Sustainable Finance in India: Trends, Challenges, and Development Prospects

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Abstract. Green finance Acts is a means to enable India's journey towards a sustainable and low carbon economy. It involves the investing of monies into green projects such as renewable energy, clean transportation and environmentally friendly infrastructure. The emergence of the green finance industry in India has also been gaining momentum with the growth of the weather obligation contracts under the umbrella of the world's agreements such as the Paris Agreement. The paper is directed towards the analysis of the current development trend, growth trend, problem areas and the opportunities in the Indian context in green finance. The study has been conducted on the basis of pure secondary research and the sources used have been the reports published by RBI, SEBI, etc., consulting firms like Deloitte and McKinsey. The authors will examine the development of the green financial instruments, such as green bonds or green funds based on ESG, using the trend analysis, which will analyze the development of these financial instruments within the years of 2015 to 2025. It also uses SWOT analysis to explore the factors impacting the external and internal environment of green finance ecosystem in India. The lessons indicate that the support of the principal policy and the increasing interest of the investors are not devoid of difficulties arising from the following: poor awareness, regulatory laxity and lack of green investment provision. The article provides Realistic recommendations and deliberations to project an image of the policymakers, investors and financial bodies to change the frame of green finance in India and reorient it towards long-term viable goals.

Keywords: Green Finance, ESG, Sustainable Investment, Trend Analysis, SWOT, Green Bonds, RBI, SEBI, Secondary Data

1. Introduction

Global scale: Green finance is a wide-ranging term that defines the mobilization of popular, non-public and alternative finance into encouraging climate change reduction (e.g. renewable energy, energy efficiency) and adaptation (e.g. disaster resilience, water conservation) and overall environmental objectives like biodiversity and resource preservation. Green finance in India: The term of green finance in India is characterized in the report of green finance in India 2024 landscape as to include climate finance and all other sustainability investments. It includes funds for mitigation and adaptation in

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clean energy, sustainable transport, energy efficiency in buildings, adapting on-farm, flood and cyclone resiliency and many more. There is a need for far greater investment in India to achieve its climate targets. The funds provided for mitigation of emissions in FY 202122 of 3.712 bn (~USD 50 bn) represent a 20% increase over the 3.712 bn (~USD 50 bn) provided in FY 201910 – and this is only around 30 percent of the climate finance India NDCs need. Unless radical measures are taken, the global average temperature may increase to around 3.0 degrees Celsius by 2070 which could cost the country as much as INR2,607 trillion (around USD35 trillion) in lost GDP potential, which in turn require adaptive investments to mitigate such risk. According to the Reserve Bank of India, the green finance flow needs to be at least 2.5 per cent of GDP per year by 2030 so that resources required for the infrastructure and transition projects can be met.

