

GREEN FINANCING IN INDIA: REGULATORY ARCHITECTURE, MARKET DEVELOPMENT, AND CLIMATE TRANSITION

Dr. N. Nisha Devi

Assistant Professor, Government Law College, Chengalpattu, Tamilnadu, India

ABSTRACT

Green financing has emerged as one of the most important policy instruments through which developing economies can pursue climate mitigation, adaptation, and sustainable development without abandoning growth imperatives. In India, the case for green finance is especially compelling. The country faces a dual challenge: it must continue to industrialize, urbanize, and expand energy access while also responding to climate vulnerability and international decarbonization pressures. This Paper argues that India's green finance architecture is real but incomplete: the market has expanded in volume and regulatory sophistication, yet it remains far below the scale required to meet India's climate commitments and developmental needs.

The paper proceeds in five parts. First, it explains the concept of green finance and why it has acquired particular significance in India. Secondly, it reviews the scale of India's financing gap and the structural role of green capital in meeting climate and infrastructure goals. Thirdly, it analyzes the institutional and regulatory architecture, focusing on the Ministry of Finance, the Reserve Bank of India, and the Securities and Exchange Board of India. Fourthly, it surveys the principal instruments—especially green bonds, public finance, concessional finance, and emerging sovereign instruments. Finally, it identifies key impediments, including an underdeveloped bond market, information asymmetries, regulatory fragmentation, lack of taxonomy, and weak project pipelines. The paper concludes that India has laid the foundations of a green finance ecosystem, but its next phase must prioritize standardization, credibility, depth, and scale.

KEYWORDS: *Green Finance, Climate Finance, Green Bonds, Sovereign Green Bonds, Sustainable Finance, Climate Transition, Financial Regulation, Green Taxonomy, ESG Disclosure, India.*

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INTRODUCTION

Green finance is often described as the allocation of capital toward projects, assets, and activities that generate environmental benefits, especially in relation to climate mitigation, adaptation, pollution control, biodiversity conservation, and sustainable resource use. In legal and policy terms, however, green finance is more than a neutral funding category. It is a governance mechanism. It influences which sectors receive concessional capital, which firms gain reputational advantages, which infrastructures are prioritized by the state, and which disclosures become mandatory in capital markets. In that sense, green finance sits at the intersection of financial regulation, development policy, and environmental law.

In India, this intersection is particularly significant. The country's climate conversation has never been reducible to emissions reduction alone. India's position has consistently emphasized climate justice, differentiated responsibilities, energy access, and the right to development. Yet those principles do not diminish the need for large-scale climate investment; they make it more urgent. India needs financing not only for solar and wind generation, but also for urban transport, resilient infrastructure, water systems, industrial efficiency, distributed energy, and adaptation in vulnerable sectors. The legal and institutional challenge, therefore, is not whether India should mobilize green finance, but how to design a financing architecture consistent with both developmental sovereignty and climate responsibility.

By 2022, the scale of the challenge was already stark. Climate Policy Initiative estimated that India would require approximately INR 162.5 lakh crore (USD 2.5 trillion) between 2015 and 2030, or around INR 11 lakh crore (USD 170 billion) annually, to meet its existing Nationally Determined Contributions. Against that requirement, tracked green finance in 2019 and 2020 was only about INR 309 thousand crore (USD 44 billion) per year, roughly a quarter of estimated needs. That gap alone explains why green finance cannot be treated as a niche market segment; it is central to India's climate-development settlement.¹

This paper argues that India's green finance regime as reflects a pattern of gradual institutionalization. Early market experimentation—especially through corporate green bonds—was followed by sectoral guidance, disclosure norms, policy reports, and, by late 2022, the launch of a sovereign green bond framework. The architecture had become more sophisticated, but it remained fragmented. India had green finance activity without yet possessing a fully integrated green finance system. The next phase, therefore, required translating policy intent into a coherent regime of standards, pipelines, verification, and investor confidence.

