

Green Finance and Banking Transformation: Driving Sustainable Growth in India

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Abstract

Green finance is gaining significance as one of the supporting measures for sustainable development, given the way in which it prioritises financial flows for environmentally sustainable projects. The banking sector in India is increasingly contributing to this shift, including through the issuance of green bonds, sustainable finance, and financing with an environmental, social and governance (ESG), as well as digital banking schemes. The study aims to explore Green Finance as an enabler of sustainable development and dissect the contribution of banking sector to India's green growth. Descriptive and analytical method adopted and secondary data collected from various published research studies, bank annual reports, RBI reports, SEBI publications and Climate Bonds Initiative report for the period 2017-2025. The results reveal a gradual shift in India towards green finance, as evidenced by the rising number of green bond issuances, regulatory support, and sustainable banking practices. In spite of this, it faces several obstacles in its development such as lack of uniformity in ESG reporting requirements, the risk of greenwashing, limited information on climate-related issues, high financing costs for green projects and variability in the adoption of ESG by financial institutions. The study highlights that robust policies, transparency and collaboration between regulators, banks, investors and businesses is critical for enhancing green finance and enable India's long-term sustainable development goals.

Keywords: Green Finance, Sustainable Banking, Green Bonds, ESG, India, Sustainable Development

Introduction

The global sustainable debt market has expanded at a fast pace, with trillions of dollars of debt issued over the past few years, according to Climate Bonds Initiative (2025). India is also one of the biggest markets for sustainable debt financing with a total of USD 55.9 billion in aligned green and sustainable debt issuance since 2014. As investors have become more interested in green bonds and other financial products focused on environmental, social and governance matters, sustainable finance has become increasingly important in achieving both climate and development objectives. The banking sector is one of the crucial players in the field of green finance in India. The financial performance of banks could be affected by the transition to a low carbon economy, and banks can contribute to the transition in a number of ways, such as by offering green loans, sustainable investment strategies, digital banking services, and climate risk management (Rodrigues Loiola et al., 2025). Both a number of banks and other banks have adopted paperless banking systems, green deposits, and even loans for energy efficiency, electric vehicles and renewable energy projects. Over time, public sector banks, private banks and specialised financial institutions have increasingly played a part in sustainable development financing. Environmental risks are now more than ever a risk to financial stability and banks are also incorporating environmental, social, and governance (ESG) parameters in their lending and investment decisions. According to the (Climate Bonds Initiative, 2025), the sustainable debt market has expanded globally to issue trillions of dollars of debt globally. India is also one of the largest emerging markets for sustainable finance financing with cumulative green/sustainable debt issuance projected to hit USD 55.9 billion by 2024. Investors' growing interest in green bonds and other ESG-influenced finance products highlights their growing role in achieving development and climate goals. Across the world, green finance is reshaping the banking system and drawing closer ties between quality, sustainable economic growth and green finance. The articles focus on the role banks green policies, technologies and products play in facilitating green economies and their ability to improve banks' own operations. On the macro level

(India), green finance has a substantial contribution towards the quality of finance structure, financial efficiency and environmental quality, which all support 'quality' sustainable growth, and fintech further contributes to this (Nenavath & Mishra, 2023). In this context, the study in the present paper aims to explore the role of green finance for sustainable development in India and to analyze how banking can help in sustainable finance and green growth. Secondary data has been used, which are sourced from RBI reports, SEBI publications, Climate Bonds Initiative reports, bank annual reports, government documents and published research articles. By reviewing recent policy initiatives, green financial instruments, and banking practices, the study provides a comprehensive understanding of the progress, opportunities, and challenges of green finance in India. The results will inform policy makers, financial institutions, researchers and investors in accelerating the country's sustainable financial system and economic and environmental development.

