

Environmental Problems in Coal Engineering in China under the Background of COVID-19 Epidemic and Their Countermeasures

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Abstract:

Water pollution, air pollution and land pollution are the main environmental problems caused by coal engineering activities. Solving these problems is the main purpose of coal engineering environmental research. Through the methods of literature search and investigation, it is concluded that the consciousness control of science and technology on the manufacture of machinery and equipment, the implementation of engineering activities and the consciousness control on the final stage of engineering are the main reasons for the formation of environmental problems. Under general conditions, only in the coal engineering activities, the coal engineers realize the purpose of manufacturing machinery and equipment, the process of implementing engineering activities and the importance of the completion of the project. The study found that the coal engineering activists activities methods under the condition of COVID - 19 outbreak change, because people realize that life is supreme, the relationship between man and the environment of an organic whole, it is fundamentally get rid of the ideology of science and technology of recessive control laid a solid foundation, so as to thoroughly solve the environmental problems of coal activity provides a new path.

Keywords: COVID-19 epidemic, Coal engineering, Environmental problems, Avoid path.

I. BACKGROUND

The implementation of coal engineering has injected strong vitality into the economic development of our country, but the environmental problems caused by it have gradually become an important topic of concern to people. At present, the academic research on the environmental problems in coal engineering is divided into two categories. The first is from the nature itself, emphasizing that “we should attach importance to the value of nature itself, advocating attention to the ethical responsibility of engineering activities to the natural environment. Then put forward countermeasures to solve ethical problems such as sustainable development and strengthening engineering ethics education”¹; Secondly, starting from the environmental ethics consciousness of engineers, the author believes that “the social role and status of engineers, the value appeal of circular economy, the sustainable development of human beings and the harmony between human and nature all call for engineers to undertake more environmental ethics responsibilities, which will inevitably lead to the ecological shift of engineers’ traditional ethical

responsibilities”². The third is the impact of COVID-19 on the coal industry. It is pointed out that “vigorously promoting the green mining and clean and efficient utilization of coal, and promoting the green development of coal”³ is the future direction. Above, however, most studies focused on the problems caused by engineering activity and tries to through the specific way to alleviate the contradiction, and from the ideology of science and technology level analysis of the cause of environmental problems, related research is not comprehensive enough, this article attempts from this Angle, to grasp the dynamic, present and future development of coal engineering activities for coal engineering activities and ecological environment in harmony can be drawn lessons from for path.

II. A VARIETY OF ENVIRONMENTAL PROBLEMS CAUSED BY COAL ENGINEERING

“Green development, in its essence, is to solve the problem of harmonious coexistence between human beings and nature”⁴. Since the new era, with the transformation of the main contradiction in Chinese society, people's yearning for a better life has become more durable. A good ecological environment is an important indicator to meet people’s yearning for a better life. Therefore, it is urgent to improve the environmental problems caused by coal projects. The concept of green development provides theoretical guidance for the realization of this goal, and it is also an important measure to realize the harmonious coexistence between man and nature. However, through the comparison and analysis of Figure 1, Figure 2 and Figure 3, we find that from the perspective of mining scale, China’s current domestic coal mining scale is still very large and still depends on imports. From the perspective of future trend, China’s coal mining situation fluctuates, but it is still high.

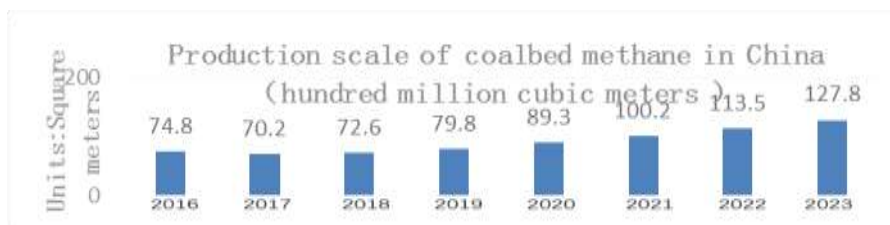


Fig 1: Scale of coal seam gas production in China

(source: 2019 Chinese CBM industry market situation and development prospects analysis Since the construction of ecological civilization for development opportunity study - forward-looking industry research institute under <https://bg.qianzhan.com/report/detail/458/190523-b8cbfd17.html>).

