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# International Experience on ESG in Promoting the Development of Carbon Markets and Lessons for Vietnam

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**ABSTRACT**

This study analyzes the role of Environmental, Social, and Governance (ESG) factors in promoting the development of carbon markets, while clarifying the relationship between ESG and technological innovation in the context of Vietnam. Amid increasing global emphasis on sustainable development and greenhouse gas emission reduction targets, ESG is considered a crucial tool for enhancing corporate transparency, accountability, and operational efficiency. The study employs a qualitative approach, including literature review, analysis of previous studies, and comparison of international experiences in several developing countries such as Brazil, India, and Indonesia. Based on this, the research evaluates the current implementation of ESG and the development of carbon markets in Vietnam, particularly in high-emission industries. The findings indicate that ESG plays a foundational role in improving information transparency, reducing information asymmetry, and supporting the development of carbon markets. At the same time, technological innovation is identified as a key factor in translating ESG commitments into actual emission reduction outcomes. The study proposes several policy implications to improve the legal framework, promote innovation, and foster the development of carbon markets in Vietnam.

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## 1. INTRODUCTION

Currently, sustainable development has become a paramount goal for economies worldwide in the context of climate change, resource depletion, and environmental pollution. In this regard, Environmental, Social, and Governance (ESG) standards have emerged as an essential tool, enabling investors and stakeholders to assess corporate risk management capacity and long-term development potential (Dung et al., 2024a). In Vietnam, this trend has been increasingly reinforced following the country's commitment to achieving net-zero emissions by 2050 at COP26. The Vietnamese government has issued various legal frameworks and guidelines, notably Circular No. 96/2020/TT-BTC, which requires public companies to disclose information related to sustainable development and ESG. However, in practice, the integration of ESG principles into business operations in Vietnam still faces numerous challenges. Approximately 70% of Vietnamese enterprises have never or rarely published ESG reports (Dung et al., 2024b). Many companies lack adequate knowledge, unified data management systems, and face significant gaps in transparent regulatory frameworks (Nguyen Hong Van, 2024).

Within this broader context, Vietnam's construction sector emerges as a critical yet highly challenging component in the roadmap toward fulfilling sustainable commitments. At the same time, it is also one of the most resource-intensive industries with substantial negative impacts on ecosystems. Globally, the construction sector accounts for approximately 40% of total energy consumption and 25% of total water usage, with about 80% of energy consumption occurring during the operational phase of buildings (Do Thanh Trung, 2025). Due to its resource-intensive nature, high energy consumption, and significant contribution to

greenhouse gas emissions-through both material production and building operations (Sizirici et al., 2021)-the pressure for green transition in construction enterprises is extremely urgent.

However, ESG implementation in this sector remains at an early stage and faces multiple internal barriers. From an environmental (E) perspective, although green building standards such as LEED, LOTUS, and EDGE have gained some traction, their widespread adoption remains limited due to the high costs associated with low-carbon technologies and materials (Nguyen & Gray, 2016; Pham et al., 2019). From a social (S) perspective, issues related to occupational safety, health management, and the rights of temporary construction workers have yet to be systematically standardized (Pham Vu Hong Son & Nguyen Van Tien Khoi, 2021). Particularly from a governance (G) perspective, management structures in many Vietnamese construction firms still lack transparency in supply chains and have not established clear sustainability performance indicators (KPIs) (Tran & Huang, 2022). The shortage of financial resources and experts with expertise in emissions measurement has created a significant gap between government expectations and firms' actual implementation capacity. As a result, except for a few leading corporations that have begun publishing standalone sustainability reports, most construction enterprises remain uncertain about integrating ESG into long-term business strategies, leading to risks of falling behind in global value chains and difficulties in accessing green finance.

