



Green Bonds - Role And Scope In India's Financial And Fiscal Landscape

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Abstract: Green bonds have become an effective alternate source of sustainable financing worldwide. In the fight against climate change and in meeting India's target of zero emission by 2070, there is a need for continuous and sustainable financing models. Today all the global issuance of green bonds by Indian players were oversubscribed. India has come up with its sovereign green bond framework. Though India's issuance of sustainable bonds has increased many folds post the pandemic era, much is required to be done in the local space to make Green bonds more familiar, popular and reliable.

Study shows that green bonds can play an efficient role as a low-cost financing option and has an effective value addition to the funding mechanisms available during various developmental phase of a project. However, the study finds various bottlenecks faced by Green bonds issuers and investors and provide solutions in line with international practices to successfully eliminate the bottlenecks and make a vibrant market for Green Bonds

1. Introduction:

It is more than a decade since Green bond made his first appearance in the international market. Indian corporates issued Green bonds much later than the international players and only in 2022 Indian government has released his framework for Green bonds.

Green bonds are one among the efficient source of finance to fund the sustainable goals of the country and the world as a whole. India needs \$13.70 trillion or minimum \$100 billion in investment for the next 40 years to achieve Net Zero emission by the year 2070. It is estimated that India can draw investment to an extent of USD 10.103 trillion dollars with the help of banks, NBFCs and Capital market. There will be a deficit of not less than USD 3.0 trillion dollars in achieving the target.

Can green bonds play a role in bridging this gap? Is Green bond a panacea to the problem.

Except for the noble cause it promises to attend to, what is so great about green bonds. It is yet another fund sourcing vehicle.

Indian bond market is a matured market and it has seen many thematic bonds and special bonds. Thematic bonds are not new to India and the world. There were many special purpose thematic bonds addressing specific problems and situation. Green bond by its name is designated to address the climate problem but source funds to be deployed to sustainable and renewable efforts of corporates and the government.

What makes green bond special except for its theme. It has a coupon rate similar to any other bonds. Even the coupon rate of Indian sovereign Green bonds is lesser than many of the sovereign bonds that comes with out theme. Many of the green bonds issued by the corporates were not rated. There is no mechanism to monitor whether the funds sourced through green bond is used for the purpose it was designated to serve.

As it is said except for the noble cause it supports what does green bond offer to the buyer of the bond i.e the lender?

And today big corporates having access to international markets use green bonds as a mechanism to support their funding needs. The MSME sector in India still have to rely on bank finance. NSE is paving ways to SMEs to raise funds through IPOs, which is cheaper in terms of cost to capital compared to funds sourced through bonds that has a fixed obligation to the debtor.

Given the challenges, the noble intention behind Green bond alone cannot make it an efficient tool in the hands of the potential borrowers. And the noble intention will alone not make the potential lender subscribe to the Green bonds.

What really can make green bonds work and what can be the potential role that Green Bonds can play in the financial and fiscal landscape in India making green bonds an efficient mechanism to address our country's ambition of achieving Net Zero emission by 2070 is a question this research paper tries to answer.

2. The objective of the study:

To study the role and scope of Green Bonds Indian financial and fiscal landscape

To study the bottlenecks faced by Issuing Entities and Investors of Green Bonds

3. The Background:

3.2 India's Commitment:

Prime Minister Shri Narendra Modi informed the world, At the World Leaders Summit at COP26 in Glasgow in November 2021, India's ambition to address the climate disaster by announcing that India will achieve net zero emissions by 2070.

Honourable Prime Minister in his speech has also announced India's 2030 targets in his five-part Panchamrit on climate actions which includes

1. India will get its non-fossil energy capacity to 500 gigawatts by 2030
2. India will meet 50 per cent of its energy requirements till 2030 with renewable energy
3. India will reduce its projected carbon emission by one billion tonnes by 2030
4. India will reduce the carbon intensity of its economy by 45 per cent by 2030
5. India will achieve net zero by 2070

Honourable Prime Minister of India has also spoke about 'India's track record' which includes India's achievement of having the fourth largest installed renewable energy capacity. He also highlighted our country's initiatives to form International Solar Alliance for solar energy and a coalition for disaster resilient infrastructure for climate adaptation.

In August 2022 Union Cabinet approved the updated Nationally Determined Contributions (NDCs) incorporating the PMs 'Panchamrit' strategy.

