The Impact of ESG Performance on Textile Industry Green exports under the Dual Carbon Goals

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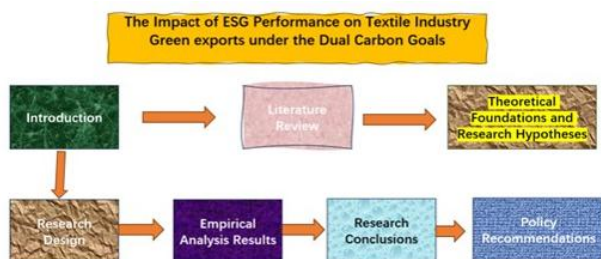[1]School of Economics and Management, North University of China, Taiyuan, China.

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Graphical abstract

Abstract

Against the backdrop of global efforts to address climate change, the dual carbon goals have emerged as a critical development directive for nations worldwide. The textile industry, as a traditional yet significant sector within the global economy, has faced considerable environmental and social challenges. The Environmental, Social, and Governance (ESG) framework has offered a novel perspective for enterprises seeking sustainable development across these three dimensions. This study integrated data from publicly listed textile companies in China spanning the years 2009 to 2023, incorporating ESG scores derived from the Huazheng Evaluation System. It conducted a comprehensive analysis of the influence of ESG performance on textile green export activity within the context of the dual carbon objectives. Through both theoretical exploration and empirical testing, the study revealed the underlying mechanisms at play. The findings indicated that strong ESG performance could enhance textile firms' green export competitiveness by improving corporate reputation and alleviating financing constraints. Furthermore, empirical results confirmed a significant positive correlation between ESG performance and green export scale in the textile sector. This research provides both theoretical support and practical guidance for textile enterprises aiming to enhance their green export capabilities through improved ESG practices under the dual carbon goals.

Keywords: Dual carbon goals, ESG performance, textile green exports, sustainable development

1. Introduction

In recent years, climate change has posed increasingly severe challenges to human survival and development (Zhan *et al.* 2025; Liang *et al.* 2025). In response, the "dual carbon" targets—peaking carbon dioxide emissions by 2030 and achieving carbon neutrality by 2060—have become strategic imperatives for nations seeking to mitigate climate change and facilitate green economic transitions (Liu *et al.* 2025; Tong *et al.* 2025). Numerous countries have formulated carbon reduction targets and action plans, actively promoting energy restructuring, industrial upgrading, and green technology innovation (Ma *et al.* 2025a, 2025b; Zhang *et al.* 2025).

The textile industry has long held a significant position in the global economy, characterised by its extensive development history and substantial industrial scale (Wu *et al.* 2025). However, it has also been associated with high resource consumption and severe environmental pollution. From raw material acquisition to energy-intensive manufacturing processes, and from emissions of wastewater and exhaust gases to the transportation and use of products, the entire value chain of the textile industry has exerted notable environmental pressure (Li 2024; Li. 2025). Relevant data indicate that the textile and apparel industry contributes approximately 10% of global greenhouse gas emissions. By 2030, its carbon emissions are projected to surpass those of the oil sector, potentially becoming the largest source of carbon emissions. In terms of water consumption, producing a single standard cotton T-shirt required approximately 2,700 litres of water—equivalent to the average drinking water consumption of an individual over two years (Wang *et al.* 2025; Wang and Ma 2024). Moreover, the production process generates large volumes of chemical pollutants, particularly in dyeing stages where various dyes and additives cause significant soil and water contamination (Zou 2024; Wen *et al.* 2024; Ma 2024).

As global awareness and endorsement of sustainable development continue to deepen, stakeholders including

consumers, investors, and governments have increasingly prioritised corporate ESG performance (Wang *et al.* 2024; Tong *et al.* 2024). In this context, the ESG framework has emerged as a key standard for evaluating corporate sustainability and competitive advantage (Wang *et al.* 2024; Wu *et al.* 2024). On the consumer front, a growing number of individuals have preferred to purchase products from companies demonstrating strong ESG performance, recognising these enterprises as committed to not only product quality but also environmental protection and social responsibility (Wen *et al.* 2024). From the perspective of investors, ESG investing has become a prominent trend in global capital markets. Investors are more inclined to allocate capital to firms with robust ESG credentials, as these entities are perceived to offer lower long-term risk and greater return potential. Concurrently, governments worldwide have introduced policies and regulations to standardise and encourage ESG practices, thereby promoting broader societal sustainability (Ma and Appolloni 2025).

While existing research has examined the impact of ESG performance across various sectors, studies specifically focusing on the textile industry—particularly under the framework of the dual carbon goals—remained limited. This study integrated ESG theory with the specific context of the textile industry to explore the mechanisms through which ESG performance influenced green export performance under the dual carbon targets. In doing so, it contributed to the enrichment and refinement of industrial economics, international trade theory, and sustainable development scholarship. By constructing a theoretical model and conducting empirical tests, the research offered novel perspectives and analytical approaches for understanding the relationship between corporate ESG practices and international trade, thereby extending the scope of current academic discourse.

For textile enterprises, improving ESG performance under the constraints of the dual carbon goals had become a necessary pathway toward sustainable development. This study provided practical insights by analysing how ESG performance influenced green export outcomes in the textile industry. Based on the findings, enterprises could strategically formulate and implement ESG initiatives, optimise production processes, enhance environmental protection efforts, improve employee welfare, and refine governance structures to elevate overall ESG performance. These actions not only enabled firms to meet international market demands for environmentally friendly and socially responsible products—thus overcoming trade barriers and expanding green export volumes—but also enhanced brand reputation and market competitiveness, achieving a win–win situation in both economic and social terms.

From a policy perspective, the study's findings offered valuable references for government agencies in designing relevant industrial and trade policies. Policymakers could employ supportive measures to encourage textile firms to actively enhance ESG performance, facilitating the green transformation and upgrading of the industry. This would

support the sustainable development of China's textile sector in the global market. Furthermore, governments could strengthen international cooperation and dialogue to collaboratively develop and improve global ESG standards and regulations for the textile industry, thereby creating a fairer and more favourable competitive environment for domestic enterprises. Existing studies (e.g., Li *et al.*, 2023; Pan *et al.*, 2025) have not incorporated the context of the "dual-carbon goals". By contrast, this study takes China's "carbon peaking by 2030 and carbon neutrality by 2060" policy as a starting point, aligning with the carbon reduction pressure and green transformation needs of the textile industry (a high-energy-consuming and high-carbon-emitting sector). It explains how ESG contributes to green exports through "carbon reduction and environmental protection", thus filling the research gap in the field of "ESG-green exports in the textile industry under the dual-carbon goals".