2. Literature Review

International financial system was at its knees with the impact of the global financial crisis (2007). The current trends in the conventional finance to the tendency towards concentrated earnings in a tangible sense were revealed by the financial crisis. The resultant impact was a lack of confidence of the public institutions on the lending financial institutions (Moranoet al. 2020). The lending financial institutions began adopting new strategies to gain investors' trust. Interest in the public in the field of finance in green investment, socially responsible investment and social impact investment is gaining more and more traction (Moranoet al. 2020; Rizzello et al. 2016; Sibanda 2013). The interaction between other climatic change risks and the global financial crisis was shown to occur by the twofold exposure model (Leichenko et al. 2009). By doing so, sustainability and climate change have become the focus of the global concern (Zhang et al. 2019). Therefore, green finance plays a vital role as it is the first concerted attempt at which every financial sector tries to correlate the success in finance with positive impacts on the environment. It appears to be one of the obvious signs that the economic system has already started to adjust to the challenge that the environment in general poses (Berrou et al., 2019). Since the arrival of UN 2030 agenda in 2015, Sustainable Development Goals (SDGs) are the most important issue of the countries that are members of the UN. The implementation of activities needs to be performed using significant financial resources in order to achieve SDGs (Pizzi et al. 2021). In the latest case, the new terminology is that of ESG finance, which is hot and currently under study by researchers such as Gillan et al. (2021) and Giese et al. (2019). The ESG paradigm (Environmental, Social and Governance) can be thought of as a logical extension of the previous paradigms because it groups the non-financial factors and quantifies them. It applies an even higher level of inclusionary screening to an even higher level of integration of measurable ecological signs (such as carbon emissions, water use), social signs (such as labour relations, community impact) and governance signs (such as board diversity, shareholder rights) within the framework of fundamental fiscal examination and risk treatment. The transformation, as reflected by the sources, is a major milestone in this particular field and is not just an ethical choice but also a practical one that has an immediate effect on the value of the firm, its risk indicators and financial performance in the long-term. The words sustainable finance, SRI, and ESG finance, validate the unity of the vision that the financial sphere also has a strong mission and toolkit to address the world's biggest problems. Green finance is a key tool for achieving sustainable development and environmental protection and responsible investment. The critical opportunity for green finance to promote financial inclusion, financial innovation and environmental quality has been emphasised in previous studies (Ahmad et al., 2022). It has also been found that financial institutions are challenged to implement green financing initiatives and supportive regulatory framework (Amran et al., 2018). The increasing significance of green financial instruments, particularly green bonds, has been well recognised in the context of facilitating investments into environmentally sustainable projects (ESPs) (Berrou et al., 2019; Ehlers & Packer, 2017). Ethical investment practices are proven to play a positive role in the value creation and risk management of the organization (Chami et al., 2002), and financing of renewable energy and financial development have been shown to have significant impacts on economic growth and carbon emission reduction (Charfeddine & Kahia, 2019). Furthermore, the role of government in spurring the development of green finance initiatives has been highlighted as an important enabler (Fedorova, 2020), and socially responsible investment funds have been a growing area of interest for their positive social and environmental effects (Diener & Habisch, 2022). The COVID-19 crisis also brought to light the fragilities and dynamics of green financial markets, which in turn underscored the importance of resilient and sustainable investments (Ghosh et al., 2022).

3. Scope of the Study

The paper represents a critical analysis of the development, current scenario and future status of green financial instruments in India and a detailed analysis of the secondary sources published between 2015-25. The scope is well-conceptualized to provide a comprehensive idea of how the market has grown from its infancy to the stage it is at today and has become an integral part of the Indian financial market. The time-based focus, which begins in 2015, is not arbitrary; this is the time when the events in the world and in the country that have led to the green finance agenda occurred. The Paris Agreement in 2015 was an international climate action commitment and in India the government made tremendous strides in the international arena with its big climate actions such as its bold Nationally Determined Contributions (NDCs) and the establishment of the International Solar Alliance. The final year of 2025 will allow for a decade long review of the achievement, as well as the evolution of policies, reaction of the market and the new issues that will mark the next phase of the process.

4.Significance of the Study

The relevance of the present research which elaborates a comprehensive review and SWOT analysis of the scenario of green finance in India for the period of 2015-2025 is profound and multi-layered as it addresses the need of the hour, both national, economic and global, at large. The interesting part is that it might actually serve as a strategic front to attack the bold, but complex, journey towards a successful economy that India is taking. As India moves towards greater heights as a 5 trillion economy, while at the same time, it is facing threats from climate change, both as extreme weather events affect Indian agriculture and the risks posed by sea level rise posing threats to Indian cities, India's transition to a low carbon and climatic resilient development model is not a luxury but a necessity of life. This transition, which requires massive investment in renewable energy generation (500 GW up to 2030), in infrastructure equipped to withstand climate change and in new ways of doing things in energy-intensive sectors, represents a scale of investment in the trillions of dollars over the coming decades. The domestic resources are too small to achieve this task and, therefore, private financing is a critical element in the Indian climate goals through the use of innovative green finance tools. This research therefore allocates a prominent role to the systematic evaluation of the financial plumbing – the very processes, green bonds, ESG funds and sustainable loans – that if developed will be able to support the country's ecological and economic goals.