WHY GREEN FINANCING MATTERS IN INDIA

The importance of green financing in India derives from three overlapping realities. First, India is highly vulnerable to climate impacts, including floods, droughts, cyclones, heat stress, and water insecurity. Secondly, its growth trajectory demands very large investments in energy, transport, housing, and industrial capacity. Thirdly, conventional financing channels—budgetary expenditure, ordinary bank lending, and fragmented project finance are insufficient to align these investments with climate goals. Green finance is therefore not merely a substitute label for existing finance; it is a tool for redirecting capital toward lower-carbon and more resilient pathways. The empirical picture confirms both progress and insufficiency. CPI's 2022 landscape report found that green finance flows in India had increased by **150 percent** from FY 2017–18 to FY 2019–20. Public sector flows rose by **179 percent**, while private sector flows rose by **130 percent**. Domestic sources continued to dominate, accounting for **87 percent and 83 percent** of tracked flows in FY 2019 and FY 2020 respectively. This shows that India's green finance story is driven primarily by domestic capital and public institutional support, not by a flood of international private climate capital. At the same time, the composition of green finance reveals structural imbalances. Finance for mitigation was concentrated in relatively mature sectors, especially clean energy and energy efficiency. Clean transport received significant public support, largely through mass rapid transit systems, while adaptation remained comparatively underfunded. CPI estimated adaptation finance at only **INR 37 thousand crore (USD 5 billion) annually** over FY 2019–20, with **94 percent** of that coming from domestic public budgets. This suggests that private finance has not yet meaningfully entered India's adaptation space, even though climate vulnerability makes adaptation central to the national interest.

¹Climate Policy Initiative, *Landscape of Green Finance in India 2022* (2022), <https://www.climatepolicyinitiative.org/publication/landscape-of-green-finance-in-india-2022/>. (last visited on ----)

India's policy discourse also reflects a broader strategic point: green finance is not just about "greening" finance, but about reducing the cost of capital for desirable sectors and increasing the credibility of environmental claims. In a developing economy, the problem is often less the absence of environmental ambition than the mismatch between long-gestation sustainable projects and short-tenor, risk-averse financial markets. This is why Indian discussions of green finance repeatedly emphasize concessional capital, blended finance, guarantees, public catalytic roles, and market-enabling regulation.²

EVOLUTION OF INDIA'S GREEN FINANCE ARCHITECTURE

India's modern green finance market is usually traced to the mid-2010s, when green bonds emerged as the most visible instrument for channeling private and quasi-public capital into environmentally beneficial projects. Sanjana Manaktala's study of India's green bond market identifies three early milestones: the first Indian green bond issuance in 2015, the issuance of SEBI's green bond guidelines in 2017, and the launch of a green bond trading platform in 2019. These developments established an initial market vocabulary, but they did not by themselves create depth or legal certainty.

The SEBI framework was significant because it moved green bonds in India from a purely voluntary reputational device toward a regulated securities product. Once disclosure requirements enter the capital market domain, "green" ceases to be only a marketing adjective and becomes a compliance category. That transition matters because investor confidence in green instruments depends on credible allocation, reporting, and use-of-proceeds structures. However, as early commentary on the Indian market noted, a legal framework for green debt is effective only if it is supported by monitoring standards, impact reporting, and mechanisms to reduce greenwashing.³

A parallel development occurred in the banking and prudential domain. In April 2022, the Reserve Bank of India announced that it would shortly publish a discussion paper on climate risk and sustainable finance. When the Discussion Paper was released on **July 27, 2022**, it marked a notable shift: climate concerns were no longer being treated solely as a capital-market disclosure issue, but as a matter of systemic financial stability and prudential governance. RBI proposed a broad framework under which regulated entities would address governance, strategy, risk management, disclosures, and the use of scenario analysis and stress testing in relation to climate risk.⁴

The RBI paper is important for at least three reasons. First, it situates climate change within the language of financial risk—physical risk, transition risk, collateral impairment, business model vulnerability, and systemic instability. Secondly, it nudges Indian financial institutions toward internationally recognizable disclosure frameworks, particularly those associated with the Task Force on Climate-related Financial Disclosures. Thirdly, it implicitly recognizes that sustainable finance cannot mature without supervisory attention to risk identification, data, and board-level governance. This moved the green finance conversation beyond project finance into the core of financial regulation.

