

A Study of Green Finance and Sustainable Management Growth in India

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Abstract

Green finance has gained strategic importance as both a mechanism for policy responses to climate change, environmental degradation and sustainable development challenges and as a mechanism for accessing funding for renewable energy and low carbon infrastructure and climate-resilient development in an Indian context. The increasing funding needs in India for renewable energy, low carbon infrastructure and climate-resilient development have resulted in increasing levels of adoption of green finance mechanisms over time. In this study, we use a secondary data research design to review the progress made toward developing green finance in India and highlight some of the challenges and opportunities for its further development to date. We examine and present a summary of the data and reports generated by relevant authorities, including the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Ministry of Finance, Climate bonds initiative, the World Bank and the International Energy Agency (IEA), related to the use of green finance as a mechanism that aligns economic growth with environmental sustainability. In India, where rapid industrialisation and urbanisation are placing stress on the environment due to the depletion of natural resources, green finance represents an important means for facilitating low carbon and climate-resilient development. Through a review of relevant contemporary literature, we identify how various forms of financial instruments, including green bonds, green credit and other types of sustainability-linked investments, assist with meeting global sustainable development goals (SDGs). We prescribe that, without supportive policies and regulatory frameworks; regulatory support; and greater participation of the private sector; there will be limited further development of green finance in India.

Keywords: Green Finance; Sustainable Finance; Green Bonds; Climate Change Financing; Sustainable Development Goals.

1. Introduction

Green Finance is a strategic approach to incorporate the financial sector in the transformation process towards low-carbon and resource-efficient economies, and in the context of the adaptation to the climate change

Green finance is instrumental in advancing India's sustainable development by allocating capital towards renewable energy, enhancing energy efficiency, and supporting clean transportation initiatives. To achieve

its net-zero emissions target by 2070, India requires an estimated annual investment of \$450 billion. Regulatory frameworks established by the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) are expediting these efforts. Green finance is defined as financial instruments specifically designed for the development, promotion, and sustained support of production activities that generate substantial positive environmental externalities. This financial innovation aims to address environmental protection requirements, foster a coordinated economic and social system, and contribute to resolving challenges such as greenhouse gas emissions and environmental pollution. Consequently, the conventional banking paradigm is adapting to incorporate the provision of environmentally responsible financial products. It is noteworthy that the internal environmental impact of the banking industry, encompassing resource consumption like water, paper, and electricity, is typically minimal. Instead, the more significant physical environmental effects are predominantly attributable to the activities of banks' customers rather than their direct operational processes.

2. Need for the Study

Regulatory Alignment and Risk Assessment: The increasing stringency of disclosure and risk reporting requirements imposed by regulatory bodies such as the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) necessitates an understanding of how businesses and financial institutions can align with these evolving regulatory frameworks and effectively address physical and transition risks.

This study holds particular relevance for financial professionals, business owners, and policymakers. It offers insights into the prevailing awareness and practical integration of green financial practices, thereby illuminating the discrepancy between conceptual understanding and operational application. This understanding, in turn, informs stakeholders about the imperative for enhanced training, robust regulatory frameworks, and targeted financial incentives to advance sustainable finance. **Promoting Sustainable Corporate Practices:** This study investigates how Environmental, Social, and Governance (ESG) criteria contribute to long-term business resilience and competitiveness.

Support for Small and Medium Enterprises (SMEs): This study identifies mechanisms through which environmentally responsible financing, facilitated by institutions such as SIDBI, can enable Indian SMEs to adopt sustainable, green technologies while maintaining market competitiveness.

3. Methodology

The methodology employed in this study primarily relies on the analysis of secondary data pertaining to global green financing research. This work endeavours to explore green finance initiatives within the context of a developing nation, specifically India. The imperative for green finance in facilitating environmentally sustainable business practices is widely acknowledged. Furthermore, in the context of rapid global population growth, green finance is deemed essential for fostering an ecologically viable environment capable of sustaining diverse life forms.

4. Review of Literature

Sharma et al. (2020) conducted a study examining the operational and strategic aspects of India's wind energy sector, specifically addressing its financing challenges. This research provides insights into how

green finance mechanisms can mitigate sector-specific obstacles and facilitate renewable energy deployment.

Reddy (2018) investigated the importance, requirements, and implications of green finance in India. This report specifically focused on its impact on the Indian economy and governmental activities within this domain.

Sarangi (2018) highlighted significant challenges in financing India's renewable energy sector. These challenges stem from characteristics inherent in India's broader financial system, such as short loan tenures, elevated capital costs, and a deficit of adequate debt financing. Furthermore, sectoral specificities, particularly technological requirements necessitating high capital expenditures alongside inherently low operational costs, complicate the procurement of necessary funding.

