The exploration and practice of creating the green development of coal enterprises

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Abstract: Severe ecological and environmental problems have deeply threatened the sustainable development of human society. In response to the severe challenges faced by mankind, the green development of coal enterprises has become an irreversible wave. This article analyzes the relevant conditions of China's coal resources based on the 2020 World Energy Statistical Yearbook published by BP, and estimates the peak coal resources based on the Hubbert Peak Model, expounding the need for coal companies to develop green development and coal companies Develop a practical and feasible path for green development, and contribute to the green transformation and development of Chinese coal enterprises. The optimization path is mainly reflected in the following aspects: the government needs to increase policy support, enterprises actively improve the level of green development, and strengthen the team building of high-quality employees.

1 INTRODUCTION

Under the combined impact of the global financial crisis, energy crisis, and ecological problems, global economic development problems have emerged one after another. Serious ecological and environmental problems have deeply threatened the sustainable development of human society. In order to cope with the severe challenges faced by mankind, how to conduct green development for coal enterprises has become an important proposition for sustainable economic development in the 21st century. According to data from the 2020 World Energy Statistics Yearbook released by BP, China accounts for more than three-quarters of the global net growth. The growth rate of global coal resource production in 2019 was 1.5%, with China experiencing the largest increase. In terms of sales volume, the sales growth rate of China and other emerging economies is higher than that of some developed countries; in terms of price, the global coal price has shown a downward trend, and the price of coal resources in China has fallen by 14%. This paper analyzes the development status of coal enterprises and recognizes the necessity of coal enterprises to promote green development at this stage. On this basis, the author estimates the peak of China's coal resources in conjunction with the Hubbert peak model, and proposes practical suggestions for the green development of coal enterprises.

2 MATERIALS AND METHODS

This article analyzes the current status of China's coal resources by collating the 2020 "World Energy Statistical Yearbook" issued by BP.

2.1 Coal resource analysis
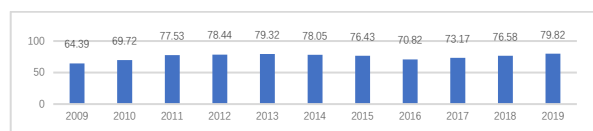
2.1.1 Coal production

Figure 1 China's coal production in the past ten years

From 2009 to 2019, the output of my country's coal resources showed an overall upward trend of volatility, and then declined slightly in 2016.
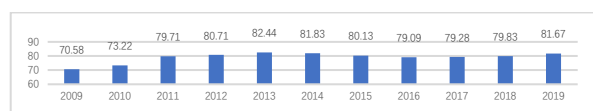
2.1.2 Coal sales

Figure 2 China's coal sales in the past ten years

From 2009 to 2019, the sales of coal resources in my country showed an overall upward trend of fluctuations, reaching the peak of sales in 2013, and there was a slight decline in 2014 and 2016.

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2.2 Problems of Chinese coal companies

2.2.1 Insufficient protection of relevant policies

The green development model of the coal industry is in the initial period of exploration, which requires the country to adopt strong relevant policy support. However, my country's policy protection for the coal industry is insufficient, which is reflected in the following aspects: First, the lack of tax policy protection . The production process of the coal industry is different from ordinary manufacturing enterprises, and its technological process is a relatively complicated process. Therefore, this requires that the regulations on tax collection and management must be refined and improved. The second is the lack of policy protection for innovative technologies in the coal industry. Innovation is the foundation of national development. In the process of coal mining, storage, transportation, and sales, the coal industry needs technological innovation to reduce corporate-related costs and increase corporate profits. However, China's existing policies and regulations are still in terms of technological innovation. There are deficiencies.

2.2.2 The mining technology is relatively backward

As the core energy source for my country's industrial development, coal resources are closely related to and inseparable from the sustainable development of human society. However, the traditional crude coal mining technology in the past has paid a painful price for the deterioration of the ecological environment. This situation directly led to the deterioration of the ecological environment and even the lack of grass in the areas and surrounding areas after coal mining. With the end of mining and excavation in the original mining area, more and more abandoned mining areas have appeared, and these abandoned mining areas have also caused a series of environmental problems in the surrounding ecological environment. Compared with developed countries, the distribution of coal resources in China mainly occurs in the northwestern region. Shanxi, Shaanxi and other regions have the largest output. Most of the mining areas in these areas are located in remote mountainous areas. The mining and transportation of coal resources rely more on manual technology. It is relatively difficult for the machine to penetrate deeply, which makes coal mining and digging more expensive.