A further step came with the Government of India's Framework for Sovereign Green Bonds, finalized in late 2022. This document was legally and symbolically consequential. It established the Government itself as a green bond issuer and clarified the eligible expenditure categories, governance arrangements, management of proceeds, and reporting commitments. The Framework identified expenditures relating to renewable energy, energy efficiency, clean

²*Id.*

³Sanjana Manaktala, *Green Bonds in Sustainable Finance: Exploring the Case of India* (Jan. 30, 2020), SSRN, available at <https://doi.org/10.2139/ssrn.3644116>. (last visited on ----)

⁴Reserve Bank of India, *Statement on Developmental and Regulatory Policies* (Apr. 8, 2022), <https://www.rbi.org.in/commonman/english/scripts/PressReleases.aspx?Id=3352>; (last visited on ---)

transportation, climate change adaptation, sustainable water and waste management, pollution prevention and control, green buildings, biodiversity conservation, and sustainable land use. It also created a Green Finance Working Committee, chaired by the Chief Economic Adviser, to oversee project selection and governance.⁵

The sovereign framework performed several functions at once. It signaled state commitment, expanded the range of investable public green assets, and linked India's financing effort to internationally legible standards by aligning with the **ICMA Green Bond Principles**. It also carried a demonstration effect: if the sovereign could create a credible framework, then state-owned enterprises, municipal entities, and private issuers might face lower interpretive uncertainty. In a market still struggling with taxonomy and scale, that signaling effect was legally valuable.⁶

By late 2022, SEBI also issued a fresh circular on green debt securities dated November 24, 2022. Even without rehearsing every operative detail here, the importance of the circular lies in the fact that green debt regulation was clearly moving toward greater standardization and specificity. The period between 2017 and late 2022 therefore reflects a movement from nascent issuance to a more deliberate regulatory architecture involving securities law, sovereign borrowing, and prudential consultation.⁷

INSTRUMENTS OF GREEN FINANCING IN INDIA

Green Bonds

Among all green finance instruments in India, green bonds have been the most visible and conceptually mature. Their appeal is straightforward: they enable issuers to raise debt earmarked for projects with environmental benefits, while allowing investors to participate in climate-aligned financing without abandoning familiar fixed-income structures. In the Indian context, green bonds have also served an agenda-setting function by introducing disclosure, certification, and use-of-proceeds debates into the financial mainstream.

Yet green bonds are not a magic solution. The Indian experience shows that labeled debt can emerge even where broader debt markets remain shallow. That is precisely why scholars and policy analysts caution against equating issuance events with market maturity. India's green bond market has been constrained by the same issues affecting the wider bond market: low liquidity, limited institutional investor participation, tenor mismatches, and uneven project pipelines. In other words, green bond growth depends on the strength of the underlying financial system.⁸

Public Finance and State Catalysis

Public finance remains indispensable to India's green transition. CPI's data shows that public sector flows played a major role in increasing aggregate green finance and that adaptation, in particular, remains overwhelmingly budget-funded. Public institutions can absorb early-stage risk, finance sectors with lower private returns but high social value, and crowd in private capital through guarantees, subordinated tranches, concessional lines, or viability-gap support. In a developing economy, the catalytic role of public finance is not a market distortion; it is often a precondition for market formation. This

⁵Framework for Sovereign Green Bonds, No. 4(3)-B(W&M)/2022, Ministry of Finance, Department of Economic Affairs, Government of India 10 (Nov. 9, 2022), available at https://dea.gov.in/files/inline-documents/Framework_for_Sovereign_Green_Bonds.pdf (last visited on ----)