Green Finance: Overview

The raising of money to assist initiatives that promote environmental sustainability is known as Green Finance. "Green Finance is any structured financial activity, a product or service that's been created to ensure a better environmental outcome," according to the (World Economic Forum, 2020) Green finance's main goals are to increase energy efficiency, lower carbon emissions, and strengthen climate resilience. It includes a variety of financial instruments such as green bonds, insurance mechanisms, equity investments, and loans. Globally, green finance is viewed as a key factor in achieving the objectives outlined in the Paris Agreement. Green finance has been acknowledged as a major facilitator of the growth of renewable energy in India. As early as 2007, India began to prioritize green finance. Authorities have created the pre-guidelines for green finance. The nation's dedication to increasing its capacity for renewable energy is largely dependent on funding allocated to sustainable projects. India wants to produce 500 GW of renewable energy by 2030 and 175 GW by 2022, however reaching these targets will require significant capital expenditure. For sustainable energy projects to be funded, green finance regulations and tools are therefore essential.

Literature Review

1. The research by (Nisamudheen & Shareef, 2026) explored the role of green finance which it plays in driving sustainable development and renewable energy the growth of in India. The author have found that the country is making strides through various financial mechanisms such as green bonds, sustainable loans, and environmentally friendly investments in order to achieve a better energy future. It also emphasized that the policy support and active involvement of financial institutions will be necessary to achieve better environmental impact. Ultimately green finance can be a key enabler to balance the long-term environmental sustainability and economic development in developing nations like India.
2. According to the Report on Currency and Finance 2022–2023 of (RBI, 2022), the physical and transition risks arising from climate change may directly impact the financial institutions and reduce asset prices and increase NPA. Green bonds, sustainable lending and ESG disclosure are proving to be important tools that can help Indian banks head toward sustainability, the report adds. The article provided Green bonds, sustainable lending and ESG disclosures are becoming vital tools to drive the Indian banking sector towards sustainability.
3. According to (Soundarrajan & Vivek, 2016), green finance is critical in connecting environmental preservation and economic growth in India. The study suggests that sustainable development can be supported by financial institutions by encouraging low carbon projects, green lending and green investments. The rising importance of green financial products such as green bonds, green insurance and financing of industries for energy efficiency was also discussed. They added more that the growing economies such as India must build awareness, regulatory support, and technical innovation to be able to implement green finance techniques.
4. (Muchiri et al., 2025) carried out a systematic review to understand the global progress of green banking along with its benefits and limitations. A thematic analysis was used to analyse the 62 published studies that were retrieved from the Scopus and Web of Science databases. The results revealed that banks are implementing various practices to meet environmental objectives, including digital banking services, green financing, and sustainable investment strategies. This study identified some key barriers, including the lack of regulatory support, higher operational costs and concerns about greenwashing. The authors found that green banking is a potential success and can contribute to sustainable growth and long-term performance of financial institutions.
5. (Kumari et al., 2025) reviewed the previous studies to gain insights into the status of Indian banks' sustainability initiatives. The study, based on published research articles, suggests that banks are increasingly promoting green finance,

digital banking and activities related to ESG to advance SDG for sustainable development. The results also indicated that private banks are more active in the environmental programs as compared to the social welfare programs of public banks. But, the lack of reporting transparency and awareness remains a problem in the sustainable banking development in India.

6. The study of (Gulzar et al., 2024) examined impact of Green banking policies on green performance of banks. This research aims at the linkage between Green Banking and the sustainable outcome, which are secondary financial and sustainability data. The results emphasized the positive effects of various strategies, including the use of paperless banking, green financing, and sustainable investment regulations, on the environmental aspects and in achieving sustainability goals. The authors suggest that more awareness and regulatory support of green banking practices in the banks will be an important future step that will contribute to the promotion of green banking.

7. In the context of global financial and environmental crises, (Chen et al., 2022) explored the opportunities for green banking practices in sustainable development and economic recovery. The study showed the impact of green lending and sustainable finance on banking performance and environmental goals through financial and banking related data. Overall, the study revealed that the banks that were advertising green finance had reduced default risk and enhanced their financial stability over time. It also identified the potential of financial institutions in the green recovery by facilitating investments in a resource-efficient way and the transition towards sustainable businesses.

