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Research on the Influence Mechanism of Corporate ESG Performance on Financial Performance: A Case Study of LONGi Green Energy Technology

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Abstract

Against the backdrop of global carbon neutrality and the "Dual Carbon" strategy, how corporate ESG performance affects financial performance has become a critical issue. This paper takes LONGi Green Energy Technology, a leading photovoltaic enterprise, as a case study, and explores the influence mechanism between the two by analyzing its ESG practices and financial data from 2020 to 2024. The study finds that LONGi's outstanding ESG performance enhances financial performance through three core pathways: in the environmental (E) dimension, sustained R&D investment and resource efficiency management drive technological cost reduction and operational resilience; in the social (S) dimension, safety production and supply chain responsibility construction ensure operational stability, while significant accumulated social reputation is directly translated into a substantial reduction in financing costs; in the governance (G) dimension, a professional board structure, anti-corruption measures, and expense control capabilities provide institutional safeguards for strategy execution and risk prevention. Strategic ESG practices can effectively transform environmental and social responsibilities into competitive advantages and financial gains, offering practical insights for similar enterprises to achieve sustainable development.

Keywords

ESG Performance; Financial Performance; LONGi Green Energy Technology; Influence Mechanism; Photovoltaic Enterprise.

1. Introduction

Against the backdrop of global climate change response and sustainable development promotion, the Environmental, Social, and Governance (ESG) concept has evolved from a marginalized ethical initiative into a core paradigm for the global investment community and corporate strategy. Regulatory bodies worldwide are continuously strengthening ESG disclosure requirements, and capital markets are increasingly directing resources towards companies with superior ESG performance [1]. Concurrently, the top-level design of the "Dual Carbon" (Carbon Peak and Carbon Neutrality) goals has reshaped national energy structures and industrial landscapes, compelling enterprises to internalize green development as a key component of their core competitiveness. In this context, how enterprises balance ESG practices with financial performance and achieve the cognitive shift from viewing ESG as a "cost center" to a "value creator" has become a focal point of common concern for both academia and practitioners[2].

Regarding the relationship between ESG performance and financial performance, divergent views exist within academia. Proponents, drawing on stakeholder theory and the resource-based view, argue that superior ESG practices can ultimately enhance long-term corporate financial value through avenues such as elevating brand reputation, reducing compliance risks,

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stimulating innovation, and attracting talent and low-cost capital. However, other perspectives point out that ESG investments increase current-period costs and, in the absence of immediate financial returns, may crowd out resources for core business operations, thereby exerting pressure on short-term financial performance [3-4]. Existing empirical research yields inconsistent conclusions, with findings variously indicating "positive promotion," "negative impact," or a "non-linear relationship" [5]. These discrepancies partly stem from differences in research contexts, industry heterogeneity, and the methodologies used to measure ESG. More importantly, the underlying mechanism-specifically, the pathways through which ESG performance affects financial performance-still requires in-depth analysis within specific and dynamic business practices[6].

As a critical force in achieving the "Dual Carbon" goals, the ESG practices of leading enterprises in the photovoltaic (PV) industry hold significant research value. LONGi Green Energy Technology Co., Ltd. (hereinafter referred to as "LONGi"), a global leader in PV wafers and modules, is not only an industry benchmark for technological iteration and cost control but also garners considerable attention for its comprehensive ESG practices guided by the "Solar for Solar" vision. The company's commitment to environmental friendliness, social responsibility, and sound governance is deeply integrated into its corporate strategy and daily operations, as evidenced by its consecutive seven years of ESG report disclosure and three years of climate white paper publication[7]. Therefore, selecting LONGi as a case study aids in observing how the ESG concept is implemented within a high-growth, technology-intensive manufacturing enterprise and in exploring its dynamic relationship with financial performance.

2. Company Profile and Business Overview of LONGi Green Energy Technology

2.1. Company Profile and Business Overview of LONGi Green Energy Technology

2.1.1. Selection Rationale

This study selects LONGi Green Energy Technology Co., Ltd. (hereinafter referred to as "LONGi") as a case study, primarily based on the representativeness of its sustainable business practices and its industry benchmark status, which hold significant theoretical and practical value. As the world's largest manufacturer of photovoltaic wafers and modules, the company's core business is deeply aligned with the global energy transition and China's "Dual Carbon" strategic goals. The photovoltaic industry inherently possesses prominent environmental attributes, and how its leading enterprises transform environmental responsibility into core competitiveness provides an excellent window for observing the deep integration of ESG and corporate strategy. LONGi ranks among the top in its industry in mainstream international ESG ratings such as MSCI and S&P CSA, and is also one of the first PV enterprises in China to issue green bonds and sign the Science Based Targets initiative (SBTi). Furthermore, as an A-share listed company, LONGi possesses long-term, continuous, and transparent financial data, with its business scale and market position ensuring the representativeness of the data. By conducting longitudinal comparison and correlational analysis between key milestones in its ESG practices and the corresponding periods' financial performance, this study can more effectively dissect the dynamic relationship between the two.

2.1.2. Company Profile.

LONGi Green Energy Technology Co., Ltd. (Stock Code: 601012.SH) is a globally leading solar technology company. Founded in 2000 and headquartered in Xi'an, China, with the mission of "Making the Best Use of Solar Energy to Build a Green World," the company has long been committed to being an advocate and practitioner of sustainable development in the global clean

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energy sector. Through persistent focus on technological innovation, LONGi has established five major business segments covering monocrystalline silicon wafers, cells and modules, distributed photovoltaic solutions, and hydrogen energy equipment, forming a globally radiating, full photovoltaic industry chain layout (see Table 1 for each segment and main products). The company maintains high-intensity R&D investment over the long term, achieving multiple breakthrough innovations in key technological areas such as monocrystalline growth and high-efficiency cells, effectively driving technological advancement and cost reduction in the photovoltaic industry. Furthermore, through its wholly-owned subsidiary Xi'an LONGi Hydrogen Energy Technology Co., Ltd., the company actively deploys its hydrogen energy business, focusing on the R&D and manufacturing of green hydrogen production equipment. Sustained innovation investment and a comprehensive industrial layout together underpin its globally outstanding product reliability and brand reputation.