Jha and Bakhshi (2019) examined the role of green finance in economic growth by analyzing the redirection of funds from governmental, private, and non-profit sectors. Their study explored various green financing channels in India and proposed multiple solutions to overcome existing barriers to funding green market initiatives.

The analysis included leading financial institutions, specifically ICICI, HDFC, other prominent private sector banks, SBI, PNB, and Mumbai Public Sector banks, based on data from BBE and NSE Annual Reports (2012–2013). Observations indicated that public sector banks generally demonstrate greater activity than their private sector counterparts, reflecting a higher awareness of the Reserve Bank's latest initiatives to promote green financial products.

5. Green Finance in Sustainable Development and Future of green finance in India

With the government holding a brief for sustainable development, and businesses and investors finding themselves increasingly pressed to develop strong sustainability credentials, the Reserve Bank of India has set guidelines for banks and NBFCs to issue 'green deposits. The goal is that these funds will be channelled to support energy efficiency, clean transportation, climate change adaptation, water & waste management, green buildings, and conservation of terrestrial & aquatic biodiversity.

As the green finance landscape expands, so will the opportunities for novel financing solutions and investments in the green sector for India. In March, the Securities and Exchange Board of India (SEBI) introduced an ESG category of mutual funds. Asset management companies in India will be able to introduce more than one ESG fund, and better reporting of ESG parameters, will instil investor confidence through greater rigour and transparency. While the government will, and has in the past, introduce regulations that will push for greater green financing- be it tax incentives on low-carbon technologies or promotion of green finance instruments etc.- it's equally crucial for the private sector too to adopt internal carbon pricing and investments in green technologies.

Early days are yet to pass and, as and when the procedures develop, green finance and other such instruments of investment will gain more standardized definitions and measurement criteria. Increased visibility of performance, as well as impact assessment, will enhance comparability and choice of funds and companies. Intersection of technology (for emissions tracking), enhanced reporting, and better governance will help enhance and refine transparency around green credentials of companies and will

eventually alleviate fears of greenwashing. Better transparency, standardization, and education around key parameters, and their impact on financial returns are needed. India, as the world's third biggest CO₂ emitter, and as the most populated nation, is a party and also a beneficiary of this change.

Green finance may not be the sole answer to environmental and social issues, but its role in driving investment and raising awareness about sustainable practices and prompting companies to take more responsibility, will be crucial. Public-private partnerships, policy advocacy, government and academic collaboration are necessary to implement innovative green financing mechanisms, especially toward India's target of a net-zero economy by 2070.

a. Key Financial Mechanisms

Green Bonds represent a specific class of fixed-income instruments explicitly designated for the purpose of raising capital to fund projects with climate and environmental benefits. Notably, the Indian government has announced the issuance of sovereign Green Bonds as part of its market borrowing strategy for the fiscal year 2022-23. The capital mobilized through these instruments is intended to finance public sector initiatives aimed at reducing the carbon intensity of both the economy and the broader environment. Green Loans are specialized credit facilities structured to provide financing for projects that demonstrate verifiable environmental advantages, such as initiatives in sustainable agriculture or the retrofitting of existing infrastructure for enhanced energy efficiency. ESG Integration refers to the systematic process of incorporating Environmental, Social, and Governance factors into financial risk assessments, alongside conventional financial metrics.

b. Benefits

Green finance contributes to the financial industry by stimulating new product development, expanding financing opportunities across various industries and technologies, and advancing sophisticated risk management methodologies. Furthermore, it enhances the operational efficiency of emission trading markets. In terms of economic growth, green finance facilitates the development of novel technologies and promotes the expansion of ecologically sustainable industries. It also contributes to the design of more efficient trading schemes. Environmental improvement is directly supported by green finance through the promotion of environmentally beneficial industries and technologies, the active functioning of carbon markets, and the impetus it provides for stronger environmental legislation.

