to be significant. In addition, the quality of already reclaimed land continues to be very low. These are, as a rule, lands with poorly conducted mining and biological stages of reclamation. This became possible due to the imperfection of environmental legislation on the issues of reclamation and the lack of scientific research. Today, society cannot rely on environmental education and the worldview of nature users, which means that it is necessary to have legal and regulatory leverage to improve the quality of reclamation.

To enhance the efficiency of disturbed land reclamation, it is necessary to adopt the federal law “On Land Reclamation”, which should define the objects of reclamation, the grounds, conditions and terms of work related to land disturbance, accounting for the disturbed lands, the procedure for acceptance and transfer of non-reclaimed lands, a procedure for monitoring land reclamation, as well as liabilities for non-compliance with established requirements. Contributions or payments that determine the economic mechanism for the provision of reclamation measures must be made at the stage of obtaining permission to conduct activities related to land disturbance.

For the successful implementation of environmental policy, coal mining companies need to determine its following main stages and main environmental and economic measures:

- to justify the priorities of environmental protection and reclamation measures;
- to identify the necessary funds for solving environmental problems and sources of financing;
- to assess the environmental and economic efficiency of environmental measures at the enterprise level.

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