

# Suggestions on Environmental Protection and Governance of Mines in China

Lihe Zhang

CUMT Geotechnical Engineering New Technology Development Co., Ltd., Xuzhou, 221000, China

**Abstract:** With the rapid development of the current economy, the demand for mineral resources is increasing. While further promoting the development of the mining industry, it has also caused great damage to the mining environment and seriously threatening social security. Mine environmental protection and governance has become an important measure that cannot be delayed. This paper analyzes the problems existing in the current mine environment, and further puts forward relevant suggestions on mine environmental protection and management for your reference.

**Keywords:** Mine environment, Protection, Governance, Recommendations

**Publication date:** July, 2019

**Publication online:** 31 July, 2019

**Corresponding Author:** Lihe Zhang, zhanglihe007@163.com

## 1 Threats to the mine environment

### 1.1 Destruction problems with the environment and resources

In the current mining process of mineral resources, it is easy to cause damage and waste of mineral resources due to unreasonable exploitation of mineral resources. In the process of mining, often due to unreasonable mining and construction, the land around the mine is occupied, the surface vegetation is destroyed, and even the farmland is encroached and planted. In addition, the excavation of minerals is also likely to lead to geological relics, representative topography and geomorphology, as well as the destruction of the human landscape and ecology of the surface. Finally, the exploitation of mineral resources can easily lead to

the destruction of equilibrium of groundwater systems, which in turn leads to problems such as lower water levels rivers and lakes.

### 1.2 Occurrence of geological disasters in mines

The mining of mineral resources can easily lead to changes in the stress system of the mining area<sup>[1]</sup>, leading to phenomena such as landslides, mountain collapse, ground collapse, debris flow and soil erosion, and leading to geological disasters such as land desertification. While further increasing the incidence of safety accidents, it poses a serious threat to the safety of life and property of residents living nearby. While affecting the social and economic benefits of mining enterprises, it also brings serious constraints on the sustainable development of mines.

### 1.3 Environmental pollution

In the mining process, “three wastes” such as waste gas, waste water and waste residue will be generated. If the “three wastes” are not properly placed in the discharge process, it is easy to pollute the atmosphere, soil and water sources around the mine, which will lead to a series of ecological and environmental problems. At the same time, it will have a negative impact on the production and life of the surrounding residents, and it will also pose a threat to their personal safety.

## 2 Current problems in mine environmental protection and governance

### 2.1 Lack of perfect legal system for mine environmental protection and governance

The development of social economy has further expanded the demand for mineral resources, which in turn has promoted the large-scale mining of mines.

Although a series of laws and regulations related to mineral environmental protection have been established in the present, there are no specific laws and regulations for mine environmental protection. As a result, some of the mines in the current mining industry are more focused on short-term gains, ignoring the importance of environmental protection. Secondly, laws and regulations serve as the benchmark and guarantee for mine environmental protection and governance, and the imperfect laws and regulations have led to weak enforcement of environmental protection in grassroots mines. In addition, some areas have not established a sound law enforcement agency for mine geological environment<sup>[2]</sup>. As a result, the implementation of measures related to mine environmental protection and treatment is not in place, and it is difficult to effectively restrict and supervise illegal mining.

## **2.2 Insufficient funds for mine environmental protection and governance**

The protection and management of the mine environment is not a verbal decision, but it needs to be implemented in practice, and this is inseparable from the support of funds. In addition, the protection and governance of the environment cannot be solved overnight, and it requires long-term unremitting persistence and efforts. Therefore, the protection and management of the mine environment requires a large amount of capital investment and support. With the deepening of mining in recent years, the environmental problems of mines are becoming more and more serious, so it is necessary to invest more manpower, material resources and financial resources. Although the state has continuously added special funds for the remediation of the mine environment, there are problems of singularity, temporality and instability of financial investment<sup>[3]</sup>. Therefore, there are still insufficient funds for mine environmental protection and governance, which is difficult to guarantee the continued operation of this long-term project to be effective. In addition, some mining enterprises have not included environmental costs into the production costs of enterprises. Therefore, when the mine environment is damaged, there is a lack of special funds for the protection and treatment of the mine environment, which further increases the funds for mine environmental protection and quality gap.