3.2 Green bonds:

Figure 1.1 will show the area where Green Bonds fit in in the entire sustainable financing structure. Green bond is one aspect of sustainable financing and also one among the options in the entire sustainable finance framework. Green bonds can either be a corporate issued bond or a sovereign bond

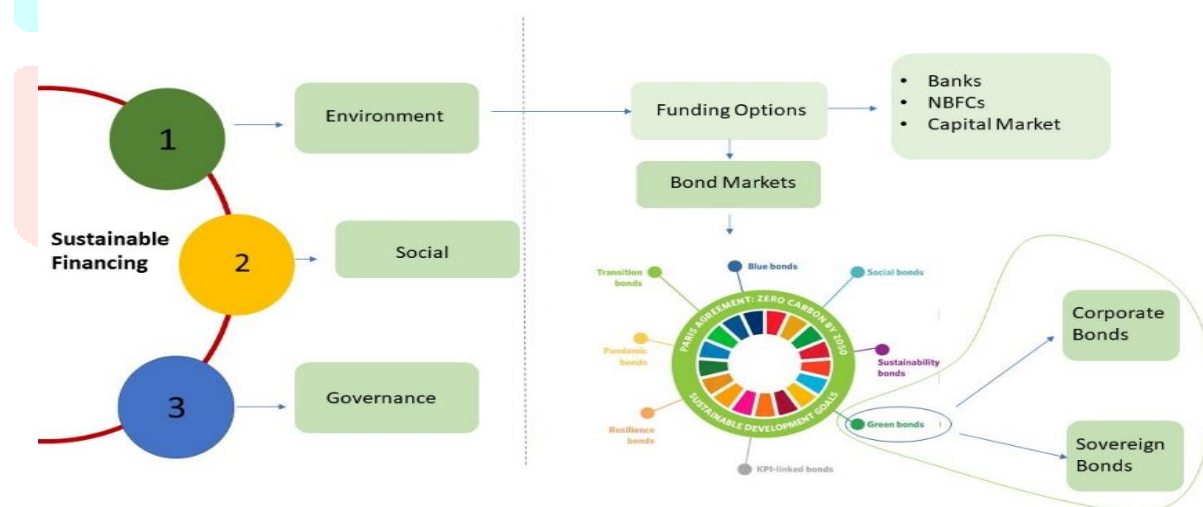


Fig 1.1 ESG funding and Green bonds

Green bonds like regular bonds, is a fixed-income instrument that represents a loan made by an investor to a borrower (typically corporate or governmental) and usually follows the same issuance procedures. But, Green bonds have one distinguishing feature where the proceeds of Green Bonds are allocated exclusively for projects with environmental benefits

International Capital Markets Association (ICMA) through its Green Bond Principles set the framework for Green Bond issuance.

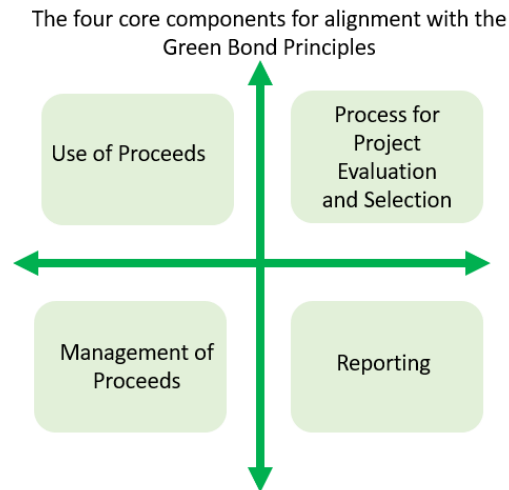


Fig 1.2 The four core components for alignment

The four core components for alignment with the Green Bond Principles (GBP) are:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

The key recommendations for heightened transparency are:

- (i) Green Bond Frameworks
- (ii) External Reviews

In India SEBI has adopted ICMA principles and came out with its Disclosure and listing requirements of Green Bonds” in the year 2017. In November 2022, Union Finance Minister Smt. Nirmala Sitharaman approved the final Sovereign **Green Bonds framework** of India which was closely aligned to the Green Bond Principles of ICMA

3.3 Green Bonds in India

The first issue of issuing Green bonds can be traced back to 2007 when European investment bank issued first ever climate awareness bond worth \$807 million. Compared to world nations India was late in launching corporate Green bonds.

In 2015, India’s issued its first evergreen infrastructure bonds worth \$160 million to finance green infrastructure projects. In 2016 Axis Bank launched India’s first internally-listed certified Green bond at London stock exchange. In 2017, L&T issued first SEBI -approved green bonds.

India’s sovereign bond is yet to be launched.