Most existing studies focus on the manufacturing industry as a whole (Li *et al.*, 2023) or the entire industry sector (Pan *et al.*, 2025), without considering the dual characteristics of the textile industry: "high export dependence + high pollution". For instance, the textile industry accounts for 10% of global greenhouse gas emissions (see Document 1. Introduction) and relies heavily on exports to markets with strict green standards such as the European Union. This study specifically designs variables for the textile industry (e.g., the proxy indicator for green exports is tailored to textile products), making its conclusions more valuable for industry practice. Existing studies either only verify a single mediating variable (e.g., Pan *et al.*, 2025 only verify "financing constraints" or "innovation") or merely describe the mechanism path (e.g., Cai & Hao, 2025 do not quantify the mediating effect). In contrast, this study adopts a dual-mediation model of "financing constraints (WW index) + corporate reputation (factor analysis of 12 indicators)". It is the first to quantify the specific effects of the two mechanisms in the textile industry — for example, a 1-unit increase in ESG leads to a 0.001 decrease in the WW index and a 0.032 increase in reputation. This approach enables a more systematic explanation of the mechanism and more actionable conclusions.

The innovations of this article are as follows:

(1) For the first time, the ESG theory has been combined with the textile industry, focusing on the impact of ESG performance on green export performance under the dual carbon goals, filling the research gap and enriching the relevant theories.

(2) A theoretical model has been constructed and empirically tested, providing a new method for studying the relationship between ESG and international trade. Meanwhile, it offers practical guidance for textile enterprises to improve ESG performance and optimize green export performance, helping enterprises achieve a win-win situation in both economic and social aspects.

(3) It provides a basis for governments to formulate industrial and trade policies, promotes the green transformation of the textile industry, supports

sustainable development, and strengthens international cooperation to improve global ESG standards.

2. Literature Review

2.1. Research on ESG

ESG—short for Environmental, Social, and Governance— referred to an investment philosophy and corporate evaluation framework that focused on non-financial performance indicators. Rather than concentrating solely on traditional financial metrics, ESG sought to assess corporate performance in areas central to sustainable development (Weston and Nnadi 2023). The concept represented a practical embodiment of sustainable development principles at the micro level, aiming to foster long-term, integrated value creation for businesses.

Cristea *et al.* (2024) defined ESG as an investment and evaluation approach prioritising environmental, social, and governance factors over conventional financial performance (Li *et al.* 2018). They argued that ESG promoted the integration of economic and social benefits, serving as a key instrument for achieving high-quality economic growth and corporate sustainability. Existing literature on ESG primarily focused on its relationship with corporate value, financial performance, financing costs, and risk management. Studies found that robust ESG performance mitigated information asymmetries both within and outside the firm and contributed positively to long-term corporate value (Li *et al.*, 2018; Fatemi *et al.*, 2018).

Zhou *et al.* (2022) reported that ESG performance significantly improved both book and market values of firms Zhou *et al.* (2022). Kumar *et al.* (2016) concluded that firms with stronger ESG performance were better able to signal credibility to external stakeholders, enhancing enterprise value while reducing financial and compliance risks (Ashwin Kuma *et al.* 2016). Similarly, Quintiliani (2022), using data from A-share manufacturing firms between 2016 and 2019, found a significant positive correlation between ESG disclosure and corporate value, especially following the introduction of relevant policies (Quintiliani 2022).

Aydoğmuş *et al.* (2022) also demonstrated that good ESG performance substantially enhanced corporate value Aydoğmuş *et al.* (2022). Zhang and You (2024) argued that the value-enhancing effects of ESG were more pronounced for non-state-owned enterprises operating in sound institutional environments with efficient information transmission (Zhang and You 2024).

ESG disclosure improved corporate transparency, alleviated information asymmetry, and fostered the image of social responsibility. It also strengthened relationships with stakeholders, thereby enhancing corporate credibility (Yu *et al.* 2018). As a result, firms' ESG performance had a significantly positive effect on overall corporate outcomes. Gigante and Manglaviti (2022) observed that positive ESG performance contributed to lower debt financing costs (Gigante and Manglaviti 2022). From the perspectives of market risk and financing cost, prior studies confirmed that ESG performance reduced total and systematic risks, while also decreasing financing costs and thereby strengthening corporate value (Chang *et al.* 2022).

Other studies investigated the impact of ESG performance on post-IPO market risk, suggesting that ESG engagement and disclosure helped firms build reputational capital after listing, improving their resilience to external shocks (Reber *et al.* 2022).

2.2. Research on the Impact of ESG Performance on Enterprise Green green exports

Li *et al.* (2023) found that strong ESG performance enhanced firms' green export resilience. ESG practices positively contributed to green export resilience by strengthening corporate reputation and alleviating financing constraints. Furthermore, the degree of digital transformation within enterprises served as a moderating factor—firms with higher levels of digital transformation experienced stronger positive effects of ESG performance on green export resilience (Li and Li 2023). Pan *et al.* (2025) reported that ESG performance significantly influenced green export intensity. They argued that ESG impacted green export concentration through mechanisms related to innovation and financing constraints Pan *et al.* (2025). Similarly, Cai and Hao (2025) contended that ESG performance significantly facilitated the expansion of green export volume. They suggested that ESG improved green exports by enhancing firm reputation, reducing trade barriers, and decreasing information asymmetries (Cai and Hao 2025). Aksoy *et al.* (2024) also identified a significant positive correlation between ESG performance and green exports, especially in the context of general trade, end-use products, and clean products, where the impact was particularly pronounced (Aksoy *et al.* 2024).

2.3. Literature Review Summary

Scholars have made substantial progress in the fields of ESG, sustainable development in the textile industry, and the relationship between trade and the environment, providing a solid theoretical foundation and valuable references for this study. However, several gaps remained in the current literature.

In terms of content, although considerable research had focused on the relationship between ESG and firm performance, investigations into the specific impact of ESG performance on textile industry green exports— particularly under the emerging and significant context of the dual carbon goals—remained insufficient and lacked systematic analysis. Methodologically, many studies relied primarily on qualitative analyses, with limited empirical support, which weakened the robustness and persuasiveness of their conclusions. Moreover, existing studies tended to examine individual dimensions of ESG in isolation, rather than comprehensively analysing the multi-dimensional impact of ESG performance on textile green exports.

Accordingly, this study aimed to build upon prior research by conducting a more in-depth and systematic exploration

of how ESG performance affected the green export performance of textile firms within the context of dual carbon objectives. By integrating theoretical frameworks with empirical investigation, this research sought to address existing gaps and provide targeted and practical recommendations to support the sustainable development of the textile industry.

