



Green finance in India: Trends and challenges

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Abstract

The most significant political and economic issue of this century and the next is climate change. Globally, governments, corporations, investors, and private citizens have begun to address climate issues, particularly with regard to climate policy strategies. To support initiatives which it reduce GHG emissions and help businesses adapt to the effects of climate change, a low-carbon economy would require extraordinary levels of new capital investment, particularly in the form of green financing. It is crucial in tying the financial system, environmental growth, and economic growth together. Both public and private sector entities make contributions to green finance initiatives. Sustainable finance, which encompasses "green finance," "climate finance," and "low-carbon finance," refers to the use of funds for projects that are significant from a social, economic, and environmental standpoint. In order to achieve "low carbon, green growth," green finance is essential. It is crucial in establishing connections between the financial sector, environmental enhancement, and economic growth. For the Indian economy, funding such environmentally significant projects has always been difficult, particularly the funding needed to achieve the production of 175 gigawatts of renewable energy by 2022. The financing of renewable energy projects in India has always been hampered by issues like high capital costs, insufficient debt financing, and short loan maturities.

Keywords: Green finance, green bonds, environmentally sustainable, climate change

Introduction

Financial investments in projects with economic, social, and environmental value that support a more sustainable economy are referred to as "green finance." It refers to any organized financial activity, whether it be a service or product, that is developed to guarantee a better environmental outcome. It includes an array of loans, debt mechanisms and investments that are used to encourage the development of green projects or minimize the impact of regular projects on the climate or a combination of both. Green finance is a loan or investment that promotes environmentally-positive activities, such as the purchase of ecologically-friendly goods and services or the construction of green infrastructure.

Climate change acts as a great threat to the environment; mainly due to the excessive usage of fossil fuels. If the usage of fossil fuels continues at the existing level, the temperature of our planet is likely to increase by 4 to 6 degree Celsius above the pre-industrial level (pre-industrial level refers to the time period before the industrial revolution started which can be taken as the 19th century when the signals of climate change started appearing); which will prove detrimental to the human health, food production, and can even threaten the survival of some communities and the biodiversity at large. Many governments have started to be cautious of this issue and have agreed to abide by and follow the path of Sustainable Development Goals (SDGs) and the Paris Agreement (adopted in 2015) which states that the global warming should be well below 2 degree Celsius and the countries should pursue efforts to limit the increase to 1.5 degree Celsius, compared to pre-industrial levels.

Green Finance Initiatives in India

On December 1, 2015, the Indian government signed the International Solar Alliance (ISA) with France, marking the first strategic move in this direction. The ISA's goal was to

address climate concerns by implementing global collaboration in this area. Given the increased demand for energy brought on by rapid industrialization, urbanization, and high economic growth, financing green projects becomes even more important for developing nations like India. To scale up the necessary funding for such rising consumption and production, the nation also introduced initiatives like "Make in India" and other Smart City Projects. India is expected to witness an addition of 600 million consumers of electricity by 2040, which will lead to a profound increase in the electricity demand (International Energy Agency, IEA 2015). At present, the government of India is primarily dependent on debt funds for financing such green and renewable energy projects. According to the report of 'Task Force for Creating National Infrastructure Pipeline', India is projected to require infrastructure funding of \$4.5 trillion by 2040 mainly for green housing, electric vehicles, and for achieving national renewable energy targets.

Challenges for Indian Economy

A major problem that has always existed in the Indian economy is the high cost of debt. This, coupled with the short tenure of loans, makes investing in green projects a less lucrative option for the investors.

A second issue that persists is the disclosure requirement for the issuance of green bonds. Securities and Exchange Board of India (SEBI) lists down disclosure requirements for offer document and does not state anything in particular. It just states that the annual reports shall include 'a brief description of such project(s) and/or asset(s) disbursed' (SEBI, 2017, p3). Looking at the future viability of such projects, these projects require a large amount of funding from various stakeholders and thus they require a properly sketched out report, rather than just a uni-dimensional summary.

