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Bridging the Green Gap in Emerging Markets: A Conceptual Framework Linking Sustainable Investment Strategies, Market Performance, and Investor Behaviour in India

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Abstract
The urgency of India's Paris Agreement commitments to reduce emissions to net zero by 2070 and achieving 50% non-fossil energy by 2030 contrasts sharply with the ESG mutual fund market's domestic AUM share of 0.3% (AMFI, 2024). This research explores discrepancies through the ESG market, investor behaviour, and structural factors. Methodology entails analysing 42 peer-reviewed journals (2000-2024), secondary index data (NSE Nifty 100 ESG Index, 2019-2024), and policy-related documents from SEBI, RBI, UNEP-FI, the World Bank, et al. The research findings reveal that Indian ESG indices perform robustly by risk-return measures compared to conventional indices over 1 to 5 years but face challenges owing to low financial literacy, greenwashing concerns, limited supply, and a weak regulatory framework. The critical analysis proposes the Green Finance Adoption Framework for Emerging Markets (GFAFEM), a conceptual framework for the supply and performance of sustainable investments, investor behaviour, and structural factors in India. This research informs policy recommendations for SEBI, fund managers, and a sustainable financing strategy for the NAPCC plan...
Keywords: sustainable finance, ESG investing, green bonds, emerging markets, investor behaviour, behavioural finance, Indian capital markets, climate finance.

Introduction

In 2023, sustainable investing reached over USD 35 trillion globally, accounting for about one-third of all professionally managed assets (GSIA, 2023). Yet ESG funds in India, one of the most climate-vulnerable countries in the world, are negligible. The Reserve Bank of India (2021) forecasts that annual GDP losses between 1.8% and 9.6% by the middle of the century are likely under various warming scenarios, emphasising that the mobilisation of green capital is crucial not just for investment portfolios but for the economy as a whole.

Since the launch of the UNEP-FI's Principles for Responsible Investment (2006), the scholarly works on SRI have evolved away from normative concerns (Renneboog et al., 2008) toward establishing ESG's empirical role in augmenting risk-adjusted returns (Friede et al., 2015). These studies are primarily based in OECD countries characterized by both advanced disclosure policies and sophisticated investors (Christensen et al., 2021; Gillan et al., 2021). India, in contrast, has a sizable and rapidly growing population of retail investors (Lusardi & Mitchell, 2014) who do not possess a considerable level of financial literacy, a regulatory environment that is evolving unevenly (SEBI, 2023), and an enterprise culture that prioritizes ESG issues only after creating value.

The objectives of this paper are to critically review the existing international and India-specific literature on ESG, identify gaps within the literature that are pertinent to the future of green financing in India, and conceptualise an original framework (the GFAFEM) that links sustainable investment practices, market performance, and investor behaviour in the context of India.

Literature Review

2.1 Evolution of Sustainable Finance Theory

Sustainable finance is the outcome of the merging of two distinct streams of thought: the normative social investing movement and the positive agency-related corporate governance studies (Jensen & Meckling, 1976) as well as stakeholder theory (Freeman, 1984). ESG ratings, emerging around the turn of the millennium, signal this convergence. Friede et al. (2015) conducted a meta-study comprising more than 2,200 individual studies on ESG and sustainability, and their relation to financial performance. In more than 90% of those studies, ESG and sustainability factors were not detrimental to financial performance; in 63% of the studies, the relationship was even positive. This dispels the myth of 'the cost of ethics.' ESG factors are only likely to have a positive impact on financial performance if they are financially material, Khan et al say (2016). Governance factors are important across industries, and environmental factors are important in more natural resources and energy-intensive industries.

The idea of double materiality – ESG issues affect both the financial results and the social impact (European Commission, 2021; Serafeim & Yoon, 2023) – has been embraced by regulators. While India's BRSR framework (SEBI, 2021) is a welcome development, it only applies to the top 1,000 listed companies, restricting its transformative potential.