Table 1. LONGi's Business Segments and Main Products

Business Segment	Main Products
Monocrystalline Silicon Wafers	TaiRui Silicon Wafer, P-type Silicon Wafer, N-type Silicon Wafer
High Conversion Rate Modules	Hi-Mo Series High-Efficiency PV Modules
Building Integrated Photovoltaics (BIPV)	High-Efficiency Power Generation Roof Systems, Integrated Photovoltaic-Storage-Charging Green Parking Spaces, Household Photovoltaic-Storage Smart Energy Systems, etc.
Provision of Photovoltaic Solutions	Power Solutions, Industry Solutions, Residential Solutions
Green Hydrogen Production Equipment	ALK Hi 1, ALK G

2.2. Analysis of the Motivations Behind LONGi's ESG Practices

2.2.1. Internal Motivations

LONGi's ESG practices are rooted in its strategic choices and core values, manifested concretely across three dimensions: governance, operations, and value conviction. At the governance level, the company has integrated ESG into the core of its governance. By establishing a Board-level Strategy and Sustainable Development Committee and linking climate performance with executive compensation, it institutionally ensures the implementation of ESG issues at the decision-making level and the allocation of resources. At the operational level, its "Solar for Solar" vision drives green production technology innovation[8]. Through large-scale energy-saving technological upgrades and the deployment of renewable energy production bases, it effectively reduces operational costs and enhances efficiency, thereby transforming environmental responsibility into a competitive advantage. Fundamentally, the deep driving force behind this practice stems from the company's value conviction[9]. The founder's vision of "Affordable Clean Energy for All" naturally integrates long-term concern for sustainable development and human well-being into the company's business decisions, thereby shaping a brand image and industry leadership that transcends commercial profit.

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2.2.2. External Motivations

LONGi's ESG practices are, first and foremost, a systematic response to its external operating environment. At the international level, the global consensus on carbon neutrality and international norms such as RE100 and the Science Based Targets initiative (SBTi) compel the company to establish ESG governance and disclosure systems that meet global standards, in order to maintain international market access and reputation. Simultaneously, China's "Dual Carbon" goals and related policies and regulations provide it with a clear strategic direction and transition framework.[10] Furthermore, the fact that global mainstream investment institutions use ESG performance as a core investment criterion, and key clients impose stringent requirements on supply chain carbon footprints, makes excellent ESG ratings a key asset for obtaining low-cost financing and premium orders. The expectations of the public and stakeholders for industry leaders to assume broader social responsibilities also drive LONGi to continue investing in areas such as community empowerment and energy equity.

With increasing global emphasis on renewable energy, the photovoltaic industry has experienced rapid development, attracting a large influx of enterprises and leading to increasingly fierce market competition. In this context, LONGi must continuously enhance its comprehensive competitiveness to maintain its industry-leading position. Sound ESG practices constitute a crucial pathway for enhancing competitiveness. For instance, by exploring and implementing public welfare models closely integrated with its own business, an enterprise can communicate its social responsibility and sustainability commitment to society, thereby elevating its brand image and public recognition. This positive corporate image, built upon ESG practices, helps the company stand out in fierce market competition, attract more potential clients and partners, and ultimately translate into sustainable competitive advantages.

2.3. LONGi's ESG Rating Status

Given the current absence of a unified global ESG evaluation standard and system, and the consequent reliance on independent assessments by third-party professional agencies for ESG rating work, this paper selects four influential ESG rating agencies-FTSE Russell, Hua Zheng Index, SynTao Green Finance, and Wind-to present LONGi's ESG ratings over the past five years, as shown in Table 2.

Table 2. Three Scheme comparing

Year	FTSE Russell	Huazheng Index	Shangdao Ronglv	Wind
2020	2	BBB	B+	7.5
2021	2	BBB	A-	7.62
2022	3	A	A-	7.85
2023	3	BBB	A-	6.94
2024	3.8	AA	AApi	7.93

Note: FTSE Russell scores range from 0 to 5; Hua Zheng Index ratings are divided into 9 tiers from C to AAA; SynTao Green Finance ratings are divided into 10 levels from D to A; Wind scores range from 0 to 10.

MSCI reports explicitly state that LONGi has fully integrated business ethics management into its operational processes, establishing a comprehensive, end-to-end compliance system, a practice that leads most of its global peers[14]. The company performs outstandingly on key issues such as supply chain labor standards and controversial sourcing, implementing effective management over all tier-one suppliers to mitigate risks at the source. From building the industry's first "Lighthouse + Zero-Carbon" factory, to publishing a net-zero emissions roadmap, and to obtaining the SSI-ESG Gold certification, its systematic environmental

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management and technological innovation have received high praise from the international community.

3. Analysis of LONGi's ESG Performance

3.1. Environmental (E) Dimension: Practical Measures

In the environmental dimension, LONGi's core practice is to implement the "Solar for Solar" (using clean energy to produce clean energy) philosophy, striving to build a green and low-carbon manufacturing closed loop. The company has set a long-term goal of achieving net-zero emissions across the entire value chain by 2050, with the key interim target of using 100% renewable electricity by 2030. To achieve these targets, the company has implemented a series of specific initiatives[11].

In terms of green operations, LONGi focuses on establishing industry manufacturing benchmarks. Its Jiaxing base in Zhejiang Province is the world's first photovoltaic production base to receive dual certifications as both a "Lighthouse Factory" and a "Zero-Carbon Factory." Through comprehensive digitalization and energy management, it achieves ultimate energy efficiency. In 2024, the company implemented 477 energy-saving technological renovations, with an estimated annual electricity saving of 426 million kilowatt-hours, thereby directly translating environmental performance into economic benefits. Meanwhile, the company actively increases the proportion of renewable energy use, with the share of green electricity in its production and operations having risen significantly.

In terms of green innovation and supply chain management, LONGi extends environmental requirements to the entire product lifecycle. The company continuously researches and develops solar cell technologies with higher conversion efficiency and lower energy consumption (e.g., HPBC, HPDC) to enhance the environmental benefits of its products during the use phase. By establishing a "Green Supply Chain" system, the company conducts carbon footprint accounting and emission reduction capacity training for suppliers, thereby promoting collaborative carbon reduction across the entire industry chain.

