

Research on the Green Development Path of Yangquan Coal Industry under the Background of Supply-Side Structural Reform

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Abstract: Shanxi, as a typical resource-based city, has been relying on coal resources to develop local economy for a long time. For China's economic development, coal resources is the most stable "ballast stone", it will always and will be a long-term burden of China's energy security, sustainable and healthy economic growth. As a typical resource-based city, Yangquan has made great contributions to the construction of socialism in China because of coal. However, due to the domestic economic and social development and the utilization and sustainable development of coal mine resources, the coal industry is facing the challenge of green development and ecological civilization construction in the context of supply-side structural reform. How to promote the green development of coal industry is an inevitable choice for the coordinated development of economic development, social synchronization, resource exploitation and utilization, and environmental protection, and also an important problem to be solved in Yangquan coal industry in the new period.

Keywords: Coal industry; Supply-side structural reform; Green development; Countermeasures

1. Introduction

The report to the 19th National Congress of the Communist Party of China (CPC) put forward the implementation of the new concept of development, actively building a modern socialist market economy, and promoting high-quality economic and social development. It also put forward that both man and nature are a community of existence, that harmony between man and nature should be maintained, and that socialist ecological civilization should be actively built. At present, Yangquan coal industry is in the critical period of opportunities and challenges, and is facing the adjustment of green development. How to promote the coal industry in Yangquan city according to the needs of China's economic development, to achieve its healthy and green development is the subject of in-depth research, in the current environmental problems such a severe situation, the study of Shanxi Yangquan environmental protection issues, not only for the future Shanxi green low-carbon development direction, At the same time, it also provides some reference for the transformation and green development of other resource-based cities.

2. Connotation of green development of coal industry

Coal is one of the most important fuels in China and is of great significance to China's economic and social development. In China's energy system, coal resources have accounted for nearly 70%.^[1] In recent years, China will consume 5.534 billion tons of standard coal. The coal-dominated energy structure also reflects the reality of China's tight resource endowment, which has been difficult to improve for a long time. Coal resources should pay attention to the green development of the industry while meeting the market demand.

2.1. The connotation of coal industry

Coal mine industry refers to the industrial groups that explore, mine, manufacture and store, produce and market coal mines and products.^[2] Specifically, including coal mining industry, coal processing industry. China's coal resources are rich in reserves, wide in distribution and complete in variety. With the continuous development of The Times, the coal industry has changed from the original mining, transportation and utilization of traditional solid resources to intelligent mining and integrated development of deep solid resources, gradually realizing "near zero" damage and "near zero" emissions.^[3] Coal industry, as a basic industry in China, has been playing an important supporting role in China's

economic development for a long time.

2.2. The connotation of green development

The core concept of green development means that ecological development should be taken into account at the same time of economic development, that is, the recycling and sustainable use of resources should be emphasized to achieve a situation where the rate of resource regeneration is higher than the rate of resource consumption, so as to form a new economic development model with healthier and sustainable development of social productivity. Green growth theory emphasizes the ecological environment protection is an irreplaceable social productivity, and demand the development of economic activities shall have respect for nature, to adapt to the nature, protect nature, and green development theory suggests that human economic and social development and shall be paid by the contradiction between ecological environment quality improvement towards unity, and form a benign mutual coordinating role. Moreover, the green development theory is a new idea proposed according to the traditional Chinese development concept and the resource bottleneck and environmental capacity problems existing in the economic development, in order to realize the harmonious coexistence of man and nature society, and form a new pattern of socialist modernization construction and development of the harmonious development of man and nature economy and society.

2.3. Connotation of green development of coal industry

Green development of coal industry refers to that Chinese coal resource enterprises realize the significance of green development of coal industry on the basis of their sufficient resource reserves and low production cost, and find a balance point so as to promote their advantageous position in China's domestic resource development and utilization structure. From the macro perspective of green development, enterprises in China's coal industry must achieve green operation, which is an important performance of effectively safeguarding national interests and people's rights and interests. Secondly, China's coal production and consumption is the largest and largest in the world. Therefore, the green construction of China's coal industry is to change the leading position of coal in resource consumption, further enhance energy competitiveness by increasing the development and application of new energy, so as to promote the use of green manufacturing in China's coal industry and promote the sustainable development of the industry.