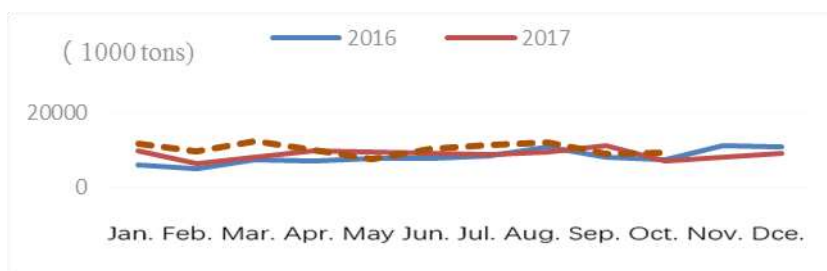


Fig 2: China’s thermal coal imports (2016-2018)
 (source: coal market outlook 2019

http://www.360doc.com/content/19/0410/14/40958856_827703133.shtml).

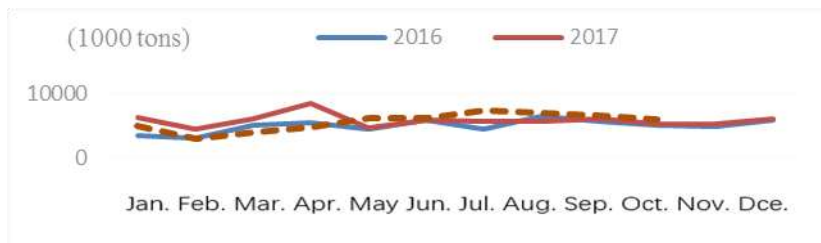
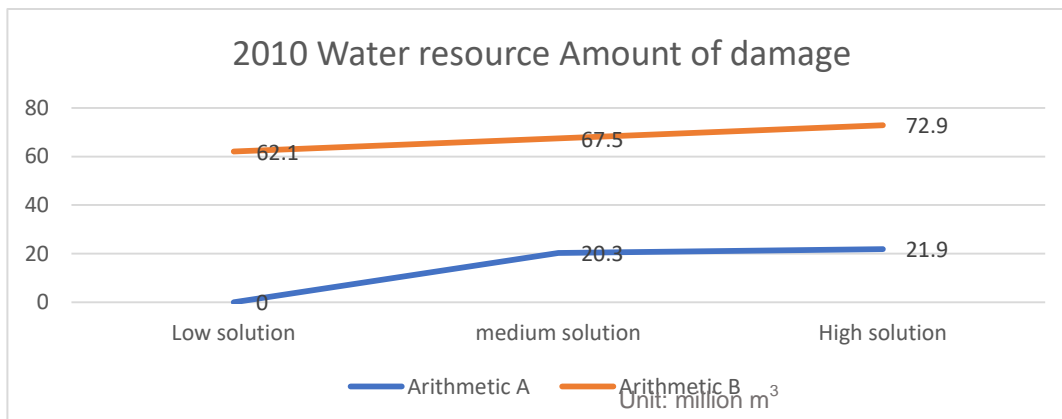


Fig 3: China’s Coking Coal Imports (2016-2018)

(source: coal market in 2019 exhibition: http://www.360doc.com/content/19/0410/14/40958856_827703133.shtml).

