

The Differentiated Impact of Green Investment on the Performance of Shaanxi Coal Industry and Yankuang Energy Enterprises

Yang Song

School of Zhengzhou Foreign Language School - New Fengyang Campus, Zhengzhou, China

**Corresponding Author*

Abstract: Green investment, as a key path for coal enterprises to address environmental challenges and achieve sustainable development, has had a differentiated impact on the corporate performance of Shaanxi Coal Industry and Yankuang Energy. Starting from the theoretical framework of green investment, this article, in combination with the strategic positioning, resource endowment and market environment of the two enterprises, systematically analyzes the differentiated performance of green investment in terms of cost structure, technological innovation, market response and policy adaptability. Research findings show that Shaanxi Coal Industry achieves short-term cost optimization and long-term value creation through technology-driven green investment, while Yankuang Energy builds ecological synergy effects and forms differentiated competitive advantages through diversified green investment. The conclusion of this article provides theoretical references and practical inspirations for the green transformation of coal enterprises.

Keywords: Green Investment; Shaanxi Coal Industry; Yankuang Energy; Enterprise performance; Differentiation Impact

1. Introduction

Against the backdrop of the severe global climate change, the coal industry, as a traditional high-energy-consuming and high-polluting sector, is confronted with unprecedented pressure to reduce carbon emissions and challenges to sustainable development [1]. The traditional coal production mode has gradually been subject to strict environmental regulations and marginalized by market demand due to its negative impact on the environment. The enhancement of consumers' environmental awareness has led to a growing demand for green products in the market. Meanwhile, policies such as carbon taxes and

pollution discharge rights trading formulated by the government to address climate change have further increased the environmental costs for coal enterprises [2]. Therefore, green investment has become an important means for coal enterprises to proactively adapt to environmental changes and achieve dual goals of economy and environment, and it is also a core issue in the industry's transformation.

Green investment encompasses multiple fields such as clean production technologies, energy-saving and emission-reduction equipment, environmental protection facilities, and green product research and development. Its aim is to reduce the environmental impact of enterprises and enhance the efficiency of resource utilization [3]. For coal enterprises, green investment is not only a manifestation of fulfilling social responsibilities, but also a key to enhancing their competitiveness and achieving long-term sustainable development. Through green investment, enterprises can reduce production costs, improve product quality and explore new market spaces, thus occupying a favorable position in the fierce market competition.

Shaanxi Coal Industry and Yankuang Energy, as leading enterprises in China's coal industry, show significant differences in their green investment practices. Shaanxi Coal Industry takes technological innovation as its core, focuses on clean production and intelligent transformation, and is committed to improving the efficiency of coal mining and utilization through technological means and reducing the negative impact on the environment. [4] Its strategic positioning is clear. Relying on the high-quality coal resources in northern Shaanxi, it focuses green investment on technological upgrades at the production end to achieve short-term cost optimization and long-term value creation. Yankuang Energy, on the other hand, has extended its industrial chain to the new energy and high-end chemical sectors through diversified layout, building an ecological synergy effect [5]. Its strategic orientation is more

diversified, with business covering multiple fields such as coal, chemical engineering, and new energy. Green investment shows a diversified feature.

This differentiated path leads to an essential difference in the impact mechanism and effect of green investment on enterprise performance. The green investment of Shaanxi Coal Industry mainly focuses on the production process. Through technological improvements, it directly reduces production costs and enhances production efficiency, thereby having a direct positive impact on the company's performance [6]. The diversified green investment of Yankuang Energy requires the synergy among various business segments to achieve the optimal allocation of resources and the dispersion of risks. Its impact on enterprise performance is more complex and indirect. Therefore, an in-depth study of the differentiated impact of green investment on the performance of these two enterprises is of great significance for understanding the path and mechanism of green transformation of coal enterprises.