3. Current situation of green development of Coal industry in Yangquan city

Due to the rapid development of China's economy and the continuous development of coal resources, the coal industry is facing the challenge of green development and ecological civilization construction. This reflects that coal resources is a highly polluting energy. In the process of development, stacking, transportation, production and utilization, it inevitably causes pollution and damage to land resources, water resources, air resources and environment, and constantly deteriorates the ecological environment.

3.1. Infrastructure construction is weak, and technical mining conditions need to be improved

In recent years, Yangquan city of Shanxi Province, which is mainly based on coal resource industry, has inevitably shown many deficiencies in technical mining conditions due to its weak infrastructure while developing economy. This is reflected in the difficulty of mining coal resources in the shallow surface of Yangquan city, but the difficulty of safe mining of the deeper part of the mine is huge. With the gradual depletion of shallow coal resources, the safe exploitation of deep coal resources has become one of the restricting factors for the development of coal industry. Compared with shallow coal mining, deep coal and rock mass are in the harsh environment of high in-situ stress, high gas, high temperature, high permeability and strong time effect, and the current theoretical research of deep coal mining is not mature, resulting in coal and gas outburst, rock burst and other dynamic disasters become serious and intractable problems.

3.2. The industrial structure is single and the problem of employment urgently needs to be solved

Yangquan coal industry structure is relatively single, and the gradual decline of coal industry will inevitably lead to a series of employment problems. Yangquan's economy mainly relies on traditional energy, and it does not know how to expand its development potential by developing other energy sources

such as hydrogen energy on the basis of coal resources. In addition, the surplus labor force in Shanxi Province and other resource-based cities is mainly concentrated in the coal mining industry. Therefore, the salary level of employees is greatly affected by the development of the coal industry. In the era of sharp decline in the price of coal products, the benefits of many units declined rapidly, employees have not been paid, and workers engaged in the coal industry after losing their jobs, it is also very difficult to re-take the post, resulting in the emergence of employment problems urgently to be solved.

3.3. Rapid depletion of resources and serious environmental damage

Coal is a non-renewable resource, but due to the accelerated use of coal and its accompanying waste of resources, the pace of resource scarcity intensifies, and at the same time, serious environmental pollution, ecological damage and other problems occur. It is mainly reflected in the recent years people to the coal mine of high intensity exercise and large area mining, led to the coal mine has gradually become a high energy, pollution in mining, stacking, handling, processing and use of process, constantly on the surrounding soil resources, water resources, resources and environment such as air pollution and damage to the natural environment is becoming more and more bad. This is in conflict with China's efforts to build a "resource-saving, environment-friendly"^[4] society. On the basis of ensuring the safe supply of energy, coal resources are facing the adjustment of green development.

3.4. The concept of green development is insufficient, and the awareness of environmental protection needs to be improved

In daily life, people cannot correctly recognize the relationship between human and nature, and lack the concept of green environmental protection. Nature also fails to achieve the integration of society, human and nature., which is mainly composed of coal resources industry especially in cities, people only see the unilateral coal to the economic benefits of the people, even the value of excessive pursuit of immediate interests, while ignoring the long-term interests, decades after failed to take into account the local may be caused by excessive mining of coal resources of resource depletion, environmental degradation and other issues. At present, people's awareness of environmental protection is still weak, failing to combine the green concept into daily life.

4. There are some problems in the green development of coal industry in Yangquan

Coal resources occupy a large share in China's electricity ratio and play an important role in supporting China's economy. Due to the decline of the national economic growth rate and the emergence of new industries, China's coal industry will be deeply affected by a series of problems in the development.