2.2 ESG Performance in Emerging Markets

There is a small but increasing amount of evidence on emerging markets. Duque-Grisales and Aguilera-Caracuel (2021) showed that ESG performance has a negative correlation with short-term accounting returns, but a positive correlation with long-term market value; and Henriksson et al. (2019) showed that integrating ESG into portfolios harms short-term accounting returns but has a positive impact on long-term market value. In India, Chauhan and Kumar (2022) reported that the companies listed on BSE that had better ESG scores had better ROE and lower cost of capital. In general, the NSE Nifty 100 ESG Index (which was launched in 2018) has been a close follower of the Nifty 100 Index and has been exceptionally resilient in the face of COVID-19 disruption (NSE, 2023).

One methodological hurdle that has been documented over time is divergence in scores, known as ESG rating divergence; across all rating providers, major rating agencies are only 0.54 correlated with each other, and this effect is even more pronounced in emerging markets, where disclosure quality is currently lower, and third-party auditing is less frequent.

2.3 Behavioural Dimensions of Sustainable Investment

The behaviour finance approach provides a more explanatory model than efficient market models in explaining ESG adoption decisions. Hartzmark and Sussman (2019) demonstrated that sustainability labels are effective decision-making heuristics, and that fund inflows are causally affected by labels, even in the absence of performance. Bauer et al. (2021) identified investor demand as a measure of the mispricing of ESG, and Riedl and Smeets (2017) showed that both personal beliefs and expectations on the sustainable funds' performance affect fund ownership.

These dynamics are further complicated by the structural factors that are not present in the western context, such as below-average financial literacy of investors in India (NCFE, 2019), the status quo bias of first generation retail investors in India, informal advice channels with limited ESG familiarity and the tendency for sustainable investing communications to focus on ethics rather than on returns, which is the primary expectation of most retail investors in India (Cole et al, 2011).

2.4 Green Bond Markets and India's Policy Architecture

Worldwide green bond issuance made a record USD 575 billion in 2023 (CBI, 2024). India had boldly introduced its sovereign green bonds worth INR 160 billion in 2023, though the greenium is relatively small and variable – around 2 basis points for high-quality issuers – and the lack of a developed secondary market is limiting the liquidity and price discovery of green bonds (IFC, 2022; Zerbib, 2019).

Regulatory changes in India have been substantial but piecemeal. Over the years, there has been a lot of institutional development in the form of successive green bond circulars by SEBI culminating in the BRSR framework (2021), and the continuous green taxonomy initiative by the Ministry of Finance. While the partial overlap in frameworks by SEBI, RBI and the Ministry of Finance may result in compliance complexity, which can hamper the growth of the market, the co-existence of the frameworks may not be enough in terms of inter-agency coordination (Chowdhury & Bhimavarapu, 2022).

Table 1: Overview of Key Literature

Note. Selected studies addressing core themes of this paper.

Author(s) & Year	Focus Area	Methodology	Key Findings
Friede et al. (2015)	ESG–CFP relationship	Meta-analysis (2,200+ studies)	90% of studies show a non-negative ESG–performance link; 63% positive.
Khan et al. (2016)	Materiality of ESG	Longitudinal panel, US firms	Financially material ESG issues drive outperformance; immaterial issues do not.
Hartzmark & Sussman (2019)	Investor demand for ESG	Natural experiment, US mutual funds	Sustainability ratings causally increase fund inflows regardless of performance.
Riedl & Smeets (2017)	Motives for ESG investing	Survey + portfolio data, Netherlands	Social preferences—not financial expectations alone—drive sustainable fund ownership.
Zerbib (2019)	Green bond pricing (greenium)	Matched-pair comparison	Green bonds carry a small yield discount (avg. –2 bps) vs conventional bonds.
Chauhan & Kumar (2022)	ESG performance, India	Panel regression, BSE-listed firms	Higher ESG scores linked to superior ROE and lower cost of capital in India.
Berg et al. (2022)	ESG rating divergence	Cross-provider rating comparison	Median ESG rating correlation across providers is only 0.54.
CBI (2024)	Green bond market data	Market report / secondary data	Global green bond issuance reached USD 575 billion in 2023; EM share growing.

Research Gaps

Although there has been an increasing number of publications, there are four substantive gaps. First, there is no integrated framework that examines the supply-side dynamics of green investment products, the demand-side investor behaviour, and the structural conditions between them, each of which has been explored separately and which is applicable to the green finance challenge in India.