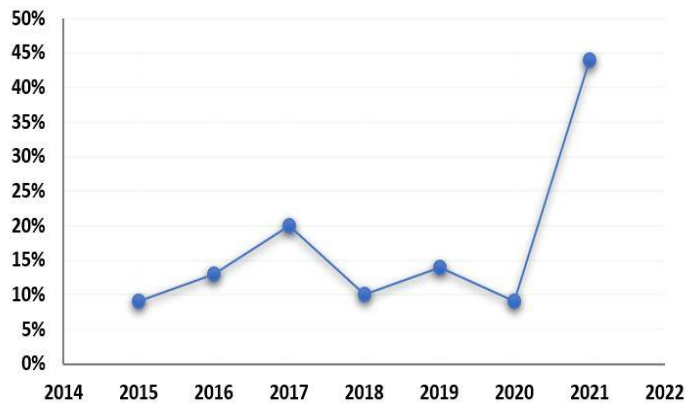


Fig 1.3 Percentage of sustainable bond issuance over all international

Though India was late in joining the corporate bond market the Percentage of sustainable bond issuance over all international issuance from India is at 45 percent for the year 2021.

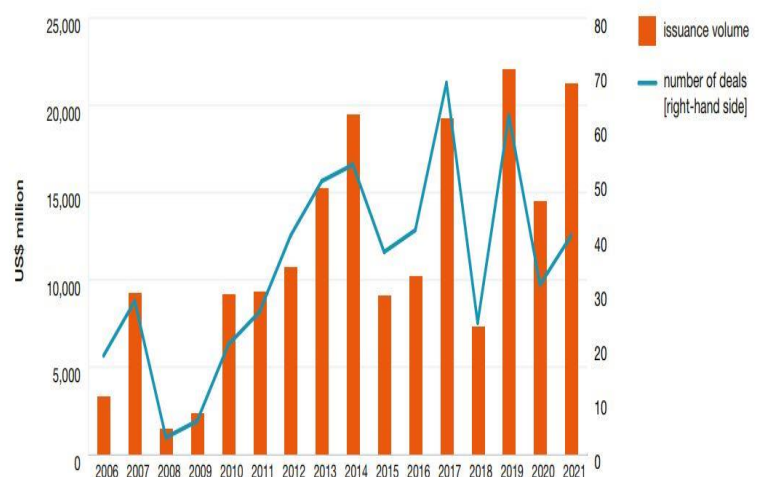
India is the second large issuer of corporate bonds from emerging markets standing only next to china.

Also, the issuance of corporate green bonds has steadily increased from 2010 till 2019. Covid pandemic has reduced the issuance volume of sustainable bonds internationally by India but in the year 2021 India's international issuance volume has touched a new high of USD 21 billion with a total deal of 40. : India regained its place as the second-largest green bond issuer among Emerging market and developing economies (EMDEs) in 2021 with a record US\$5.9 billion, accounting for one-third of total issuance since the country began issuing green bonds in 2015. Most of the proceeds from these bonds were allocated to renewable energy, airport infrastructure, and a municipality. India also issued US\$725 million in social bonds, up from US\$500 million in 2020, and—for the first time—issued both sustainability bonds and SLBs, of US\$600 million and US\$1.2 billion, respectively. Global issuance of SLBs grew strongly from US\$11 billion in 2020 to US\$87 billion in 2021. India was the sole issuer in South Asia (US\$1.2 billion), with 6 percent of total EMDE issuance

India surpassed previous green bond issuance volumes in 2021, with potential for more issuance, given the significant capital needs to

meet its net-zero emissions target by 2070. Although nonfinancial corporates in the renewable energy sector accounted for most of the recent issuance, banks could start increasing their issuance to finance sustainable lending projects.

India is in the early stages of developing a green taxonomy with its **Sovereign Green Bonds framework** issued only in Nov 2022.



4. Literature review:

Dr. Sanjay K. Solomon (2020), stated that there have been remarkable improvements in public awareness and financing options. The research identified that the major challenges in green financing in India includes high borrowing costs, false claims of environmental compliance, plenty of green loan definitions, maturity mismatches between long-term green investment and relatively short-term interests of investors. **Caroline Flammer (2020)**, suggested that certification is a key governance mechanism for Green Bonds. **Ashima Verma and Rachna Agarwal (2020)**, in their study concluded that defining green appropriately and encouraging transparency promote the issuance and investment in green bonds. They also opined that there will be question on whether green bonds are displaying the required environmental transformation or not and Standardisation of the issuance process can take green bonds a long way. **Natural Resources Defense Council, 2016** in its interim report suggested that green bonds in India from this nascent stage should aim to achieve these three objectives: 1) Reduce the cost of capital further, 2) Stimulate demand from institutional and retail investors, and 3) Expand and diversify the issuers base

5. Research methodology:

The study will use a five-point mechanism to assess the bottlenecks faced by the potential issuers and Investors. The issuers are the borrowers of the money, typically banks, financial institutions, Governments and Corporations

The investors are buyers who typically include institutional investors, national development banks, pension funds, insurance companies, foundations, private investors, commercial banks, retailers. The most active investors in green bond markets are pension funds insurance companies looking for long term and safe investments.