In Vietnam specifically, recent studies reveal alarming figures: the construction sector contributes up to 23% of air pollution causes, 50% of climate change drivers, 40% of drinking water pollution, and generates 50% of landfill waste (Tran Linh Huan & Le Pham Anh Tho, 2024). In major urban areas such as Hanoi and Ho Chi Minh City, environmental quality has significantly deteriorated due to the rapid expansion of construction projects. Construction activities generate large volumes of dust, toxic emissions, and noise pollution, along with illegal wastewater discharge directly into rivers, causing public concern.

Clearly, more than in many other sectors, the transition toward sustainable models and ESG practices in the construction industry is an urgent necessity. The convergence of these factors indicates that the construction sector is not only a major contributor to environmental pressure but also highly vulnerable to environmental changes. Continuing a growth model based on raw resource exploitation and low-cost labor is no longer viable as green technical barriers are increasingly established globally. Therefore, ESG implementation in Vietnam's construction enterprises is no longer merely an optional or symbolic effort to enhance corporate image, but has become a mandatory survival strategy. Without narrowing the gap between awareness and action, domestic firms risk exclusion from global supply chains, losing access to affordable capital from sustainable investment funds, and, more importantly, eroding public trust.

## 2. LITERATURE REVIEW

The relationship between ESG practices and the development of a low-carbon economy has attracted significant attention in international academic discourse. Fundamentally, ESG investment is considered a core driver of the low-carbon economy, providing essential financial support for enterprises to achieve "dual carbon" goals (Li et al., 2023). Empirical evidence shows that improving ESG performance and disclosure significantly reduces emission intensity and enhances corporate carbon efficiency (Qian & Liu, 2024; Xie et al., 2024; Yin et al., 2023). The underlying mechanisms include easing financial constraints, promoting green technological innovation, improving total factor productivity (TFP), and attracting institutional investors (Qian & Liu, 2024; Xie et al., 2024). By enhancing ESG transparency, firms-especially those in heavily polluting industries-not only gain social legitimacy but also optimize carbon performance under institutional pressures and media scrutiny (Yin et al., 2023).

The growing emphasis on ESG standards and net-zero commitments from the private sector is also generating substantial demand for the global voluntary carbon market (VCM). Many large corporations rely on purchasing carbon credits to offset emissions that cannot be reduced internally, thereby stimulating the development of diverse carbon credit projects, including blue carbon initiatives derived from coastal ecosystems (Kreibich & Hermwille, 2021; Perera et al., 2024). These nature-based carbon projects not only contribute to climate change mitigation but also address broader ESG objectives such as poverty reduction, gender equality, and biodiversity conservation (Perera et al., 2024). Nevertheless, the post-Paris Agreement development of VCM faces critical challenges related to environmental integrity, particularly the risk of double claiming between host countries and credit-buying firms. This issue necessitates strong policy intervention to ensure market credibility (Kreibich & Hermwille, 2021).

Conversely, empirical studies in major economies confirm that carbon trading policies themselves-especially emissions trading systems (ETS)-serve as powerful environmental regulatory tools that enhance corporate ESG performance. Through carbon pricing mechanisms, ETS compels firms to internalize emission costs, thereby creating both pressure and financial incentives to improve environmental governance (Tang et al., 2025; Yao et al., 2023; Yu et al., 2025). In China, ETS has been shown to improve ESG performance by strengthening government supervision, mitigating managerial short-termism, promoting research and development (R&D) investment, and enhancing internal controls (Tang et al., 2025; Tian et al., 2024; Yao et al., 2023; Zhang et al., 2023). However, in Europe, some studies report mixed or even contrasting findings, where increased carbon allowances under the EU ETS and technological advancements directly yield environmental benefits, thereby reducing the urgency to expand ESG-driven initiatives (Pata et al., 2024).