2.1 Water Pollution

The destruction of water resources by coal engineering activities is mainly caused by surface water and groundwater, and the main destruction modes are the influence of surface water cut-off and water quality, such as river cut-off. Groundwater pollution, such as subsidence area water pollution, water depletion. Northwestern region of fragile ecological environment, natural restoring force is poor, in the northwest region, for example, through the data analysis diagram 4, we can clearly see that, due to the large open coal project, according to the amount of damage to the water resources in 2010, by 2020, if the coal mining in northwest China is still not controlled, the amount of damage to the water up to 3.55 billion m³ or 11.84 billion m³. Environmental problems caused by large-scale coal mining and use include water pollution, air pollution and land pollution, as shown in Figure 4 and Figure 5:



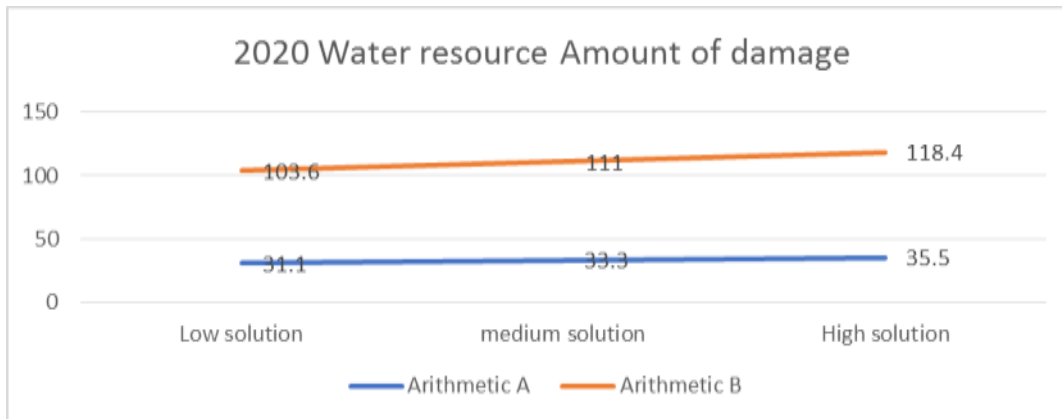


Fig 4: Prediction of water resource destruction in coal mining in Northwest China from 2010 to 2020 (unit: billion m3)

(source: <https://m.book118.com/html/2015/0808/22806660.shtm>.)

2.2 The Problem of Air Pollution

Coal project of atmospheric pollution of coal mining is the main performance of the early to late pollution and use of coal pollution, pollution of prophase included in the process of production or transportation process of coal powder into the air, causing respiratory diseases, pollution mainly includes in the late of abandoned coal as raw materials for the production and living of atmospheric pollution, compared to the former, the latter of atmospheric pollution is more serious, the formation of haze is the most typical example.

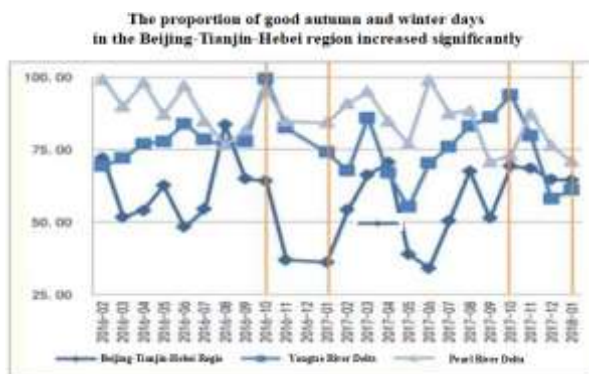


Fig 5: Current situation of air quality and development trend of haze control in China (source: in 2018 China's air quality situation and haze management development trend Since the Chinese industry information network: <http://www.chyxx.com/industry/201804/629140.html>.)

2.3 Land Pollution

According to the data, in Yunnan, Guangxi, Sichuan, Guizhou and other major heavy metal producing areas, many mining areas have been formed around the spread of heavy metal pollution land. The land

contaminated by heavy metals makes crops inedible, and the local people's life is in a dilemma⁵. Huainan City, Anhui Province is deeply troubled by coal mining collapse. It is estimated that by 2010, "the total area of the whole city's subsidence area will reach 369.08 square kilometers, more than 2.6 times of the subsidence area in 2008, and more than 27% of the whole city's land will become subsidence areas, which will eventually affect 623 natural villages"⁶. The exploitation of the coal that lies beneath the earth is hurting the land as never before.

