THE ROLE OF GREEN FINANCE IN SUPPORTING INDIA'S TRANSITION TO A LOW-CARBON ECONOMY

Savar Verma, Jindal Global Law School

Introduction

There is no doubt that financing and banking are one of the major drivers of growth and innovation in any country or economy. Traditionally financing companies and services have invested in industries and projects that have either harmed the environment or exacerbated the effects of human induced climate change. References can be made to the large industries such as coal, mining, automobile industries and petrochemicals. The finance industry's historical disinterest in ecosystems has contributed to or exacerbated problems including habitat and resource loss, global warming, and pollution. The attitude is further reflected in the abysmal or the minimal amount of investment green initiatives and sustainable business models have received. Due to the global recognition given to climate change and the need for sustainable business models there has been a shift in attitude. The shift can be traced back to the signing of the Paris Agreement (COP 21) which was the most comprehensive international collaboration to address climate change[1]. The agreement mandated the signatories to reduce carbon emissions and at the same time to transition to a low-carbon economy or net zero carbon emissions. This declaration saw a new interest in green initiatives and projects such as solar energy, wind energy, electric cars etc.

India being a signatory to the Paris Agreement has committed to reduce its carbon emissions and strive to become a carbon neutral country. Thus, due to its commitments there's lots of interest in the emerging field of "green finance". Whilst there is technically no hard and fast definition of green finance it could refer to investing or financing activities that promote sustainable environment and development. India's move towards the low carbon economy is supported by the growing importance of green finance. India has adopted very high level of targets on climate including zero carbon emission target in 2070. Nevertheless, attaining these objectives will entail a substantive economic shift in India. This is where green finance comes

[1] "Paris Agreement | Summary and Facts." *Encyclopedia Britannica*, www.britannica.com/topic/Paris-Agreement-2015.

in handy as it bridges this financing gap thereby providing for clean energy, energy efficiency and low carbon initiatives in India's transitional low– carbon economy.

This paper will investigate how green finance can drive India's economy towards sustainability. Firstly, it will focus on the climatic targets as well as major areas which require de-carbonization in India. Firstly, it shall describe the role of green finance in helping India's shift towards a low carbon economy by touching on several aspects including various categories of green financial products and their advantages. Finally, the study will consider the issues and prospects of green finance in India and offer some proposals on how to speed up this process.

India's climate goals and commitments

As previously said, India, having ratified the Paris Agreement, is now under a legally enforceable commitment to decrease its emissions and shift towards being a low carbon economy by the year 2070. As a result of these obligations, there arises a necessity for substantial capital infusion in the realm of renewable energy. According to the NDC report presented to the UNFCC in 2015, a sum of 2.5 trillion dollars is required to achieve the established objectives by the year 2030[2]. Moreover, according to a report, it is projected that India may be required to allocate a cumulative sum of $10 trillion by the year 2070 to attain its climate objective of achieving net zero emissions. Hence, to meet its objectives, India will need to allocate an estimated sum of approximately $160 billion or around 11 lakh crores towards mathematics-related expenditures. Although there has been a noticeable rise in the expenditure, it remains insufficient[3]. As an illustration, the overall allocation towards environmentally friendly endeavors amounted to Rs.309 thousand crores, equivalent to around $44 billion, in the year 2022. The current level of expenditure falls well short of the amount required to achieve our climate change targets[4]. The disparity of $44 billion vs $170 billion can potentially be bridged by the implementation of innovative approaches to green financing in India.

[2] *https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf*. unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf.

[3] Livemint. "What India Needs to Achieve Net-zero Emission Goals by 2020. Read Here." *Mint*, 16 June 2022, www.livemint.com/news/india/incentives-10-trillion-investment-what-india-needs-to-achieve-net-zero-emission-goals-by-2070-11655383805642.html.

[4] "Landscape of Green Finance in India 2022 - CPI." *CPI*, 10 Aug. 2022, www.climatepolicyinitiative.org/publication/landscape-of-green-finance-in-india-2022.