3. Theoretical Foundations and Research Hypotheses

3.1. ESG Performance and Green exports in the Textile Industry

The theory of sustainable development emphasised the coordinated advancement of economic, social, and environmental objectives. It required firms to pursue profitability while simultaneously assuming environmental responsibilities. As a traditionally high-pollution, high-energy-consuming sector, the textile industry attracted considerable scrutiny due to issues such as energy consumption and the discharge of wastewater and air pollutants during production (Wen *et al.* 2025a, 2025b).

From an environmental (E) perspective, when textile firms adopted clean production technologies—such as energy-efficient dyeing equipment and water recycling systems—they significantly reduced carbon emissions and environmental pollutants (Zhang *et al.* 2025; Shen *et al.* 2024). Improvements in environmental performance aligned with global trends in addressing climate change and meeting dual carbon goals. This allowed firms to meet increasingly stringent environmental standards in international markets, such as the EU's REACH regulation on chemical substances in textiles, thereby avoiding exclusion from global supply chains and facilitating green export growth. Additionally, green technology innovation enabled firms to develop differentiated, environmentally friendly products—such as organic cotton garments or recycled fibre products—which appealed to environmentally conscious consumers and helped to open up niche markets, directly boosting green export volumes (Wen *et al.* 2025).

Stakeholder theory posited that corporate activities affected a wide range of stakeholders, including employees, consumers, suppliers, and local communities. Firms needed to balance these interests to achieve sustainable development. From the social (S) dimension, textile firms that protected employees' legal rights, provided safe working conditions, and supported career development were able to enhance workforce motivation and creativity, leading to improved productivity and product quality. These improvements, in turn, bolstered the quality assurance of green export products. By focusing on consumer safety, ensuring product quality, and engaging in community initiatives—such as charitable activities and local economic development—firms shaped a positive social image and strengthened their brand reputation. In international markets, a strong social reputation enhanced consumer trust and fostered long-term relationships with foreign buyers, thereby increasing green export orders and scale (Wu *et al.* 2025).

Hypothesis 1: There was a significant positive relationship between ESG performance and the green export scale of textile enterprises.

3.2. ESG Performance, Financing Constraints, and Green export Outcomes in the Textile Industry

According to information asymmetry theory, discrepancies in information between firms and investors in financial markets could lead to adverse selection and moral hazard, increasing firms' financing costs and difficulties (Duan *et al.* 2025). In the case of textile firms, ESG-related information—such as environmental performance, social responsibility, and governance structures—was often not fully or accurately accessible to investors. A well-developed ESG system that employed standardised disclosure practices could systematically convey firms' achievements in energy-saving technologies, employee welfare, and internal risk management (Xia *et al.* 2024).

For example, the regular publication of ESG reports detailing metrics such as water reuse rates, employee training investments, and board composition significantly reduced information asymmetries. With greater transparency, investors were better equipped to assess business risks and growth potential, thereby becoming more willing to offer financial support. This alleviated firms' financing constraints and provided capital for green export expansion.

Signal theory further suggested that firms could convey quality signals to the market through specific behaviours to attract investment (Zeng *et al.* 2024, 2025a, 2025b). In capital markets, textile firms that actively implemented ESG practices and achieved strong results sent a clear signal of long-term sustainability and managerial competence. For instance, by adopting advanced eco-friendly production methods, acquiring internationally recognised environmental certifications, or establishing robust social responsibility systems and participating in global philanthropic projects, firms demonstrated their resilience and growth prospects to investors. These positive signals increased investor confidence, attracted institutional and individual investors, and expanded access to financing.

With adequate funding, firms could invest in advanced production equipment, explore overseas markets, and develop innovative products, thereby enhancing green export competitiveness and scaling up international operations (Ding *et al.* 2025).

Hypothesis 2: ESG performance promoted the expansion of textile green export scale by alleviating financing constraints.

3.3. ESG Performance, Corporate Reputation, and Green exports in the Textile Industry

Reputation theory posited that corporate reputation was a critical intangible asset developed over time through consistent organisational behaviour. It served as a source of competitive advantage. Within the textile industry, environmental concerns had long been a focal point due

to the sector's reliance on energy-intensive and pollution-heavy production processes—such as wastewater discharge during dyeing and high energy consumption in synthetic fibre production (Ma *et al.* 2025).

When textile firms actively engaged with the environmental (E) dimension by adopting environmentally friendly technologies, reducing pollutant emissions, and promoting energy conservation and emission reduction, they not only mitigated adverse environmental impacts but also signalled a strong commitment to sustainable development. Over time, such efforts contributed to the formation of a green and environmentally responsible corporate image (Zhang *et al.* 2025).

In the social (S) dimension, actions such as protecting employee rights, contributing to community development, and prioritising consumer health and safety enhanced a firm's image as a socially responsible entity. For example, providing a supportive work environment and career development opportunities increased employee loyalty and sense of belonging. Participation in local community initiatives and philanthropic activities helped to raise the firm's visibility and public goodwill. The sustained implementation of these ESG-related practices steadily built up corporate reputation, transforming it into a valuable asset that strengthened the firm's competitiveness in international markets. A strong reputation attracted increased attention and trust from global clients, which in turn led to more green export orders and the expansion of green export volume.

Signalling theory emphasised that firms could communicate their quality and strengths to the market through specific behaviours, thereby attracting potential partners and consumers. In the highly competitive global textile industry, ESG performance had become an important channel for conveying a firm's capabilities to external stakeholders. Exceptional ESG performance—such as obtaining internationally recognised environmental certifications, publishing high-quality ESG reports, and actively participating in global sustainability initiatives—served as clear signals to the international market that the firm embraced advanced management philosophies, possessed strong innovation capabilities, and maintained a high level of social responsibility.

These positive signals significantly enhanced the firm's reputation in the global marketplace, enabling it to stand out among competitors. When selecting suppliers, international clients often prioritised firms with strong ESG reputations, believing these firms to offer superior product quality, delivery reliability, and risk management. Additionally, a reputable ESG image attracted the attention of international media and industry associations, further elevating the firm's global profile and creating favourable conditions for overseas market expansion and increased green export activity.

Hypothesis 3: ESG performance promoted the expansion of textile industry green exports by enhancing corporate reputation.

4. Research Design

4.1. Data Description

The firm-level data used in this study were sourced from the CSMAR database, which contained publicly available information on all listed companies in China's textile industry. This study focused on textile firms listed between 2009 and 2023. Following the procedures adopted in previous literature, the data were filtered as follows:

(1) Firms with substantial missing data and those classified as ST or *ST were excluded to ensure the completeness and reliability of the dataset;
(2) Continuous variables were winsorised at the 1% and 99% levels to mitigate the influence of outliers on the regression results.