2.2.3 The quality of the staff team is low

In recent years, Chinese coal companies have focused their construction on smart mines and smart mining areas, and their emphasis on employee training and education has been slightly reduced. Mainly reflected in: First, the method of training and education is outdated and single. From the current point of view, the training of employees is mainly carried out in the traditional "full house" method. Today, with the impact of new elements such as big data and the Internet, this method is no longer suitable for related training. Second, the content of training and

education is less targeted. Due to the different educational backgrounds and basic conditions of employees, coal companies do not classify employees in the training of related businesses. Therefore, the training work is not highly targeted, which results in employees not being able to master the professions required by their positions.

2.3 Coal resource analysis based on the Hubbert peak model

Hubbert believes that the annual output curve will be like a bell-shaped curve. After coal production reaches its peak, the output will fall irreversibly. We compare coal reserves with people's height, and coal production with people's annual growth rate. The height of a person is described by an s-shaped curve, and the annual growth rate is described by a bell-shaped curve. Similarly, cumulative production is similar to an s-shaped curve, while annual coal production is similar to a bell-shaped curve. China is a big country of coal production and consumption. Although China's coal resources cannot be exploited for 100 years, whether it can meet the needs of continuous growth remains to be demonstrated. Based on the system dynamics, this paper analyzes the peak of coal resources in China after improving the Hubbert peak model constructed by Tao Zaipu scholars.
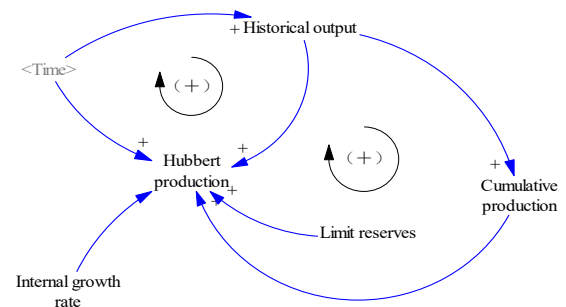
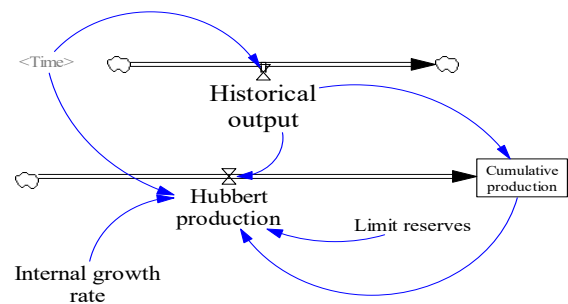

Figure 3 Hubbert Peak Model Causality Diagram

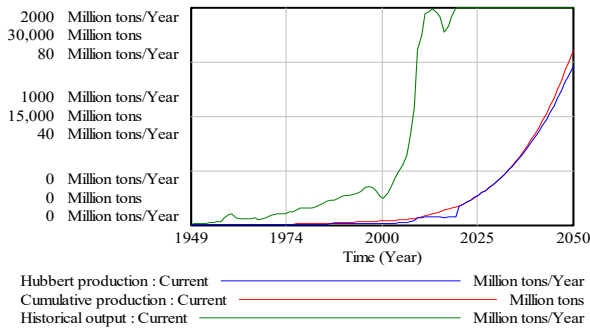**Figure 4** Hubbert peak model stock flow diagram

Figure 5 Peak curve of China's coal resources

This paper uses Vensim PLE to process the relevant data of China's coal resources from 2009 to 2019 in the model. As shown in Figure 10, the Hubbert peak of China's raw coal production appeared in 2030, with an output of approximately 37.84 million tons.