8. In seeking to understand whether green banking could help financial institutions to support a long-term sustainable economic recovery after the outbreak of COVID-19, (Chen et al., 2022) examined the possibility of green banking. The study analysed the impact of sustainable finance on bank performance for banks in the Gulf Cooperation Council (GCC) countries during the period 2011-2021. The findings showed that banks that took up the practice of green loans were less likely to default and had more financial returns. In addition, the study found that more small banks were more profitable on implementing green financing strategies. In general, they found that the green banking can help to achieve long-term environmental goals and contribute to financial stability.

9. The study by (Trivedi et al., 2025) on renewable energy finance explored the opportunities and challenges of financing clean energy projects in India. Descriptive-analytical methodology was used in the study based on secondary data from financial studies, policy reports and investment trends. The results revealed Green bonds, bank financing, government incentives, and public-private partnerships as the top four methods used to promote the development of renewable energy in India. The research also demonstrated that despite the challenges such as high capital investment, policy uncertainty and financing challenges, institutional investment and policy support have been driving investment in sustainable energy projects.

Theoretical Framework: Stakeholder's Theory

The idea holds that businesses create long-term value by balancing the needs and expectations of many stakeholders rather than focusing only on increasing revenues. Therefore, essential elements of business strategy include transparency, ethics, and social responsibility. The concept is that green finance will have banks and other financial institutions pushing for green conscious investments, when stakeholders demand ethical and sustainable finance practices. For instances, investors require transparency in ESG, governments promote green bonds and society expects companies to minimise environmental harm (R. Edward Freeman & John Mcvea, n.d.). This strategy focuses on sustainable financial solutions that can enhance the situation and society at large by companies. Companies that invest in renewable energy initiatives, carbon credit programs and green bonds, among others, are putting their money where their mouth is, thereby boosting their brand value and appealing to ethical investors. Governments and financial institutions can also fulfil their role as stakeholders through the enactment of laws and the provision of incentives to encourage sustainable investing.

Research Gap

Although several studies have discussed Green Finance, Sustainable Banking & ESG Practices but limited research has examined how green finance is transforming the Indian Banking Sector & Sustainable Development in a comprehensive manner. Most existing studies focus on individual financial instruments or policy initiatives rather than combined role of both green finance & banking institutions. Therefore, there's a need for an updated study that analyses recent developments, identifies key challenges & contribution of the banking sector towards sustainable growth.

Research Objectives

- To study the role of Green Finance in promoting Sustainable Development in India.
- To examine the contribution of the Banking sector toward Sustainable Finance and green growth.

Research Methodology

This is a descriptive, analytical and secondary data study. The data has been collected from government documents, research articles, RBI reports, SEBI publications and reports from Climate Bond Initiative and bank annual reports. The aim of this research is to analyze the development of green finance instruments and the contribution of banks in sustainable development in India (2017-2025). A trend analysis and descriptive interpretation approach was used to study the relation between green finance, banking practices and sustainable growth.

Table 1 : Growth of Green Finance in India

Year	Major Development	Approx. Amount Raised (in Cr.)
2017-2018	Initial corporate green bond issuances	₹667 cr.
2018-2019	Renewable energy financing expanded	₹1,000 + cr.
2020-2021	Municipal corporations entered green bond market	₹150 + cr.
2022-2023	Large renewable and infrastructure issuances increased	₹2,000 + cr.
2024-2025	Wider issuer participation and sovereign support	₹11,678.59 cr. cumulative

Source - Compiled by the Researcher using (Securities Exchange Board of India ESG Securities, 2026)

