

UNLOCKING THE GREEN BOND POTENTIAL IN INDIA



The Energy and Resources Institute



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Inside the Report

The report seeks to understand the rising 'green' bonds segment in India. It gives a brief overview of the developments in this segment – regulatory and market driven; lists key challenges to the instrument in developing to its full potential in terms of supporting climate actions; and identifies specific opportunities, on the basis of success stories and best practices from across the world, for enabling Indian green bonds to accelerate and diversify.

The approach taken in developing this report consisted of a mix between desk-based secondary research and insights gathered from interviewing industry practitioners who have issued green bonds in India and also those who are closely involved in shaping the segment.

Our endeavor was to identify and introduce possible next steps for the segment, to enable it to realize its full potential. Further focused studies on these suggested steps are required to create detailed issue analysis and action plans for their implementation.

Green Bonds – An overview

'Green bonds' are the fixed income financial instruments that are linked to promoting and implementing climate change and environment solutions. With this instrument, the issuer of the green bond gets the capital to finance green projects while the investors receive fixed income in the form of interest. When the bond matures, the principal is repaid. In a way, green bonds are the same as any corporate, in fact they are a subset of corporate bonds, where the use of proceeds are pre-allocated to a green activity. The first green bond was issued in 2007 by the European Investment Bank, underwriting €600 million under the label 'Climate Awareness Bond', as a structured bond with proceeds dedicated to renewable energy and energy efficiency projects.

Box 1: European Investment Bank – Climate Awareness Bond

Issuers	Issuer Type	Date
European Investment Bank	Investment Bank	1 May, 2007
Amount	Sector	Credit Rating
€600 million	Renewable Energy and Energy Efficiency	-

What's New

EIB acted as a catalyst for green bond market by issuing the first green bond in May, 2007. The Bond was designed as a structured product, whereby instead of a fixed coupon, the bond returns were linked to an equity index. The Climate Awareness bond has supported nearly 131 projects in 43 countries within and outside of the EU.

Since then, the market has witnessed over 50% compound annual growth rate (CAGR), and it continues to evolve into a mainstream subset of the broader fixed income market. The global green bond market has grown from \$34 billion in 2014 – to \$41 billion in 2015 – to \$81 billion in 2016 – to more than \$120 billion in 2017¹. Over the years, the market has expanded significantly in terms of breadth—scope, average issue size, issuer diversity, investor diversity, credit ratings, review and indexes; and depth—repeat issuers, larger tranches, and a growing base of institutional investors.

But when seen in comparison to the global debt market, green bonds continues to constitute a small fraction of it—close to 1%, indicating a massive potential for the market to grow². Volume and scale in the green bonds market is crucial to attract vast base of investors towards this niche segment. In this context, there is an imperative need to build confidence in the green market through careful balancing of market risks and liquidity.

Rationale for Green Bonds

Given the overall nature of green technologies that have and are likely to enter the market, fixed income bonds are particularly well suited to finance them because,

- (1) these technologies are largely capital intensive fixed investments in nature
- (2) the technologies generally tend to have low variable cost in the project lifetime
- (3) they generate steady paybacks and low-risk revenue streams over long periods of time once the investments are up and running.

However, on the other hand, because the technologies are new and novel, risk reduction on long payments streams will be critical to enhance the confidence among investors to enter the market. In this context, several risk reduction and other innovative models of green bond financing have been experimented with corporations and countries including measures such as credit enhancements and guarantees – that are especially useful. Besides, aggregation and securitization to pool risks and generate steady income flows of sufficient scale and size have potential and are likely to be well appreciated in long investment markets among institutional investors. While the green bond market has developed bottom-up, and largely independent of government regulation, which is one explanation for the instrument's vitality and dynamism and the pace of this market's development. However, if the

¹ RBC Capital Markets – Industry Note

² Article: Exchanges Play a Crucial Role in Developing the Sustainable Finance Market (2017). Available on: <http://www.bondsloans.com/news/article/1600/exchanges-play-a-crucial-role-in-developing-t>

instrument is to build trust in its stated purpose and retain investor confidence, there is a need for some level of standardization in the disclosure and transparency requirements, and there is a facilitative role the Government is required to play here. Public policy backing in the form of support, policy directions, and transparency of guidelines, measurements, and robust standards could play a very crucial role in strengthening the green bonds market. While a level of Government intervention is needed, it is also necessary to point out that this intervention should not make regulatory requirements and taxonomies too rigid for the instrument, as this will hamper the innovativeness witnessed with this instrument across the world and thus effect its growth and climate impact potential.