The five potential bottlenecks faced by potential issuers are identified through our literature study and they are as follows

- Lack of green bonds and green project pipelines
- Lack of aggregation mechanisms for green projects
- Lack of green bonds definition and framework
- Lack of information and market knowledge
- Lack of clear risk profile of green investments

The scale used to rank the parameters will be High: If no details or structure or framework is available; Moderate: If details or structure or framework is partially available; Low: If details or structure or framework is completely available

The parameters that was traditionally used by investors to assess a bond are as follows

- Coupon rate
- Tenure
- Risk rating
- Liquidity
- 5. Information availability

6. Data on Green Bonds issued in India:

Table 6.1

Green Bonds Issuances (as on 14/09/2022)					
Sr. No.	Issuer	Amount (Rs. In crs.)	Coupon (%)	Tenure	
1	L&T Infrastructure Finance Company Ltd	667	7.59%	7.39	
2	Tata Cleantech Capital Limited	180	8.74%	5	
3	Indian Renewable Energy Development Agency Limited	275	8.51%	10.01	
4	Indian Renewable Energy Development Agency Limited	590	8.47%	10.01	
5	Ghaziabad Nagar Nigam *	150	8.10%	4.02	
6	Yarrow Infrastructure Private Limited	581	6.49%	3	
7	Priapus Infrastructure Limited	16	6.49%	3	
8	Rattanindia Solar 2 Private Limited	227	6.49%	3	
9	Malwa Solar Power Generation Private Limited	197	6.49%	3	
10	Citra Real Estate Limited	19	6.49%	3	
11	Sepset Constructions Limited	197	6.49%	3	
12	Fermi Solarfarms Private Limited	337	6.75%	3	
13	Clean Sustainable Energy Private Limited	334	6.75%	3	
14	Avaada Sataramh Private Limited	270	6.75%	3	
15	Avaada Solarise Energy Private Limited	499	6.75%	3	
	TOTAL	4539			

Data Source: <https://www.sebi.gov.in/statistics/greenbonds.html>

<https://www.ireda.in/images/HTMLfiles/Green%20Bond%20compliance-%20Domestic%20Bond.pdf>

https://www.ireda.in/Images/HTMLfiles/Annual%20Report%20Climate%20Bond%20_31_03_2020-Masala%20Bonds.pdf

Indian Renewable Energy Development Agency Limited (IREDA) has issued Masala Greenbonds of INR 19416.54 million in 2017 and regular Green bonds of INR 7000 million issued in 2017 which is not mentioned in SEBI data but reflected in the data published by IREDA

Table 6.2

Si.No	Particulars	As at March 31, 2021(in Lakhs)	As at March 31, 2022
1	8.12% Taxable Green Bonds (Series VI A - 2016-17) (Repayable on 24.03.2027)	20,000.00	20,000.00
2	8.05% Taxable Green Bonds(Series VI B - 2016-17) (Repayable on 29.03.2027)	50000	50000

https://www.ireda.in/Images/HTMLfiles/Annual%20Report%20Climate%20Bond%20_31_03_2020-Masala%20Bonds.pdf

Table 6.3

Si.No	Sovereign Green Bonds issued by RBI	Amount (Rs. In crs.)	Coupon (%)	Tenure
1	05 Year SGrB for ₹4,000 crore - Jan 2023	4000.00	7.10	5
2	10 Year SGrB for ₹4,000 crore - Jan 2023	4000.00	7.29	10
3	05 Year SGrB for ₹4,000 crore - Feb 2023	4000.00	7.10	5
4	10 Year SGrB for ₹4,000 crore - Feb 2023	4000.00	7.29	10