3.2. Social Responsibility (S) Dimension: Practical Measures

In the social responsibility dimension, with employees, customers, and communities as its core stakeholders, LONGi is committed to creating shared value through systematic practices. Specifically, its responsibility fulfillment pathway can be divided into the following three levels: At the level of employee rights and development, the company regards talent as a core asset. Beyond offering competitive compensation and benefits as well as a robust health and safety Security system, it has also established a comprehensive training system and multi-channel career development paths to support the long-term growth of employees[12]. By implementing multiple equity incentive plans, the company enables core employees to share in the fruits of development, thereby effectively enhancing team cohesion and stability. At the level of customer responsibility and product quality, adhering to the core values of "Reliable, Value-adding, Delightful," LONGi has built a full-chain quality management system covering R&D, production, and after-sales service to ensure products possess reliability and power generation performance throughout their lifecycle. With the deep integration of photovoltaics and digital technology, the company has also strengthened specialized protection for customer data security and privacy. At the level of community engagement and development, leveraging its industrial advantages, LONGi conducts strategic public welfare initiatives. Its globally promoted "PV+" projects (e.g., PV+Agriculture, PV+Water) not only address communities' clean energy needs but also simultaneously promote local economic development and livelihood improvement. Furthermore, by collaborating with international organizations such as the

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UNHCR, the company provides clean electricity to energy-scarce regions, practically fulfilling its corporate mission of "Affordable Clean Energy for All."

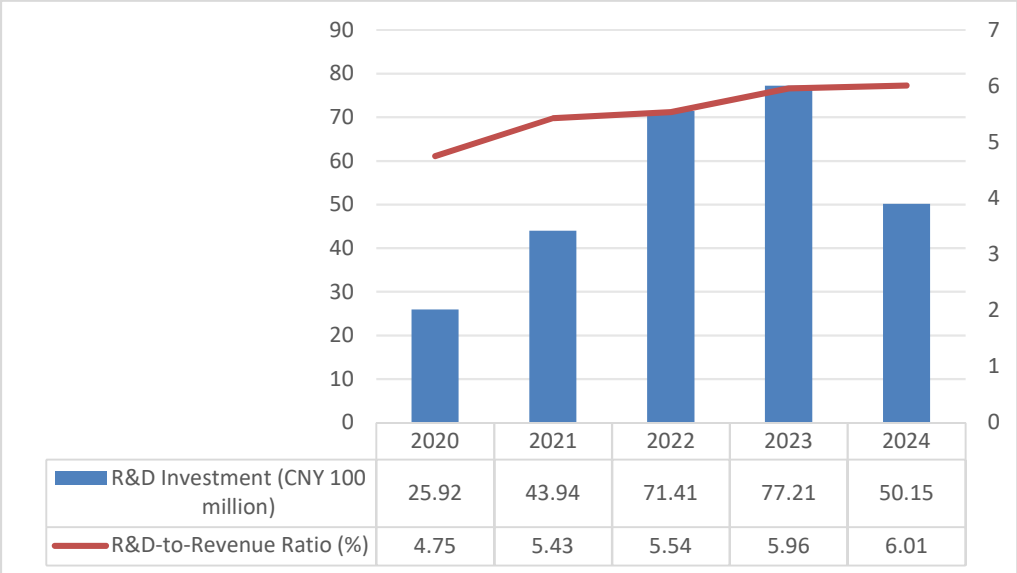
3.3. Corporate Governance (G) Dimension: Practical Measures

In the governance dimension, LONGi has established a well-defined ESG governance structure with clear authority and responsibility to ensure the effective implementation of its sustainable development strategy. This structure forms a three-tier management system from the Board of Directors, through senior management, down to the execution level. The "Strategy and Sustainable Development Committee" under the Board of Directors is responsible for reviewing and supervising major ESG strategies, ensuring their inclusion in the company's highest decision-making agenda. Senior management has established a dedicated ESG execution body responsible for cross-departmental coordination and the advancement of specific targets. In terms of risk management and business ethics, the company has built a rigorous internal control and compliance system, formulating a series of regulations including a "Code of Business Conduct," anti-corruption policies, and a comprehensive whistleblower protection mechanism. Crucially, the company incorporates key ESG performance indicators such as climate change into the compensation assessment system for senior management, thereby institutionally aligning management interests with the company's long-term environmental goals and ensuring the driving force for ESG execution. Regarding transparency and information disclosure, LONGi has published high-quality standalone ESG reports for consecutive years, with its disclosure framework strictly benchmarked against international standards such as the Global Reporting Initiative (GRI) and the Task Force on Climate-related Financial Disclosures (TCFD). This high level of transparency practice significantly reduces information asymmetry with stakeholders such as investors and clients, earning it trust in the capital markets[13].

4. Mechanism Analysis of How ESG Performance Affects Financial Performance

4.1. Environmental Dimension

4.1.1. Technological Innovation



	2020	2021	2022	2023	2024
R&D Investment (CNY 100 million)	25.92	43.94	71.41	77.21	50.15
R&D-to-Revenue Ratio (%)	4.75	5.43	5.54	5.96	6.01

Figure 1. R&D Investment and R&D-to-Revenue Ratio Data (2020-2024)