In many economies, public sector has been lending confidence in the green bonds market by issuing sovereign bonds. Currently, the sovereign issuers have been able to raise close to \$ 10 billion towards green investments covering all major continents – Asia, Africa, Europe, and the Pacific Islands. The countries which have issued green bonds are Fiji, France, Poland, Nigeria, Indonesia, and the most recent, as of February 2018, being Belgium. The trend has been growing, as within a year of the first sovereign green bond issue in as early as December 2016, the market has seen diverse new entrants of sovereign green bond issuers. In some other countries, like in China, the public sector has been advancing the green bond market by introducing robust domestic green bond evaluation guidelines for the ease of the market players.

The Indian Green Bond Market

India entered the green bond market in 2015 with the YES Bank issuing the first green bond for financing the renewable and clean energy projects particularly, for wind and solar. Gradually, the green bond market has expanded to several public sector undertakings, state-owned commercial banks, state-owned financial institutions, corporates, and the banking sector. The Climate Transparency’s *Brown to Green* Report 2017, drew a comparison across the G20 countries in terms of their green bond issuance as a share of the country’s overall debt market. According to them, among the G20 countries, India ranks fifth. This highlights the existing scale and future scope in the country to develop and grow green bonds as an instrument to accelerate green market penetration.

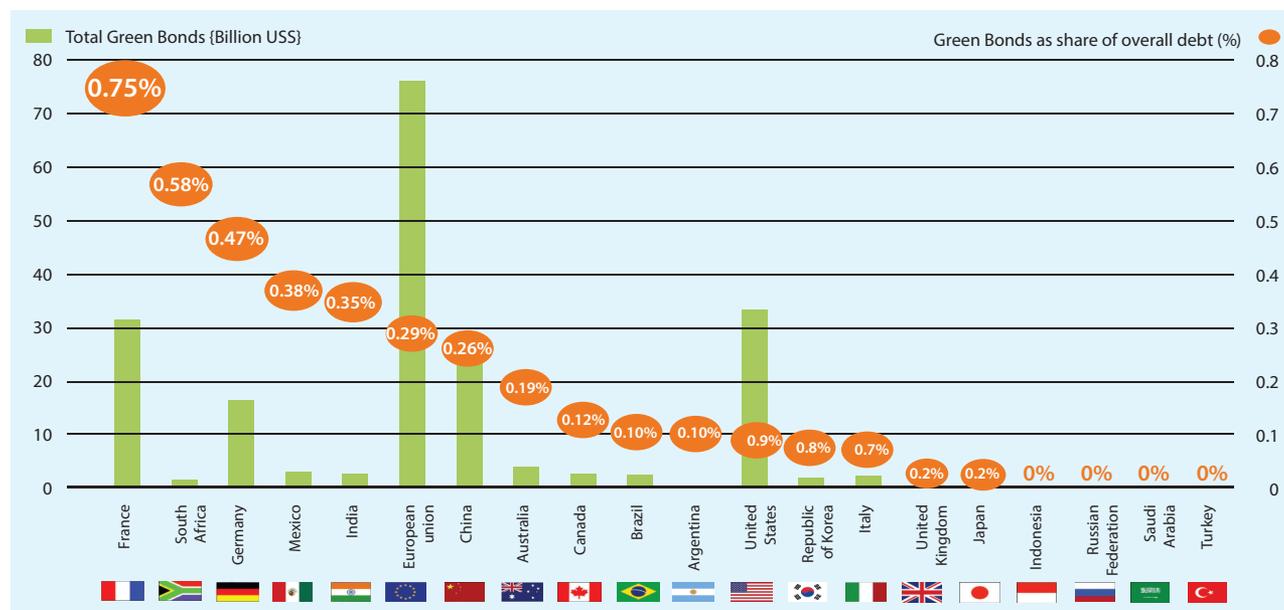


Figure 1: Green Bond Issuance of the G20 Countries (as of 2017)

Source: Climate Transparency Group, *G20 Brown to Green Report*, 2017

TERI analysed 25 key green bonds (certified, self-labelled), which have been issued in India by various players. There have been several innovations in the market since the first issue, it is reflected in the timelines graph depicted below. However, the Indian green bond market hasn’t been able to diversify itself much in the nature of assets for funding, which are still focused on the ‘pure play’ renewable energy projects.