III. CAUSES OF VARIOUS ENVIRONMENTAL PROBLEMS CAUSED BY COAL PROJECTS

3.1 The Unconscious Control of Science and Technology on the Machinery and Equipment Manufactured by the Coal Engineering Workers

"Simple tools, accumulation of tools, composite tools; The composite tools are powered by an engine, that is, by human hands, and the forces of nature operate them; The machine; A system of machines with an engine; A machine system with an automatic engine -- this is the process of the development of the machine"⁷. This is Marx's incisive exposition of the process of machine generation. The machinery and equipment in the coal project are the necessary powerful weapons for the coal project operators to carry out the project. At the beginning, the amount of engineering activities such as coal mining and research and development was not very large. With the development of machine industry, people's conquest of natural forces has reached its peak. As some scholars have pointed out, "roadside environment perception, roadside decision planning and car fusion cognitive three aspects elaborated the AI technology in the way the application of collaborative system"⁸ shown in, intelligent tool in the application of the coal industry to make more a steady stream of coal mined from nature gradually, coal activists proud of more advanced machines, they only consider the results, regardless of the consequences.

3.2 The Implicit Control of Consciousness of Coal Engineering Activities Exercised by Science and Technology

The implementation stage is the main stage of each project activity. The main stage determines whether the engineering activity can be implemented. Coal engineering activities once you begin, before people can only is the final result, motors have excavator and heavy-duty truck, dump truck dumping piece banging and driver are a powerful impact, there are cutting steel wheel and steel of high frequency, shuttering demolition mode when tap on a template, concrete material in blender billow noise, it was all broke the silence of nature, there are serious air pollution in coal, etc., make people irritable and even lead to neurological disorders. Rich coal resources have been mined, but the land is left in a mess. Although the coal engineering activities in the harsh environment, but once the project started can not stop the pace of its pursuit of profit, coal engineering subjects have no deep insight into this.

3.3 The Recessive Control of Science and Technology on the Consciousness of the Coal Engineering Activists in the Final Stage of the Project

To improve the ecological environment, some scholars by analyzing the impact of coal mining on the environment and governance countermeasure, proposed the strategy of “coal green” three points, namely “the green mining of coal, coal pollutant treatment and green mine construction strategy”⁹, among them, the green coal pollutant treatment and green mine construction can be summed up in real finishing touches coal project. The closing work of coal engineering activities is an important stage to keep the coal engineering activities normal next time. It mainly includes two aspects: one is to timely remedy the damaged ecological environment in practice, so as to minimize the damage to nature caused by engineering activities. The second is to reflect on the theory, thinking about how to make a better remedy or what means to take to minimize the harm. Whether in the preparatory stage, the implementation stage or the final completion stage of coal engineering, the subject of engineering activities has been controlled by science and technology, forming the science and technology ideology in engineering activities. People’s blind pursuit of GDP, regardless of whether the project will have a negative impact on the environment, these are the issues that must be considered before the implementation of coal projects. Studies have pointed out that “coal is China’s long-term basic energy, and the exploitation and utilization of coal is also the main source of greenhouse gas emissions in China”¹⁰. Therefore, the generation of COVID-19, from the root, must be closely related to climate change, and the coal industry must be directly or indirectly related to it.

IV. THE VARIOUS ENVIRONMENTAL PROBLEMS CAUSED BY THE COAL PROJECT TO AVOID THE PAT

In the process of the implementation of the coal engineering, engineering activity main body due to the implicit control of science and technology has not clearly realize their behavior consequence, that must be conducted activities in the main body of coal project engineering machinery and equipment, the implementation process, and finishing process of environmental education, make them aware of the dialectical relationship between environmental and engineering activities, aware of how to reduce the damage to the environment.