6. Challenges of Green Finance

A significant challenge is the lack of standardization in defining what constitutes a "green" investment. This heterogeneity impedes the robust evaluation and comparative analysis of different investment opportunities. Investor perceptions often categorize green technologies as inherently high-risk, a view that frequently results in a greater reliance on public funding mechanisms rather than private capital. India faces a substantial capital shortage, with an estimated investment requirement exceeding \$2.5 trillion by 2030 to achieve its climate objectives. Renewable energy projects, particularly in their nascent stages, are characterized by high upfront investment costs and elevated operational risks. A limited awareness among key stakeholders, including financial institutions and consumers, regarding the potential opportunities presented by green finance, remains a barrier. Regulatory barriers, encompassing inconsistent policies and a lack of effective incentives, frequently deter private sector participation in green finance initiatives

The energy sector, designated as a concurrent subject, faces challenges from regulatory barriers and policy uncertainties, manifesting in inconsistent implementation across states and various sectors. Additionally, financial institutions frequently exhibit limited expertise in Environmental, Social, and Governance (ESG) principles. The cost of financing for renewable energy projects also presents a significant disparity; for instance, a 100 MW solar photovoltaic (PV) project in India typically incurs financing rates between 10.0% and 11.5%, which is markedly higher than the approximately 2.8% observed in Germany and 5.3% in the United States. This situation contributes to a substantial finance deficit, as demonstrated by India's green bond issuances, which totalled USD 21 billion by 2023, remaining modest relative to its ambitious renewable energy target of approximately 500 GW by 2030.

a. Green finance products

Green financial products warrant focused attention and development across four primary categories: Retail Finance, Asset Management, Corporate Finance, and Insurance. Governments typically pursue several key objectives through green financing initiatives. These include establishing and securing funding for green industries and growth, supporting low-carbon green growth via the development of novel financial products, attracting private capital for the construction and maintenance of green infrastructure, enhancing corporate disclosure of green management practices, and extending financial support to organizations adopting such practices. Furthermore, a critical objective is to facilitate the establishment of markets for environmental goods and services, such as carbon markets featuring carbon credits.

7. Conclusion

Green finance represents more than a mechanism for environmental preservation; it constitutes a transformative approach critical for achieving sustainable development in India. Indeed, it serves as a cornerstone for the nation's transition towards a sustainable future. Achieving green growth necessitates a synergistic collaboration among various entities, including technology developers, financial institutions, governmental bodies, and consumers. Financial institutions, particularly banks, are not only tasked with direct investments in sustainable development but also with leveraging their indirect influence over investment and management decisions to guide businesses toward broader social and environmental objectives. The active collaboration among diverse stakeholders, including governmental entities, the private sector, and the international community, is indispensable for realizing the full potential of green finance. As India accelerates its transition to a sustainable future, green finance is poised to play a transformative role in reshaping the nation's economic and environmental landscape.

References

1. Dikau, S., Volz, U.: Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance (2020) 342 M. Biju et al.
2. Wang, Y., Zhi, Q.: The role of green finance in environmental protection: Two aspects of market mechanism and policies. In: CUE2016-Applied Energy Symposium and Forum 2016: Low carbon cities & urban energy systems (2016)
3. Urban, M.A., Wojcik, D.: Dirty banking: probing the gap in sustainable finance. *Sustainability* 11(6), 1745 (2019)

4. Chopra K., Kumar P. (2005): Ecosystems and Human WellBeing: Our Human Planet: Summary for Decision Makers. Millennium Ecosystem Assessment, Island Press, Washington D.C
5. Amidjaya, P.G., Widagdo, A.K.: Sustainability reporting in Indonesian listed banks: do corporate governance, ownership structure and digital banking matter? *J. Appl. Acc. Res.* 21(2), 231–247 (2019)
6. Dorry, S., Schulz, C.: Green financing, interrupted. Potential directions for sustainable finance in Luxembourg. *Local Environ.* 23(7), 717–733 (2018)
7. Zhang, D., Zhang, Z., Managi, S.: A bibliometric analysis on green finance: current status, development, and future directions. *Financ. Res. Lett.* 29, 425–430 (2019)
8. Ziolo, M., Filipiak, B.Z., Bak, I., Cheba, K.: How to Design more sustainable financial systems: the roles of environmental, social, and governance factors in the decision-making process. *Sustainability (Switzerland)* 11(20), 5604 (2019)
9. Naeem, M., Farid, S., Ferrer, R., Shahzad, S.J.: Comparative efficiency of green and conventional bonds pre- and during COVID-19: an asymmetric multifractal detrended fluctuation analysis. *Energy Policy* 153, 112285 (2021)
10. Fu, J., Ng, A.W.: Green finance reform and innovation for sustainable development of the greater bay area: towards an ecosystem for sustainability. In: *Sustainable Energy and Green Finance for a Low-Carbon Economy*, pp. 3–23 (2020)
11. International Finance Corporation: *Investing for Impact: Operating Principles for Impact Management*. International Finance Corporation, Washington, D.C (2019)
12. Climate Group (2010): *Climate Change and Finance in India: Banking on the Low Carbon Indian Economy*. Available at www.theclimategroup.org