Four key elements of green financing are listed by the Global Business Practices (GBP) as guidelines for bond issuers: the process for project evaluation and selection, the use of proceeds, the management of proceeds, and reporting. They require a proper and thorough explanation of the entire procedure in a way that complies with the law. On the other hand, SEBI only requires issuers to briefly disclose how funds are being used, which causes investors to question the legitimacy of green projects in our nation.

Review of Literature

Kaur (2024) ^[7] discusses the role of Indian banks and organizations of public and private sector in implementation of green finance. The various obstacles faced in green financing-Investor's ignorance, market risk faced by financial instruments, expense of debt financing and offers various suggestions to overcome these obstacles. This review shows the relation between climate change and risk management and effect of environmental factors on financial decision making. This study also discusses how investors accept low returns in exchange for getting advantage of environment protection.

Rathod and Thobhani (2023) ^[12] analyze the recent trends and the future prospects of development of green finance in India. The study discusses various sources of green finance called green finance instruments such as green bonds, green banks, carbon financing. The researchers emphasised the need to make people aware about the importance of green financing.

Ansari and Anand (2022) ^[11] are of the view that financing of environment friendly projects has been a challenging task for an Indian economy especially financing the production of renewable energy. The study discusses various initiatives taken- Ministry of New and renewable energy is formed. In the dimension of Renewable Energy financing-accelerated depreciation, viability gap funding and Generation based initiative, Priority sector lending recognition for green financing projects. Green banks, Green loans, soft loans from IREDA. The study also highlighting the challenges-high cost of debt, disclosure requirements, lack of framework, green washing.

Sushma (2021) studies different aspects of Green Banking, Green Insurance, and Green Bonds as a part of Green Financing. The study also evaluates the opportunities and challenges for Green Finance in developing countries like India and attempts to give new insight about Green Finance as an effective tool of Sustainability. The researcher emphasized the need for proper regulatory framework to evaluate the green projects and to ensure that investors are not cheated in the label of green. India being a developing country should concentrate on renewable energy generation, protecting natural resources, efficient energy management, climate adoption, and other ecological issues with the help of green financing. The researcher is hopeful that Green finance if properly managed can work as an effective tool for sustainable development.

Ranjan, Abhishek (2021) ^[11] identifies the best practices followed across the globe for green finance promotion-International best practices, as climate change is and agenda at G20. The focus has been on Circular Carbon Economy to deal with harmful emissions, to promote funding for sustainable development across the globe, directed and concessional lending, micro and macro prudential regulations for financial and non-financial institutions.

Public policy in India initiatives include-Green lending, Green bonds and improvement in general awareness.

Jha and Bakhshi (2019) ^[5] study the green financing initiatives by public and private sector banks and non-banking institutions. Commitments made by different institutions for renewable energy projects were reviewed. Challenges associated with green financing have been discussed.

Soundarrajan and Nagarajan (2016) study the concept of green finance and its validity as feasible in the Indian industries for balancing the ecological depreciation due to the assimilation of carbon gases in atmosphere. Green Finance is a market-based investing or lending program that factors environmental impact into risk assessment, or utilizing environmental incentives to drive business decisions. The study discusses the recent trends and the future opportunities and challenges in green finance in the emerging India. Green investing recognizes the value of the environment and its natural capital and also seeks to improve the human well-being and social equity while reducing environmental risks and improving the ecological integrity.

Objectives of the Study

1. To understand the concept of Green Finance.
2. To know about the trends and challenges of Green Finance in India.

Research Methodology

This study is descriptive research in nature and based on secondary data which have been derived from various books, websites and journals.

Rationale of Green Financing

Green finance delivers economic and environmental advantages to everybody. It broadens access to environmentally-friendly goods and services for individuals and enterprises, equalizing the transition to a low carbon society, resulting in more socially inclusive growth. This results in a 'great green multiplier' effect in which both the economy and the environment gain, making it a win-win situation for everyone.

Green Finance ensure economic development: The green finance bridges the gap of conventional financial system, where profitable projects are financed. This investment option is although less profitable but it contributes in the growth of economy in alignment with the protection of the environment. Green projects utilize alternative sources of energy and technology. It will conserve the natural resources and hence promote economic development.