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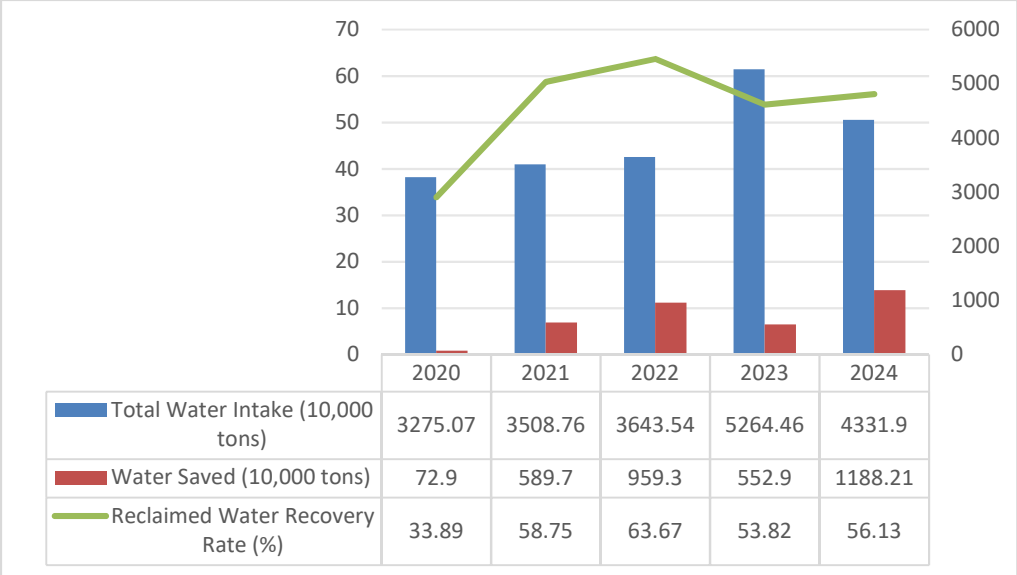
LONGi's green development philosophy is rooted in a new-quality productive forces development model with technological innovation at its core, which serves as the fundamental mechanism for achieving high-quality development. The company's total R&D investment and its proportion of revenue have continued to grow for five consecutive years, strongly confirming that the company places technological innovation at the heart of its environmental strategy and regards it as the fundamental path to addressing environmental challenges. Sustained, high-intensity R&D investment is the essential guarantee for realizing the "Solar for Solar" vision and maintaining low-carbon competitive advantages throughout the product lifecycle. This strategic choice is intrinsically linked to the subsequently analyzed fact of "reduction in financing costs": capital markets are likely to interpret significant and sustained R&D investment as a signal of the company's long-term technological competitiveness and sustainable development potential, thus willing to offer more favorable financing terms, forming a virtuous cycle of "innovation investment - market recognition - capital facilitation".

4.1.2. Resource Conservation

Under the strategic framework of sustainable development, LONGi places resource efficiency and circular utilization at its core, committed to building a resource-conserving and environmentally friendly operational model. Specifically regarding water resource management, the company implements a comprehensive strategy of "Water Conservation Priority, Circulation and Reuse." By strictly controlling water intake during production processes and heavily investing in wastewater recovery and reuse technologies, it aims to minimize water consumption and maximize utility. Figure 2 reveals the dynamic balance the company maintains between "scale expansion" and "efficiency improvement." The increase in total water intake is primarily attributable to business scale expansion, while the significant rise in water savings during the same period and the stable maintenance of reclaimed water recovery rate above 50% clearly indicate that its water resource circular economy model has been deeply integrated into daily operations. This model not only directly leads to savings in water costs but also effectively mitigates water resource risks faced by the entire supply chain, translating environmental management into tangible operational resilience and economic benefits.



	2020	2021	2022	2023	2024
Total Water Intake (10,000 tons)	3275.07	3508.76	3643.54	5264.46	4331.9
Water Saved (10,000 tons)	72.9	589.7	959.3	552.9	1188.21
Reclaimed Water Recovery Rate (%)	33.89	58.75	63.67	53.82	56.13

Figure 2. Annual Water Resource Usage Data Statistics

From the perspective of environmental performance analysis, although LONGi has continuously advanced energy-saving and consumption-reduction initiatives in recent years,

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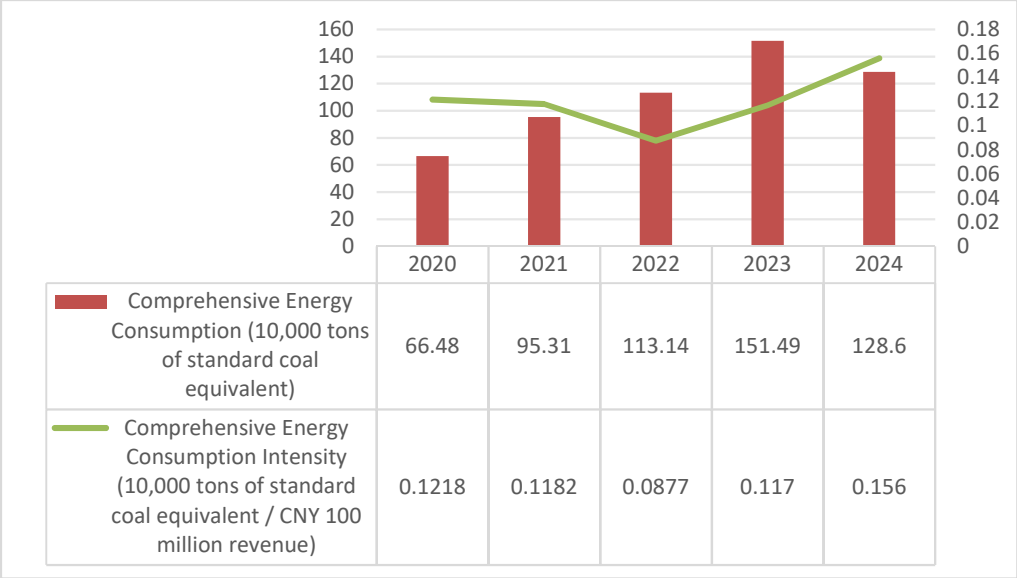
its total comprehensive energy consumption still shows an upward trend (see Figure 3). This phenomenon is primarily attributed to continuous capacity expansion and business scale growth. However, a closer examination of its energy utilization efficiency reveals that, despite the increase in total consumption, the key efficiency indicator of energy consumption per unit revenue (i.e., energy intensity) shows an overall declining trend (see Table 3.1.3). For example, the low intensity point in 2022 clearly reflects the positive results of technological and management optimization. Notably, a significant rise in energy intensity occurred in 2024. This reveals that during periods of market downturn and industry demand fluctuations, the inherent rigidity in energy consumption of production facilities becomes prominent, leading to a passive deterioration in energy efficiency indicators. This dynamic change profoundly exposes the close linkage between a company's environmental performance (E) and market cycles as well as short-term financial performance, indicating that maintaining or even improving environmental efficiency faces more severe challenges under economic downturn pressures.