<https://rbidocs.rbi.org.in/rdocs/content/pdfs/GoISGrB03022023.pdf>

6.1 Analysis on bottle necks faced by issuers of Green Bonds:**Table 6.4**

Si. No	Key Bottlenecks	Bottlenecks	Observations made in the study
1	Lack of green bonds and green project pipelines	High	Today there is no pipelines of green bonds and green project in India. There is no data available on the list of green projects that awaits funding. Neither the government or any other regulatory authority has created and listed the green projects that awaits funding
2	Lack of aggregation mechanisms for green projects	High	Aggregation is the mechanism where cash flows are bundled and streamlined to meet the needs of small green projects that requires less funding and not suitable for issuance of bonds. This mechanism is widely used to fund SMEs where fund requirement is very low. At present we do not have such aggregation mechanism and small green projects often look for bank credits and government support
3	Lack of green bonds definition and framework	Moderate	India has come up with its sovereign green bond framework and SEBI has already issued the Disclosure requirements for issuance and listing of Green Bonds. There is no definition as such provided by SEBI or the government. Our sovereign green bond framework defined what can be considered as Green projects
4	Lack of information and market knowledge	Moderate	Data on India Green Bonds issued in foreign markets are not directly available or freely available. Only data on sustainable bond is available and it has to be collected from multiple international sources and reports. SEBI website provides data on Green Bonds issued. However, data on Green bonds

			issued prior to 2017 was not readily available
5	Lack of clear risk profile of green investments	High	There is no preferential treatment of Green bonds in monetary policy and fiscal policy of India

The analysis shows that there is a high degree of bottle necks available on the following parameters

- Lack of green bonds and green project pipelines
- Lack of aggregation mechanisms for green projects
- Lack of clear risk profile of green investments

And a moderate degree of bottlenecks available on the following parameters

- Lack of green bonds definition and framework
- Lack of information and market knowledge

6.2 Analysis of Problems faced by Investors in Green Bond:

The efficiency of the green bonds was measured using the following parameters

1. Coupon rate
2. Tenure
3. Risk rating
4. Liquidity
5. Information availability

6.2.1 Coupon rate of green bonds:

The coupon rate of green bonds issued by corporates and RBI are at an average of 7.2% as shown in the table 6.5

Table 6.5

Si.No	Parameters	Corporate Bonds	Sovereign Green Bonds
1	Average Volume Size	302.6	4000
2	Average coupon rate	7.16%	7.19%
3	Average Tenure	4.43	7.5

The is lesser than the coupon rates of other debentures and bonds issued by Indian corporates. The coupon rate of Indian green bonds issued by 10 out of 15 companies is at an average of 6.49 percent. Whereas the other five issuers have issued at a rate of 8.48 percent. There is a huge disparity in the coupon rate among peers (issuers of green bonds) and are not competitive enough to match the coupon rate of other bonds issued by the corporates in general.

Table 6.6

Si.No	Parameters	Coupon Rate	Bond Identity
1	Average of coupon rate of all bonds listed in NSE	6.71%	
2	Highest coupon rate by Indian corporate Bond	11%	Dhani Loans and Services Limited
3	Average coupon rate of Sovereign Bonds listed in NSE	8.01%	
4	Highest Sovereign bond coupon rate	10.18%	IN0020010081

The table 6.6 shows that the average coupon rate of bonds listed in India National Stock Exchange is 6.71% and the average coupon rate of Sovereign bonds listed in NSE is 8.01%

6.2.2 Tenure:

The average tenure of corporate green bonds is 4.4 years and that of sovereign green bonds are 7.5 years. Investors in bond traditionally look for higher tenure bonds as their objective is long tenure and safe return. The average tenure of corporate bonds issued by Indian entities are at an average of 4.43 years. Two third of the fifteen bonds issued are having a tenure of three years.

Only two bonds issued by Indian Renewable Energy Development Agency Limited has tenure of ten years.

6.2.3 Risk Rating:

Risk rating is a major concern as data suggests that risk ratings of all the bonds are not freely available in order to make an investment decision. Only the risk rating of bonds issued by Indian Renewable Energy Development Agency Limited was available in its website and in the annual report.

Table 6.6

Rating Agency	Instrument/Purpose/Issue	Rating
ICRA Limited	Tax-free bonds (₹ 200,000.00 Lakhs) Fiscal 2015-16 Series XIV (Public and Private Placement)	ICRA AA+ (Stable) Reaffirmed
	Taxable Green bonds (₹ 70,000.00 Lakhs) Fiscal 2016-17 Series VI-A & VI-B	ICRA AA+ (Stable) Reaffirmed
	Taxable Unsecured bonds (₹ 10,600.00 Lakhs) Fiscal 2021-22	ICRA AA+ (Stable), Assigned

The risk rating of all other bonds is not available in the decentralized place or either in the website of the issuers

6.2.4 Liquidity:

There is no clear and direct data available on the liquidity of the green bonds. All we found is the combined liquidity position of Bonds from SEBI website.