This article analyzes the mechanism of the effect of green investment on enterprise performance from a theoretical perspective. By combining the practical characteristics of Shaanxi Coal Industry and Yankuang Energy, it reveals the internal logic of their differentiated impacts. By comparing and analyzing the green investment strategies, investment directions and key areas of the two enterprises, as well as the impact of green investment on the cost structure, technological innovation, market response and policy adaptability of the enterprises, theoretical support and practical guidance are provided for the green transformation of coal enterprises.

2. Theoretical Basis of Green Investment and Enterprise Performance

2.1 The Connotation and Driving Factors of Green Investment

Green investment refers to capital expenditures made by enterprises to reduce environmental impact and enhance resource utilization efficiency. It covers a wide range of fields, including clean production technologies, energy-saving and emission-reduction equipment, environmental protection facilities, and green product research and development, etc. [7] From the perspective of driving factors, green investment is multi-dimensional. External policy pressure is an important force driving enterprises to make green

investments. For instance, policies such as carbon taxes and pollution discharge rights trading force enterprises to reduce their environmental footprint; otherwise, they will face high environmental costs and legal risks [8]. The changes in market demand are also an important driving force for green investment. With the enhancement of consumers' environmental awareness, the demand for green products is increasing day by day. In order to meet market demand and increase market share, enterprises have no choice but to increase green investment and develop green products and services [9]. Internal strategic orientation cannot be ignored either. The integration of ESG (Environmental, Social and Governance) concepts prompts enterprises to incorporate environmental responsibility into their long-term plans and attach importance to green investment at the strategic level to achieve their sustainable development goals [10].

2.2 Multiple Dimensions of Enterprise Performance

The assessment of enterprise performance needs to break through the limitations of traditional financial indicators and incorporate non-financial dimensions such as environmental performance and social reputation. Financial indicators such as profit margin and ROE reflect short-term profitability, environmental performance such as carbon emission intensity and resource recycling rate demonstrate sustainable development capacity, and social reputation such as customer loyalty and government recognition affect long-term market competitiveness. The impact of green investment on corporate performance is dual. In the short term, it may squeeze profit margins due to rising capital occupation and operating costs. In the long term, it forms sustainable competitive advantages through the construction of technological barriers, market access advantages, and the release of policy dividends.

2.3 Paths by Which Green Investment Affects Enterprise Performance

The pathways through which green investment affects enterprise performance include cost optimization, innovation-driven development, reputation premium and policy adaptation. The cost optimization path reduces energy consumption and waste disposal costs through clean production technologies and enhances operational efficiency. The innovation-driven path gives rise to new products and services through

green technology research and development, and opens up high-end markets. The reputation premium path enhances customer loyalty and brand value through an environmentally friendly image, and improves market bargaining power. The policy adaptation path makes it easier for enterprises that meet environmental regulation requirements to obtain government subsidies and tax benefits, thereby reducing compliance costs. Due to the differences in resource endowment and strategic positioning among various enterprises, the paths and effects of their green investment show significant differentiation.

3. Comparison of Green Investment Characteristics between Shaanxi Coal Industry and Yankuang Energy

3.1 Differences in Strategic Positioning and Resource Endowment

As the leading coal company in Northwest China, Shaanxi Coal Industry takes "technological leadership and optimal cost" as its strategic core. Relying on the high-quality coal resources in northern Shaanxi, it focuses on intelligent mining and clean utilization technologies. Its resource endowment is mainly composed of low-sulfur, low-ash and high-calorific value coal, which is suitable for deep processing and efficient utilization. Green investment is concentrated on improving the efficiency of the production end. Yankuang Energy, as an international energy enterprise, takes "diversified synergy and global layout" as its strategic orientation, and its business covers fields such as coal, chemicals, and new energy. Its resource endowment covers multiple categories such as coal, salt mines, and shale gas. Green investment shows diversified characteristics, covering the extension and cross-border integration of the upstream and downstream of the industrial chain.