Table 1 Main simulation results Unit: million tons

years	Yield	Cumulative production
1970	6.54	92.03
1990	10.8	298.23
2020	34.64	789.3
2030	37.84	1119.84
2040	23.38	1801.13
2050	14.39	1989.25

3 RESULTS & DISCUSSION

3.1 Improve relevant policy support for the coal industry

Policy regulations are the cornerstone of the development of the coal industry, laying a solid foundation for the sound and sustainable development of the coal industry, and the lack of policy support for the contemporary Chinese coal industry. Increasing financial investment can ensure the healthy and sustainable development of coal enterprises to the greatest extent, reduce their costs and expenses, and increase profit and income. First of all, we should consider increasing support for value-added tax and income tax. "From the perspective of the composition of value-added tax, the mining industry belongs to the secondary industry in my country, and it needs to pay value-added tax like the manufacturing industry, which invisibly increases the value-added tax burden of coal enterprises; from the perspective of the composition of income tax, It is possible to appropriately increase the amount of taxable income that can be used to deduct the current year's taxable income according to a certain multiple of the actual application technology cost for coal enterprises that adopt green mining technology [1]. "Secondly, the resource tax reduction and exemption policy can be appropriately expanded. Since December 1, 2014, China has implemented an ad valorem levy method for coal resources, and has reduced the resource tax by 50% on the coal resources extracted from filling, but the extent

of the reduction and exemption cannot effectively compensate for the coal resources. Of mining costs. Therefore, on this basis, in order to promote the large-scale application of green mining technology, policies and regulations to expand the extent of resource tax reduction and exemption can be appropriately increased.

3.2 Actively promote innovative research on mining and mining technology

Actively encourage the efficient and green development of coal research and development technology. The research and development of innovative technology is the foundation of the development of a country and an enterprise. Only by mastering the latest technological means can we lead the development direction of the industry and become the "leader" of the industry. The existing research on green development technologies mainly include: First, water-preserving mining technology. As the name suggests, the meaning of water conservation mining is to protect water resources from pollution as much as possible while mining coal resources. It is worth noting that water conservation mining technology can also adjust the degree of water conservation according to the difference in the inventory of water resources in the coal mining area. The second is mining and gas mining technology. Because gas is stored below the surface, it is possible to mine gas at the same time when mining coal. At the same time, as a good fuel, if gas is mined, it will play a positive role in the development of heavy industry and chemical industry. On this basis, the technology of mining and gas mining can perfectly fit the ideal situation of Shaanxi Coal Industry for the green mining technology of coal resources. This mining technology not only makes full use of gas resources, but also indirectly reduces the risk index in the mining process.

3.3 Strengthen staff training and quality construction education

In view of the deficiencies in employee training, this article believes that it can be enhanced from the following aspects:

The first is to create a good training and education atmosphere and change employees' concepts of training and education. Senior managers in various departments of the company need to consider from multiple angles, create a training atmosphere eager to learn and love learning throughout the company, and fully consider the multi-faceted needs of employees. In Maslow's hierarchy of needs theory and Herzberg Under the guidance of the two-factor theory, it meets the needs of employees and lays a solid foundation for a good education atmosphere.

The second is to accurately locate the target of training employees and enhance their enthusiasm for training. Each department of the company sets up different training and education courses for different employees in different positions. According to the different training personnel, employees can be divided into: management personnel, professional and technical personnel, and operating skilled personnel, etc. The training adheres to practical and

effective training. Based on principles, trainees can learn, learn quickly, remember, and use multiple channels to increase their motivation for training. For example, online course education can be appropriately increased, and training courses can be combined with "Internet +" to enrich The form of training.

4 CONCLUSION

Coal production usually follows a bell-shaped curve, that is, it first gradually increases to the maximum output, then there is a short peak, and then gradually decreases. Through the simulation of the system dynamics Vensim PLE software, the peak of China's coal resources will appear around 2030, and the peak output will be about 37.84 million tons. China's raw coal production will increase by about 3 to 4% every year before the peak. This is a good opportunity for the development of Chinese coal companies. However, the crude development model restricts the continuous progress of coal companies. Chinese coal companies should start with new strategies and take effective measures to strengthen the development of clean coal technologies, such as coal preparation briquette (CPB) and coal water slurry (CWS),Coal gasification, coal liquefaction and so on. In the future, the independent innovation capability and cross-industry exchanges of the coal industry will be further promoted. While promoting the protection of the ecological environment, we must also focus on how to achieve the green development of enterprises more efficiently, and take effective measures to form and improve industrial integration.

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