4.2. Variable Definitions

Dependent variable: The dependent variable was the firm's green export scale (Green export), measured by the total value of green exports. To eliminate the effects of inflation and differences in scale, the green export values were log-transformed. This transformation enabled a more accurate reflection of variations in green export scale (Ying *et al.* 2025). In this study, the "logarithm of a firm's annual overseas sales revenue" is used as a proxy variable for "green export scale," primarily based on the practical context that, under the dual-carbon goals, the "green exports of the textile industry mainly take overseas markets as their primary scenario."

Independent variable: The key independent variable was the firm's ESG performance (ESG), measured using ESG ratings provided by Huazheng. The Huazheng ESG ratings ranged from AAA to C. For empirical analysis, these ratings were converted into numerical scores: AAA was assigned a score of 9, AA a score of 8, and so forth, with C corresponding to a score of 1. Higher scores indicated better ESG performance (Zhou *et al.* 2025).

Control variables: Several control variables that might affect a firm's green export performance were included (Zeng *et al.* 2025)]:

Firm size (Size): Measured by the natural logarithm of total assets. Larger firms were generally assumed to have advantages in terms of capital, technology, and market access, facilitating their green export activities.

Profitability (ROA): Represented by return on assets, indicating the firm's ability to generate profits using its total assets. Firms with higher profitability were more likely to allocate resources to green export activities.

Leverage (Lev): Measured by the debt-to-asset ratio, reflecting the firm's financial risk and debt-servicing capacity, both of which influenced financing ability and operational stability, and in turn, green export performance.

Firm age (Age): Calculated as the logarithm of the current year minus the founding year plus one.

Fixed asset ratio (Fixed): Measured as the ratio of net fixed assets to total assets.

Growth capacity (Growth): Measured by the growth rate of total assets.

Industry dummies (Industry): Dummy variables were set according to the industry classification standards of the China Securities Regulatory Commission, to control for industry-level heterogeneity in green export performance.

Year dummies (Year): Dummy variables were introduced for each year to control for time-varying factors such as macroeconomic conditions and policy changes that might influence green export outcomes. **Table 1** presents the definitions of all variables used in the empirical model.

Table 1. Definition of variables.

Variable type	Variable name	Variable symbol	Variable explanation
Explained Variables	Green export size	Exsc	Natural logarithm of the firm's annual overseas sales revenue
Explanatory Variables	Firm ESG performance	ESG	Huazheng ESG score
Control Variables	Firm size	Size	Natural logarithm of total assets
	Fixed asset share	Fixed	Ratio of net fixed assets to total assets of an enterprise
	Firm age	FirmAge	Natural logarithm of the current year minus the year of establishment plus one
	Net profit margin on total assets	ROA	Ratio of net profit to total assets
	Balance sheet ratio	Lev	Ratio of total liabilities to total assets
	Business growth capacity	Growth	Total asset growth rate
	Industry	Industry	Industry dummy variables
	Annual	Year	Age dummy variables

4.3. Model Construction

The following linear fixed effects model was constructed for estimation in the empirical analysis section:

$$\text{Exsc}_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \beta_2 \text{Control}_{it} + \mu_i + \mu_t + \varepsilon_{it} \qquad (1)$$

In the above equation, subscripts *i* and *t* and denote firms and years respectively. Exsc_{it} is the explanatory variable. Referring to the existing literature, it will be expressed by taking the natural logarithm of the enterprise's annual overseas sales revenue after adding one. β_0 is a constant term ESG_{it} is the key explanatory variable, which is represented by Huazheng ESG score. *Control_{it}* denotes a series of variables used to represent firm characteristics, including the logarithm of firm size (*Size*), firm age (*FirmAge*), net profit margin on total assets (*ROA*), gearing ratio (*Lev*), firm growth capacity (*Growth*), and fixed asset share (*Fixed*). In addition, the model also controls for both time fixed effects (μ_t), which control for the effects of time-varying and unobservable factors, and firm fixed effects (μ_i), which control for the effects of firm-level factors that do not vary over time and are unobservable on the results. Finally, ε_{it} in the model is a residual term.

In order to test hypothesis two of this paper, the following mediation effect model is developed in this paper:

$$M_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \beta_2 \text{Control}_{it} + \mu_i + \mu_t + \varepsilon_{it} \qquad (2)$$

In this context, M_{it} represents the mediating variable, which refers to the firm's financing constraint index and corporate reputation. The financing constraint index used in this study was the *WW* index. Corporate reputation was assessed based on the study by Baruah & Panda (2019), which selected 12 reputation evaluation indicators:

From the consumer and societal perspectives: the firm's asset, income, net profit, and ranking within the industry (the higher the rank, the higher the firm's reputation). From the creditor's perspective: the firm's debt-to-asset ratio, current ratio, and long-term debt ratio. From the shareholder's perspective: earnings per share, dividends per share, whether the firm was audited by one of the Big Four international accounting firms, the firm's sustainable growth rate, and the proportion of independent directors.

Factor analysis was applied to these 12 indicators to calculate the firm's reputation score. Subsequently, firms were categorised into ten groups, ranked from lowest to highest according to their reputation scores, and each group was assigned a reputation score (*rep*) ranging from 1 to 10 (Baruah and Panda 2020).

Given the issues of overuse and endogeneity bias in traditional mediation stepwise methods, this study followed the recommendations and focused on the causal identification credibility of the core explanatory variable, the firm's ESG index, on the dependent variable, green export performance. The same method was applied to identify the causal relationship between the core explanatory variable and the mediating variable, allowing for accurate identification of the underlying mechanism.

In equation (2), the model also controlled for time-fixed effects (μ_i) to account for unobserved factors that vary over time, as well as firm-fixed effects (μ_t) to control for firm-level factors that do not change over time and cannot be observed. Finally, ε_{it} represents the residual term in the

model. The variable meanings in Model 2 were consistent with those in Model 1 and **Table 1**.

5. Empirical Analysis Results

5.1. Descriptive Statistics of Variables

The table below presented the descriptive statistics for the key variables used in this study (Hu *et al.* 2025). The mean value of enterprise green export scale (Exsc) was 16.8739, with a standard deviation of 6.628, indicating substantial variability in green export activity. The minimum value was 0 (indicating that some firms did not engage in green export), while the maximum value was 22.14, reflecting significant heterogeneity in green export intensity across the sample firms.

The average ESG performance score (*ESG*) was 72.7325, with a standard deviation of 4.114. The scores ranged from 58.01 to 83.29. The median score (72.92) was closely aligned with the mean, suggesting that the overall ESG performance of the sample firms was relatively high and concentrated within a narrow range.

Among the mediating variables, the mean value of corporate reputation (*rep*) was 5.2995, with a standard deviation of 2.807. The values ranged from 1 to 10, indicating clear stratification in reputation across different firms. The mean value of financing constraint (*WW*) was -0.9958, with a standard deviation of only 0.063. The median value was exactly -1, which was consistent with the theoretical benchmark of the WW index, implying a generally stable financing environment with slight variations among firms.