Figure 2: Green Bond Issues by Issuer Type

Source: TERI analysis

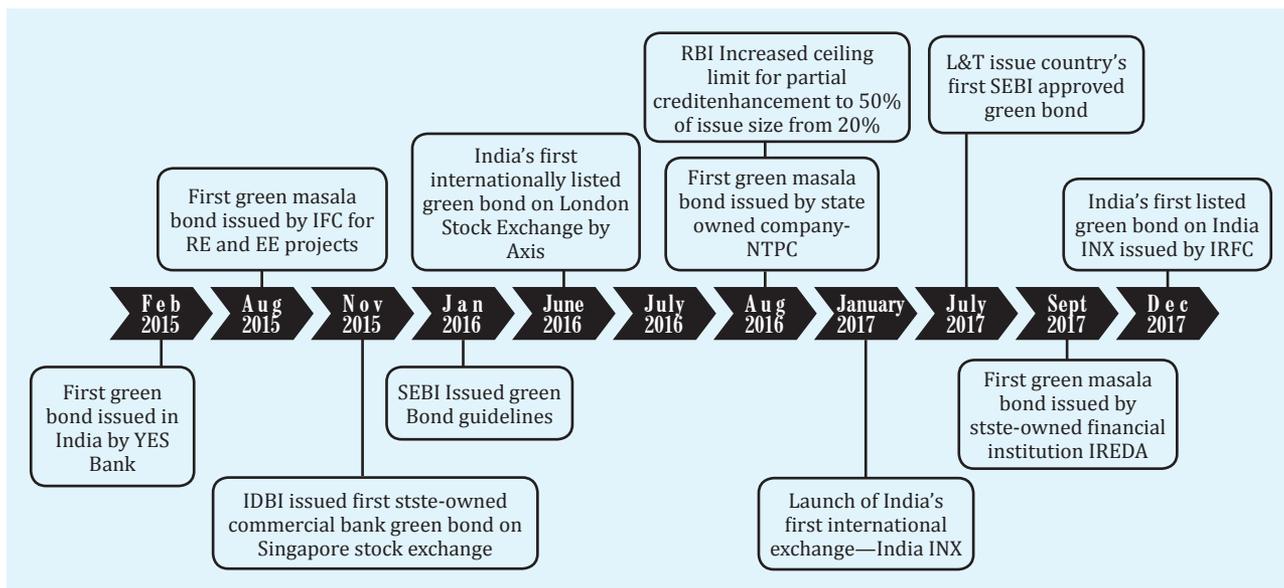


Figure 3: Timeline of Green Bonds in India

Variance in Coupon Rates: Average coupon rate for domestic issuers is significantly higher—7.5% compared with 4.7% for international issuance. This significant difference is linked to the currency risk of the Indian Rupee (INR). Additional hedging costs would need to be considered and accounted for to make these figures comparable. In India, the coupon rates for masala bonds ranges from 7% to 10%, and for other bonds, the range is 2.5%—8% (the spread also indicates the difference between INR and foreign currency bonds).