Second, existing behavioural finance research on sustainable investing has primarily been conducted with Western investor samples. We know little about India-specific factors such as caste-based referral networks for investments, religion-driven ethics lenses, and prevalent informal financial advice provision (Cole et al., 2011).

Third, the market-level effects of India's policy mix of SEBI, RBI, and Ministry of Finance regulations have not been modelled. Chowdhury and Bhimavarapu (2022) identify the risk but do not quantify its impact on investor participation or market development.

Fourth, the Nifty 100 ESG Index was only established in 2018, leaving less than six years of performance data with which to work. International studies show that only long-term, extensive research can truly reveal the value

of ESG. This study acknowledges this limitation and attempts to compensate through the development of a conceptual framework to support future extensive empirical studies.

Research Objectives and Questions

This study is guided by the following objectives:

Critically synthesise international and India-specific literature on sustainable finance, ESG performance, and investor behaviour.

Identify and substantiate specific scholarly gaps regarding India's green finance market.

Analyse the risk-adjusted performance of Indian ESG indices relative to conventional benchmarks (2018–2024).

Examine cognitive, institutional, and informational barriers to sustainable investment adoption in India.

Develop the GFAFEM integrating investment strategies, market performance, and investor behaviour within India's structural context.

Derive policy-relevant recommendations for regulatory bodies, asset managers, and governmental stakeholders.

These objectives are operationalised through four research questions:

RQ1: Do ESG-oriented instruments in India demonstrate competitive risk-adjusted returns relative to conventional benchmarks, and what structural factors explain divergence from developed-market patterns?

RQ2: What behavioural, cognitive, and institutional factors most significantly shape retail and institutional investor decisions regarding sustainable instruments in India?

RQ3: How does India's evolving regulatory architecture BRSR, sovereign green bonds, and emerging green taxonomy hape market development and investor confidence?

RQ4: What conceptual framework most coherently accounts for the relationships among investment strategies, market performance, investor behaviour, and regulatory context in emerging markets?

Research Methodology

5.1 Research Paradigm

This research from the standpoint of critical realism (Bhaskar, 1978; Sayer, 2000), which strikes a middle path between positivism and interpretivism by assuming causal mechanisms exist whether or not they are observed, but their operation is enabled or constrained by social and institutional factors. We find this applicable to the sustainable finance context in India since ESG value-creation mechanisms exist but are dependent on regulatory, cultural, market- infrastructure conditions and more. Fallibilist realism is assumed from an epistemological perspective, where we recognise limits to data quality and model specifications (Gillan et al., 2021).

5.2 Research Design and Data Sources

The study uses a conceptual synthesis design (Jaakkola, 2020), integrating and reinterpreting existing empirical and theoretical work to develop an original framework. A systematic search of Scopus, Web of Science, and SSRN using terms including "ESG India", "sustainable finance emerging markets", and "behavioural finance ESG" identified 155 articles (2000–2024). After title/abstract screening, 68 were retained for full review, with 42 cited in this paper. Policy documents from SEBI, RBI, Ministry of Finance, NSE, AMFI, CBI, UNEP-FI, IFC, and the World Bank provided regulatory and market context.

For the performance analysis, publicly available index data for the Nifty 100 ESG Index and Nifty 100 Total Return Index was obtained from NSE India for January 2019 - December 2024. Descriptive statistics—annualised returns, standard deviation, Sharpe ratio (using the 91-day T-bill as risk-free rate), and maximum drawdown—were computed. No inferential tests were performed given the limited time-series length and the study's primarily conceptual orientation.

5.3 Methodological Limitations

As a conceptual synthesis, the study relies on existing literature, and the limited high-quality empirical research on Indian ESG investor behaviour constrains the framework's empirical foundation. The six-year index dataset limits statistical reliability and precludes full business-cycle analysis. The proposed framework requires empirical validation through future survey-based, experimental, or econometric research.

Results, Analysis, and Discussion

6.1 Comparative Performance of Indian ESG and Conventional Indices

Table 2 presents performance data for the period January 2019–December 2024, spanning the COVID-19 market turmoil, subsequent recovery, 2022–23 inflationary pressures, and India's continued equity expansion through 2024.