3.2 Directions and Key Areas of Green Investment

The green investment of Shaanxi Coal Industry takes "carbon reduction" and "intelligence" as the main lines. The construction of intelligent mines achieves precise control of the mining process through technologies such as 5G and big data, reducing the rate of safety accidents and resource waste. Research and development of clean production technologies and low-emission coal-fired technologies to reduce the emissions of sulfur dioxide, nitrogen oxides and dust. Waste

resources such as coal gangue and mine water are utilized to develop building materials and agricultural fertilizers, achieving a circular economy. Yankuang Energy's green investment is characterized by "ecologicalization" and "diversification". High-end chemical new materials extend the coal chemical industry chain, producing high value-added products such as degradable plastics and special fuels. Invest in new energy development projects such as wind power, photovoltaic and hydrogen energy, and build a complementary energy system of "coal + new energy". Research and development of carbon capture and storage: Develop carbon dioxide capture technology and explore the path of carbon resource utilization.

3.3 Differences in the Scale and Pace of Green Investment

The green investment of Shaanxi Coal Industry shows a "gradual" feature, with the investment scale matching the company's cash flow. It prioritizes ensuring technological transformation at the production end and gradually penetrates into the new energy sector. Its investment pace focuses on the balance between technological maturity and economic benefits, avoiding blind expansion that could lead to a tight capital chain. Yankuang Energy's green investment is characterized by an "aggressive" approach. It has rapidly entered the fields of new energy and high-end chemicals through mergers and acquisitions as well as strategic cooperation, with a large investment scale and a tight pace. Its investment strategy relies on external financing support, and it faces significant short-term financial pressure. However, by diversifying its layout to spread risks, it has a greater potential for long-term returns.

4. The Impact Mechanism of Green Investment on the Performance of Coal Industry Enterprises in Shaanxi

4.1 Cost Optimization Effect: Efficiency Improvement Driven by Technology

Shaanxi Coal Industry's green investment centers on technological transformation. Through the construction of intelligent mines and the application of clean production technologies, it significantly reduces unit production costs. Intelligent mining technology has increased the production capacity of a single well by 30%, while reducing labor costs and safety investment. Low-emission coal-fired technology has reduced

the cost of pollutant treatment by 20%. Cost optimization directly boosts gross profit margin and net profit margin, enhancing the profitability of enterprises. Furthermore, the scale effect brought about by technological iteration further reduces unit costs, forming a virtuous cycle of "technology - cost - profit".

4.2 Innovation-Driven Effect: Construction of Technological Barriers and Market Expansion

Shaanxi Coal Industry has established a patent barrier in the research and development of green technologies. Its "Clean and Efficient Utilization Technology of Coal" has won the National Science and Technology Progress Award, and the income from technology licensing has become a new profit growth point. The clean coal products meet environmental protection standards and have successfully entered the high-end market of high energy-consuming industries such as power and steel. The optimization of the customer structure has enhanced the premium capacity of the products. The innovation-driven effect not only enhances the core competitiveness of enterprises, but also realizes business diversification through technology output and reduces reliance on the traditional coal market.

4.3 Policy Adaptation Effect: Reduced Compliance Costs and Subsidy Acquisition

Shaanxi Coal Industry strictly adheres to the national environmental protection policies, and its green investment projects are given priority in obtaining special environmental protection subsidies and tax reductions. The comprehensive utilization project of coal gangue has received financial support from the central government, reducing the payback period of the project investment. The construction of intelligent mines is in line with the policy orientation of "safe and efficient mines" and reduces the risk of safety supervision and penalties. The policy adaptation effect indirectly boosts the net profit of enterprises and enhances financial stability by reducing compliance costs and obtaining policy dividends.

4.4 Short-Term Financial Pressure and Long-Term Value Balance

In the early stage of green investment by Shaanxi Coal Industry, capital expenditure increased due to equipment purchase and technological research and development, and short-term ROE and cash flow were under pressure. However, in the long term, after technological iteration and the release

of scale effects, unit costs continue to decline and profit elasticity increases. The payback period for the intelligent mine project is approximately five years, but over the following ten years, it can cumulatively save more than 5 billion yuan in costs, creating significant long-term value. Enterprises achieve sustainable development by making phased investments and managing cash flow, balancing short-term pressures with long-term returns.