	2020	2021	2022	2023	2024
Comprehensive Energy Consumption (10,000 tons of standard coal equivalent)	66.48	95.31	113.14	151.49	128.6
Comprehensive Energy Consumption Intensity (10,000 tons of standard coal equivalent / CNY 100 million revenue)	0.1218	0.1182	0.0877	0.117	0.156

Figure 3. Comprehensive Energy Consumption Data

Overall, LONGi's performance in resource management is correlated with production costs. Improvements in resource management efficiency enable the company to utilize resources more effectively, reduce unnecessary waste, thereby enhancing corporate profitability on the basis of cost savings; conversely, a decline in resource management efficiency leads to higher production costs for the enterprise.

4.2. Social Responsibility Dimension

4.2.1. Employee Care

Workplace safety is the cornerstone for manufacturing enterprises in fulfilling social responsibility (S), directly impacting employee well-being, operational continuity, and corporate reputation. For photovoltaic manufacturing enterprises like LONGi, their production activities involve high-risk procedures such as work at height, electrical operations, and heavy equipment handling, constantly facing potential risks like falls from height, electrical accidents, and mechanical injuries. The occurrence of any serious safety incident would not only cause irreversible human harm but also trigger a chain reaction including production disruption, asset damage, legal litigation, and reputational loss, posing significant financial and operational shocks to the enterprise.

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Based on this, LONGi elevates workplace safety to the level of strategic management, constructing a safety management system characterized by “prevention-oriented, systematic control”. This system, through the systematic integration of multiple measures such as improving rules and regulations, strengthening all members training, enforcing strict equipment maintenance,improve contingency plans, implementing assessment and accountability, and strengthen daily supervision, is dedicated to achieving advanced identification and whole-process control of safety risks. From a performance perspective, its occupational injury data (Table 3) reveals a dynamic evolutionary process: safety performance peaked in 2023, followed by a callback fluctuation in 2024. This verifies that safety management possesses significant dynamism and context-dependency, with its effectiveness susceptible to interference from internal and external factors such as the commissioning of new production lines, changes in production task urgency, and increased staff turnover. Therefore, safety performance cannot be achieved overnight and must be sustained through continuous culture building and process optimization.

Fundamentally, the significance of continuously reducing accident rates extends far beyond minimizing direct losses. A safe working environment is a prerequisite for ensuring the smooth execution of production plans and maintaining stable output quality; it directly relates to "operational resilience". Simultaneously, it internally enhances employees' sense of belonging, morale, and production efficiency, and externally shape the image of a responsible employer and community partner. Consequently, safety management transcends mere compliance. By safeguarding the two core elements of "people" and "operations," it provides the most fundamental support for the enterprise to achieve the integration of long-term economic benefits and social value.

Table 3. Three Scheme comparing

Year	Number of Recordable Occupational Injuries (persons)	Work Days Lost Due to Injury (days)
2021	88	2110
2022	52	420
2023	17	353
2024	59	480

4.2.2. Supply Chain Optimization

LONGi's supply chain management is an integral part of its Environmental, Social, and Governance (ESG) strategy. Its objective transcends traditional efficiency and cost control, shifting towards building a transparent, collaborative, and responsible supply chain ecosystem. The core of this transformation lies in viewing suppliers as partners for achieving sustainable value creation, rather than merely transactional counterparts. An efficient and responsible supply chain not only ensures raw material quality, reduces disruption risks, and optimizes procurement costs, thereby supporting financial performance, but is also key for enterprises to fulfill their extended responsibility, manage Scope 3 carbon emissions, and ultimately achieve sustainable development across the entire value chain.

In terms of management practices, LONGi deeply integrates Corporate Social Responsibility (CSR) and ESG performance into its supplier qualification and evaluation system. The company conducts comprehensive audits of potential partners across multiple dimensions such as environmental compliance, labor rights, and business ethics. It prioritizes establishing long-term cooperative relationships with high-quality suppliers who actively practice ESG concepts and hold international certifications like ISO 14001. This "selective integration" strategy injects sustainability principles from the source, significantly enhancing the supply chain's quality reliability, risk resilience, and long-term robustness.

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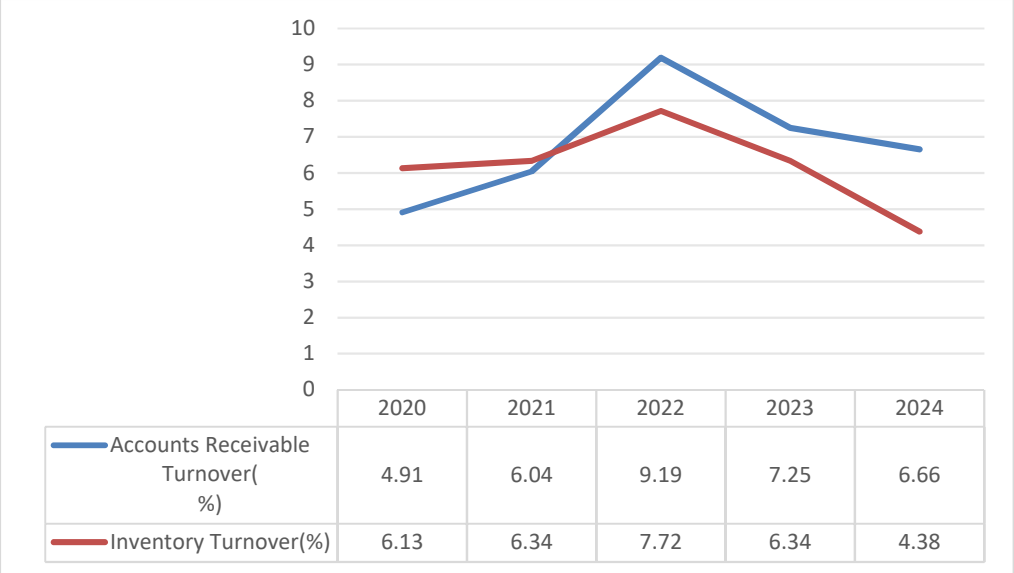
However, managing a sustainable supply chain faces severe tests during industry cycle fluctuations. As shown in Figure 4, after 2022, the company's accounts payable turnover days and inventory turnover ratio both exhibited a synchronized declining trend. This financial phenomenon is typical of the photovoltaic industry entering a downturn cycle: amid changing market supply-demand dynamics and intensifying competition, companies generally face slowing inventory turnover and working capital pressure, leading to passively extended payment periods. At this point, a company's financial decisions exert direct pressure on the cash flow of its upstream suppliers. This precisely highlights the deeper challenge within the Social Responsibility (S) dimension of ESG: during an industry downturn, can a company transcend short-term financial self-preservation logic, work with suppliers to overcome difficulties through innovative means such as fair procurement terms and supply chain financial support, and genuinely fulfill its responsibility to value chain partners. Such choices under pressure serve as the true litmus test for the solidity of its supply chain responsibility commitment and are key to determining whether its supply chain resilience can be transformed into a long-term competitive barrier.