4.1 Coal Engineering Practitioners should be Aware of the Purpose of Manufacturing Machinery and Equipment

Human beings are the main force of social development. “Only under the guidance of Marx’s thought of labor subjectivity can the dominant position of scientific and technological talents be guaranteed in the development of science and technology”¹¹, can the benign development of technology be realized. Advanced machines and equipment are made in order to better transform the world, and the ultimate goal is to meet the needs of human beings to live in the world better. The invention of machinery and equipment in coal engineering activities is also to realize people’s needs for a better life. Before the beginning of the coal engineering activities to do the following points: first of all, before a project has not started, should set

up a good sense of the relationship between the results and consequences. Secondly, the concept of “two mountains” must be established before the project starts, so that the project can proceed smoothly. Finally, as the main body of coal activities should realize the real use of production tools. As suggested by some scholars, “the concept of ‘goodness’ should be embedded into artificial intelligence machines at the beginning of intelligent machine design to promote and guide the development of artificial intelligence”¹².

4.2 Coal Engineering Practitioners should be Aware of the Process of Carrying out Engineering Activities

In the implementation of the project, if the principle of “interests first” is carried out, it will make all efforts in the preparation stage fall short. Therefore, persistence in the implementation process is the most important step. The implementation of engineering activities is the existence of process, with long - term and arduous nature. The following points should be achieved in the implementation of coal engineering activities: First of all, adhere to the principle of proper mining. Consideration should be given to whether the project activities can be carried out, such as using advanced technology to determine whether the area is suitable for mining, how much damage will be caused to the environment after mining, and whether the damage to the environment is reversible or irreversible. Second, adhere to the principle of the least harm, the best return. In the process of mining, the specific plan and implementation steps with little environmental damage and large economic benefit recovery are adopted to form an expert group for environmental assessment and a professional group for timely maintenance of machinery and equipment to minimize the natural damage as far as possible. Finally, adhere to the principle of self-reflection. After the completion of the coal project, it is necessary to reflect on the technical loopholes or unknown difficulties in the project in time, so as to accumulate experience for the next scientific mining.

4.3 Coal Engineering Activities should be Aware of the Importance of Carrying out the Project Closure

“Man and nature are a community of life, and human beings must respect, conform to and protect nature”¹³. Awareness of the importance of a project closure refers to timely reflection on the completion of a project and the implementation of remedial measures. First of all, adhere to the timely principle. Repair specific technical loopholes at appropriate times, and do not finish the work because of the completion of the main project activities. For example, after the demolition of the luxury villas in Qinling Mountains caused great environmental damage to the land and the ecological environment, the national government immediately remedied it, and now the ecological environment at the northern foot of Qinling Mountains has been restored to its original appearance. Second, adhere to the principle of practice. Practice should be taken as a more important part of coal activities, always bearing in mind that the ecological environment is the first place, and protecting the ecological environment is everyone’s responsibility. Finally, adhere to the principle of sustainability. Sustainable development provides basic principles for coal engineering activities. The subject of coal engineering activities should put the concept of sustainable development through the whole activity.

V. CONCLUSIONS

Coal engineering has promoted the rapid development of economy, but at the same time it has produced many visible and invisible negative effects. Only by correctly applying science and technology can it serve for human beings for a longer time. Based on the above analysis, the following conclusions can be drawn:

(1) Coal engineering not only meets people's production and living needs and brings profits to the country, but also causes a certain degree of environmental loss and destruction. How to dialectically treat it is a test of people's survival wisdom;

(2) Science and technology is the primary productive force and an important force to promote the scientific development of coal engineering;

(3) The ideology of science and technology makes the coal engineering activities lose the consciousness of subject. Only by implementing the concept of harmonious development between man and nature and society in the whole process of coal engineering can sustainable development be realized.

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