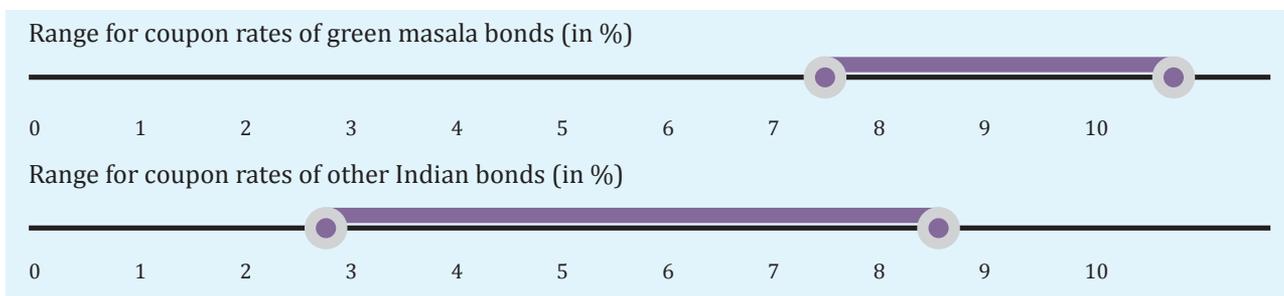


Figure 4: Variance in Coupon Rates

COMPANY	OVERSUBSCRIPTION PROPORTION
Axis Bank	2.2
EXIM Bank	3
REC	3.9
NTPC	1.45
YES Bank	2
Greenko Group	1.5
IREDA (2016)	5.1
IREDA (2017)	1.74
AZURE POWER	2
IRFC	3

Oversubscription of Bonds: The interest in issuance in green bonds is not only visible in terms of the growth of the Indian green bond market, it is also reflected in the oversubscriptions of some of the bonds. This shows that not only are the issuers showing active interest but the investors are also attracted towards green bonds. The tax-free bond issued by the *Indian Renewable Energy Development Agency Limited (IREDA)* in 2016 was oversubscribed by more than 5.1 times.

COMPANY	OVERSUBSCRIPTION (Times)
IREDA (2016)	5.1
REC	3.9
EXIM Bank	3
IRFC	3
Axis Bank	2.2
YES Bank	2
AZURE POWER	2
IREDA (2017)	1.74
Greenko Group	1.5
NTPC	1.45

Issuance Size: The issuance size in India varies from a small issue size bond, below \$100 million issue, to very large issue size bond ranging to \$1 billion. Some industry experts have stated that – “small size of the bond issue generally works for India³. But when one tries to go international, investors would require big volume and therefore are interested in moving towards big issue size”. Therefore, in order to mobilize the Indian green bond market, and to tap domestic investors, it would be essential to have a well-developed national exchange and a domestic certifier for the projects. Together India has raised nearly \$7.3 billion in green bonds (certified and self-labelled) by now.

³ Expert interview with a state owned financial institution in India



Figure 5: Indian Green Bonds – by Issues Size

Policies and Regulations to Accelerate the Green Bond Market

Government support in the form of policies and regulatory support is vital to bring the green bonds market in India to scale. Over the years, the Government of India has been providing greater policy visibility and regulatory certainty in accordance with commitments outlined in the Paris Agreement which anchors a clear policy direction towards the green market. In addition, specific policy and regulatory measures have also been taken to accelerate the green bond market in India. Some of them are listed below:

The Indian regulator SEBI issued the domestic green bond guidelines⁴

In January 2016, the Securities and Exchange Board of India published its official green bonds requirements for Indian issuers making India the second country (after China) to provide national level guidelines. As per the guidelines of the *Securities and Exchange Board of India (SEBI)*, a debt security shall be considered as ‘Green’ or ‘Green Debt Securities’, if the funds raised through issuance of the debt securities are to be utilized for project(s) and/or asset(s) falling under any of the following broad categories:

1. Renewable and sustainable energy including wind, solar, bioenergy, other sources of energy which use clean technology, etc.
2. Clean transportation including mass/public transportation, etc.
3. Sustainable water management including clean and/or drinking water, water recycling, etc. There are different types of definitions and indexes that can be leveraged:
4. Climate change adaptation
5. Energy efficiency including efficient and green buildings, etc.
6. Sustainable waste management including recycling, waste-to-energy, efficient disposal of wastage, etc.
7. Sustainable land use including sustainable forestry and agriculture, afforestation, etc.
8. Biodiversity conservation

SEBI issued circular on disclosure norms in May 2017

In addition to the above, SEBI issued a circular on May 30, 2017, setting out disclosure norms which would govern the issuance and listing of ‘green bonds’ in India (Green Bond Guidelines), in addition to the existing SEBI (Issue and Listing of Debt Securities) Regulations, 2008 (ILDS Regulations). Within the guidelines, the scope of definition of green bonds has been kept wide to include most types of green projects and SEBI has been empowered to

⁴ SEBI. Available at: https://www.sebi.gov.in/sebi_data/meetingfiles/1453349548574-a.pdf

include any other category of projects from time to time. As part of the guidelines, the issuer would have to make disclosures including use of proceeds, list of projects to which green bond proceeds have been allocated in the annual report, and periodic filings made to the stock exchanges.