⁶Id.,

⁷Securities & Exchange Board of India, Circular No. SEBI/HO/DDHS/DDHS_Div1/P/CIR/2022/158, Issue of Green Debt Securities by an Issuer Under Securities and Exchange Board of India (Issue and Listing of Municipal Debt Securities) Regulations, 2015 (Nov. 24, 2022), available at https://www.sebi.gov.in/legal/circulars/nov-2022/issue-of-green-debt-securities-by-an-issuer-under-securities-and-exchange-board-of-india-issue-and-listing-of-municipal-debt-securities-regulations-2015_65404.html (last visited on ----)

⁸Manaktala, *supra* note 4.

logic also explains the relevance of development finance institutions and multilateral support. The World Bank noted that one of its India development policy operations supported reforms aimed at launching India's first sovereign green bond, improving ESG disclosures, and developing carbon-market infrastructure. Such support matters less because of the absolute volume of funds than because it lowers policy-risk perceptions and helps align domestic reforms with global investor expectations.⁹

Bank Lending, Blended Finance and Transition Support

Conventional bank lending remains a major part of the Indian financing landscape, but it is not always well suited to climate-aligned infrastructure. ADB's analysis of green energy finance in India identifies several recurring obstacles: **short loan tenures, high capital costs, lack of adequate debt financing, limited budgetary resources, and difficulty mobilizing private capital**. These are not abstract market defects. They directly affect the viability of renewable energy, storage, distributed generation, and other green sectors that depend on long-duration, stable-cost financing.¹⁰

As a result, blended finance becomes increasingly attractive. By combining public, philanthropic, multilateral, and private capital, blended structures can improve bankability and make risk-adjusted returns more acceptable to commercial investors. India's future green finance market is therefore likely to involve not just stand-alone green bonds, but layered capital structures, credit enhancement, co-lending, and policy-backed sectoral platforms. The legal system's task is to ensure that such innovation does not sacrifice transparency or accountability.

Core Problems in the Indian Green Finance Ecosystem

The first major problem is **scale**. Even where green finance is growing, it remains too small relative to national requirements. A system in which tracked finance equals only about one-fourth of estimated needs cannot rely on incrementalism alone. Unless the cost of capital falls and investable green opportunities expand, India risks a persistent mismatch between climate ambition and financing capacity.¹¹

The second problem is **taxonomy and definitional uncertainty**. Without a common domestic understanding of what counts as "green," issuers, lenders, investors, and regulators may apply inconsistent standards. This creates room for greenwashing, raises transaction costs, and weakens cross-border credibility. Both CPI and commentary surrounding RBI's 2022 discussion paper highlighted the importance of a green taxonomy and stronger measurement, reporting, and verification systems.¹²

The third problem is **data asymmetry**. CPI expressly observed that reporting in India remains "anemic," especially in the private sector. Data scarcity does not merely frustrate researchers; it deters investors. Investors need reliable information about pipelines, project performance, environmental outcomes, and use of proceeds. A green market without credible data will always struggle to price risk and attract institutional capital at scale.¹³

⁹ World Bank, *Investing in Climate During Turbulent Times* (Sept. 7, 2022), <https://www.worldbank.org/en/news/feature/2022/09/07/world-bank-group-exceeds-new-climate-finance-target-31-7-billion-in-funding-for-climate-action>. (last visited on ----)

¹⁰ Gopal K. Sarangi, *Green Energy Finance in India: Challenges and Solutions*, ADBI Working Paper No. 863, Asian Development Bank Institute 15 (2018), <https://www.adb.org/publications/green-energy-finance-india-challenges-and-solutions> (last visited on ---)