	2020	2021	2022	2023	2024
Accounts Receivable Turnover(%)	4.91	6.04	9.19	7.25	6.66
Inventory Turnover(%)	6.13	6.34	7.72	6.34	4.38

Figure 4. Accounts Payable and Inventory Turnover Ratio Statistics (2020-2024)

4.2.3. Philanthropic Activities

Philanthropic donation represents a critical dimension for enterprises in fulfilling social responsibility (S) and serves as a significant manifestation of ESG practices. In China's efforts to address sudden disasters and advance major national strategies such as poverty alleviation, corporate philanthropic contributions have played an irreplaceable role. LONGi Green Energy Technology has long regarded philanthropic investment as an inherent corporate obligation, actively giving back to society through multifaceted initiatives including education-based poverty alleviation, industrial support, and consumption-driven agricultural assistance, thereby earnestly honoring its social commitments[15].

With the increasing dissemination and deepening of ESG principles, investors and financial institutions are progressively emphasizing corporate non-financial performance, among which philanthropic donation records have become a vital basis for assessing corporate social responsibility and long-term value. Through sustained and targeted philanthropic investments, LONGi conveys a positive signal of responsibility to external stakeholders, gradually accumulating substantial reputational capital. This reputational capital enhances the company's relationships with stakeholders, strengthens trust, and is subsequently translated—directly or indirectly-into financial advantages. As illustrated in Table 4, LONGi's financing cost

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rate has exhibited a consistent and steady downward trend over the past five years. This indicates the company's ability to secure funds at lower costs, effectively expanding its profit margins. This trend robustly substantiates that substantive corporate contributions in the realm of social welfare not only generate positive societal impact but also, by reducing financing costs and optimizing financial performance, ultimately achieve synergistic growth of social value and corporate economic value.

Table 4. LONGi's Financing Cost Situation in the Past Five Years

Year	Financial Expenses (CNY 100 million)	Total Liabilities (CNY 100 million)	Financing Cost (%)
2020	3.86	520.37	0.74
2021	3.55	501.48	0.71
2022	4.75	773.01	0.61
2023	5.16	932.57	0.55
2024	-2.37	914.44	0.48

4.3. Corporate Governance Dimension

4.3.1. Optimizing Organizational Structure

A sound and efficient organizational structure is the core of corporate governance (G), providing crucial institutional safeguards for strategy execution, risk control, and value creation. LONGi's governance structure (as shown in Figure 5) embodies the principles of checks and balances on authority and responsibility, as well as specialized division of labor under the modern enterprise system. The company has established a standardized governance framework with the Shareholders' General Meeting as the supreme authority, where the Board of Supervisors and the Board of Directors separately oversee supervisory and decision-making functions. Crucially, the Board of Directors has established four specialized committees: Strategy and Sustainable Development, Compensation and Assessment, Nomination, and Audit. This committee-based structure elevates key strategic issues such as ESG to the board-level decision-making process, ensuring specialized deliberation and ongoing supervision. From a management effectiveness perspective, this organizational design with clearly defined authority and responsibility, by explicitly delineating the authority boundaries of various departments and positions, effectively avoids internal coordination costs and agency problems arising from overlapping or ambiguous functions. Its direct outcomes are manifested in the simplification of management processes and the enhancement of decision-making efficiency, thereby reducing internal transaction costs. More importantly, a robust governance foundation forms the cornerstone for the company to practice long-termism and balance the demands of multiple stakeholders. It not only supports the systematic implementation of the aforementioned environmental and social responsibility (E&S) strategies but also, by enhancing operational transparency and strengthening risk management and control, creates conditions for winning investor trust and securing stable capital (such as the aforementioned reduction in financing costs), ultimately transforming governance advantages into sustainable financial performance and competitive advantages.

The composition of LONGi's Board of Directors reflects a comprehensive consideration of professionalism, independence, and diversity in modern corporate governance. As shown in Table 5, its Board consists of 9 members, structurally comprising 5 internal directors, 1 external director, and 3 independent directors, including 2 female directors. This composition not only formally meets regulatory requirements such as the proportion of independent directors being no less than one-third but also substantially aggregates professional expertise in key areas including strategic planning, financial management, energy technology, and supply chain operations. The diverse and complementary knowledge structure of the Board provides crucial cognitive breadth and depth for the company's strategic decision-making. When facing major

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decisions, directors from different backgrounds can contribute differentiated perspectives and in-depth analyses based on their professional experience, effectively avoiding decision-making biases caused by "groupthink" or knowledge blind spots. Its decision-making process integrates internal operational insights, independent third-party judgments, and industry expertise, thereby significantly enhancing the scientific rigor and foresight of decisions. From a governance effectiveness perspective, a board characterized by both professional complementarity and diverse perspectives can identify market trends and potential risks more nimbly and accurately. This enables the company to accelerate its strategic response speed, capture opportunities in the rapidly changing photovoltaic industry, while avoiding significant costs and strategic losses arising from decision delays or errors. Therefore, an optimized board structure is not merely a compliance measure but a key mechanism for translating governance (G) advantages into strategic decision-making quality and core competitiveness.