The Indian green bond market has seen phenomenal growth in the recent years. (Securities Exchange Board of India ESG Securities, 2026) data shows that the total value of ESG debt securities issued till March 2026 was almost ₹11,678.59 crore. The market in 2017 was limited to corporate issuances. It has grown slowly to include banking institutions, infrastructure companies, renewable energy companies and municipal corporations. The trend is growing as the financial products that are associated with sustainability are becoming acceptable in the capital market in India. The introduction of green bonds in India is not only because of the growth in terms of value of issuance. The market is also more diverse in terms of the issuer's point of view. As a growing market, the green bond is now growing with infrastructure companies, financial institutions and municipal corporations such as Indore, Ahmedabad, Vadodara and Prayagraj Nagar Nigam. This kind shows that sustainable financing is gaining wider acceptance in a number of economic areas. Banks are still in a key position for financing renewable energy in India. The financial institutions in the public sector and specially created institutions such as IREDA, Power Finance Corporation (PFC), and REC Limited, lend and give financial assistance for renewable energy infrastructure. There is also growing support for commercial banks and NBFCs to support ESG-based and climate-driven efforts.

Role of Banking Sector in Green Finance

Table 2: Banking Related Green Finance Tools

Instrument / Practice	Main Role for Sustainable Growth
Green loans / credit	lower NPLs, support eco-firms, Finance cleaner production
Green bonds	Channel capital to low-carbon projects, ease finance gap
Green Banks Program	Use public funds to crowd in private green investment

Source : Compiled by the Researcher

Banks are one of the key actors to support green industries and contribute to sustainable development. There is increased investment in the financial sector in low-carbon industries and the transition to cleaner modes of transport, as well as in sustainable infrastructure and renewable energy. The public sector banks like State Bank of India (SBI) have introduced green banking and sustainable finance initiatives. Private banks are also moving to paperless banking systems and using ESG-based financing techniques in an effort to improve their environmental performance. Climate-related issues can directly impact the stability of financial institutions, (RBI, 2022). This has resulted in a gradual adoption of ESG principles and climate risk assessment into banks' credit and investment decision-making.

Banks promote sustainability through:

- Green loans and sustainable funding, funding for green energy.
- Green deposits
- ESG-based investment decisions
- Paperless and Digital Banking initiatives
- Techniques for assessing the climate risk.

As a result, the banking industry has emerged as a key player in India's shift towards sustainable economic development.

Findings

Although the concept of 'green finance' is quite general, the concept of 'green' remains ambiguous and what is 'green' remains unclear. The Companies Act 2013 introduced green projects and sustainable development initiatives in the Act, making them obligatory through corporate social responsibility in India. Moreover, nearly 40% of all loans are dedicated to green energy and the Reserve Bank of India has taken efforts to recognise green finance as the priority lending under green initiatives. The Security Exchange Board of India has also made a name in this field in the span of 25 years with the issuance of green bonds that amount to \$7.15 billion. Green Banking is significant in India too. As an inevitable requirement, all banks have developed their own green banking policies for enhancing the market from the Corporate Social Responsibility and green marketing perspective. The key green banking programs that foster a greener economy are solar ATM, ICICI loan for electric and hybrid automobiles, long duration loans for solar power projects for big business houses and maximum loads in non-paper transactions by all banks. The results indicate that green money is slowly becoming a part of the financial landscape in India. Growing public awareness and policy support are indicated by the increase in green bonds and sustainable debt. But the use of green financing remains uneven. Larger firms and organisations tend to be more active, whilst smaller firms may find they lack the resources to be as active. Indian banks are falling behind those in developed economies, despite the fact that green banking is a proactive approach to future sustainability. There are chances for customers to embrace the potential that the bank's employees have generated, but it is challenging for banks to explain green. Banks in the public and commercial sectors have taken a variety of steps to reduce carbon emissions. Banks are aware of the difficulties in bringing green banking to the country (Prabhu, 2021). The findings align with international research indicating the positive impacts that green money has on sustainability outcomes. But the Indian scenario has pointed out the necessity of robust institutional assistance and clear policies.