Following table shows the most commonly available data about green bonds in India

Table 6.6

Period	BSE/ICCL [Trades executed on OTC+RFQ+anonymous platforms and settled through ICCL] Source:ICCL				NSE/NSCCL [Trades executed on OTC+RFQ+anonymous platforms and settled through NSCCL] Source:NSCCL				MCX-SX/MSE Clearing Source:MSE Clearing		Off Market Settled Trades Source: NSDL /CDSL				Total Trades Settled /CDSL		
	Listed Corporate Bonds		Unlisted Corporate Bonds		Listed Corporate Bonds		Unlisted Corporate Bonds				Listed Corporate Bonds		Unlisted Corporate Bonds				
	No. of Trades Settled	Amount (in Rs. Crs)	No. of Trades Settled	Amount (in Rs. Crs)	No. of Trades Settled	Amount (in Rs. Crs)	No. of Trades Settled	Amount (in Rs. Crs)			No. of Trades Settled	Amount (in Rs. Crs)	No. of Trades Settled	Amount (in Rs. Crs)	No. of Trades Settled	Amount (in Rs. Crs)	

There is no information available in public domain on the liquidity positions of Green Bonds

Also, the data available with NSE suggests that none of the green bonds mentioned in table are listed in National Stock Exchange.

6.2.5 Information availability:

One of the major concerns that was encountered at the course of the research on Green bonds was the availability of data. Since there is no single regulatory authority, and no decentralized mechanism to pool the data, collecting data on Green bonds become an uphill task.

Data on India Green Bonds issued in foreign markets are not directly available or freely available. Only data on sustainable bond is available and it has to be collected from multiple international sources and reports.

Most of the data on sustainable bonds are available at a cost both from Indian regulators and Institution vendors.

6.3 Greenwashing monitoring:

Greenwashing is one of the menaces in sustainable financing and in the global fight against Global warming. The dictionary meaning of Greenwashing is the act or practice of making a product, policy, activity, etc. appear to be more environmentally friendly or less environmentally damaging than it really is.

Today, the proceeds of the funds are to be disclosed voluntarily by the organization sourcing the funds. Today there is no mechanism available in India to see if the organization is Greenwashing or really fighting the war

against climate change. There is no central monitoring mechanism and there is no regulatory framework to assess if the funds are channeled to the right players.

This leads to more ethical concerns and a systematic risk of funding the wrong projects using green bond mechanism.

6.4 The role and scope of Green bonds in Indian financial and fiscal landscape:

6.4.1. Green bonds as an Asset Liability mismatch mitigating tool:

Banks and Financial institutions (FIs) often face the Interest rate risk and liquidity risk due to asset liability maturity mismatch

Green bond can be considered as an alternate source of long-time borrowings to shield effectively against bank runs and interest rate risk.

Also, securitization of projects portfolios during various stage of maturity will provide exit options to banks to overcome their asset-liability mismatch.

6.4.2. Risk premiums via pricing arbitrage:

At the time of issuance of Green Bonds (with “mature” projects portfolio), due to low risk portfolio and potentially higher ratings in open markets, Financial institutions (FIs) can command risk premiums via pricing arbitrage.

This necessitates classifying portfolios under green bonds for efficient rating and price exploration. Creating such portfolios based on the maturity of the projects will help create various avenues of financing at every stage of the projects thereby creating an efficient financial conveyor belt i.e access to finance at various stages of development.

6.4.3. Lending above Sector wise exposure limit:

As per RBI circular on Priority Sector Lending, Bank loans up to a limit of ₹30 crore to borrowers for purposes like solar based power generators, biomass-based power generators, wind mills, micro-hydel plants and for non-conventional energy based public utilities, viz., street lighting systems and remote village electrification etc., will be eligible for Priority Sector classification. For individual households, the loan limit will be ₹10 lakh per borrower.

Moreover, FIs in India have self-imposed limits which restrict exposure to a particular sector. With Green Bonds, FIs will have an option to offload holding assets through Green portfolio issuance, thereby allowing the institutions to adhere to the sector limits, while deploying bond proceeds into new green projects.

6.4.4. Financing at various stages of development

Today intergrated power project (IPP) has a longer incubation phase and a long developmental phase. Green Bonds can facilitate capital during various development stages of for IPPs and project developers thus leading to larger implementation of projects. The below table suggest potential areas where green bonds can become a effective financing options.