The interaction between carbon markets and ESG is not uniform but is influenced by firm-specific characteristics and macroeconomic contexts. Research indicates that the positive effects of carbon trading policies on ESG (or ESG on carbon

performance) are more pronounced in non-state-owned enterprises, firms with higher levels of digital transformation, those outside heavily polluting sectors, and companies operating in highly market-oriented regions (Qian & Liu, 2024; Tang et al., 2025; Tian et al., 2024; Yu et al., 2025; Zhang et al., 2023). In contrast, for heavily polluting firms or state-owned enterprises, "soft constraints" from ESG alone may not be sufficient to drive comprehensive transformation without "hard constraints" imposed by stringent environmental regulations (Xie et al., 2024).

Overall, the international literature provides a solid theoretical foundation but also reveals a significant research gap, particularly the lack of empirical evidence specific to Vietnam. Drawing from global experiences, promoting the development of a domestic carbon market in Vietnam requires the establishment of a context-specific and standardized ESG evaluation framework to attract green finance (Li et al., 2023). Additionally, implementing a mandatory emissions trading system (ETS) could serve as an effective policy lever to compel firms to enhance ESG governance (Yao et al., 2023). At the same time, regulators need to strengthen the legal framework to address issues such as double claiming in voluntary carbon markets, ensuring transparency and credibility to better integrate with global ESG investment flows (Kreibich & Hermwille, 2021).

## 3. INTERNATIONAL EXPERIENCE

### *3.1. Experience from Developing Countries*

*3.2.1. Brazil*

Brazil is one of the pioneering countries in institutionalizing ESG through a close integration of environmental policy, financial markets, and carbon market instruments. According to Chambers and Partners (2025), Brazil's ESG framework has made significant progress with the enactment of Law No. 15,042/2024, which establishes the national greenhouse gas emissions trading system (SBCE) under a "cap-and-trade" mechanism. This system sets emission limits while allowing firms to trade carbon credits, thereby internalizing carbon costs. It not only operationalizes the country's commitments under the Paris Agreement but also lays the foundation for a structured and transparent carbon market.

In parallel, Brazil has strengthened ESG disclosure standards through regulations issued by its Securities and Exchange Commission (CVM), requiring listed companies to publish sustainability reports in line with international standards such as IFRS S1 and S2. These measures significantly enhance transparency and investor confidence, contributing to the alignment between ESG practices and financial market development.

Moreover, Brazil has actively developed a green finance ecosystem through initiatives such as a national Sustainable Taxonomy and large-scale capital mobilization programs for energy transition. These initiatives are expected to attract substantial investment—amounting to trillions of Brazilian reals—into sustainable projects over the coming decade. However, ESG implementation in Brazil still faces challenges, including fragmented governance structures across multiple regulatory bodies and the risk of "greenwashing," particularly as small and medium-sized enterprises struggle to meet reporting requirements and access green finance.

Overall, Brazil demonstrates that ESG is not merely a risk management tool but also a critical institutional foundation for fostering carbon market development and restructuring the economy toward sustainability. The country provides a typical example of integrating ESG into carbon market mechanisms based on natural resources, especially the Amazon rainforest. Beyond environmental policy, Brazil has built a comprehensive green financial ecosystem in which ESG serves as a guiding standard for both corporate behavior and investment decisions.

The implementation of ESG in Brazil is closely linked to REDD+ initiatives, transforming forest resources into economic assets that can be monetized through carbon credits. From the perspective of the resource-based view (Hart, 1995), natural resources are no longer merely exploited inputs but become strategic competitive advantages when managed sustainably. This enables Brazilian firms not only to mitigate environmental risks but also to access international green investment flows. More importantly, ESG in Brazil functions as a signaling mechanism, helping markets distinguish between firms with high and low environmental responsibility, thereby enhancing transparency and efficiency in carbon markets.

*3.2.2. India*

In contrast to Brazil, India approaches ESG primarily from an institutional and financial market perspective. The mandatory Corporate Social Responsibility (CSR) spending requirement for firms has created an important foundation for expanding toward a more comprehensive ESG framework.