5. Objectives

• To examine the achievements in the green financial instruments in India (green bonds, green ESG mutual funds, sustainable loans) the year 2015-2025.

• To offer suggestions and ideas on how to empower the green finance framework in India to the stakeholders- policymakers, investors and institutions.

6. Research Methodology

6.1 Research Design

The present research study will be a quantitative research design, one of the descriptive research designs, with secondary data only being used. The aim is to identify, examine and explore the available/ existing information and literature to identify the trends and challenges/opportunities of green finance in India.

6.2 Data Collection

Secondary data Data sources: Reporting and databases of: The Reserve Bank of India (RBI) is the central bank of India. The securities exchange board of India is the board of the securities exchange in India. • Finance Ministry even UNDP, IMF, World Bank -

international organisations. Consulting services like Deloitte, McKinsey and CPI are used. – periodicals, newspapers, academic papers.

6.3 Time frame of study

It is analysed in this report, which presents 10 years of the green finance history in India in relation to the change in the policy, bond issuance, expansion of ESG funds and infrastructure investment. To create a simple website, you will need the following tools and techniques: 1. Trend Analysis: used in the study of the annual variation and the amount of green financial instruments, including: • Green Bonds • Mutual Funds-ESG The program can also be put in place through community-based projects, focusing on climate financing of infrastructure. Charts, graphs and tabular form is used to present and show trends.

7. Data Analysis & Interpretation

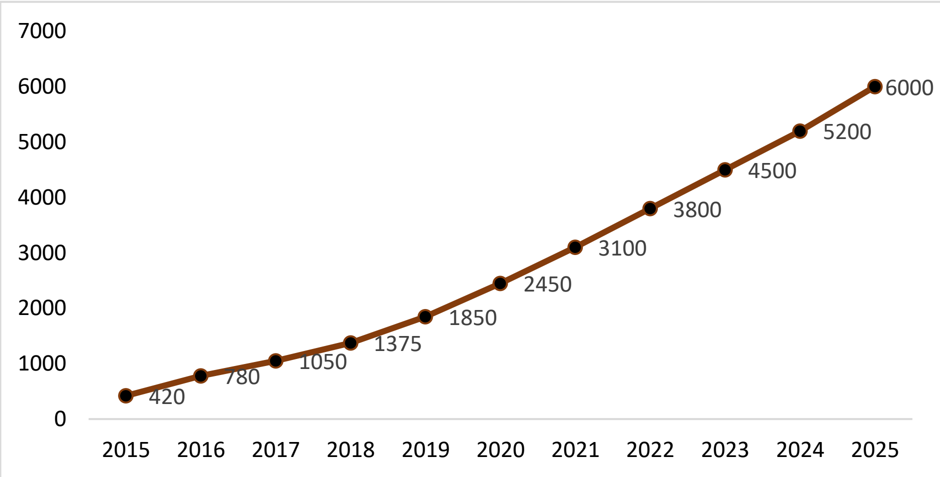

Figure 1. Green Bonds Issued in India From 2015-2025

Entire view of line graph indicating the issuance of green bonds in India 2015-2025 indicates that the mobilization of capital in the environmentally friendly projects has been continually growing. It is evident that the market is still in its infancy, as green bond issues began slowly in 2015 with a total of Rs. 420 crore. The years 2016:2020: During this time frame, the policy initiatives of the Indian country are not developed well and the global obligation towards the climate has been denied. The its has seen a significant rise in the number of new green bond issuances since 2020, with new issuances in 2021 rising by 3100 crores, which is expected to continue to rise to 6000 crores in 2025. It is in tandem with the increase of Net Zero commitment by India by

2070, green ESG policies in India and the establishment of green finance as a priority sector lending program by te RBI.