Table 2: Comparative Performance — Nifty 100 ESG Index vs. Nifty 100 TRI (January 2019–December 2024)

Metric	Nifty 100 ESG Index	Nifty 100 TRI
Annualised Return (5-yr CAGR)	14.80%	14.10%
Annualised Standard Deviation	18.30%	19.10%
Sharpe Ratio (annualised)	0.71	0.65
Maximum Drawdown (COVID, Mar 2020)	–33.2%	–38.4%
Recovery to Pre-Drawdown Level	~6 months	~8 months
2024 YTD Return (Jan–Dec)	22.40%	21.80%

Note. Data sourced from NSE India (2024). Sharpe ratio computed using 91-day T-bill rate as risk-free rate.

The Nifty 100 ESG Index's annualised return was slightly higher than the conventional index (14.8% vs. 14.1%), and it performed better on risk measures, as standard deviation was 18.3% compared to 19.1% and the Sharpe ratio 0.71 compared to 0.65, which is consistent with international evidence on the risk-mitigating properties of ESG in volatile environments (Henriksson et al., 2019). The COVID-19 comparison is especially revealing: the ESG index had a flatter drawdown (–33.2% vs. –38.4%) and was able to bounce back a couple of months earlier, perhaps due to less exposure to sectors that were structurally weak, like fossil fuels and real estate.

The results presented here should be treated with some caution. One six-year period of one major market disruption is not enough to prove long run outperformance. The composition of ESG indexes may vary based on the methodology used for rating (Berg et al., 2022), and changes in the construction during the time frame can lead to survivorship or rebalancing biases. The findings are most easily interpreted as broadly consistent with, rather than evidence for, the international evidence base regarding performance resilience related to ESG.

6.2 Behavioural Barriers to Green Capital Adoption

In the literature review, it has been identified that there are barriers at three levels. At the individual level: (1) low financial literacy leads to a constrained ability to assess ESG products as they are more complex than traditional

equity or fixed-deposit products (Lusardi and Mitchell, 2014; NCFE, 2019); (2) first-generation retail investors are more likely to be status quo biased and less likely to interpret the complexity of the ESG products (Kahneman and Tversky, 1979); and (3) rational greenwashing scepticism because current transparency of sustainability disclosures is limited in Indian financial products (Chauhan & Kumar, 2022).

The social and informational level of the market is characterised by an absence of informal advice channels, dominated by family members and unregistered advisors, that recommend ESG products, because they do not know what these are, while popular media articles on sustainable investment focus on ethical rather than financial motivations (Riedl & Smeets, 2017; Cole et al., 2011).

Structurally, the access to such products is also highly limited, with India having less than 25 ESG related active funds as compared to more than 600 in Europe (AMFI, 2024; Morningstar, 2024). There is a less developed secondary market for green bonds that lacks liquidity for institutional investors like insurance companies and pension funds (IFC, 2022).

6.3 The Green Finance Adoption Framework for Emerging Markets (GFAFEM)

From the above analysis, this paper suggests an integrated conceptual model (GFAFEM) that consists of four main constructs, namely:

The factors include (1) Sustainable Investment Supply (product availability, regulatory quality and disclosure depth), (2) Market Performance Dynamics (ESG index returns, risk characteristics, and greenium), (3) Investor Behavioural Factors (financial literacy, cognitive biases, values alignment, and social networks), and (4) Structural Context (regulatory architecture, market infrastructure, and macroeconomic conditions). Structural Context serves as a moderator of the relationships between the other three constructs on a meta-level.

The model postulates four main relationships: (a) Sustainable Investment Supply affects Investor Behaviour, as the availability of sustainable investments and information quality; (b) Investor Behavioural Factors combine to influence Sustainable Investment Adoption, with financial literacy acting as a moderator between supply-behaviour and performance-behaviour relationships; and (c) Structural Context acts as a moderator in all three relationships, either positively or negatively, by influencing investor adoption of sustainable finance through regulatory clarity and institutional reliability.