Table 6.8

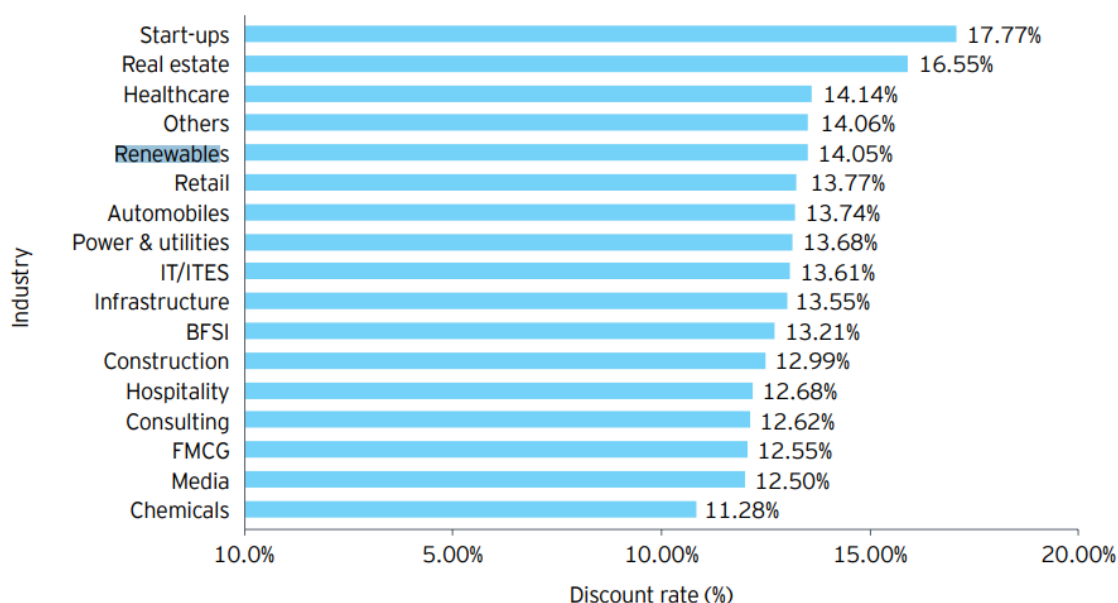
Stages of Solar Power IPP		Financial conveyor belt		
Project Phase	Pre-planning	Promoter capital, Private Equity, NBFCs etc		
	Designing and Engineering	Promoter capital, Private Equity, NBFCs etc	OEMs	
	Construction	Promoter capital, Private Equity, NBFCs etc	OEMs	Green Bonds
Operation and Exploitation Phase	Operation and Maintenance	NBFCs, Private Equity	Suppliers EXIM finance, Green Bonds , Banks etc	Large Private equity, share Listing, MFs
End-of-life phase	Dismantling and Recycling			

6.4.5 As a Low-cost funding option

As per Climate Policy Initiative: Meeting India's Renewable Energy Targets: The Financing Challenge: It is estimated that higher interest rates and unattractive terms under which debt is available in India, raise the cost of renewable energy by 24-32 percent compared to similar projects being financed in the U.S. or Europe.

As per the India cost of equity survey conducted by EY India the India's average cost of equity is ~14%. Real estate, healthcare (including pharmaceuticals and life sciences) and **renewables** command the highest cost of equity, whereas chemicals, media and entertainment and FMCG are at the lowest.

The cost of equity of renewables is at 14.05 % and the debt costs is at 7.2% making Green bonds as an effective alternate source of funding by corporates



Courtesy: EY Cost of capital Survey report 2021

7. Findings

1. Role and scope of Green Bonds in Indian financial and fiscal landscape

- Green bonds as an Asset Liability mismatch mitigating tool
- Risk premiums via pricing arbitrage
- Lending above Sector wise exposure limit
- Financing at various stages of development
- As a Low-cost funding option

2. Bottlenecks faced by Green bonds

From Investors perspective:

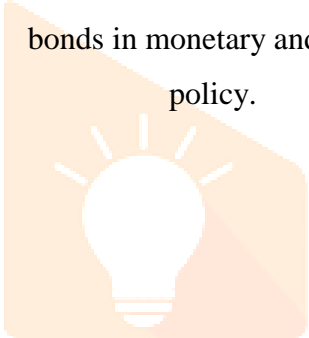
1. The study confirms that the coupon rate and tenure of the green bonds are not competitive enough as there are various bonds providing better returns and higher tenure compared to the green bonds that are listed and under the study
2. The risk rating is available only for two out of 15 green bonds under study. Risk rating is the crucial indicator of the reliability of a financial instrument. It helps investors take prudent and a calculated investment decision. Non-availability of ratings is a serious deterrent in making green bonds investor friendly
3. Liquidity data are not readily available and it is found that the 15 green bonds under study were not available in the data on the bonds listed and traded in National Stock Exchange (NSE) of India
4. There is no information on the end use of funds and also the greenwashing possibilities. Availability of proper information will allow investors to gain confident in investing in green bonds even if the returns are not competitive