Union Budget 2018 proposal to consider A-rated bonds for investment⁵

One of the most confusing things about bonds is that no two bonds are the same. For instance, the same company can set up its capital structure differently for two bonds, offering collateral to back some of its bonds, receive credit enhancement or guarantee or issue senior or subordinated bonds that have different priorities for repayment in a bankruptcy proceeding. Therefore, the role a rating agency plays is to look closely at individual bonds - and judge the likelihood that the issuer is able to repay to its investors - and rate them accordingly (along their specific rating scales) to make the risk assessment profile of the bond, available to all, in the open market.

In the Union Budget 2018, an appeal to consider A-rated bonds for investments was an important proposal aimed at deepening India's corporate bond market. The Hon'ble Finance Minister of India in his Budget speech said that "corporate bonds rated 'BBB' or equivalents are investment grade." However, he recognized that in India, most regulators permit only bonds with 'AA' rating as eligible for investment. Therefore, there was an indication provided to the concerned regulators to consider moving from AA to A grade ratings. This has relevance for all kinds of investment funds, such as pension funds, insurance funds, and mutual funds, which invest in corporate bonds across different schemes.

Such a move will allow development of the corporate bond market in a more comprehensive manner including that of the green bonds, by witnessing more corporates entering the capital market to raise funds. For instance, this may allow access to a broader investor class including insurance companies and mutual funds early on.

The Reserve Bank of India (RBI) introduced corporate bond measures

The Reserve Bank of India introduced a number of measures in August 2016 that will help to develop the corporate bond market in the country. The following are some of measures undertaken:

- a. It raised the ceiling limit for partial credit enhancement to 50% of issue size from the earlier limit of 20%
- b. It allowed banks to issue rupee denominated bonds overseas under the extant framework of incentivizing issuance of long-term bonds by banks for financing infrastructure and affordable housing
- c. In order to encourage activity in the corporate bond market, the RBI allowed brokers to participate in corporate bond repo market
- d. To facilitate direct trading in corporate bonds, RBI in consultation with SEBI, decided to allow foreign portfolio investments (FPIs) to transact in corporate bonds directly without involving brokers.

Barriers that Impede Green Bonds Growth

While the green bonds segment has undoubtedly been successful in India over the last three years, especially for a nascent instrument, there is the possibility that it will soon peak or prove to be ineffective in advancing green growth, if certain steps and innovative solutions are not adopted to drive it forward. The key challenges that the market currently faces are as follows:

1) Lack of concentrated measures to support this nascent instrument

Green bonds have a huge potential in accelerating climate actions and promoting sustainable development. However, due to the newness of the instrument and lack of understanding of all its implications, the average domestic investor is wary of investing in these, and perceives them as high-risk investments. This is especially true if the bond is not issued by one of the more recognized green sectors such as renewable energy. Further, especially in India, green projects are likely to not adhere to the conventionally accepted standards, in terms of their returns period, the issuer type and the generally smaller size of projects. However, financial structuring, such as aggregation and securitization can be applied to lower risk and enhance the credit profiles of such projects and enable them to leverage green bonds for financing.

⁵ Union Budget speech 2018

To support and drive the segment in its early stages, there is a need for public intervention. Demonstration of innovative models for structuring green bonds by large organizations or government-supported entities will greatly help in encouraging such models.

Further, there are many credit-enhancement methods which have been adopted across the world by governments, ranging from the creation of guarantee funds, to issuing of sovereign green bonds, to making such bonds tax-exempt or with lower taxes. There is a need to study global examples and decide on the most appropriate strategy for driving green bonds in the Indian market.

2) Lack of sector diversification in green bond issuances

Several experts have noted that it is important for the market participants to now analyse more complex sectors and broaden out the use-of-proceeds from the 'low-hanging fruit'⁶ for growth to continue at this pace in 2018, particularly in the sectors other than renewable energy.