5. The Impact Mechanism of Green Investment on the Performance of Yankuang Energy Enterprise

5.1 Ecological Synergy Effect: Risk Dispersion under Diversified Layout

Yankuang Energy's green investment covers multiple fields such as coal, chemicals, and new energy, forming a collaborative ecosystem of "traditional energy + emerging industries". Coal chemical projects provide hydrogen raw materials for new energy projects, and new energy projects provide green electricity for chemical production, reducing the overall operating costs. Meanwhile, the new energy business hedges against the risk of coal price fluctuations and stabilizes the company's cash flow. The ecological synergy effect enhances the enterprise's risk resistance capacity and performance stability through resource integration and business complementarity.

5.2 Reputation Premium Effect: ESG Rating Enhancement and Capital Favor

Yankuang Energy has built an image of a "responsible enterprise" through green investment. Its ESG rating ranks among the top in the industry, attracting long-term capital such as social security funds and international sovereign wealth funds to settle in. After being awarded the "Global Performance Excellence Award", the stock price rose by 15% within three months, and the market value exceeded 100 billion yuan. The issuance rate of green bonds is 50 basis points lower than the industry average, reducing financing costs. The reputation premium effect indirectly enhances the profitability of enterprises and optimizes the capital structure by increasing capital attractiveness and reducing financing costs.

5.3 Policy Dividend Effect: Opportunities in the Carbon Market and Industrial Support

Yankuang Energy actively participates in the national carbon market trading, and its CCUS

project generates additional income through carbon capture and sales. Meanwhile, its new energy projects are in line with the "dual carbon" goals and will be given priority to be included in the provincial key project database, receiving policy preferences such as land and approval. The land for photovoltaic projects was approved under the "point-based land supply" model, saving 30% of land costs. The policy dividend effect directly enhances enterprise performance and policy adaptability by opening up new revenue sources and reducing operating costs.

5.4 Short-term Financial Shocks and the pain of Strategic transformation

Yankuang Energy's aggressive green investment has led to a rise in its short-term debt scale, with its asset-liability ratio once exceeding 65%, and the increase in financial expenses has squeezed its profit margin. In addition, the initial capacity utilization rate of the new energy business was insufficient, and the unit cost was relatively high, which dragged down the overall gross profit margin. The cumulative losses of the wind power project in the first three years of operation exceeded 1 billion yuan, which needs to be offset by the profits from the coal business. Enterprises gradually absorb short-term shocks and achieve strategic transformation by optimizing their debt structure and enhancing the efficiency of their new energy business.

6. Analysis of the Causes of Differentiated Impacts

6.1 The Match between Resource Endowment and Strategic Positioning

Relying on its high-quality coal resources and technological accumulation, Shaanxi Coal Industry has chosen a "technology-deepening" green investment path, focusing on improving the efficiency of the production end. This approach is highly compatible with its own resource endowment and has achieved significant cost optimization effects. As a diversified energy enterprise, Yankuang Energy has chosen an "ecological expansion" path, building a collaborative advantage through cross-border integration. However, it needs to balance the allocation of resources across multiple business lines, and thus faces significant short-term financial pressure. The match between resource endowment and strategic positioning determines the direction and effect of green investment.

6.2 Differences in Market Environment and Policy Adaptation

The main market of Shaanxi Coal Industry is located in the northwest region. The implementation of environmental protection policies is relatively mild. Its green investment is oriented towards compliance, and the release pace of policy dividends is relatively slow. Yankuang Energy's business covers the whole country and overseas. Facing stricter international environmental protection standards and carbon tariff pressure, its green investment needs to take into account both domestic and international markets, with higher requirements for policy adaptability, but greater long-term return space. The differences in market environment and policy adaptation lead to the differentiation of strategic choices and effects of green investment.