Green Finance and Innovation: The most beneficial effect of sustainable finance is as it increases the innovation potential of different enterprises by switching to green or eco-friendly production which helps in sustainable development of an economy and take good care of the organization's financial objectives. Research and development take place considering the environmental factors and long term benefits for an organization and economy.

Wider Technology Diffusion: Investment in eco-friendly technology like clean energy will bring down its costs and

will ensure its wider diffusion. The country can leap ahead in terms of eco-efficient infrastructure which will ensure better management of resources and increase its competitiveness at the global level.

Increases value of an entity: Green finance adds value to the portfolio of businesses, organizations, and corporations by publicizing their involvement in green finance. Green projects attract environment friendly investors and clients towards the organization.

Trends and Challenges in Green Finance

As early as 2007, India began concentrating on green finance. The broad policy framework for reducing the effects of climate change was developed in 2008 with the creation of the National Action Plan on Climate Change (NAPCC). The Ministry of Finance established the Climate Change Finance Unit (CCFU) in 2011 to serve as a coordinating body for the different organizations in charge of green finance in India. These investments have improved the environment and slowed down climate change. The Reserve Bank has also been taking various policy measures to promote green financing. RBI included the small renewable energy sector under its Priority Sector Lending (PSL) scheme in 2015. Under this scheme, firms in renewable energy sector are eligible for loans upto Rs.30 crore while the households are eligible for loans up to Rs. 10 lakhs for investing into renewable energy. In September 2019, India announced a target to reach 450 GW of renewable energy generation by 2030. Green finance has increased by 150% from 2017-18 to 2019-20.

The government has started a number of initiatives to boost funding for energy efficiency, clean energy, and clean transportation. The Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSUM) scheme is one such program that was introduced in 2019 and encourages solar energy in the agricultural sector, improving energy security and giving farmers more sources of income. The program subsidizes the installation of solar powered water pumps, converting existing grid connected pumps to solar, and the setting up of small solar power plants (up to 2 MW) on farms. Launched in 2014 and extended until 2026 (MNRE 2023), the Scheme for Development of Solar Parks and Ultra Mega Solar Power Projects aimed to add 40 GW (MNRE 2024) of solar capacity. In the Budget 2024-25, the government announced a slew of measures for the promotion of renewable energy, including initiatives such as the PM Surya Ghar Muft Bijli Yojana for promoting solar rooftop energy for households.

In India, many public sector and private sector banks have started funding for the renewable energy projects. Bank of Baroda and Canara Bank have launched schemes for Small Medium Enterprises for purchase of equipment and services for promoting energy conservation. SBI has launched Green Home Loan scheme to support environment friendly residential projects. The scheme offers concessions in interest rates and zero processing fees for projects rated by Indian Green Building Council. The SBI also uses wind mill energy for its offices in Tamil Nadu, Gujarat, and Maharashtra. Yes, bank identifies Green Bonds for improving India as a green economy. In 2015, Yes bank issued first green bond to invest in renewable energy sector. Green projects received green finance through bonds expected to generate 2.35 MWh of electricity. Issuance of

green bonds stood at USD 7.15 billion between 2015 to 2018. IndusInd Bank has initiated Green Office project in which Solar powered ATMs in different cities are installed to save energy reduce carbon emissions. ICICI bank assists various projects that contribute to the reduction of the GHG emissions and financing clean technologies. The Yes Bank supports South Asia Clean Energy Fund and the Tatva Investment Program. IDBI bank is leading in the segment of environmental banking. The bank has created an exclusive group working on the climate change. This group has devised a structured product for providing upfront finance against the carbon credit receivables. As a leading development financial institution engaged in the promotion, financing and development of the Indian MSMEs, the SIDBI has supported in the area of sustainable development of the MSME sector. The bank has so far provided support to more than 2000 MSMEs with the assistance of more than Rs.800 crore for the cleaner production and energy saving investments.