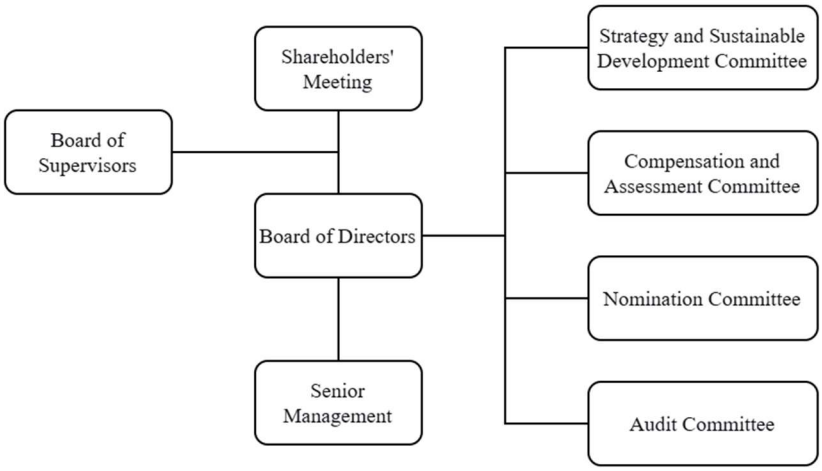

Figure 5. Organizational Structure

Table 5. Distribution of Longi Green Energy Directors by Skills and Expertise in 2024

Skills and Experience	Number of Directors
Energy	2
Strategic Management	1
Supply Chain Management	1
Engineering Design	1
Economics and Finance	1
Finance and Audit	2
ESG Management	1

During industry downturn cycles with declining revenue, a rising administration expense ratio presents a common challenge. LONGi's administration expense ratio increased significantly from 2.27% in 2022 to 4.08% in 2024. While this is partly attributable to the "denominator effect" of reduced revenue scale, it also tests the company's ability to maintain managerial refinement during strategic adjustment periods, which may necessitate higher expenditures on consulting and restructuring. Effective corporate governance (G) should be demonstrated by the capability to balance long-term strategic investment with short-term expense control amidst cyclical fluctuations. Considering the severe challenges faced by the photovoltaic industry in 2023, the author posits that the rise in LONGi's administration expense ratio that year demonstrates the high level of governance acumen and strategic foresight possessed by its decision-makers. The ability to proactively drive transformation and actively respond to

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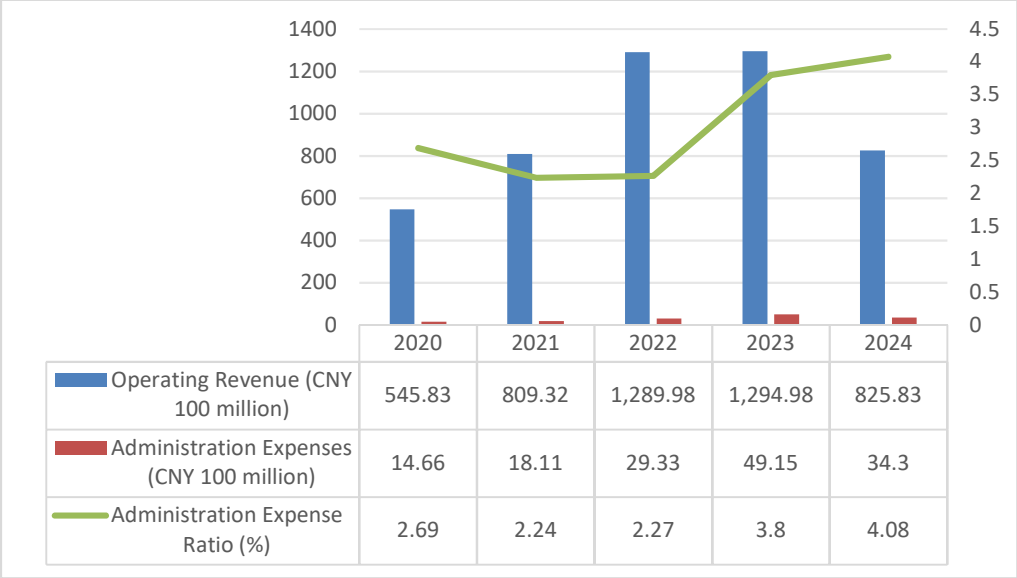
market challenges during industry adversity will endow the company with stronger market competitiveness, broader market space, and more sustainable development momentum, thereby enhancing its financial performance.



	2020	2021	2022	2023	2024
Operating Revenue (CNY 100 million)	545.83	809.32	1,289.98	1,294.98	825.83
Administration Expenses (CNY 100 million)	14.66	18.11	29.33	49.15	34.3
Administration Expense Ratio (%)	2.69	2.24	2.27	3.8	4.08

Figure 6. Summary of Financial Data (2020-2024)

4.3.2. Anti-Corruption Development

LONGi's anti-corruption development has evolved into a systematic and institutionalized governance framework, exerting a comprehensive and profound positive impact on the company's ESG performance. Within the governance (G) dimension, the company has obtained the stringent ISO 37001 Anti-Bribery Management System certification and established a multi-channel whistleblowing and oversight mechanism overseen by the Audit and Supervision Center. This robust institutional development has garnered direct recognition from international rating agencies such as MSCI. (The company) is recognized for its business ethics practices most global peers, which constitutes a key scoring factor in elevating its ESG rating to the industry forefront. It ensures that substantial investments in R&D, energy conservation, and environmental protection are efficiently and precisely allocated to technological breakthroughs and emission reduction projects, preventing resource leakage. Extending anti-corruption requirements to supply chain management promotes responsible procurement and compliant operations, optimizing the industrial chain ecosystem. Therefore, anti-corruption development transcends a mere compliance function, becoming the core governance cornerstone for LONGi to integrate resources, drive the achievement of E and S objectives, and ultimately build a sustainable business model.