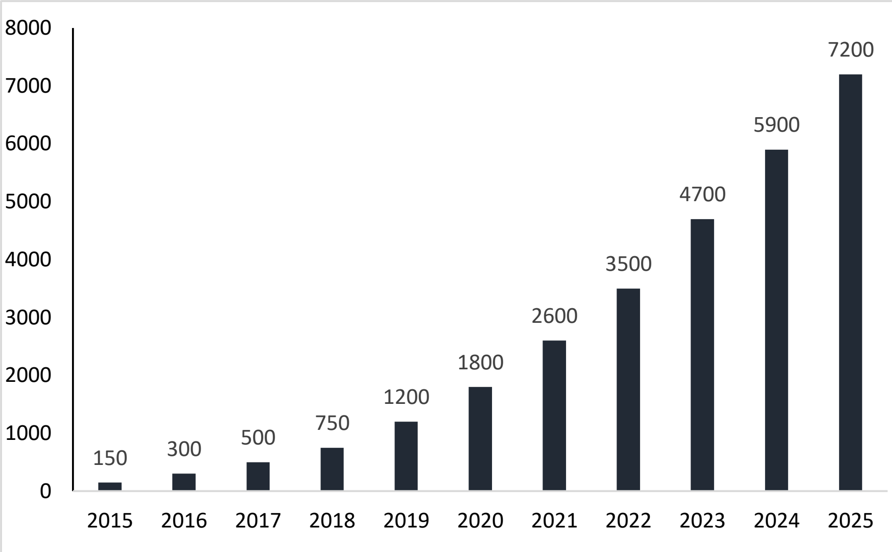

Figure 2. AUM growth of ESG mutual funds in India.

The bar graph depicting the AUM of ESG mutual funds from the year 2015 to 2025 shows that the amount invested by the investors or the money already invested by the investors in the ESG compliant investment products is skyrocketing. Examples The new ESG funds that have been established have starting AUM of from 150 to 200 crores and only in the past year or two has the AUM of ESG funds reached over 1,800 crores. The growth in 2020 onwards has been steered with high growth rate AUM doubles in every 2 years to conclude with the projection of AUM of 7,200 crores by 2025. The new ESG disclosure guidelines by SEBI, increase in the contribution of the retail investors and change in the institutional portfolios in regard to ESG consideration have boosted this.

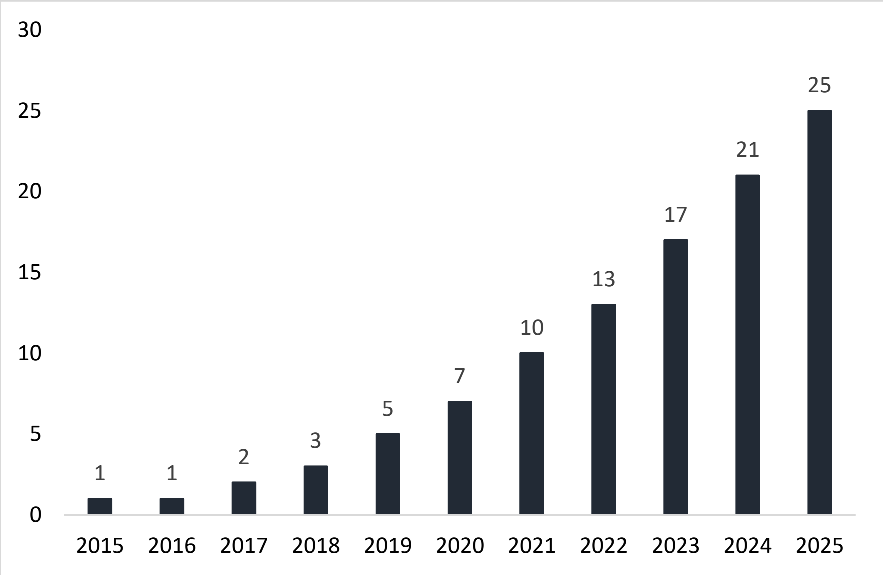

Figure 3. Number of ESG mutual funds over the years.