Because of the precarious position the nation holds in relation to climate change, there is an even greater urgency in rapidly increasing spending and investment in environmentally friendly industries. According to a study, India is the fifth most vulnerable nation to climate change, and the effects of it are costing us at least two to four and a half percent of our GDP[5]. In addition, a study conducted by Stanford University found that India's gross domestic product (GDP) has shrunk by around 31 percent in comparison to what it would have been if global warming hadn't taken place[6]. The impacts of global warming and climate change not only have an influence on the economics of the country, but they also have an effect on the people's day-to-day lives and the quality of their lives overall.

While there is a need to promote new and clean industries it is also equally important to decarbonize industries that cause the most CO2 emissions: -

1. Energy- India's energy sector is the largest source of greenhouse gas emissions, accounting for over 60% of the country's total emissions. India needs to transition to a clean energy mix, with a focus on renewable energy sources such as solar, wind and nuclear. The FM earmarked Rs.3,000 crores for the same[7] and moreover the Government Plans to increase the nuclear power plant capacity from 7480 MW to 22480 MW by 2031. This is also in line with India's plan to meet 50 of energy requirements from clean sources of energy by 2030.

2. Agriculture: India's agricultural sector is a significant source of methane emissions. India needs to implement sustainable agricultural practices, such as reducing the use of chemical fertilizers and pesticides.

3. Automotive Industry- Given the huge population of India and the vast number of vehicles that are used on a day-to-day basis it is no shock that the automotive industry alone contributes about 8% of the GHG emissions. Thus, there is a need to reduce emissions in this area as well where electrification of the industry is needed. The

[5] Tripathi, Bhasker. "India 5th Most Vulnerable to Climate Change Fallouts, Its Poor the Worst Hit." *India 5th Most Vulnerable to Climate Change Fallouts, Its Poor the Worst Hit*, 5 Dec. 2019, www.indiaspend.com/india-5th-most-vulnerable-to-climate-change-fallouts-its-poor-the-worst-hit.
[6] University, Stanford. "Climate Change Has Worsened Global Economic Inequality | Stanford News." *Stanford News*, 22 Apr. 2019, news.stanford.edu/2019/04/22/climate-change-worsened-global-economic-inequality.
[7] "Union Budget: Rs 3,030 Crore Allocated to Environment Ministry." *The Economic Times*, economictimes.indiatimes.com/news/economy/policy/union-budget-rs-3030-crore-allocated-to-environment-ministry/articleshow/89274698.cms.

Government through its National Electric Mobility Plan 2020 has helped pave the way for this electrification which has brought investments from private players for EVs. The government has further provided financing and subsidies to such initiatives and focused on vehicles that could run on green hydrogen which would make them more efficient and greener than EVs as well[8].

Thus, while there is action being taken to reduce GHG emissions in the most polluting industries the amount of capital needed to fund these projects is astronomically high and the Government has limited resources to spend. The gap in investing can thus be filled via green financing. In the next section we will look at the different methods of green financing that are in India and their impact on the green initiatives and economy.

Types of Green Financing Products

1. Green Bonds- 1- According to GIZ (2015), green bonds are seen as new financial instruments that operate inside the market-based financing framework. These financial instruments are classified as fixed-income securities and are utilized to generate money for projects that possess environmentally advantageous characteristics. The risk exposures associated with green bonds are comparable to those of conventional bonds. In order to secure institutional funding, green bonds must also have the necessary credit rating. While the utilization of this financial instrument is relatively new in India, it has been gaining traction in the country's financial industry in recent times. Under the Issue and Listing of Debt Securities Act, 2008, the Securities and Exchange Board of India (SEBI) was the first organization to present the idea of green bonds in a circular dated May 30, 2017. In addition, paragraph (q) of Regulation 2(1) defined and clarified the kinds of activities that qualify as eligible uses for green bonds. In addition, reference to the consultation paper that SEBI has prepared on sustainable finance. explains the ways in which sustainable bonds can be utilized to successfully raise capital. They go on to correlate and compare it to the level of success that green bonds have had in the United States[9]. The Indian government issued one set of green bonds with a total value of INR