In India, ESG is currently undergoing a transition from a traditional CSR-based approach to a more systematic framework linked to financial markets. However, the level of implementation remains limited and uneven. According to the Centre for Business and Commercial Laws (2023), although regulators require listed companies to adopt Business Responsibility and Sustainability Reporting (BRSR), the actual scope of implementation remains narrow, with only a small proportion of firms complying nationwide. This indicates that ESG practices are still concentrated among large corporations rather than being widely adopted across the broader business sector.

Furthermore, while the regulatory framework has made progress in requiring ESG disclosure, it still lacks comprehensive mandatory enforcement mechanisms. As a result, incentives for integrating ESG into core business strategies remain relatively weak. Compared to the European Union-where ESG is institutionalized through instruments such as sustainable taxonomies and

green bond standards-India's approach remains more disclosure-oriented rather than focused on regulating market behavior. In addition, barriers such as the lack of standardized data, high compliance costs, and limited implementation capacity continue to hinder large-scale ESG adoption. Nevertheless, ESG demonstrates strong potential for economic value creation, particularly in reducing capital costs and long-term investment risks (CBCL, 2023).

Empirical research by Malik and Kashiramka (2024) shows that ESG disclosure significantly reduces the cost of debt, thereby improving firms' access to financing for emission reduction projects. This is especially important for carbon markets, where initial investment costs for green projects are typically high. Moreover, ESG in India has contributed to the development of green financial instruments such as green bonds and sustainable investment funds. These instruments serve as a bridge between financial markets and carbon markets, helping to expand market scale and improve liquidity.

*3.2.3. Indonesia*

Indonesia provides a clear illustration of the role of ESG in driving the transition toward a low-carbon economic structure. As an economy heavily dependent on natural resources and fossil fuels, Indonesia has leveraged ESG as a strategic tool to restructure its growth model.

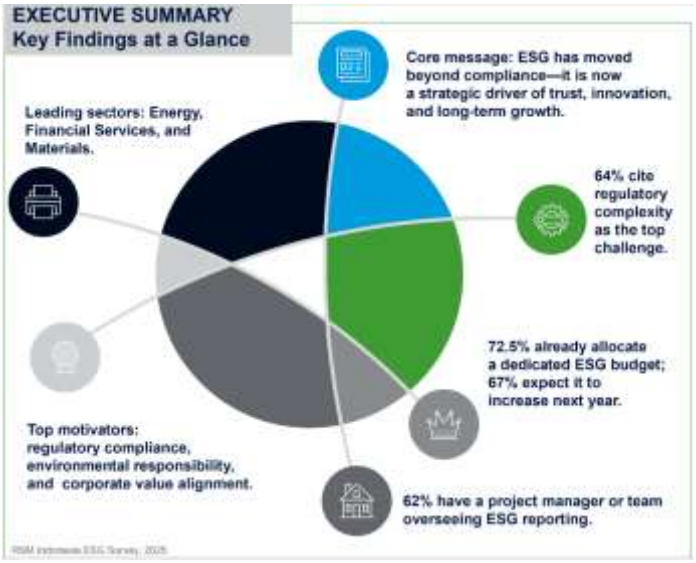
Firms adopting ESG practices in Indonesia tend to invest more in technological innovation and renewable energy. This aligns with the findings of Ji et al. (2025), which demonstrate that ESG significantly influences ambidextrous innovation, including both exploitative and exploratory innovation. This dual innovation capability enables firms not only to improve existing processes but also to develop new low-carbon technologies, thereby enhancing their long-term competitiveness.

Indonesia also highlights the increasingly central role of ESG in linking public policy, financial markets, and carbon markets. According to Chambers and Partners (2025), the country is transitioning from a voluntary ESG approach to a more mandatory and standardized regulatory framework. This shift is particularly evident in the expansion of carbon pricing mechanisms and the recognition of international carbon trading under the Paris Agreement.