Over the past five years, due to LONGi's relentless efforts in anti-corruption and integrity building, it has achieved an outstanding record of zero corruption internally. This ensures the company's funds and resources are utilized legally and compliantly, averting additional expenditures on risk management and legal disputes. It also enhances investor trust in LONGi, thereby contributing to the overall maintenance of financial health.

5. The Mechanism Model of How LONGi's ESG Performance Affects Financial Performance

The study finds that Longi Green Energy's ESG performance enhances its financial performance primarily through three synergistic pathways: In the environmental (E) dimension, continuous R&D innovation and resource recycling achieve technological cost reduction and operational

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resilience enhancement. In the social (S) dimension, safety production, supply chain responsibility development, and public welfare investments accumulate significant reputational capital, directly leading to a substantial decrease in financing costs. In the governance (G) dimension, a professional board structure, a systematic anti-corruption framework, and efficient control mechanisms provide institutional safeguards for strategy execution and compliant resource utilization.These three pathways support each other, forming a transmission mechanism characterized by "governance as the foundation, with environment and society as dual drivers." Collectively, through channels such as cost reduction, risk control, financing optimization, and efficiency enhancement, they transform ESG practices into a sustainable financial competitive advantage, empirically demonstrating the strategic shift of ESG from a "cost center" to a core of "value creation."Based on the above, this paper constructs the pathways through which Longi Green Energy improves corporate financial performance via its ESG performance.

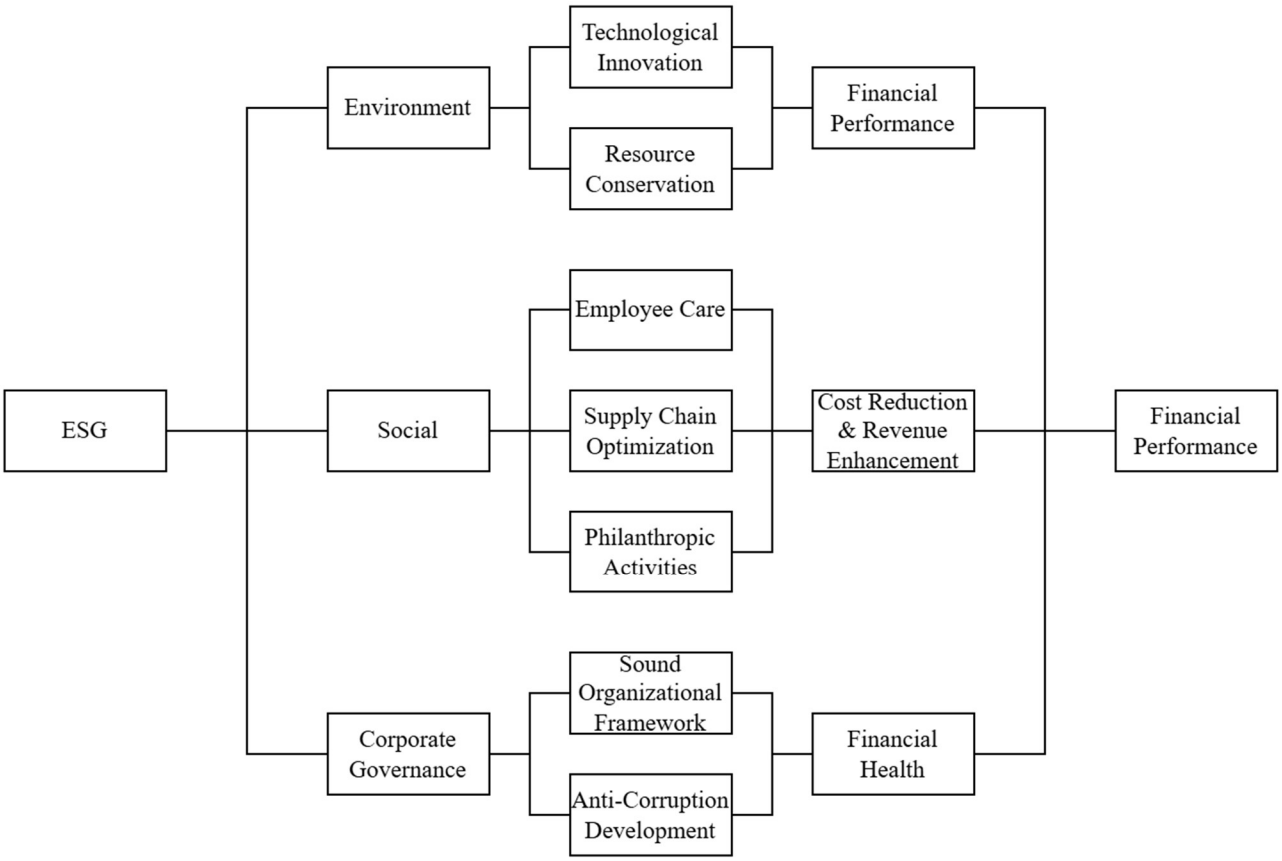

Figure 7. The Mechanism Model of How LONGi's ESG Performance Affects Financial Performance

6. Conclusion

Through the analysis of LONGi's ESG practices and financial data from 2020 to 2024, this study arrives at a core conclusion: ESG performance enhances financial performance through three key pathways. The first is the Technology-Driven Cost Reduction Pathway, where sustained R&D and resource recycling transform environmental responsibility into long-term cost advantages and operational resilience. The second is the Reputation-Financing Pathway, where investments in employees, the supply chain, and philanthropy accumulate significant reputational capital, directly leading to a substantial reduction in financing costs. This represents the most direct manifestation of ESG creating financial value. The third is the

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Governance Safeguard Pathway, where a professional board of directors and an anti-corruption system ensure strategic execution efficiency and compliant resource utilization, forming the cornerstone of the influence mechanism.z

In summary, the case of LONGi demonstrates that ESG has transitioned from a "cost center" to a strategic core for "value creation." Deeply integrating ESG into operations enables enterprises not only to manage risks effectively but also to directly or indirectly improve financial performance, achieving the unification of commercial value and social value. This study provides empirical evidence from a leading Chinese enterprise for the proposition that "ESG enhances financial performance," and also offers a reference for the practices of similar enterprises.

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