The mean value of firm size (*Size*), measured as the natural logarithm of total assets, was 21.8422, with a standard deviation of 0.969. The range between the minimum and maximum values spanned 4.73 logarithmic units, demonstrating the inclusion of a diverse set of firms from small- and medium-sized enterprises to large-scale corporations. The mean proportion of fixed assets (*Fixed*)

was 23.03%, with a standard deviation of 13.6 percentage points. The values ranged from 1% to 58%, reflecting notable differences in asset allocation strategies among firms.

The mean leverage ratio (*Lev*) was 40.41%, with a median of 38%, indicating a mildly right-skewed distribution and suggesting that some firms adopted aggressive financial leverage strategies. The return on assets (*ROA*) had a mean of 3.46%, with a standard deviation of 5.5 percentage points. The minimum value of -18% revealed that some firms experienced significant financial losses. Lastly, the mean value of growth (*Growth*) was 19.96%, which was skewed upward by extreme values (with a maximum of 298%). However, the median of 12% more accurately reflected the moderate growth trajectory of the majority of firms in the sample.

The interpretation of the aforementioned insignificant control variables does not deny the importance of these variables. Instead, based on industry characteristics and the research context, it highlights the "unique value of ESG in promoting green exports of the textile industry". Compared with traditional variables such as firm size and short-term profitability, ESG addresses core pain points in green exports—such as "compliance thresholds" and "long-term trust"—and thus serves as a more critical driving factor. This finding aligns with the results in **Table 2**, where the ESG coefficient remains significantly positive (ranging from 0.158 to 0.203), further supporting the core hypothesis of this study. Meanwhile, it also provides practical implications for textile enterprises: under the dual-carbon goals, improving green export capabilities should not solely focus on scale expansion or short-term profitability. Instead, enterprises should prioritize building compliance advantages and long-term reputation through ESG practices.

Table 2. Descriptive statistics.

Variable	Observations	Mean	Standard Deviation	Minimum	Median	Maximum
Exsc	738	16.8739	6.628	0.00	19.39	22.14
ESG	738	72.7325	4.114	58.01	72.92	83.29
WW	738	-0.9958	0.063	-1.16	-1.00	-0.85
Rep	738	5.2995	2.807	1.00	5.00	10.00
Size	738	21.8422	0.969	19.88	21.75	24.61
Lev	738	0.4041	0.182	0.08	0.38	0.88
ROA	738	0.0346	0.055	-0.18	0.03	0.15
Growth	738	0.1996	0.480	-0.66	0.12	2.98
Fixed	738	0.2303	0.136	0.01	0.22	0.58

5.2. Correlation analysis

Table 3 Correlation analysis among the main firm characteristic variables, firm ESG performance (*ESG*) and green export size (*Exsc*) are significantly and positively correlated at the 1% level, which initially supports the research hypothesis that improved ESG performance may promote green export expansion. The correlation coefficients between firm size and green export do not pass the significance test, implying that the direct effect of size on green export is limited.

5.3. Baseline Regression Analysis

Table 4 presented the baseline regression results examining the impact of ESG performance on the green export performance of firms in the textile industry. A stepwise regression approach was adopted. The first column did not include any control variables, while columns two to seven progressively introduced control variables.

The results demonstrated a consistently significant positive correlation between ESG performance and green

export performance across all model specifications. Moreover, the coefficient for ESG performance increased from 0.158 to 0.203 as more control variables were added, and remained significant at the 1% level. This indicated that better ESG performance was associated with stronger green export capacity among textile firms. These findings supported Hypothesis 1, suggesting that

improved ESG performance enhanced the green export capability of textile enterprises.

In all six model specifications, the coefficient for ESG performance was significantly positive, regardless of the number of control variables included. This consistency confirmed the robustness of the results.

Table 3. Correlation coefficient matrix.

Variables	Exsc	ESG	Size	Lev	ROA	Growth	Fixed	FirmAge
Exsc	1.000							
ESG	0.147***	1.000						
Size	0.050	0.318***	1.000					
Lev	0.114***	-0.200***	0.260***	1.000				
ROA	-0.044	0.457***	0.150***	-0.426***	1.000			
Growth	-0.193***	-0.043	0.081**	0.044	0.097***	1.000		
Fixed	0.195***	0.072*	-0.068*	0.120***	-0.045	-0.262***	1.000	
FirmAge	-0.014	0.080**	0.064*	0.053	-0.108***	0.021	-0.057	1.000

*Notes：*** $p<0.01$, ** $p<0.05$, * $p<0.1$*

Table 4. Regression results.

Variables	(1) Exsc	(2) Exsc	(3) Exsc	(4) Exsc	(5) Exsc	(6) Exsc	(7) Exsc
ESG	0.158**	0.177***	0.175***	0.184***	0.191***	0.197***	0.203***
	(2.53)	(2.85)	(2.82)	(2.93)	(3.05)	(3.13)	(3.22)
Lev		6.265***	5.857***	5.466***	4.917**	5.309***	5.103***
		(3.75)	(3.12)	(2.84)	(2.55)	(2.72)	(2.60)
Size			0.248	0.313	0.704	0.605	0.567
			(0.48)	(0.60)	(1.29)	(1.10)	(1.03)
ROA				-4.391	-2.950	-3.747	-3.695
				(-0.94)	(-0.63)	(-0.79)	(-0.78)
Growth					-1.075**	-1.158**	-1.163**
					(-2.32)	(-2.48)	(-2.49)
Fixed						-3.564	-3.609
						(-1.32)	(-1.34)
FirmAge							3.855
							(1.08)
Constant	5.741	1.894	-3.123	-4.811	-13.342	-10.702	-19.711
	(1.24)	(0.40)	(-0.27)	(-0.42)	(-1.10)	(-0.87)	(-1.33)
Observations	738	738	738	738	738	738	738
R-squared	0.048	0.069	0.070	0.071	0.079	0.082	0.084
Number of id	120	120	120	120	120	120	120
id FE	YES	YES	YES	YES	YES	YES	YES
year FE	YES	YES	YES	YES	YES	YES	YES

*Notes: t-statistics in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$*

5.4. Mediation Effect Analysis

To explore the impact of ESG performance on the green export capacity of textile firms, this study employed a two-step approach to test for mediation effects. The first column presented the regression results of the explanatory variable (ESG performance) on the dependent variable (firm green exports). The second and third columns reported the regression results of the explanatory variable on the mediating variables.