4.1. The mode of production is mainly extensive, and technological exploitation lacks innovation ability

The coal mining industry is mainly resource-intensive and labor-intensive small and medium-sized enterprises with extensive methods, mainly focused on simple mining and tunneling and some primary mechanical processing, with relatively few technical requirements. We can obtain high profits without too much technology and innovation. The coal enterprises which are characterized by extensive production mode do not know how to combine traditional coal with modern new technology and high and new technology to improve the technical rate of coal mining so as to create excellent quality anthracite. In addition, the enterprise in the process of exploitation of coal resources in the lack of innovation ability, failed to inject ideas of science and technology developing, also do not know the design a variety of research subjects and strengthen the scientific research colleges and universities cooperation, technological research and scientific research to promote enterprise mining technology has increased, resulting in the coal enterprise development speed slows or stagnate, seriously hindered the development of the local economy forward.

4.2. Irrational coal industry structure and serious brain drain

Yangquan's single coal industry structure and the existence of "path dependence"^[5] in the development process of the industry have seriously restricted the development of other local industries, resulting in the outflow of talents. Yangquan city, as one of the resource-rich region, with a congenital advantage of coal resources, at the beginning of the development of national economy, has been formed in the coal

industry consolidation and a preliminary division of labor, but also is due to a large number of coal resources, have obvious dependence on development of coal industry in Shanxi Province, industrial structure is monotonous. As a result, the market flow of factors of production is unbalanced, and a large number of labor, land and capital flow into the coal industry, which leads to the long-term lack of manufacturing factors in other industries, and also inhibits the agglomeration of industry and the vigorous development of modern service industry. In addition, the demand for personnel quality of coal enterprises is obviously not as good as that of capital-intensive and technology-intensive industries, which makes local people gradually develop the habit of "relying on mountains and relying on water", resulting in the restriction of long-term employment of local excellent talents, and a serious shortage of high-quality and innovative talents.

4.3. Excessive exploitation without restraint, emphasizing "benefit" rather than "maintenance"

When mining coal resources, coal enterprises ignore the maintenance of surrounding land resources, water resources and air resources because of excessive pursuit of economic benefits. Yangquan city of Shanxi Province is an area with high intensity of coal mining in China. After a long time of large-scale mining, the exploitation of coal resources by well engineering has caused the soil surface subsidence in the mining area, which has led to the decrease of the utilization rate of cultivated land, and caused soil erosion and desertification. In the process of exploitation of coal resources, due to the constant extension of the coal mining, the mining of underground water level constantly presents downtrend, exacerbated by the exploitation of the mining area of soil and water loss, at the same time coal stone in various harmful substances will also seep into the water because of the impact of the heavy rain to closed loop, lead to severely contaminated water in the water cycle system. In the process of coal development, a certain amount of coal mine gas protection will be generated, which will become one of the main sources of disaster in coal development activities and bring great danger to the life and health safety of mining workers.

4.4. Ignore the concept of environmental protection and increase the cost of ecological environment

Many energy companies led by coal mine pay attention to the use of fuel resources, but ignore the concern of environmental problems, resulting in huge environmental problems, virtually increase the cost of ecological environment. Such as ecological environment problem and pollution costs, coal mine explosion caused the generated sulfide, carbon form acid rain, ozone hole, greenhouse effect, etc., if the deal with these problems, in turn, will raise the cost of environmental management and environmental transformation, and in the process of production of coal mine, in order to prevent the ecological environment pollution, the enterprise through the corresponding protection measures are taken to the natural environment of the pollutants In order to adapt to the social and economic development and people's survival needs, the expenses related to ecological restoration, environmental restoration and environmental management costs, all of which are derived from people's lack of green ecological concept and the implementation of environmental protection concept.

5. The route choice of Yangquan coal industry green development

In order to solve the problem of green development in the process of development, the coal industry needs to strengthen infrastructure construction under the structural reform of the supply side, improve innovation ability and optimize the industrial structure, solve the employment problem of residents in resource-based cities with coal as the main energy, and promote the green development of the coal industry in Yangquan city.