[8] www.ETAuto.com. "With Government and Corporate Support India Gets Ready for Hydrogen-based Transportation Ecosystem - ET Auto." *ETAuto.com*, auto.economictimes.indiatimes.com/news/auto-technology/with-government-and-corporate-support-india-gets-ready-for-hydrogen-based-mobility-ecosystem/98382148.

[9] "SEBI | Consultation Paper on Green and Blue Bonds as a Mode of Sustainable Finance." *SEBI | Consultation Paper on Green and Blue Bonds as a Mode of Sustainable Finance*, www.sebi.gov.in/reports-and-

80 billion ($980 million) on January 25th, 2023, and then issued another set of green bonds with a total value of INR 80 billion in February. Since 2015, the Indian financial sector has reportedly issued green bonds in the amount of $21 billion, as reported by the World Bank[10]. Additionally, prior to the central government issuing green bonds the IRDEA used to issue green bonds called masala green bonds.

2. Green Banking- The emergence of green banks has been recognised as a pioneering mechanism for expediting the provision of financial resources for clean energy projects on a worldwide scale. Dedicated financial institutions have demonstrated their effectiveness as a successful instrument for utilizing limited public money to mobilise the necessary private capital within the sector. The initial endeavor in India can be attributed to the Indian Renewable Energy Development Agency (IREDA)'s proposal in May 2016 to investigate the possibility of establishing the nation's inaugural green bank[11]. The conception of this notion was predicated on the recognition that it would leverage restricted public resources to galvanize private capital, with the aim of achieving India's overarching objectives in the realm of clean energy. A number of additional commercial banks in India have also undertaken efforts to transition into environmentally sustainable financial institutions. As an example, the State Bank of India (SBI) provides extended-duration loans with preferential interest rates to initiatives focused on renewable energy[12]. Green banks possess the capacity to mitigate lending rates and provide adaptable financial solutions that align with the requirements of renewable energy financing. The proposition suggests that the establishment of a green banking system in India has the potential to effectively tackle ongoing financial obstacles. These issues include mitigating foreign-exchange risks, establishing an escrow facility, and offering blended lines of credit, among others.

3. Green Deposits: "Green deposits are interest-bearing fixed deposits denominated in Indian rupees, similar to regular fixed deposits. The proceeds from green deposits are earmarked for allocation into projects or activities that yield environmental benefit."

statistics/reports/aug-2022/consultation-paper-on-green-and-blue-bonds-as-a-mode-of-sustainable-finance_61636.html.

[10] "India Incorporates Green Bonds into Its Climate Finance Strategy." *World Bank Blogs*, 12 June 2023, blogs.worldbank.org/climatechange/india-incorporates-green-bonds-its-climate-finance-strategy.

[11] "IREDA May Be Converted into a Green Bank | Delhi News - Times of India." *The Times of India*, timesofindia.indiatimes.com/city/delhi/ireda-may-be-converted-into-a-green-bank/articleshow/52110140.cms.

[12] "SBI Annual Report"

Another major development came through RBI notification that came on April 11th, 2023, under which it recognized that certain regulated entities have started offering green deposits for financing green activities. Thus, to regulate the same RBI devised a framework for the acceptance of green deposits by "regulated entities." Or in other words RBI has devised a framework that should guide banks and other financial institutions on how to accept green deposits. In its framework it further provided various definitions of what constitutes green finance and clean energy. Another notable area of interest in the definitions clause was the phenomenon of green washing which was defined as "ppractice of marketing products/services as green, when in fact they do not meet requirements to be defined as green activities/projects." We will discuss more about green washing in the challenges section of the paper. The circular further provided the ways and manner in which these sectors could be utilised.