Challenges in Green Finance

1. Lack of Standardised ESG Reporting

Different ESG disclosure practices are followed by different financial institutions which reduce transparency & comparability.

2. Concerns of Greenwashing

Projects are often promoted as environmentally sustainable without proper verification which creates concerns with respect to Greenwashing.

3. Limited Climate-Related Data

The effective decision making & sustainable investment planning is affected due to lack of reliable climate risk data.

4. High Cost of Green Projects

Smaller firms face difficulties in financing, since larger initial investment is required by many sustainable infrastructure projects.

5. Uneven Adoption Among Banks

Smaller institutions still face technological and financial limitations as compared to larger banks since they are proactive in green financing.

Policy Implications

I. Development of a Unified Green Finance Framework

A clear and standardised green finance framework should be established by the government and financial regulators to help banks, investors, and businesses. Consistency in green financing practices can be improved through a uniform structure which can reduce confusion in implementation.

II. Strengthening ESG Reporting and Climate Risk Assessment

ESG disclosure standards should improve by Banks and financial institutions & in their financial decision-making process climate-risk assessment must be included. Investor confidence can be increased through better transparency and reporting practices with responsible financing activities.

III. Through Incentives encouragement of Green Investments

For renewable energy, sustainable infrastructure & clean technology projects, policy support should be provided in the form of tax benefits, subsidies, and easier financing. Those small and medium-sized enterprises that often face financial limitations in adopting sustainable practices must get special attention.

IV. Through Strong Monitoring Reduction in Greenwashing

To ensure that green bonds and sustainable finance funds are used for environmentally responsible activities, there must be a regulatory bodies which should perform proper monitoring and verification systems. Accountability can improve stronger supervision & the risk of misleading sustainability claims can reduce.

V. Promoting Awareness and Capacity Building

Through awareness programs, training, and digital initiatives banks, businesses, and customers should be encouraged to adopt sustainable financial practices. India's long-term sustainability goals can strengthen by improved understanding of green finance with wider participation.

Conclusion

This study examined the role of green finance in promoting sustainable development in India and analysed the contribution of the banking sector towards sustainable finance and green growth. The study was done based on the secondary data collection obtained from the annual reports of RBI, SEBI publications, Climate Bonds Initiative reports, and published research which revealed that green finance has turned out to be an integral part of the financial system of India. Financial institutions are increasingly embracing environmentally friendly development through the growth of green bonds, sustainable lending, financing based on ESG principles and digital banking. The results indicate the important role of banks in financing renewable energy projects, promoting sustainable investment and practicing green banking. Meanwhile, the RBI and the Securities and Exchange Board of India (SEBI) have been supporting the growth of green finance in the country. The study also highlights a number of obstacles, such as the absence of harmonised ESG reporting requirements, greenwashing concerns, the scarcity of climate related data, cost of financing green projects and the disparity in the implementation of sustainable practices among financial institutions. The study finds that Green Finance has tremendous potential in the long-run in supporting India's economic growth in the context of environmental protection. To realize this potential, more policy support, more effective regulation, more transparency, and increased involvement from banks, businesses and investors are needed. With a coordinated environment amongst all stakeholders,

the green finance ecosystem can be further strengthened and a more sustainable, resilient and inclusive financial system built in India.

Limitations of the Study

For this study, secondary data have been used which were obtained from the government reports, publications of RBI and SEBI, research papers and public sources. Surveys and/or interviews as primary data collection tools were not utilized. It does not necessarily cover the entirety of sustainable finance, and is primarily a description of Indian banking industry and a few green finance products. Comparisons and analysis are hindered by the absence of comparable standards for ESG reporting, evolving practices in green finance, and the absence of long-term data. The study's descriptive and analytical methodology might not be able to establish a direct relationship between green finance and sustainable economic growth. Nevertheless, the report offers valuable insights into the potential role of green financing in helping India meet its sustainable development objectives despite these constraints.

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