5.1. Follow the trend of "Building a Green, Low-carbon Era and a Beautiful China" and strengthen infrastructure development

We have written the word "beautiful China" into the overarching goal of building China into a major modern socialist country, and advanced the socialist ecological civilization project in the history of promoting the glory of the Chinese nation and the Chinese dream.^[6] This demonstrates our Party's vision and sense of responsibility. In the traditional enterprise development in China, people tend to focus only on the acquisition of business profits, emphasizing the cost and benefit of the enterprise, while ignoring the sustainable development of the enterprise and various environmental protection problems brought to the production and operation of the enterprise, thus failing to properly balance the relationship between

the enterprise benefit and environmental protection problems. In today's society economy has entered a green ecological, low-carbon development period, therefore, the green management as the cornerstone of enterprise development, the traditional management pattern about the development of the coal company to make the corresponding reform and adjustment, the environmental pollution problems in the production of the coal industry has made a reasonable control, is the development of the coal industry and between society, economy and environmental protection An important guarantee of a healthy relationship. Yangquan city in recent years, the government in the process of the coal industry development, firmly establish the concept of green development, in order to adapt to low-carbon development, insist on will eliminate backward production capacity and the development of new production capacity, the combination of positive development of modern coal chemical technologies, has invested 3.6 billion yuan of coal 200000 tons of ethylene glycol issue project put into production, The industrial added value of coal and coking industry is 7.3% and 3.0% respectively , which has achieved remarkable results.^[7]

5.2. Adjust the industrial structure and optimize the internal mode of enterprises to increase employment opportunities

To promote the high-quality development of China's coal industry, the first measure is to optimize the industrial structure and internal mechanism of the company. Enterprises must not only maintain systematic thinking, but also comprehensively reform and develop traditional industries by using innovative science and technology. At the same time, we should grasp the key links and drive the overall situation with technological breakthroughs in important areas and key links such as intelligent coal mining ^[8] and clean and efficient utilization. Yangquan city in the world energy to green low-carbon transformation trend, to strengthen the use of science and technology and advanced production technology to transform and optimize the traditional enterprises, in order to improve the world energy technology, clean low-carbon technology level. Surrounding industrial energy storage, energy conservation, environmental protection, green intelligent use of coal safety and effective utilization of renewable energy, hydrogen resources comprehensive utilization related areas such as research and development, and focus on trying to break the high energy consumption, high water consumption, high pollution ^[9]and other major technical bottlenecks, high efficient and clean production mode is formed within the enterprise, to promote coal industry products sell well, It is convenient for the coal industry to expand and invest in greater production, arousing the enthusiasm of miners, increasing employment opportunities and enhancing the happiness of workers.

5.3. Promote energy conservation and speed up the construction of the resource-saving, ecological protection and recycling coal industry

Accelerate and follow the pace of supply-side structural reform, promote the coal industry to achieve green, low-carbon and sustainable development from the perspective of resource saving, ecological protection and vigorously developing circular economy. Taking Yangquan city as an example, coal enterprises have long been characterized by high energy consumption and heavy environmental pollution, and constantly produce different forms of environmental pollution and waste to the surrounding environment and resources. Therefore, coal enterprises must strengthen scientific and technological research and development investment and other means to improve high net coal technology, through the development of new coal products, reduce capacity, inventory and deleveraging ^[10]to promote enterprises to digest labor excess capacity, reduce the consumption of resources, promote resource saving; At the same time to carry out the principle of combining the development and utilization and environmental protection, in the process of production strictly enforce the ecological environmental laws and regulations, improve the coal industry of ecological environmental protection of the social sense of responsibility, positive energy clean, low carbonization of social responsibility, and promote the construction of green transformation innovation development platform to improve the government's ecological construction of coal mine industry security; Actively develop wind energy, hydropower, photovoltaic and other renewable energy, through the establishment of diversified energy supply layout, to promote the development of recycling coal industry.^[11]