At the same time, Indonesia has strongly promoted sustainable finance through initiatives such as the Indonesia Taxonomy for Sustainable Finance 2.0, which covers 192 economic sectors and helps direct capital flows toward low-emission activities. In addition, mandatory ESG reporting requirements for listed companies, along with the adoption of international standards such as the GHG Protocol and ISO 14064, have significantly improved transparency and the quality of emissions data—both of which are essential for the effective functioning of carbon markets.

However, ESG implementation in Indonesia still faces challenges, particularly the fragmentation of the legal and regulatory framework. This creates a need for stronger coordination mechanisms among regulatory bodies to ensure consistency and effectiveness.

Overall, the case of Indonesia demonstrates that ESG not only contributes to emission reduction but also serves as a strategic coordination mechanism that facilitates the transition to a low-carbon economy and enhances participation in global carbon markets.




***Source: RSM Indonesia (2025)***

In Indonesia, ESG is no longer viewed merely as a compliance obligation but has evolved into a strategic driver that fosters innovation, reputation, and long-term growth (RSM Indonesia, 2025). ESG practices in the country are clearly shifting from a compliance-based approach toward a more strategic orientation. Notably, leading sectors in ESG implementation include energy, financial services, and materials, reflecting industries with high environmental impact and strong governance requirements. In terms

of motivation, ESG adoption is primarily driven by regulatory compliance, environmental responsibility, and alignment with corporate values, indicating that institutional pressure remains a dominant force.

In addition, empirical data reveal that 64% of firms consider regulatory complexity as the most significant challenge. Meanwhile, 72.5% of companies have allocated dedicated ESG budgets, and 67% plan to increase these budgets in the future, reflecting a growing level of commitment. Furthermore, 62% of firms have established dedicated ESG teams or assigned personnel responsible for ESG reporting, indicating an increasing level of specialization in ESG governance.

Importantly, ESG in Indonesia is no longer confined to compliance but is increasingly recognized as a mechanism for building trust, driving innovation, and supporting long-term growth. This transformation reinforces the role of ESG in corporate strategy and enhances firms' capacity to participate in carbon markets. As a result, ESG not only contributes to emission reductions but also creates new business opportunities, particularly in the voluntary carbon credit market.

## 4. VIETNAM

In Vietnam, ESG is still in its early stages of development but has shown encouraging signs of progress. Recent reports by the International Finance Corporation (2022) indicate that investors in the stock market are increasingly paying attention to ESG information, reflecting a shift in awareness toward sustainable development factors. Notably, ESG disclosure rates in high environmental impact sectors remain significantly lower than those in service or financial industries. According to PwC Vietnam (2025), the level of ESG commitment varies considerably across different types of enterprises, with foreign-invested firms reaching approximately 71%, listed companies 57%, and domestic private enterprises only around 27%. This disparity highlights substantial differences in financial resources, human capital, and stakeholder pressure.

However, ESG implementation remains uneven across firms and is largely concentrated among large corporations or those with foreign investment. Statistics show that only about 20-25% of listed companies in Vietnam disclose ESG information or publish sustainability reports, which is considerably lower than the ASEAN average (PwC Vietnam, 2022). This gap creates significant limitations in firms' ability to participate effectively in carbon markets.

In addition, although Vietnam has established a roadmap for carbon market development, key foundational elements-such as the Measurement, Reporting, and Verification (MRV) system, emissions databases, and the legal framework-remain underdeveloped. These limitations constrain the role of ESG in meaningfully supporting the development of a functional and efficient carbon market.


***Source: PwC (2025), authors' compilation***

The chart clearly illustrates significant disparities in the level of ESG component implementation across firms. Specifically, risk management and compliance account for the highest proportion (65%), reflecting a tendency for firms to prioritize mandatory activities or those aimed at mitigating legal risks. This suggests that ESG in Vietnam is still largely approached from a compliance perspective rather than as a long-term strategic framework.