(1) Financing constraint mechanism

In examining the relationship between ESG performance and green export capacity in the textile industry, financing constraints served as a theoretically and empirically

justified mediating variable. From a theoretical perspective, financial development theory emphasised that access to capital was crucial for firms engaging in international operations. ESG performance, in essence, represented a process through which firms achieved economic returns via sustainable development practices. This process inherently influenced capital markets' reassessment of firm value, thereby affecting the firm's financing environment.

The regression results indicated a significantly negative relationship between ESG performance and financing constraints, suggesting that better ESG performance alleviated financing constraints. According to existing literature, when firms experienced lower financing costs

and improved capital availability, they were more capable of investing in research and development, improving product quality and technological content, expanding global marketing networks, and enhancing international competitiveness. These factors ultimately contributed to increased green export scale and higher value-added green export products.

(2) Corporate Reputation Mechanism

Corporate reputation, as another key mediating variable linking ESG performance and green export capacity, played an important role in advancing firms' internationalisation. Firstly, the regression results demonstrated a significantly positive relationship between ESG performance and green export capacity (coefficient = 0.203, p < 0.01), providing preliminary

evidence of ESG's direct positive effect on green export capacity in the textile industry.

Secondly, the regression coefficient between ESG performance and corporate reputation was 0.032 (p < 0.01), indicating that firms capable of realising commercial value through ESG practices significantly enhanced their reputation. This suggested that corporate reputation partially mediated the relationship between ESG performance and green export capacity. Specifically, ESG performance enhanced green export capacity both directly and indirectly by shaping a socially responsible image, enabling firms to overcome green trade barriers (such as carbon footprint verification under the EU CBAM mechanism), attracting international partners, and ultimately expanding green export channels and optimising supply chains (**Table 5**).

Table 5. Mediated effects test.

Variables	(1) Exsc	(2) rep	(3) WW
ESG	0.203***	0.032***	-0.001**
	(3.22)	(2.75)	(-2.03)
Lev	5.103***	0.478	0.029***
	(2.60)	(1.33)	(2.87)
Size	0.567	1.726***	-0.050***
	(1.03)	(17.12)	(-17.45)
ROA	-3.695	11.177***	-0.213***
	(-0.78)	(12.94)	(-8.61)
Growth	-1.163**	0.018	-0.006**
	(-2.49)	(0.21)	(-2.45)
Fixed	-3.609	-0.589	0.016
	(-1.34)	(-1.19)	(1.16)
FirmAge	3.855	-1.278*	0.048**
	(1.08)	(-1.96)	(2.55)
Constant	-19.711	-30.595***	0.032
	(-1.33)	(-11.27)	(0.41)
Observations	738	738	738
R-squared	0.084	0.603	0.590
Number of id	120	120	120
id FE	YES	YES	YES
year FE	YES	YES	YES

Notes: t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1.

5.5. Robustness Tests

5.5.1. Robustness Analysis

(1) Propensity score matching method

This study employed the Propensity Score Matching (PSM) method to test the robustness of the impact of ESG performance on green export capacity among textile firms (Zhao *et al.*). Firms were grouped based on the median ESG score, and the nearest neighbour matching technique was applied.

As shown in **Table 6**, in column (1), where no control variables were included, the ESG coefficient was 0.157**, indicating a statistically significant positive effect on textile firms' green export capacity (Exscl) at the 5% level. In column (2), after including control variables, the ESG coefficient increased to 0.205***, which was significant at the 1% level.

These results demonstrated that the positive effect of ESG performance on the green export capacity of textile firms remained robust even after addressing sample selection bias through the PSM nearest neighbour matching method.

(2) Replacing the dependent variable

To further reinforce the reliability of the research findings, this study conducted a robustness test by replacing the dependent variable (Ma *et al.* 2025). Specifically, for the textile industry, the original green export volume variable was substituted with a binary variable indicating whether a firm engaged in green export activities (Exscl), where a value of 1 denoted the presence of green exports and 0 otherwise. This aimed to examine the effect of ESG performance on firms' likelihood of participating in green export activities, thereby validating the stability of the core argument (**Tables 7 and 8**).

Table 6. Results of regression analysis of the propensity score matching method.

Variables	(1) Exsc1	(2) Exsc1
ESG	0.157**	0.205***
	(2.49)	(3.21)
Lev		5.206***
		(2.62)
Size		0.545
		(0.98)
ROA		-4.311
		(-0.89)
Growth		-1.197**
		(-2.52)
Fixed		-3.843
		(-1.40)
FirmAge		3.954
		(1.08)
Constant	5.801	-19.588
	(1.25)	(-1.30)
Observations	727	727
R-squared	0.048	0.085
Number of id	119	119
id FE	YES	YES
year FE	YES	YES

*Notes: t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 7. Regression results using the alternative dependent variable.

Variables	(1) Exsc1	(2) Exsc1
ESG	0.009***	0.012***
	(2.81)	(3.46)
Lev		0.305***
		(2.91)
Size		-0.009
		(-0.29)
ROA		-0.166
		(-0.66)
Growth		-0.053**
		(-2.12)
Fixed		-0.210
		(-1.45)
FirmAge		0.179
		(0.94)
Constant	0.218	-0.251
	(0.89)	(-0.32)
Observations	738	738
R-squared	0.051	0.081
Number of id	120	120
id FE	YES	YES
year FE	YES	YES

According to the regression results, in column (1), where no control variables were included, the coefficient of ESG performance was 0.009***, indicating a statistically significant positive relationship at the 1% level. This suggested that better ESG performance increased the probability that textile firms engaged in green export activities. After incorporating control variables such as leverage (Lev) and firm size (Size) in column (2), the ESG coefficient increased to 0.012***, remaining significant at the 1% level.

These findings indicated that, regardless of whether firm-specific characteristics were controlled for, ESG performance consistently and significantly enhanced the probability of green export participation. This supported the core conclusion from the baseline regression that ESG

performance contributed to improved green export capability among textile firms.

(3) Excluding the impact of the COVID-19 pandemic

To rigorously test the robustness of the baseline regression results regarding the impact of ESG performance on green export capability, this study conducted a targeted robustness check by excluding the potential distortions introduced by the unique macroeconomic environment during the COVID-19 pandemic (2020–2023).

As a labour-intensive and green export-dependent sector, the textile industry was particularly vulnerable to the adverse effects of the pandemic, including supply chain disruptions, fluctuations in overseas orders, and irregularities in the pace of production resumption. These disruptions often led to abnormal fluctuations in firms'

operational behaviour. Moreover, temporary government support measures—such as tax relief, subsidies, and social security exemptions—may have distorted the intrinsic relationships between variables. If left unaddressed, such interference could bias the regression outcomes.

