

Exploration and Practice of Green and Low-Carbon Development of Coal Energy Enterprises

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Abstract: Green and low-carbon development is an inevitable requirement for high-quality development and is the consensus of all countries around the world. As an important energy pillar in our country, coal energy companies have important responsibilities in green and low-carbon development. The green and low-carbon development of coal energy enterprises is of great significance and practical value to the implementation of Xi Jinping's thought on Ecological Civilization. This article will deeply explore the comprehensive use of various means by a large coal energy enterprise in central China to promote the exploration and development of green and low-carbon development from various aspects such as development concepts, technological innovation, remediation and utilization of subsided land, clean energy construction, and industrial chain extension. Practice to achieve dual benefits of economy and environment.

Key words: Green And Low-Carbon Development; Technology Innovation; Local-Enterprise Cooperation; Subsided Land Restoration and Utilization; Recycling Development

Green and low-carbon development is a distinctive feature and inevitable requirement of high-quality development. As an important part of the traditional energy industry, how coal energy companies achieve green and low-carbon transformation is of great significance and practical value for the implementation of Xi Jinping's ecological civilization thought and the global response to climate change. This article will take Huaibei MINING (GROUP), a large coal energy enterprise in central China, as an example to discuss how it adheres to the concept of "lucid waters and lush mountains are valuable assets", implements green and low-carbon development strategies, and promotes the exploration and practice of high-quality development.

1. Background of Implementing and Promoting Green and Low-Carbon Development

Promoting green and low-carbon economic and social development is a key link in achieving high-quality development. Coal is the main energy source in our country. We must follow the direction of green and low-carbon development, achieve the goal of carbon peak and carbon neutrality, and follow the path of green and low-carbon development.

As an important basic industry, the coal industry is an important pillar of the development of the national economy. It must adhere to the two-wheel drive of coal resource mining and utilization and ecological and environmental protection to achieve the coordination and unity of enterprise development, ecological environmental protection, and economic and social development. In order to meet the economic and social needs for coal with high quality, it is imperative for coal enterprises to transform and upgrade. To promote the green and low-carbon development of coal enterprises, only by taking safe, green, intelligent mining, low-carbon and efficient utilization as the development direction, and accelerating the development and application of new business forms and new models, we can promote the transformation of coal energy into green energy and allow green and low-carbon development to run through scientific coal mining and the whole process of utilization.

At present, the new era has given coal development a new mission. Only by properly handling the relationship between resource development and environmental protection, mining and environmental governance, we can promote the scientific

and rational development and utilization of coal resources, continue to promote the construction of green mines, and achieve the “acceleration” of green transformation and development, providing a strong guarantee for the high-quality development of enterprises.

2. Practical Exploration of Promoting Green and Low-Carbon Development

2.1 Establishing the Concept of Green Development and Promoting Green and Low-Carbon Development of Enterprises

In accordance with the development strategy of “relying on coal, extending coal, and transcending coal”, the group insists on paying equal attention to coal mining and environmental protection, effectively transforms the development model, and promotes green and low-carbon development. The group continues to deepen energy conservation and emission reduction, implement low-carbon development goals, and complete the review of the group's carbon peak carbon action plan, which provides guarantee for green development and green development of deep resources. We will steadily implement ecological restoration and fully complete the annual mine ecological restoration and cultivated land reclamation project plans. Actively we promote the research and development of green and low-carbon technologies, and cooperate with well-known domestic research institutes to develop ceramic catalytic filter tube dust, sulfur and nitrate integrated flue gas treatment technology and dry quenching coke exhaust gas treatment technology, filling the domestic gap. At the same time, the construction of new energy projects has been vigorously carried out. Multiple photovoltaic power generation projects are being promoted in an orderly manner, and some projects have been connected to the grid for power generation.