Thus, as Beginning on June 1st, both retail and institutional depositors will have the option of switching to "green" deposits instead of fixed deposits. With the help of this new initiative, financial institutions like banks and certain types of deposit-taking non-bank financial services (like housing-finance companies) will be able to increase their fundraising potential and create a pool of money earmarked for green initiatives. In addition to helping firms migrate towards net-zero emissions, the introduction of green deposits improves their access to green financing, ideally with better terms and conditions[13].

4. Blended Finance- To accelerate private investments to achieve sustainable development in underdeveloped nations, blended finance represents a strategic option. SDG-aligned projects can attract private investment with the help of this cutting-edge instrument, which pools together concessional public monies, guarantees, technical assistance, and design funding grants. Blended concessional finance is emphasized in the report titled "Blended Finance for Climate Investments in India" as a novel financing strategy that encourages private sector investment in high-impact development mitigation and adaptation initiatives.

[13] www.ETBFSI.com. "Explainer: How Will RBI's New Green Deposits Framework Work? - ET BFSI." *ETBFSI.com*, bfsi.economictimes.indiatimes.com/news/policy/explainer-i-how-will-rbis-new-green-deposits-framework-that-kicks-in-on-june-1-work/100400209.

In order to tackle this obstacle, the report delineates several crucial sectors—including but not limited to energy, transportation, waste management, agriculture, biodiversity, and health—in which investments ought to be given precedence in order to bolster the nation's goals regarding climate adaptation and mitigation. To attain its net-zero emissions goals, India will, nevertheless, be required to substantially increase its climate investments from $18 billion to $170 billion per year until 2030[14]. The annual financial allocation for climate action in India is a mere $44 billion, as reported by the Climate Policy Initiative in 2022.

Challenges to Green Finance in India

Although green financing methods have gained prominence over the years thanks to global attention and focus on climate change and commitments. There still exists certain challenges and concerns in relation to green financing some of those points have been explained and looked at below: -

- Green Bond Related costs- Indian companies are hesitant to adopt green bonds due to insignificant pricing advantages for domestic issuers, ranging between 7 and 14 basis points. The IMF provides little evidence that green bonds cause lower costs of issuance than regular ones. Green bonds carry additional legal risks relating to the process of marketing and selling the instrument first off. The issuance process comprises a due diligence stage, procuring compliance of operations with environmental standards and dispelling material concerns[15].

- Institutional and Policy level complicacies and uncertainties- The constitutional position of energy as a concurrent subject is wrapped up in this issue. Given the current political climate, cooperative federalism is seen as requiring constant and efficient communication between various levels of government, including the federal and provincial levels, to raise the necessary funds. This is shown in the form of numerous proclamations of policy made by provincial agencies. There is some unpredictability

[14] "Blended Finance Is Key to Supporting India's Path to Net-zero, Says New IFC Report." *Blended Finance Is Key to Supporting India's Path to Net-zero, Says New IFC Report*, pressroom.ifc.org/all/pages/PressDetail.aspx?ID=27776#: ~:text=There%20is%20an%20urgent%20need,long-term%20development%20priorities.%22.

[15] Finextra. "Green Bonds in India Face Unresolved Challenges." *Finextra Research*, 25 May 2023, www.finextra.com/blogposting/24270/green-bonds-in-india-face-unresolved-challenges.

because energy investment decisions are made not just at the federal level, but also at the provincial level. This causes market fragmentation within the country and discourages investors, both domestic and international, from viewing India as a unified market. The uneven distribution of renewable energy resources across the country's regions only serves to amplify the competition in this niche industry. [16].

