

Financial Transformation Strategies of High-Energy-Consumption Enterprises under the Background of Green Finance

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Abstract. Green finance has emerged as a driving force in the restructuring of energy-intensive industries by integrating ecological objectives into financial decision-making. This paper explores the significance and strategic pathways of financial transformation for high-energy-consumption enterprises under the guidance of green finance. The discussion emphasizes the necessity of industrial upgrading, diversification of financing channels, improvement of environmental risk management, and reinforcement of sustainable competitiveness. Four major strategies are examined: enhancing green accounting information disclosure, innovating green investment instruments, strengthening environmental cost and performance management, and constructing green risk control systems. These approaches illustrate how enterprises can achieve financial resilience and ecological accountability simultaneously, thereby securing long-term growth within increasingly stringent environmental and financial frameworks.

Keywords: Green finance; High-energy-consumption enterprises; Financial transformation; Environmental management; Sustainable development.

1. Introduction

Green finance arises as a pivotal paradigm in global economic governance, guided by ecological principles and aligned with international climate commitments. It integrates environmental objectives into capital allocation, risk assessment, and industrial regulation, thereby reshaping the traditional boundaries between financial flows and ecological responsibility. Regulatory frameworks such as carbon trading systems, green credit guidelines, and sustainability disclosure standards define the operational foundation of this financial landscape[1]. In high-energy-consumption industries, green finance imposes rigorous requirements on capital circulation, compelling enterprises to restructure financial systems in accordance with environmental benchmarks.

2. The Significance of Financial Transformation of High-Energy-Consumption Enterprises under the Green Finance Background

2.1. Promote Industrial Structure Upgrading

The integration of green finance reshapes industrial hierarchies by directing financial resources toward cleaner production technologies and resource-efficient processes. This orientation accelerates the phasing out of outdated capacity and channels funds toward innovation in energy-saving equipment and advanced management systems[2]. The process nurtures industrial synergy, where traditional energy-intensive sectors recalibrate their internal structures to align with ecological and regulatory demands. Continuous capital reallocation toward research in renewable energy and environmentally responsible technologies redefines the competitive framework, ensuring that enterprises gradually align financial strategies with sustainability imperatives.

2.2. Expand Green Financing Channels

The landscape of corporate financing undergoes significant evolution under green finance frameworks, as multiple channels for capital acquisition emerge. Financial institutions introduce

specialized credit lines, green bonds, and sustainability-linked loans that impose measurable environmental performance benchmarks. The proliferation of these instruments enhances corporate capacity to attract funding while ensuring that repayment structures are tied to environmental metrics. Broader access to capital markets encourages collaboration between commercial banks, investment funds, and public entities, resulting in diversified financial support for eco-friendly projects. Such expansion of financing mechanisms also stabilizes investor confidence, as transparent disclosure practices and verifiable sustainability indicators reduce information asymmetry in financial markets.

2.3. Enhance Environmental Risk Management Capacity

Green finance strengthens environmental risk management by embedding ecological variables into financial decision-making frameworks. Enterprises are required to incorporate carbon emission data, pollution discharge metrics, and energy efficiency indicators into risk assessment models. Integration of such parameters redefines credit evaluation and investment appraisal processes, ensuring that ecological liabilities receive equal weight with financial obligations. By adopting comprehensive monitoring systems, firms detect environmental risks early and design targeted mitigation strategies that safeguard financial stability.

2.4. Strengthen Corporate Sustainable Competitiveness

Financial transformation under the green finance paradigm stimulates the reinforcement of corporate competitiveness in global markets. Resource allocation toward cleaner technologies elevates production efficiency and reduces operating costs, thereby securing cost advantages in the long term. Transparent disclosure of sustainability performance fosters stronger reputational standing and enhances brand credibility among stakeholders. Strategic alignment with international environmental standards facilitates access to global supply networks, ensuring continuity of trade relations in markets with strict environmental regulations.

3. Exploration of Financial Transformation Strategies of High-Energy-Consumption Enterprises under the Green Finance Background

3.1. Improve the System of Green Accounting Information Disclosure

A comprehensive system of green accounting information disclosure establishes credibility in financial markets and strengthens the linkage between capital flows and environmental performance. High-energy-consumption enterprises should build standardized frameworks that integrate carbon emissions, pollutant discharge, and resource efficiency indicators into financial reports. Quantitative metrics combined with narrative explanations enhance transparency, allowing regulators, investors, and stakeholders to evaluate environmental responsibilities with accuracy. Advanced digital tools such as blockchain and big data analytics ensure traceability and authenticity of disclosed data, reducing the risk of information distortion. Periodic publication of environmental performance alongside financial statements provides a dual perspective that reflects both economic viability and ecological accountability, creating a reliable foundation for sustainable investment decisions.

3.2. Innovate Green Investment and Financing Instruments

Innovation in investment and financing instruments opens new avenues for capital acquisition and supports the transition of high-energy-consumption enterprises toward sustainable development. Establishment of green bonds, sustainability-linked loans, and carbon credit securitization channels financial resources into projects that prioritize efficiency enhancement and emission reduction. Enterprises should design internal mechanisms that align financing terms with environmental achievements, ensuring that capital usage directly correlates with ecological improvements. Collaboration with financial institutions encourages the creation of hybrid products that integrate insurance services, equity financing, and government subsidies, thereby diversifying sources of

funds[3].. Widening the scope of financial innovation reduces reliance on traditional credit while stimulating competition among institutions to provide specialized services, reinforcing the transformation trajectory.

3.3. Strengthen Environmental Cost and Performance Management

Strengthening environmental cost and performance management ensures that ecological considerations influence operational and financial strategies. Enterprises need to establish accounting modules that capture hidden environmental costs, such as waste disposal, energy inefficiency, and regulatory penalties, integrating them into decision-making models. Dynamic performance indicators, including carbon intensity per unit of output and energy utilization efficiency, must be embedded into managerial evaluation systems. Application of lifecycle assessment tools enhances the accuracy of cost measurement, while continuous benchmarking against industry standards provides reference for improvement[4]. Internal incentive schemes can reward departments that achieve substantial ecological outcomes, fostering organizational cohesion around sustainability goals. Integration of environmental costs into financial control strengthens long-term profitability by aligning resource allocation with ecological imperatives.

3.4. Build Green Risk Control and Internal Audit Mechanisms

Construction of green risk control and internal audit mechanisms establishes resilience against ecological and financial uncertainties. Risk control frameworks must incorporate multidimensional factors, including climate policy shifts, carbon price fluctuations, and technological volatility, into corporate financial models. Continuous monitoring systems supported by artificial intelligence can identify emerging risks in real time, enabling timely strategic responses[5]. Independent internal audit committees should evaluate adherence to green finance standards, assessing both compliance with external regulations and the integrity of internal governance structures. Cross-functional teams combining financial experts, environmental engineers, and legal advisors enhance the precision of risk assessments. Integration of risk control with enterprise resource planning systems ensures that ecological accountability becomes embedded in daily operations, safeguarding both financial security and environmental responsibility.

4. Conclusion

Green finance reshapes financial systems of energy-intensive enterprises by integrating ecological benchmarks into fiscal operations. Standardized disclosure enhances transparency, while innovative financing instruments direct capital toward sustainable projects. Incorporation of environmental costs into performance management aligns operational priorities with ecological goals. Risk control mechanisms further secure stability against regulatory and market uncertainties. These strategies jointly strengthen competitiveness and ensure that financial growth proceeds in harmony with environmental responsibility.

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