5.4. We should foster the concept of green development and raise awareness of it

General Secretary Xi Jinping believes that to cultivate a new approach to economic development in the new era, we must closely combine resource conservation and environmental conservation, and strive to create a new pattern of development in a beautiful China where industrial production is growing, the

people live an affluent life and the social environment is sound.^[12] Government departments should establish and improve the green development-oriented system, further improve the ecological and environmental management system, vigorously advocate the rational use of new energy, pay attention to the combination of digital technology and low-carbon technology, and effectively reduce greenhouse gas emissions. The industry should promote supply-side structural reform, find a balance between resource utilization and environmental protection, optimize the industrial structure by injecting innovative elements inside the enterprise, integrate the development of coal economy into the ecological cycle system, achieve a good situation of harmony between man and nature, and reduce the damage to the environment by using clean energy. Ecological civilization is practiced by, depends on and benefits the people. People in daily life will practice green activities, reduce environmental pollution and resource waste to promote the formation of green lifestyle. From the perspective of the government, enterprises and individuals to achieve a full range of green ecological life chain.

6. Conclusion

To sum up, the current coal industry must pay attention to environmental issues and realize the necessity of environmental protection if it wants to truly achieve sustainable development. While emphasizing environmental protection, we should encourage the economy and reduce the harm caused by coal to the ecological environment. Enterprises should increase innovative technologies, speed up the transformation of the coal industry and promote the development of the coal industry toward the direction of green energy conservation and environmental protection. Deepen the understanding of green development of coal industry from the perspective of government, enterprises and individuals, and jointly promote high-quality development of coal industry from three dimensions.

References

- [1] Wang Qiang. *Research on coordination operation Mechanism and optimization model of coal power energy supply chain* [D]. North China Electric Power University (Beijing), 2020.
- [2] Sun Tingyan. *Research on "Characteristics" of Socialism with Chinese Characteristics* [D]. Shandong Normal University, 2021.
- [3] zhong Minxuan. *Analysis and Suggestions on the development status of resource-based areas under the background of green development -- A case study of coal industry in Shanxi Province* [J]. (China, 2020 (01).
- [4] Green Development Research Group of Party School of Yangquan Municipal Committee of CPC. *Strategic choice of promoting green development of coal industry in Yangquan city* [J]. *Journal of party school of CPC Shanxi provincial committee*, 2017,40(06):74-77.
- [5] Feng Shuangjian. *Changing machines and reducing personnel to promote transformation and Ensure Safety -- A brief account of coal intelligent Construction of Guoneng Shendong Coal Group* [J]. *China Emergency Management*, 2022,(03):78-81.
- [6] Zhang Z C. *Strive to write a new chapter of beautiful Jincheng high quality and high speed transformation development in the new era* [J]. *Forward*, 2021 (04): 9-11.
- [7] [Zhao y. *measurement of green development efficiency of provincial coal industry in China* [J]. *Coal economics research*, 2020,40(10):50-55.]
- [8] Liu Hong. *China's coal green development strategy and technology path design* [J]. *China energy*, 2020,42(07):22-25.
- [9] CAI Meifeng, Wu Yunquan, Li Peng, Pan Jiliang, Hong Wei, Li Jun. *Green Development of coal resources in Ningxia* [J]. *Chinese Journal of Engineering Science*, 202,44(01):1-10.
- [10] Li Zhiyong. *Research on the development of China's coal industry under the supply-side structural reform* [J]. *Technology and market*, 2020,27(03):160+162.
- [11] Haorui Yang, Shuzheng Ning, Lian Ding, Zhao Liu. *Current Situation and Countermeasures of Coal Industry in China in the New Period* [J]. *Coal Geology of China*, 201,33(S1):44-48.
- [12] Sun Wei, Lin Qing, ZHAO Hongfei. *Safety, intelligence, innovation and green "four-wheel Drive" to promote high-quality development of coal industry* [J]. *Coal mine safety*, 2020,51(10):187-190.