One of the unique aspects of GFAFEM is its focus on feedback loops. Sustainable Investment Adoption is considered an outcome and a driver of future conditions: more sustainable green capital mobilisation more ESG product supply, richer performance data, more pressure for better regulation in the political economy. This is a similar framing effect, as described by Sayer (2000) and Fatica et al. (2021) in financial market environments.

The framework also captures the temporal dynamics of Duque-Grisales and Aguilera-Caracuel (2021), which is to say, early adoption is more about value alignment and social norms, and when markets mature and data are collected, the performance pathway grows more relevant, thereby attracting performance-oriented investors initially unappealing by ESG signals.

6.4 Critical Discussion

The GFAFEM is a conceptual tool, not a deterministic model. Several of its proposed relationships, while theoretically grounded and broadly consistent with available evidence, remain formally untested in the Indian context. The relationship between financial literacy and ESG adoption, for instance, may be complicated by values-based motivations that, in India's context of potent religious and community-based value systems, could operate quite differently from Western secular contexts (Riedl & Smeets, 2017).

The framework also has limitations regarding institutional investors, whose decision-making involves regulatory constraints from IRDA, EPFO, and PFRDA guidelines that currently limit ESG integration regardless of portfolio managers' inclinations. Full treatment of institutional adoption—including principal-agent dynamics and evolving interpretations of fiduciary duty—represents an important direction for future work.

Conclusion and Future Scope

This paper synthesises the scattered literature on sustainable finance, ESG performance, investor behaviour, and green capital market development into a conceptual framework tailored to India's institutional and behavioural context. Three contributions stand out.

First, despite India's serious climate pledges, green capital mobilisation remains systematically constrained by supply-side deficiencies, behavioural barriers, regulatory fragmentation, and market infrastructure gaps—problems that the GFAFEM integrates for the first time in a single analytical model. Second, the performance analysis indicates that the Nifty 100 ESG Index had competitive risk-adjusted performance over the last 6 years (2019-2024), especially during the COVID-19 situation, which can gradually change the investor sentiment as more data is available in the future. Third, the GFAFEM's dynamic, feedback-driven view of the development of the green finance market fills a gap in existing literature, which is largely concerned with cross-sectional dimensions of finance market development.

The following future research direction is recommended: (i) To test pathways of GFAFEM using longitudinal panel data; (ii) To formally test the causal impact of ESG framing and disclosure quality on ESG adoption intention by survey-experimental designs; (iii) To conduct comparative studies of India, the study area, with Brazil, Indonesia and South Africa to identify framework relationships that are specific to India versus generalizable; and (iv) To explore ESG integration of institutional investors through qualitative research in the insurance companies and provident funds of India.

Policy Implications and Recommendations

For the Securities and Exchange Board of India (SEBI)

Fast-track the adoption of a legally binding green finance taxonomy, in line with the ongoing initiative by the Ministry of Finance and require SEBI product approval to be subject to compliance with green finance taxonomy. This will help decrease greenwashing, minimise investor uncertainty and allow ESG index construction to cover the mid- and small-cap range.

Enhance enforcement of BRSR, with graduated sanctions for failure to comply, and increase mandatory reporting to include Scope 3 emissions. The top 2,000 listed companies should be covered within three years, with the focus on mid-cap companies with a high likelihood of being included in broader ESG indexes.

Introduce mandatory ESG suitability assessment within the KYC process for retail mutual fund investments, enabling distributors and registered investment advisors to recommend ESG products aligned with investor profiles.

For the Reserve Bank of India and the Ministry of Finance

Develop a concessional finance facility for green bond issuers in infrastructure and renewable energy, reducing the yield cost of green certification for first-time issuers and addressing the absence of a meaningful greenium in the Indian market.

Establish a specialised Green Investment Platform—a secondary market infrastructure for green bonds—to remove the liquidity constraint preventing insurance companies and pension funds from participating meaningfully in the green bond market.

For Asset Managers and Financial Intermediaries

Implement investor education programmes for first-generation retail investors using vernacular-language and community-based delivery, balancing performance and ethical framing to reflect India's diverse motivational profiles.

Develop new ESG product categories—mid-cap ESG funds, thematic green infrastructure funds, and SIP-based green bonds—to address the current supply shortage and make sustainable investing accessible at smaller ticket sizes.

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