- Poor Organization of long-term financing The industry's pressing need for long-term funding is not being adequately supported by the current structure. The domestic bond market, for instance, is in its infancy and poorly designed. Bonds with a high rating but low risk, such as those issued by the government or those with an AAA credit rating, have become increasingly popular among investors. Due to its early stage of growth, the renewable energy market has not yet established sufficient creditworthiness to warrant an independent bond offering and has failed to garner sufficient investor interest. In addition, only a small percentage of Indian families have any form of long-term savings because insurance and pension funds are so uncommon. The ability of other nonbanking financing companies to offer the necessary money is insufficient. Corporate bond markets, for instance, have not developed in India because rating standards exclude long-term investors like insurance and pension funds.

- The Risk of Green Washing- Merriam-Webster dictionary defines green washing as "the practice of making products, activities, or policies seem more environmentally friendly or less environmentally damaging than they actually are." The problem is much worse in India if reference is made to various reports and papers. Several research and papers have brought attention to the issue of greenwashing in India. According to one report by the Centre for Science and atmosphere (CSE), for instance, many businesses in India overstate the environmental benefits of their products and operate in an atmosphere where accountability and openness are lacking. The majority (79 percent) of green promises made in Indian commercials were either untrue or grossly overstated, according to a separate survey by the Advertising Standards Council of India (ASCI). YouGov, a market research agency, found that 71% of Indian customers had seen greenwashing, with 60% expressing concern about it. Accenture also discovered that only 29% of Indian consumers believe businesses to be truthful when making environmental claims. One of leading causes of

[16] "Green Energy Finance in India: Challenges and Solutions." *Asian Development Bank*, www.adb.org/publications/green-energy-finance-india-challenges-and-solutions.

green washing is the lack of regulatory oversight and no clear demarcation as to what constitutes as green products[17]. The current scenario is of significant concern due to the way in which environmentally unsustainable initiatives and enterprises, despite claiming otherwise, may nonetheless acquire backing and financial resources.

Although India has come far in its quest for self-reliance and promoting a green economy, there still exist glaring issues that need to be addressed both at a policy level and at institutional level. The policy perspective needs to focus on easing the process on funding clean initiatives and at the same needs to give clarity on what constitutes as clean initiatives so that the precious funds are used for the right projects which have a tangible impact on the goals of SDGS.

Conclusion

Green finance plays a crucial role in supporting the transition to a low-carbon economy. It can help to mobilize private investment, de-risk green investments, support innovation, and promote transparency and accountability. In this paper we have looked the role green finance can play in helping India achieve its climate goals and commitments. The paper further discussed India's climate commitments and the amount of financial resources that would be needed to fund the program. It was found that while there is significant investment that is made towards such desirable initiatives the amount it is not adequate and thus to bridge this gap green financing source can be a viable tool.

However, while these sources of green finance are a viable tool they also suffer from their own set of issues and challenges which do not help them realise their full potential. Investment risks, technology risks, high cost of debt, low operational costs, lack of awareness, lack of a proper regulatory framework, and short loan terms all work against green bonds and other tools of green financing in India. Thus, there is an urgent need for collaborative effort that is needed between the investors and the government to make India a much more effective destination for green investing both at the domestic level and as well as international level.

[17] "The Problem of Greenwashing in India: Policy Review." *GGI*, 11 June 2023, www.theggi.org/post/the-problem-of-greenwashing-in-india.

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4. Jain S, 'Financing India's Green Transition' (*ORF*, 4 February 2020) <https://www.orfonline.org/research/financing-indias-green-transition-60753/>

5. Remarks delivered virtually by Shri M. Rajeshwar Rao, Deputy Governor, Reserve Bank of India on December 22, 2022, at the Business Standard BFSI Insight Summit at Mumbai. The inputs provided by Sunil Nair, Brij Raj and Pradeep Kumar are gratefully acknowledged.

6. Rout, Sanat and Sahoo, Sadananda (2021) "Green Finance: The Future of Sustainable Banking in India," Interscience Management Review: Vol. 5: Iss. 1, Article 4. DOI: 10.47893/IMR.2021.1101