Accordingly, this study excluded observations from the period 2020–2023 from the textile industry sample to eliminate the influence of the pandemic and related policies. As shown in the test results: in column (1), without the inclusion of control variables, the coefficient of ESG performance on green export capability was 0.182**, with a t-value of 2.57, indicating a statistically significant positive effect at the 5% level. In column (2), after the inclusion of control variables, the coefficient increased to 0.211***, with a t-value of 2.87, and was statistically significant at the 1% level.

Table 8. Regression results after excluding the impact of the pandemic.

Variables	(1)	(2)
	Exsc	*Exsc*
ESG	0.182**	0.211***
	(2.57)	(2.87)
Lev		-2.461
		(-0.96)
Size		1.612**
		(2.45)
ROA		-4.225
		(-0.67)
Growth		-1.748***
		(-3.26)
Fixed		-2.425
		(-0.75)
FirmAge		0.713
		(0.13)
Constant	4.018	-32.060*
	(0.78)	(-1.67)
Observations	496	496
R-squared	0.059	0.092
Number of id	92	92
id FE	YES	YES
year FE	YES	YES

*Notes: t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

These findings clearly demonstrated that even after removing the influence of the pandemic period, the positive effect of ESG performance on the green export capability of textile firms remained robust and, in fact, became more statistically significant (**Table 9**).

5.5.2. Heterogeneity Analysis

(1) Regional heterogeneity

As shown in the table below, the impact of ESG performance on textile firms' green exports was significantly positive in the eastern region, insignificantly positive in the western region, and insignificantly negative in the central region. These results indicated a pronounced regional heterogeneity, characterised by a strong effect in the east and weaker or negligible effects in the central and western regions.

This pattern could be attributed to the well-established foreign trade foundations of the textile industry in the eastern region, which had a long history of engaging with international markets—particularly those in Europe and North America that enforced stringent ESG standards. Enterprises in the east had adopted ESG practices such as green production and social responsibility management earlier, and had developed mature systems that allowed them to align closely with the sustainability requirements of overseas clients. As a result, strong ESG performance was more likely to be translated into an green export advantage, thereby promoting green export growth.

In contrast, the textile industries in the central and western regions operated on a smaller scale, had lower levels of internationalisation, and invested less in ESG initiatives. The depth of ESG implementation in these

areas remained limited, and firms often lacked the capacity to interpret and adapt to international ESG standards. Consequently, the positive transmission mechanism from ESG practices to enhanced green export performance was underdeveloped, weakening the overall effect.

This disparity was essentially the outcome of the combined influence of regional differences in foreign trade maturity, ESG implementation capabilities, and market alignment efficiency. Targeted policy interventions would be necessary in the future to bridge the regional gap in ESG-enabled green export competitiveness.

Table 9. Regional Heterogeneity.

Variables	(1) East	(2) West	(3) Mid
ESG	0.258***	0.034	-0.017
	(3.40)	(0.25)	(-0.18)
Lev	7.500***	22.878**	1.524
	(2.99)	(2.71)	(0.46)
Size	-0.304	-2.982	1.406
	(-0.45)	(-0.82)	(1.31)
ROA	-5.155	64.888	4.793
	(-0.91)	(1.84)	(0.53)
Growth	-1.664***	-0.397	0.026
	(-2.88)	(-0.36)	(0.03)
Fixed	-1.106	-14.973	-9.088
	(-0.33)	(-1.61)	(-1.46)
FirmAge	2.852	5.569	5.143
	(0.69)	(0.13)	(0.82)
Constant	-3.433	50.643	-24.677
	(-0.19)	(0.67)	(-1.10)
Observations	601	34	103
R-squared	0.097	0.960	0.374
Number of id	101	8	11
id FE	YES	YES	YES
year FE	YES	YES	YES

Notes: t-statistics in parentheses, *** p<0.01, ** p<0.05, * p<0.1

(2) Ownership heterogeneity

As shown in the table below, the effect of ESG performance on green exports in textile enterprises exhibited ownership heterogeneity, with a stronger influence observed in non-state-owned enterprises (non-SOEs) compared to state-owned enterprises (SOEs).

This divergence could primarily be explained by the greater flexibility of non-SOEs in market competition and their heightened responsiveness to ESG demands from international markets. In order to secure overseas orders and overcome trade barriers, non-SOEs actively engaged in ESG practices—such as green production and the protection of labour rights—effectively translating their ESG performance into a competitive advantage in green exports. Moreover, the shorter decision-making chains and more direct incentive mechanisms in non-SOEs allowed ESG investments to impact green export operations more efficiently, resulting in a significantly positive effect on green export performance.

Conversely, SOEs were often constrained by institutional structures and policy orientations. Their ESG practices tended to focus more on regulatory compliance and fulfilling social responsibilities, which aligned less effectively with the green export-driven ESG demands of international markets. Additionally, the relatively complex decision-making processes within SOEs limited the efficiency with which ESG investments translated into enhanced green export capacity. As a result, the positive impact of ESG performance on green exports was less pronounced in SOEs (**Table 10**).

6.   Research Conclusions

6.1. Significant positive association between ESG performance and textile industry green exports

The study confirmed a significant positive correlation between ESG performance and the green export scale of textile enterprises under the dual-carbon goals framework. Specifically, for every one-unit increase in ESG performance, the green export scale of textile enterprises increased by approximately 0.158 to 0.203 units. This conclusion was validated through multiple robustness tests, including benchmark regressions, propensity score matching (PSM), substitution of the dependent variable, and the exclusion of the pandemic period, confirming its reliability. Financing constraints and corporate reputation as core mediating mechanisms

Alleviation of financing constraints: ESG performance mitigated financing constraints by improving the transparency of information disclosure (e.g., regular publication of ESG reports) and by serving as a credible signal (e.g., obtaining international environmental certifications). These actions reduced information

asymmetry between enterprises and investors. Empirical results demonstrated that a one-unit increase in ESG performance led to a 0.001 decrease in the financing

constraint index (WW index), thereby providing financial support for the expansion of green exports.

Table 10. Ownership Heterogeneity.

Variables	(1) State-owned enterprises	(2) Non-state-owned enterprises
	Exsc	Exsc
ESG	0.108	0.261***
	(0.55)	(3.81)
Lev	-3.951	8.221***
	(-0.72)	(3.67)
Size	0.735	1.551**
	(0.57)	(2.18)
ROA	-5.147	2.156
	(-0.49)	(0.40)
Growth	-1.283	-1.414***
	(-1.28)	(-2.69)
Fixed	-10.125	-3.128
	(-1.46)	(-1.03)
FirmAge	2.468	7.522*
	(0.25)	(1.77)
Constant	-8.652	-54.654***
	(-0.25)	(-2.97)
Observations	152	582
R-squared	0.240	0.165
Number of id	27	102
id FE	YES	YES
year FE	YES	YES

Notes: t-statistics in parentheses,*** p<0.01, ** p<0.05, * p<0.1

Enhancement of corporate reputation: ESG practices in environmental management (e.g., adoption of cleaner production technologies) and social responsibility (e.g., safeguarding employee rights) enhanced a firm's reputation for environmental and social responsibility. Each one-unit increase in ESG performance resulted in a 0.032-point improvement in the corporate reputation score, which in turn attracted international clients, helped firms overcome green trade barriers, and directly promoted green export growth.