## **2.3 Insufficient work in mine environmental protection and governance**

Due to the diversification and complexity of mine environmental protection and governance, advanced science and technology and management experience are needed in the protection and quality work to further implement mine environmental protection and governance<sup>[4]</sup>. However, from the current situation analysis, the mine environment restoration and control technology is relatively backward, and it is not perfect in terms of technical standards and parameter settings. In addition, some mining enterprises have insufficient attention to environmental governance and their research capabilities are weak. As a result, many technical problems are difficult to be effectively solved, which has brought certain obstacles to the recovery and restoration of the mine environment. On the other hand, at present, there is still a gap in mine environmental protection and governance talents, lack of high-quality professional talents, and it is difficult to provide sufficient talent support for mine environmental protection and governance, which further affects the implementation and effectiveness of governance work.

## **2.4 Weak supervision of mine environmental protection and governance**

In the process of carrying out mine environmental protection and governance, it is necessary to cooperate with various management departments, such as the national land department, the forestry department, and the water conservancy department. In addition, there are many links in the mining process, such as project review, approval and supervision, which lead to the intertwining of multiple management departments, which brings certain difficulties to its supervision and management. Secondly, the current lack of a perfect mine environmental value assessment and monitoring statistical system<sup>[5]</sup>, leading to the lack of corresponding standards in the development of mine environmental protection and governance work, it is difficult to make a scientific and standard assessment of its losses when the mine environment is destroyed, which seriously affected the implementation of mine environmental supervision and responsibility. On the other hand, the staggered office form of various departments has facilitated the shirking responsibility of some management departments, and it is difficult to effectively supervise the protection and treatment of the mine environment, while some management departments pay more attention to the exploitation of mine resources, while ignoring the mines. The

factors that may affect the mine environment during the mining process lead to damage to the mine environment and lack of source monitoring, resulting in the protection and treatment of the mine environment being in a state of passive remediation.

### **3 Suggestions on strengthening mine environmental protection and governance**

#### **3.1 Strengthening the construction of mine environmental protection laws**

The law is an important foundation and mechanism for protecting mine environmental protection and governance. Therefore, establishing a sound mine environmental protection legal system is the primary measure for mine environmental protection and governance. Although the “Environmental Protection Law” has been established at the moment, due to its timeliness, there is no timely and all-round adjustment of environmental and resource protection in its content<sup>[5]</sup>, it is difficult to provide effective legal support to protect the mine environment and governance under the current status quo. Therefore, first of all, on the basis of the existing law, we should fully refer to the current status of social development and timely update and adjust its laws and regulations. Secondly, the current lacking laws and regulations specifically for mine environmental protection and governance are mostly classified into environmental protection. Therefore, it is necessary to further strengthen the construction of relevant laws and regulations on mine environmental protection and governance, and provide a complete and scientific legal support for mine environmental protection and governance while further constructing a safe and sound legal system.

#### **3.2 Improvement of mine environmental management system**

First of all, it is necessary to establish a mine environmental management system led by the land and resources department<sup>[6]</sup>. As a multi-management collaboration industry, the mining industry has established a leading position in the land and resources sector and can effectively monitor and manage the mine environment. As the functional department in charge of China's mineral resources exploration, mining and gold protection supervision, the Land and Resources Management Department actively plays its leading and organizational role, further links with the

agriculture and forestry departments, water conservancy departments and other relevant departments to build a comprehensive and multi-faceted mine environment. The management system will ensure the orderly development of mine environmental protection and governance. Secondly, the working mechanism of mine environmental protection and governance should be further constructed. Establish a series of management mechanisms from source control to damage repair. For example, a perfect mine environment access mechanism can be established to strengthen the control of mine environmental pollution and damage from the source, and create the first line of defense for mine environmental protection. Finally, the establishment of the mine environmental protection mechanism should be strengthened. As an executor of mining, mining enterprises have played an inescapable role in mine environmental protection and management. Therefore, it is necessary to further establish an environmental protection mechanism for mine environmental protection and treatment within the mining enterprise. On the basis of further promoting the enterprise to realize the optimal allocation of resources, improve the environmental awareness of mining enterprises, make them regulate the mining behavior, and avoid the problems of environmental pollution and damage caused by mining, and realize the best unity of benefits, social benefits and environmental benefits of enterprise's own economy.