As per the column graph depicting the number of ESG mutual funds from 2015 to 2025, the interest in ESG investing in India is fairly growing with a substantial number of funds and a robust diversity. This is because it had one ESG mutual fund in the Indian market in 2015. This as a signifier of the fact that sustainable investment was still in its early stages. This number has not been high until 2017 but since 2018, the number has started to increase gradually. The ESG number of funds is now 7, making it possible to talk about the first regulatory push and interest from investors. The trend of steep increase is the most noticeable trend from 2021 to 2025 where the value is increasing by a range of 15 to 25, indicating that the PESG principles are becoming a major stream activity in the asset management sector.

8. Findings

The green finance analysis in India indicates a financial sector that has undergone a deep-seated and structural transformation, whose growth is robust, sustained and non-linear, with no sign yet to be seen of this force slowing down sooner or later indicating a clear-cut shift in niche concept towards a mainstream economic need. This trend is best depicted by the fact that the debt capital markets have surged, in terms of green bonds being issued at an unprecedented rate with the volume of green bonds likely to be 6,000 crores compared to 420 crores in 2015. This massive volume of green bond issuances is not just a numbers game, but a strong indicator of market confidence in the financial sustainability of green assets, a confidence that is strongly linked to the confidence shown in government policies and action by the big regulating bodies such as Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI). This investor confidence has played a vital role in enabling the capital markets of India to have a complete footing and strategise well with the ambitious international climate commitments of the country which includes the commitment to net-zero emissions by 2070. As with the revolution in the debt market, the equity side of the investment universe has seen a similarly spectacular, although less dramatic, growth, with the number of Assets Under Management (AUM) of equity ESG mutual funds growing from a mere ₹150 crores in 2015 to a jaw-dropping ₹7,200 crores now. 9.

9. Challenges & Opportunities

India's green finance ecosystem is facing a tough patch in the policy and market terrain with an incredible promotion of policies and market construction with major threats which are challenging the entire potential of the green finance ecosystem. Investor awareness and education is one of the biggest challenges, given that, in most cases, retail investors do not possess a well-developed and sophisticated understanding of the concepts of ESG and how green financial products work, and, for this reason, they are reluctant to participate and are generally interested. The lack of a national framework, which is heavily exacerbating this confusion, takes the form of the absence of clear definition and coherence in the approach of various agencies towards the rating of ESG, and this is the reason why the labyrinth of scores and conflicting scores has been formed, which is eroding the comparability and, ultimately, the investor's confidence. Worsening the situation is a green finance taxonomy that is unsuitable and in the state of perpetual evolution, with the inappropriateness of what is considered a green activity potentially resulting in the misplaced capital and fragmentation of the market. Moreover, the pipeline of bankable, certified green projects is small especially outside the renewable energy sector and poses a bottleneck in supply-side that slows the mobilization of the very capital that the system is supposed to mobilize. The risk of 'greenwashing' of the environmental benefits of a financial product or corporate action, which undermines integrity and can lead to the rejection of genuine sustainable investment, may be the biggest threat to the integrity of the market. Finally, the industry is already greatly lacking in inclusivity as today green finance is very concentrated and is only available to big corporations to negotiate, while Micro, Small and Medium Enterprises (MSMEs) are the ones driving the economic prosperity in India today and are often left out in the cold, unable to participate in the building of a change that would see the Indian economy change drastically.

10. Conclusion

The Indian financial ecosystem is in a revolution and is becoming sustainable, as can be seen from the green finance trends in India during the time period of 2015-2025.

Interesting facts: Green finance becomes, due to the increasing climatic concerns, more environmentally conscious and as a consequence of the regulators and pressure put on by the international investors. The rising demand for green investments is reflected in the growing number of green bonds and assets under ESG mutual funds. Significant to this area has been such regulatory policies as SEBI and RBI which have introduced supporting policies that have helped include the green financing in the default financial instrument. But, on the one hand, the good news, the situation in India remains the disturbing tendency in relation to green finance. They include lack of awareness among the retail investors, lack of a conventional structure to assess ESG and low availability of MSMEs to sustainable finance. In addition to this, it is a huge problem of greenwashing and inconsistently operative, which becomes a major problem in the credibility and functioning of the ecosystem.

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