2.2 Strengthening the Development and Application of New Technologies and Promoting High-Quality Development of Enterprises

By strengthening technological innovation and the application of new processes, we will achieve more efficient and cleaner development and utilization of coal, and follow the path of green and low-carbon development. On the one hand, the Group strengthens technological development and innovation, strengthens scientific and technological cooperation, and strengthens scientific and technological learning and exchange activities in the process of developing a green and low-carbon economy, thereby continuously broadening the innovative application capabilities of technical personnel. On the other hand, we should give full play to the advantages of talents, accelerate the innovation of coal production processes and the application of new technologies, strengthen the “Five Small” scientific and technological innovation and “QC group” activities, and carry out management innovation, technological innovation and job innovation and innovation at different levels through technology patent research and development. Efficiently, we form a strong atmosphere of innovation and efficiency creation in the group and mining plants, accelerate technological innovation in coal mining and utilization, and continuously improve production efficiency and development quality.

2.3 Strengthening Cooperation between Local Governments and Enterprises to Restore and Utilize Subsidized Land

The ecological environment protection and management of coal mining subsidence areas is a historical problem in the coal mining process. As an arduous, complex, and long-term systematic project, it has always troubled coal enterprises. The Group actively explores and implements the governance model of “government leadership, policy support, corporate responsibility, and social participation”, proactively fulfills its social responsibilities, actively cooperates with scientific research institutes to develop overburden separation layer grouting filling technology, and vigorously promotes overburden separation in the Huaibei mining area. The new layer isolation grouting technology realizes green mining, reasonably controls ground subsidence, and ensures that ground villages and basic farmland are protected from damage. We collaborate with local governments to create a series of comprehensive management projects with typical characteristics of resource-based cities. In mining and coal subsidence areas, urban construction land shall be managed and restored. Actively we cooperate with local governments to implement multiple comprehensive lake management projects, providing experience that can be learned and promoted for the transformation and development of resource-based cities.

3. Effects of Implementing the Green and Low-Carbon Development Economic Model

3.1 The green and Low-Carbon Path of Enterprises Empowers High-Quality Development

The Group vigorously implements innovation-driven development in green and low-carbon development, focusing on strengthening the research on key core technologies and the transformation and application of scientific and technological innovation results, and has achieved a number of major landmark results and breakthrough progress. We accelerate the construction of smart mines, use new equipment, new technologies, and new processes to promote green mining, and achieve new changes with good safety, high efficiency, and fewer employees. In 2022, two pairs of mines passed the national and provincial intelligent coal mine inspections, and a number of intelligent coal mining working faces and intelligent excavation working faces will be built. In May 2023, the world's first large-angle downhill excavation mining shield machine, developed in cooperation with China Railway Engineering Equipment Group Co., Ltd., successfully rolled off the production line. By the end of this year, 9 shield operation lines will be built, effectively ensuring stable production order. We explored a new way for the implementation of shield tunneling technology in coal mines. Affiliated high-tech companies focus on deepening the structural adjustment of transportation, creating green multi-modal transportation demonstration projects, promoting “road-to-rail” and “road-to-water” product transportation, forming a center in Huaibei, radiating to East China, and serving the country's clean coal A new pattern of green development for multi-modal transport.

3.2 Providing Huai-Mining Solutions for Coal Enterprises to Promote Green Development

The group has achieved a series of ecological and environmental protection reform and innovation achievements, and the ecological environment quality of the mining area has been steadily improved. It is embarking on a path of green, low-carbon and high-quality development based on the standards of pioneering demonstration. Nine “national-level green mines” and two “national-level green factories” have been built. A model project for treating coal mining subsidence areas has been created. By 2022, the ecological restoration target of 5,460 acres of mines has be completed. Among them, Huaibei South Lake, the former Yangzhuang Coal Mine collapse area, has been built into a national 4A-level tourist attraction; in 2020, Huaibei Green Gold Lake was included in the “Top Ten Cases of Social Capital Participation in Land Space Ecological Restoration” by the Ministry of Natural Resources; In October 2021 at the Ecological Civilization Forum of the United Nations Conference on Biological Diversity on the 15th, Green Gold Lake was listed as a “Typical Case of Ecological Restoration in China”, providing successful experience for coal subsidence area management and ecological environment restoration, and promoting the idea that “lucid waters and lush mountains are golden mountains” ,and the concept of "Silver Mountain" has been put into practice and achieved results.

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