#### **3.3 Strengthening the fund operation mechanism of mine environmental protection and governance**

Faced with the problem of the current environmental protection and governance funds of the mine, it is possible to further establish a sound financing system and establish a standardized compensation gold tendering mechanism. Since the mine environment has strong externalities, the local government of the mining area can encourage social enterprises or private individuals by giving the land reclamation priority to use the restored land or giving the mine the remaining mining rights. To carry out the management and restoration of abandoned mines<sup>[7]</sup>. Secondly, it is also possible to use the method of open tendering to transform the environmental protection and governance of mines into a market-oriented operation. On the basis of realizing the diversification of environmental protection investment entities, the participation of corporate governance and the collection of tender

funds can further strengthen the environmental protection and governance efficiency of mines, while alleviating the funding gap for mine environmental management. On the other hand, it is also necessary to strengthen the supervision mechanism for the use of mine environmental protection and governance funds to ensure the maximum benefit of the use of funds. Conduct a scientific assessment of the mine environmental management project, and develop a clear governance plan, and then assess the amount of funds required, so that the funds are dedicated. Secondly, it is necessary to establish a corresponding auditing and taxation supervision system to effectively protect the use of funds in the governance work and avoid the situation of misappropriation or seizure.

### **3.4 Increasing the investment in mine environmental management technology and talents**

In the process of mine environmental protection and governance, it should also be able to recognize the role played by advanced science and technology. While strengthening the emphasis, we can cooperate with relevant research institutions to further study and upgrade existing mining technologies, and try to avoid the occurrence of problems such as damaging mine environment due to unreasonable mining. Secondly, it is necessary to strengthen research on the treatment methods of waste gas, waste water and other wastes generated by mines, and fundamentally reduce the damage to the mine environment. At the same time, special research work will be carried out to study the environmental damages in the relevant mining areas, and on this basis, we will develop targeted environmental management aspects to improve the technical level of environmental restoration and treatment in mining areas and upgrade environmental governance efficiency of mines. Finally, it is necessary to strengthen research on related mine application equipment and production processes, further strengthen the use efficiency of related application equipment, create greater economic value, and at the same time improve the production process and application equipment, and further promote the fineness of mining. In addition, the phenomenon of damage to the mining environment such as surface collapse and vegetation damage caused by rough mining is reduced. On the other hand, it is necessary to strengthen the training of relevant talents, and then

establish a team of environmental protection and management of the mine industry with high quality. Through the training seminar on mine environmental protection and governance, or cooperation with relevant universities, we will strengthen the awareness of the relevant staff on the protection of the mine environment, and actively cultivate the means and capabilities of relevant personnel on mine environmental management, thereby promoting mine environmental protection and the implementation of governance work.

## **4 Conclusion**

Since the beginning of the 21st century, economic development and environmental protection have become the common themes of the world. As a relatively complex social project, mine environmental protection and governance combines economic and environmental issues. While improving its own complexity, it is even more difficult to develop mine environmental protection and governance work. Therefore, we will further enhance the emphasis on mine environmental protection and governance, and continuously strengthen research on mine environmental protection and governance, so as to maximize the economic benefits while realizing the protection of the mine environment, and then promote the mining industry and promote the society to continue to advance in the direction of sustainable development.

## **References**

- [1] Chen LX. Some suggestions on mine environmental protection and governance in China[J]. *China Mining*, 2011, 20(2):53-5.
- [2] Zhang YY. Understanding and Suggestions on Mine Geological Environment Protection and Management in China[J]. *Charming China*, 2013, (16):329.
- [3] Liang SL. Analysis of mine geological environment protection and governance[J]. *Commodity and Quality*, 2016, (23):249.
- [4] Zhang X, Wang LY. Research on mine geological environment protection and governance[J]. *China Mining*, 2011, 20(8):52-5.
- [5] Jia SA, Li CY. Analysis of mine geological environment protection and governance[J]. *Jiangxi Building Materials*, 2016, (6):257, 261.
- [6] Tao H, Gao QG. Analysis of the current situation of mine environmental protection and governance in Baiyin City[J]. *Gansu Metallurgy*, 2014, (4):99-102.
- [7] Cui ZM, Yan JH. Analysis of mine environmental protection in China[J]. *Mineral Protection and Utilization*, 2009, (3):41-3.