There is a large scope for green bonds to be issued across a wide-range of sectors such as the unconventional investment sectors like forestry and marine conservation, innovative transport, and new business models. However, with the limits of traditional bond issuances, it is difficult to finance such climate projects. Led by development and multilateral organizations, there have been some novel application of traditional financial instruments to fund these sectors through bonds. These have involved partnerships between governments at times and leading corporates in other cases.

3) Lack of methodologies and frameworks for evaluating diverse projects in the Indian context

There are some fundamental impending challenges in the market, which need to be addressed to accelerate the momentum in green bonds.

Challenges facing the Green Bonds Market

- Smaller size of projects resulting in relatively smaller issue sizes
- High perceived risk for novel technologies Lack of methodologies which incorporate the national context for evaluating projects
- Responsible investors also seeking to move towards sustainable development goals through bonds
- No common definition of 'green' from the domestic perspective

First, there's still a **lack of accepted taxonomies**, defining 'what is green' across different asset classes and industries. The range of assets widely accepted as 'green' is still limited today, which encourages issuers and bankers to be cautious about financing new asset classes in the green bond market.⁷ On the other hand, from the issuer's perspective, no issuer would want to risk their reputation by issuing a bond which is criticized for not being adequately green or transformational, particularly due to lack of availability of a domestic green assessment framework to rate them in a transparent and uniform manner.

Second, there has been a common market view that **many issuers feel constrained by the requirements of a green bond market**, as there has been a significant move towards sustainable and social goals as a more inclusive way forward to encompass a broader range of use of proceeds. The green bond guidelines issued in India by the regulatory authority, SEBI, has tried to address this aspect by including a wide diversity of project types within the taxonomy of green bonds. But currently, there is no available domestic framework to assess this wide variety of projects. In addition, with the transitioning sentiments of the market where the dominant theme for investors is changing fast to align them to the broader mandate of sustainability, it has become important that issuers map their green bond assessment framework to the SDGs. This entails employing one's environmental expertise to

⁶ Driving corporate green bond growth through diversification and environmental expertise (2018). Available at: <https://www.environmental-finance.com/content/the-green-bond-hub/driving-corporate-green-bond-growth-through-diversification-and-environmental-expertise.html>

⁷ Interview of Mr Philip Brown of the Citi Group, available at <https://www.environmental-finance.com/content/the-green-bond-hub/driving-corporate-green-bond-growth-through-diversification-and-environmental-expertise.html>

understand the entire ecosystem and life-cycle of green assets.

Third, we need to understand that there is a **need to define a domestic context while defining green and evaluating green bonds**. This is because different countries are at a different trajectory of development, and therefore, their prioritized green or climate actions may vary from one country to another. Organizations such as CICERO and the Climate Bonds Initiative, along with leading international banks, have been pioneering the global green bonds market and have developed global standards for evaluating the green bonds, and has helped in providing an excellent start to countries to begin screening projects. But, beyond this, a more nuanced domestic framework needs to be developed for India, building on the broader norms of the Global Green Bonds Principles, but one which is more aligned to the domestic needs for accelerating the market, evaluating the use of proceeds, and adhering to the domestic framework for disbursement of funds.

For this growth trend to continue and the green bonds market to expand, the above listed issues need to be addressed in terms of policy support as well as structuring of bonds. In order to minimize the cost of funds, for example, various strategies for risk mitigation and credit enhancement can be considered. In order to provide a further boost to green bonds, there is a need for validation of 'green' projects. A strong standards and certification process that clearly establishes green credentials can mitigate the risk of green washing will go a long way in supporting the market in the initial stages and diversifying the issuer base.

In the next three sections, we discuss these issues and look at innovative methods adopted world-wide to address them.

Models for Credit Enhancement of Green Bonds

Green bonds, being a relatively new type of investment and financial instrument, are perceived as higher risk and are yet to establish a financial and credit profile which is comparable to the risk-return characteristics of conventional bonds. Further, green projects are generally smaller in size, especially when done by the corporate sector, making them unviable under the conventional bond structures. These are the key barriers to the expansion of the green bonds market in India and globally.

To overcome these barriers, governments across the world are introducing regulations and measures for credit enhancement and are backing development and financial institutions which are trying novel finance structures for growing this segment. This is especially true and necessary in the case of developing economies, including India, where the debt markets haven't matured enough to be able to properly leverage this emerging instrument.