Meanwhile, corporate governance stands at 45%, indicating a moderate level of attention. Although governance practices have improved, they have not yet become a core foundation for ESG implementation, particularly among non-listed firms or those without foreign investment. Notably, ESG reporting has the lowest proportion (36%), highlighting limited transparency. The relatively low level of ESG disclosure reflects both a lack of reporting capacity and insufficient pressure from the market and stakeholders. Overall, the chart indicates that ESG development in Vietnam remains more "compliance-driven" than "value-driven." This implies that for

ESG to effectively support carbon market development and sustainable growth, a shift toward more strategic, value-oriented practices is necessary-particularly through strengthening governance quality and enhancing transparency.

Despite the expected positive impacts of ESG on sustainable development, its implementation in Vietnam's construction sector still faces significant limitations. Since 2010, the number of certified green buildings (such as LOTUS, LEED, EDGE, and Green Mark) has remained relatively modest, with just over 500 projects by 2024-representing a very small proportion of total construction projects nationwide (VietnamPlus, 2024). Although a legal framework for environmental protection in construction has been established, several critical shortcomings persist.

First, there is a lack of clear regulations imposing direct financial liability on project owners in cases of environmental incidents, often shifting the burden to contractors. Second, administrative penalties remain relatively low and lack sufficient deterrent effect, leading many firms to opt for paying fines rather than investing in environmental mitigation measures. Third, the policy system lacks concrete incentives for adopting environmentally friendly materials, thereby limiting the motivation to transition toward sustainable construction practices (Baker McKenzie, 2023).

Beyond legal barriers, construction firms themselves often lack proper awareness of ESG. Many view environmental protection merely as a procedural requirement for obtaining construction permits, subsequently neglecting their commitments during project implementation. Notably, studies highlight a paradox in Vietnam: firms operating in environmentally sensitive sectors (such as construction and mining) are among the least likely to voluntarily disclose ESG reports, due to constraints in financial and human resources as well as insufficient pressure from stakeholders (Nguyen Thi Minh Phuong & Hoang Tuan Minh, 2025).

## 5. LESSONS LEARNED FOR VIETNAM

From international experiences, it is evident that ESG is not merely a reporting framework but also a market-operating mechanism. A common feature among successful countries is the integration of ESG across three levels: macro-level policy, financial markets, and corporate strategy. This multi-level integration ensures that ESG is not only enforced through regulations but also internalized in market behavior and business decision-making.

The chart reproduced from Lutfiana et al. (2025) demonstrates a clear positive relationship between the level of ESG implementation and the development of carbon markets. As ESG performance improves, both the scale and maturity of carbon markets increase correspondingly. This suggests that ESG functions as an institutional foundation that enables carbon markets to operate more effectively and efficiently.

Another key lesson is the mediating role of innovation. ESG can only generate meaningful impacts when it is translated into concrete innovation activities, particularly green innovation (Kraus et al., 2020). This serves as the critical linkage between policy commitments and actual emission reduction outcomes. In other words, while ESG provides direction and incentives, innovation acts as the mechanism through which these goals are realized in practice.

## 5. POLICY IMPLICATIONS

*First,* Vietnam needs to develop a unified legal framework for ESG closely linked to the carbon market. This framework should clearly define disclosure standards, monitoring mechanisms, and enforcement sanctions to ensure transparency and reduce information asymmetry in the market.

*Second*, it is essential to promote private sector participation through financial incentives such as tax preferences, green credit, and technical support. This is particularly important for small and medium-sized enterprises (SMEs), which often face limitations in capacity and resources for ESG implementation.

*Third*, Vietnam should prioritize the development of a green innovation ecosystem, including support for research and development (R&D), technology transfer, and international collaboration. This is a decisive factor in translating ESG commitments into tangible emission reduction outcomes.

*Finally*, strengthening international integration in ESG and carbon markets is crucial. This will enable Vietnam to leverage financial resources, advanced technologies, and management experience from more developed countries, thereby accelerating the transition toward a sustainable and low-carbon economy.

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