From Issuers perspective:

1. There is no green project pipeline created. Creating just pool of green projects will help understand where we stand as a nation in achieving sustainable goals of the country. It will help us estimate the future needs and set goals and targets accordingly
2. Aggregation mechanism is quintessential in ensuring that every small project is not sidelined or neglected among the giants. Today big corporates have the means and necessary tools to reach the bond market and meet their financial needs. The same is not the case with Micro Small Medium industries. Their fund requirement is very less and they mostly do not qualify the listing needs of bond markets. The size of the project should not cease them the avenues available in meeting their genuine financial needs. Hence a robust mechanism is a need
3. Availability of rating is a hinderance that is faced by both issuers and investors

8. Suggestions:

Si. No	Key Bottlenecks	Suggestions to reduce the bottle necks	Global Practices
1	Availability of green bonds and green project pipelines	Green Bond and Green projects Catalogue should be created to bring in all the green projects that are awaiting funding. This will be helpful in fulfilling the requirements of building a green finance system and regulating the domestic market of green bond in India	The People's Bank of China, National Development and Reform Commission & China Securities Regulatory Commission has issued Green Bond Endorsed Projects Catalogue
2	Availability of aggregation mechanisms for green projects	Public Sector banks and Regulators can play a supporting role in aggregation and securitization	US Warehouse for Energy Efficiency Loans (WHEEL) programme
3	Availability of green bonds definition and framework	India has its own Sovereign Green Bond framework in line with Green Bonds principle by ICMA. Similar framework has to be created for corporate bonds with a separate regulatory authority for sustainable finance. This will centralize the entire sustainable financing under one umbrella. Such umbrella organization will have all statutory authority to define and label green bonds	Central bank strategy on green bonds - China AND "Energy and Ecological Transition for Climate" Label - France

4	Availability of information and market knowledge	1.Increasing transparency of use of proceeds and expected environmental impacts 2. Making bonds from different issuers easy to compare 3. Periodic Reporting by the Issuer	
5	Availability of clear risk profile of green investments	<p>Preferential treatment of green bonds in monetary and fiscal policy.</p>  <p>Public Investments in Green Bonds will boost investor sentiments. Policies should be amended to ensure that at least a minor proposition of pension funds and other state investments flow towards green bonds</p>	<p>The European Central bank (ECB) has floated the idea of treating green bonds preferentially in its collateral framework, i.e. the conditions under which banks can pledge assets to obtain short-term funding from the Central Bank. The People's Bank of China (PBoC) started accepting green bonds as collateral on preferential terms already in 2018.</p> <p>Norway's Sovereign Wealth Fund investment in green bonds AND The California State Teachers' Retirement System (CalSTRS) investment in green bonds issued by the World Bank.</p>

Few other international practices like

- Providing Tax incentives for green bonds
- Developing roadmaps or visions for green bond market development
- Setting up national platforms through which actors can jointly work on the development of the bond markets
- Subsidizing interest payments by Bond issuers
- Improving compliance and transparency
- Improving accounting and disclosure practices

- Emulating best practices by various governments and institutions

can help green bond markets establish itself as a stable funding mechanism and a solution to India's zero emission goal

9. Conclusion:

Green bond market is in its early stage in India. Today every green bond issued by Indian corporates both in Indian market and in global market gets subscribed. This shows that there is a demand and there is a market available for green bonds. Today the global outlook of India has changed a positive turn and countries are looking at India as a new leader of the emerging economies. Our efforts and fight against climate change are globally acknowledged. We should not let the momentum vanish in the darkness. To make use of the positive outlook that investors have on India, it is important that we create a robust environment for sustainable finance. An internationally acknowledged policy framework, a vibrant institutional infrastructure to implement and regulate the policy and a vibrant market environment is the immediate need. Work has to be done on both the supply side and demand side of the market. The supply side needs institutional support and guidance to establish and take a confident stride in the market. The demand side needs their confidence reinforced. They need information, regulation and better results to make an informed investment choice that will be risk free, encouraging and profitable.

10. Bibliography:

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