Credit enhancement has been crucial for driving green bonds in international markets and there is a range of credit enhancement measures available, largely through guarantees, partial credit enhancements, and subordinated debt or equity. These mostly rely on a stronger public sector entity or financial institution to support the credit enhancement measures.

To make green bonds issuances more attractive for investors and boost this emerging market, credit enhancement measures for improving the credit rating, especially of corporate bonds, are necessary. It essentially means an additional assurance or guarantee to service the bond. To mitigate the higher perceived risk, large investors looking to invest in green bonds are predominantly looking at certified and investment-grade bonds, which in the current scenario, are mostly backed by the state. The more innovative corporate-backed green projects are likely to have lower credit ratings, in part due to the relatively limited experience with green technologies, such as solar power, and the challenge of establishing a strong revenue stream for green projects, such as forestry or marine conservation projects.

Once the market matures, investors would be more comfortable with the instrument and open to invest in a wider range of rated bonds, leading to an increase in issuances and further strengthening of the market, as is happening now in the US and Europe. According to Moody's, in 2016, only 1.4% of global green bonds issuance was speculative grade, while for the first three quarters of 2017, 6.1% of green bonds issuance were of speculative grade, indicating a gradual maturation of the global green bonds market.⁸

Guarantees

Guarantees⁹ and partial risk guarantees are among the more widely used mechanisms across the financial sector for credit enhancement of conventional bonds and debts. These can be in the form of private collaterals or public sector backing. The public sector often provides partial-risk guarantees for bond issuances in priority sectors such as infrastructure development. The energy sector has been a huge beneficiary of this.

To increase their use for growing the green bonds market, financial experts have suggested measures such as non-banking financial companies (NBFCs) playing a larger role by offering guarantees for green infrastructure projects, so as to lower the risk and enhance the credit rating.¹⁰ An implemented example of this is India Infrastructure Finance Company Ltd. (IIFCL) partially guaranteeing ReNew Power's bond issue to improve the credit rating (see Box 2). In recent studies, research organisations¹¹ have also suggested government intervention in the form of a fund to offer guarantees for enabling credit enhancement. China's National Development and Reform Commission (NDRC) has gone a step further and suggested that local governments should set up green bond guarantee funds.¹²

⁸ Moody's (2016). https://www.moody.com/research/Moodys-Global-green-bond-issuance-in-2017-eclipses-2016-record--PR_375206

⁹ A *financial guarantee* is a promise to take responsibility for another company's *financial* obligation if that company cannot meet its obligation.

¹⁰ The Hindu - Business Line (August 2016). Green bonds: Nothing to write home about. (Last accessed on January 24, 2017: <http://www.thehindubusinessline.com/specials/clean-tech/green-bonds-nothing-to-write-home-about/article8933951.ece>)

¹¹ CEEW and NRDC (April 2016). Greening India's Financial Market - Interim Report. <http://ceew.in/pdf/CEEW%20NRDC%20-%20Green%20Bonds%20Can%20Drive%20Clean%20Energy%20Deployment%20-%20203%20May%202016.pdf>

¹² Roadmap for China: Green securitisation, tax incentives and credit enhancements to scale green bonds (Climate Bonds Initiative; International Institute for Sustainable Development)

Box -2: ReNew Power			
Country	Issuer Type	Sector	Date
India	Corporate	Renewable Energy	Sep-15
Amount	Coupon Rate	Tenure	Credit Rating
\$68 million	9.50%	17.5 years	AA+
Barrier Addressed			
Institutional investors are wary of investing in green bonds, especially those issued by the corporate sector, as these are usually of speculative grade (credit rating of BBB and below).			
What's New			
As a successful example of credit enhancement, ReNew Power's green bond was guaranteed jointly by the Asian Development Bank (ADB) and the India Infrastructure Finance Company Ltd. (IIFCL), which increased its credit rating from BBB to AA+ and made the issue attractive for institutional investors.			
Overview:			
This project bond's original credit rating of BBB was enhanced to AA+ by IIFCL's guarantee facility, which provides partial guarantees on rupee-denominated bonds issued by Indian companies to finance infrastructure projects; and by ADB which then took on a part of IIFCL's guarantee risk. The bond was raised to refinance bank loans for the company's 85 megawatts (MW) wind power plant in Maharashtra.			