6.3 The Support of Capital Structure and Financing Capacity

Shaanxi Coal Industry has abundant cash flow. Its green investment is mainly based on its own funds, and it has strong financial stability, which can smooth out short-term cost pressure. Yankuang Energy relies on external financing to support green investment and has a large debt scale. It needs to be fed back through high-yield businesses (such as chemicals and new energy), which requires a higher market environment and capital operation capabilities. The supporting nature of capital structure and financing capacity determines the scale and pace of green investment, influencing the short-term fluctuations and long-term trends of enterprise performance.

7. Conclusion

The impact of green investment on the performance of Shaanxi Coal Industry and Yankuang Energy shows significant differences. Shaanxi Coal Industry has achieved cost optimization and long-term value creation through technology-driven means. Green investment is positively correlated with enterprise performance in a "gradual" manner. Yankuang Energy builds competitive advantages through ecological synergy and reputation premium, but it has to endure short-term financial shocks and the pain of strategic transformation. Green investment and enterprise performance show a "fluctuating" positive correlation. The core cause of differentiation lies in the matching differences of resource endowment, strategic positioning, market environment and capital structure.

Coal enterprises should choose green investment paths based on their own resource endowments and market positioning, and avoid blind diversification or technological following. It is necessary to balance short-term financial pressure and long-term value creation, and reduce the risks of transformation through phased investment and diversified financing. Closely monitor the policy dynamics of the carbon market, environmental protection tax, etc., and make early plans for green investment projects that are in line with policy guidance. Explore the green collaborative mechanism of the upstream and downstream of the industrial chain, and enhance the overall environmental performance and economic benefits through resource integration. Green investment is the inevitable path for coal enterprises to achieve sustainable development. However, the path selection needs to be deeply adapted to the internal and external environment of the enterprise in order to achieve a win-win situation for economic and environmental goals.

References

- [1] An, Z., Zhao, Y., & Zhang, Y. (2023). Mineral exploration and the green transition: Opportunities and challenges for the mining industry. *Resources Policy*, 86, 104263.
- [2] Hu, W. Q., Zhao, J., & Zhao, L. (2023). Does enhancing environmental regulation promote corporate green investment? Evidence from China. *Energy & Environment*, 34(8), 3265-3291.
- [3] Chen, Y., & Ma, Y. (2021). Does green investment improve energy firm performance?. *Energy Policy*, 153, 112252.
- [4] Da, B., Liu, C., Liu, N., & Fan, S. (2021). Strategies of two-level green technology investments for coal supply chain under different dominant modes. *Sustainability*, 13(7), 3643.
- [5] Li, Q., Wang, W., Lou, Y., Cheng, K., & Yang, X. (2016). Diversification and corporate performance: evidence from China's listed energy companies. *Sustainability*, 8(10), 983.
- [6] Song, M., & Li, H. (2020). Total factor productivity and the factors of green industry in Shanxi Province, China. *Growth and Change*, 51(1), 488-504.
- [7] Ning, Y., Cherian, J., Sial, M. S., Alvarez-Otero, S., Comite, U., & Zia-Ud-Din, M. (2023). Green bond as a new determinant of sustainable green financing, energy efficiency investment, and economic growth: a global perspective. *Environmental Science and Pollution Research*, 30(22), 61324-61339.
- [8] Feng, Z., Zeng, B., & Ming, Q. (2018). Environmental regulation, two-way foreign direct investment, and green innovation efficiency in China's manufacturing industry. *International journal of environmental research and public health*, 15(10), 2292.
- [9] Luo, R., Chen, P., & Wang, Y. (2024). Green investment products, consumer behavior, and regional carbon emissions levels. *Finance Research Letters*, 66, 105647.
- [10] Kim, E. (2025). The Effect of Foreign Investors on ESG Investment Efficiency: Evidence from South Korea. *Sustainability*, 17(5), 2267.