6.2. Heterogeneity characteristics highlight differential impacts

Regional heterogeneity: The green export-promoting effect of ESG performance was significantly stronger in eastern regions (coefficient = 0.258***) than in central (−0.017) and western regions (0.034), reflecting the eastern region's advantages in mature ESG practices and higher efficiency in engaging with international markets.

Ownership heterogeneity: Non-state-owned enterprises (non-SOEs) exhibited a markedly stronger positive relationship between ESG performance and green exports (coefficient = 0.261***) compared to state-owned enterprises (SOEs) (0.108), indicating the greater flexibility and efficiency of non-SOEs in responding to market demands and converting ESG investments into green export performance. Against the backdrop of the deep integration of digital technology and the textile industry, and drawing on the perspective of "digital transformation moderating effect" proposed by Li *et al.* (2023) (as cited in the Document), subsequent studies can further expand

the analytical framework of this research by introducing key moderating variables, so as to enrich the exploration of the mechanism between ESG performance and green exports in the textile industry. digital transformation can be incorporated as a moderating variable to examine its regulatory role in the impact of ESG performance on green exports. In the textile industry, digital transformation is manifested in multiple dimensions such as intelligent production (e.g., digital monitoring of energy consumption in dyeing processes) and cross-border e-commerce (e.g., digital platforms for overseas market demand analysis). On one hand, digital technology can improve the efficiency and transparency of ESG information disclosure — for example, blockchain technology can realize real-time tracing of carbon emissions data in the textile production chain, making ESG performance more recognizable to international buyers and thus strengthening the promotion effect of ESG on green export orders. On the other hand, intelligent production systems can optimize the allocation of resources in ESG practice processes (e.g., AI algorithms to reduce material waste in the weaving process), enabling enterprises to achieve better ESG results with lower input costs and further amplifying the positive impact of ESG on green export competitiveness. Future studies can measure the level of digital transformation of textile enterprises through indicators such as the proportion of digital equipment investment and the scale of cross-border e-commerce sales, and verify how different degrees of digital transformation adjust the intensity of the ESG-green export relationship.

7.   Policy Recommendations

7.1. Enterprise level: targeted enhancement of ESG competitiveness

Enterprises should enhance ESG practices across all dimensions and increase investment in green technologies. This includes promoting energy-saving dyeing equipment, water recycling systems, and developing eco-friendly products such as organic cotton and recycled fibres to comply with international environmental standards like the EU REACH regulation and avoid trade barriers.

They should also improve employee welfare systems, optimise the working environment and career development pathways, strengthen quality and safety control measures, and participate in community welfare initiatives to build a sustainable supply chain image. Enhancing corporate governance structures and improving ESG disclosure quality—such as regularly releasing standardised ESG reports and disclosing key indicators like carbon emissions and staff training—would reduce information asymmetry with investors.

Firms should leverage ESG performance to ease financing constraints, using the cost savings to invest in overseas market expansion, advanced equipment procurement, and research and development to enhance the added value of green export products. Moreover, ESG reputation can be used to pursue international certifications (e.g., GOTS for organic textiles) and participate in global sustainability initiatives (e.g., UN Global Compact), thereby increasing trust among international buyers.

A differentiated ESG strategy should be adopted across regions. Eastern enterprises could focus on high-end market ESG standards (e.g., EU CBAM carbon tariffs), while central and western enterprises should first consolidate ESG fundamentals and gradually align with international regulations. SOEs should improve the compatibility of ESG practices with green export demands by shifting from a compliance-oriented to a market-oriented approach, whereas non-SOEs should retain their flexibility and strengthen the synergy between ESG and green export operations.

7.2. Government level: establishing a supportive policy framework

Authorities should refine ESG standards and incentive mechanisms by developing detailed ESG guidelines for the textile industry, including quantifiable metrics for environmental (e.g., carbon emissions per unit of output), social (e.g., labour rights), and governance (e.g., board diversity) aspects. Policies should be introduced to support high-performing ESG enterprises through green export tax rebates, subsidised green loans, and reduced compliance costs.

The government should also enhance international cooperation and regional coordination by promoting mutual recognition of ESG standards with key markets such as the EU and US, simplifying ESG certification processes, and reducing compliance costs. A dedicated ESG transformation fund for central and western textile enterprises could support the adoption of green technologies and employee training, narrowing the gap with eastern regions.

Additionally, the trade and financial environment should be optimised. This includes establishing ESG trade barrier early-warning systems, issuing timely updates on major ESG regulations in key markets (e.g., the US SEC's climate disclosure requirements), and guiding financial institutions to incorporate ESG indicators into credit evaluations. Specialised financial products that integrate ESG and green export considerations should also be developed to broaden financing channels for enterprises. Establish a Special Fund for ESG Transformation of the Textile Industry in Central and Western China to Address Funding Constraints for enterprises that adopt clean technologies such as energy-efficient dyeing equipment and wastewater recycling systems, a subsidy of 30% to 50% of the equipment procurement cost shall be provided. Enterprises that release ESG information in compliance with the Textile Industry ESG Information Disclosure Guidelines (which may refer to the industry disclosure framework of the China Securities Regulatory Commission) for the first time will be given a one-time reward of 200,000 to 500,000 yuan to reduce the cost of information disclosure. For enterprises that improve their employee social security systems and build safety training bases, a special labor rights subsidy of 500 to 1,000 yuan per employee per year shall be granted based on the number of employees. Relying on local industry and information technology departments, a full-process management system covering "online application - expert review - progress tracking - effect evaluation" shall be established to ensure traceable fund flows. The use of funds by enterprises and the results of ESG improvement shall be publicly disclosed on a regular basis.

7.3. Industry and societal level: coordinated advancement of sustainable development industry associations

Industry associations should lead the creation of ESG information-sharing platforms within the textile sector, promote best-practice ESG case studies (e.g., firms reducing green export costs through water recycling), and facilitate industry-wide improvement.

Consumers and investors: Media campaigns should be used to promote green consumption concepts, encouraging consumers to prioritise ESG-certified products. Meanwhile, ESG investment principles should be more widely disseminated to institutional investors, encouraging greater capital allocation to ESG-leading firms in the textile sector, thereby establishing a market-driven mechanism for sustainable development.

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