¹¹ Climate Policy Initiative *Supra* note 2

¹² *Id.*,

¹³ *Id.*; Reserve Bank of India *Supra* note 5

The fourth problem is **sectoral concentration**. Capital tends to flow toward mature mitigation sectors such as utility-scale clean energy, while less mature sectors—including adaptation, distributed systems, and some forms of clean transport—receive less attention. This pattern is commercially understandable but normatively problematic. A green finance system that ignores adaptation in a climate-vulnerable country risks reproducing market bias under the language of sustainability.¹⁴

The fifth problem is the weakness of the underlying bond market and long-term financing structure. India's green bond market is constrained by the broader underdevelopment of domestic bond markets, along with concerns about regulatory uncertainty and green washing. Green labels cannot compensate for structural illiquidity, narrow investor bases, or weak municipal and sub-sovereign debt ecosystems.¹⁵

A REFORM AGENDA FOR INDIA

The first reform priority is a **credible national green taxonomy**. This should not be understood as a merely technical classification exercise. A taxonomy allocates legal meaning to the term “green,” shapes disclosure burdens, and reduces interpretive fragmentation across regulators and issuers. For India, the ideal taxonomy would be internationally legible but domestically tailored, recognizing the country's development needs and transition realities rather than mechanically importing foreign categories.

The second priority is **deeper integration across regulators**. Green finance in India currently touches the Ministry of Finance, RBI, SEBI, sectoral ministries, public financial institutions, and potentially state and municipal actors. Without coordination, issuers face overlapping or inconsistent expectations. With coordination, however, India could produce a more coherent ecosystem in which sovereign issuance, bank supervision, debt disclosure, and project-level reporting operate as mutually reinforcing parts of a single framework.

The third priority is **strengthening disclosure and verification**. Green instruments derive value from credibility. The more markets suspect greenwashing, the less pricing advantage a green label offers. SEBI's role is therefore central, because securities law can create enforceable disclosure norms; but prudential and banking regulators also matter, since climate exposure increasingly affects credit quality and systemic resilience. India's reform pathway should move toward standardized impact reporting, clearer review mechanisms, and better post-issuance transparency.

The fourth priority is **mobilizing private capital without withdrawing public responsibility**. India's green finance future cannot depend solely on sovereign and public-sector balance sheets. Yet public finance should not be prematurely displaced by the rhetoric of private mobilization. Public capital must remain catalytic, especially in sectors where returns are diffuse, risks are high, or developmental benefits exceed private payoffs. The proper question is not public versus private finance, but how public instruments can crowd in credible private investment while preserving distributional fairness and strategic autonomy.

The fifth priority is to broaden the market beyond large corporate issuers. India's green transition will require finance for cities, state-level infrastructure, MSMEs, transport entities, distribution utilities, adaptation projects, and community-level resilience measures. A green finance system concentrated only in top-tier corporate debt markets will remain too narrow for India's real needs. The next stage must therefore include municipal pathways, pooled structures, credit enhancement, and project preparation support for less traditional issuers.

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¹⁵Manaktala, *supra note 4*.

CONCLUSION

India had moved beyond conceptual endorsement and entered a stage of regulatory and institutional formation. The growth in tracked finance, the development of the corporate green bond market, RBI's climate-risk intervention, and the sovereign green bond framework all indicate that green finance has become a serious part of India's financial-policy architecture.

Yet seriousness is not the same as sufficiency. The core challenge remains the same: India's financing needs are vast, while current green flows remain limited, uneven, and heavily dependent on public support. The legal and policy task ahead is therefore to convert an emerging market into a trusted system—one grounded in taxonomy, disclosure, institutional coordination, and scale. If India succeeds, green finance can become a vehicle for climate action compatible with developmental justice. If it fails, green finance may remain a promising but partial layer atop an otherwise misaligned financial structure.

In that sense, green financing in India should not be understood as a passing market trend. It is part of a larger constitutional and developmental question: how a major developing democracy finances the future without surrendering either sustainability or growth. India had not fully answered that question—but it had unmistakably begun to build the institutions through which an answer might emerge.