RIL has helped to create environmentally friendly projects. By 2035, they want to achieve net carbon zero. RIL raised \$736 million in green loans in 2021 as part of its green finance initiative. In order to create a clean and cost-effective energy ecosystem in India, RIL is investing more than USD 10 billion. RIL has invested Rs. 150 billion in the renewable energy sector with the aim of constructing 100GW of solar capacity by 2030. Adani group started their green financing in 2021 for all green financial instruments- green bonds, loans for renewable energy projects. Equity investors through private equity and venture capital participating in green financing. Green banks are explored for clean energy. It was initiated by formation of first Green Bank Indian Renewable Energy Development Agency (IREDA) in 2016. Multilateral and international organizations also support green financing in India.

The environment ministry estimates that, in order to meet India's NDC 2015 targets, the country will need an average of Rs. 162.5 trillion (USD 2.5 trillion) per year between 2015 and 2030. Of this, USD 280 billion is needed for the green foundation in 2021–2026. Green finance is required for two main purposes: firstly, for mitigation which includes clean energy, clean transportation, and energy efficiency, secondly, for adaptation which includes disaster risk management, flood and cyclone mitigation, drought management and interventions in the agricultural sector. Estimates suggest that for adaptation-related interventions, India's cumulative investment needs are at least Rs. 85.6 trillion (USD 1 trillion) for the period 2015 to 2030.

Challenges of Green Finance

Market Risk: Environmental externalities continue to distort market prices of energy sector. Investments in green energy projects will yield low return on investment because green finance markets are small in size and lack liquidity.

High cost of debt: Investment in green projects become expensive due to high cost of debt capital. The cost of issuing green bonds is generally higher than issuing other bonds. Moreover, green projects with short durations are not very attractive for investors.

Competitive objective: Green finance investment is affected by different objectives of the investors. Private investors aim to maximize the profits and growth of their

investment while public investors who provide green finance want to improve the environmental conditions as their social responsibility. Policymakers are interested in achieving the best development prospects.

Ignorance of investors: Investors are still not aware about the importance of green finance and prospects of sustainable investment. Providing education to investors regarding environmental and social impact of investment in projects is very difficult. It creates hurdle in raising funds for green projects.

Improper framework and policies: Lack of proper framework for achieving sustainable development is a major problem in India. The government has listed various agendas, policies and circulars regarding the environment, energy sector, sustainability but they are not linked to each other for achieving a common goal of sustainable development.

Risk assessment: Green projects carry several risks – regulatory risk, technology risk, currency risk etc. Changes in regulations or policies may have major impact on the profitability of the green projects. These risks can be challenging for new or innovative green instruments. The capital markets of developing countries are not efficient in pricing of risks associated with green projects. Mispricing of these risks represents a big challenge.

Project evaluation: Lack of proper criteria for project evaluation of innovative green project at an early stage becomes a challenge for channelizing funds towards such projects which will contribute to the environmental sustainability.

Conclusion

India is particularly susceptible to the negative effects of climate change. Furthermore, India's population is growing daily, which increases the demand for energy and, consequently, environmental problems. Green financing is being increased through sustainable investments and a greater awareness of social and environmental issues. Green finance is necessary for adaptation and mitigation. It is well established that climate change poses a serious threat to India's economic growth and overall development, and climate action today can significantly reduce expected economic, human, and environmental losses. This means that the economic cost of inadequate action is extremely high. If in future India and the rest of the world do not significantly reduce emissions relative to current levels, global warming can reach up to 3°C by 2070 (Deloitte Economics Institute 2021). This can result in an estimated economic loss of INR 2,607.5 trillion (USD 35 trillion) by 2070 which is projected to be 12.5% of Gross Domestic Product (GDP) in 2070 alone (Deloitte Economics Institute 2021).

A more transparent policy framework is needed to boost green funds from both domestic and foreign investors in order to lessen this loss. The development of green finance should be taken into account when designing policies. With the assistance of numerous organizations and businesses, green finance can support sustainable economic development. India's transition to a green economy is still a long way off. In the upcoming years, investing in green

projects is advised for sustainable development and a green future.

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