Partial Credit Enhancement (PCE)

PCE¹³ provides credit support in times of distress, hence lowers the risk of the associated project and improves the credit rating of the bond.

India in the last few years has been exploring this mechanism for growing the domestic corporate bonds market, introducing and periodically modifying rules to develop a robust corporate bonds segment. In 2015, the Reserve Bank of India (RBI) allowed Indian banks to provide PCE to corporate bonds issued for infrastructure projects, which is a benefit for green bonds, which are largely project based for the corporate sector. In 2016, the RBI revised its earlier rule to increase the aggregate exposure limit from the banking system to 50% of a bonds issue size, from a limit of 20% for an individual bank,¹⁴ allowing companies to lower their borrowing costs even more due to improved ratings. However, in a 2017 circular, RBI introduced a new rule to make infrastructure bonds 'safer' under which to be eligible for PCE, corporate bonds need to be rated by a minimum of two external credit rating agencies, and the lower of the two will be used by banks for providing PCE. Further, bonds need to have a minimum investment grade rating of BBB—to be eligible for PCE.¹⁵

While the RBI is considering PCE for the corporate bonds segment as a whole till date, there is scope for further modifying the rules to focus on boosting the green bonds segment.

Another form of PCE undertaken by the public sector to boost certain types of investments and sectors is subordinated debt or equity. Under these, public entities can invest in a project or portfolio, and take the position of accepting loss before private institutional investors. This protects part of the overall project investment to an extent, which lowers the risk and hence leads to a higher rating. An example of this is the European Investment Bank's initiative which covers first loss for bond issuances which are related to EU's Connect Europe program¹⁶.

¹³ Note: Banks can provide PCE to a project as a non-funded subordinated facility in the form of an irrevocable contingent line of credit which will be drawn in case of shortfall in cash flows for servicing the bonds.

¹⁴ RBI Notification - Partial Credit Enhancement (PCE) to Corporate Bonds. Last accessed on January 23, 2018: <https://rbi.org.in/Scripts/NotificationUser.aspx?id=10571&Mode=0>

¹⁵ Economic Times (May 2017). (Last accessed on January 23, 2018: http://economictimes.indiatimes.com/articleshow/49504377.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

¹⁶ European Investment Bank: An outline guide to Project Bonds Credit Enhancement and the Project Bond Initiative; http://www.eib.org/attachments/documents/project_bonds_guide_en.pdf

Aggregation and Asset-Backed Securities

Another challenge which impacts the credit ratings of green projects is that standalone green projects are small in scale, such as rooftop solar, household or building energy efficiency projects, and are thus unattractive to institutional investors. In most bond markets, institutional investors generally seek issuance sizes of at least \$100 million, which makes it difficult to raise financing for smaller green projects¹⁷.

To address this, a mechanism which has proved to be successful in some novel applications internationally, but has not as yet been explored in Indian green bonds is securitization. Securitization leads to the aggregation of several smaller projects, and could give an added impetus to green bonds.

The mechanism of asset-backed securitization (ABS)¹⁸ for green projects is similar to that of the usual ABS, with the difference being that the money raised will be used for green projects. In green ABS, the cash flows backing the issuance could be from green or non-green assets, but the proceeds raised from the bond issuance would be allocated to green assets. The process of securitization detaches the assets to be securitized from the initiators' overall balance sheet and credit rating, which may be below investment-grade, and instead allows a higher rating which is based on the credit-worthiness of the selected assets only. Further, ABS for green bonds reduces the risks associated with the green projects and requires a form of aggregation of smaller green projects to reach a scale that is viable for financing. This results in the benefits of having improved access to finance and lower cost of capital in comparison to bank financing for the project as a whole. (See Box 3)

Box 3: Inter-American Development Bank (IDB) and Clean Technology Fund's (CTF) two-phased Energy Efficiency Green Bond

Country	Issuer Type	Date
Mexico	Development Bank	2016
Amount	Sector	Credit Rating
\$125 million	Energy efficiency (Energy Service Companies)	

What's New

The innovative structuring of this bond, aims at providing longer-term support for energy efficiency projects, primarily those developed by energy service companies (ESCOs). The two-phased structuring of the bond, addresses the issues of aggregating smaller standalone projects to create a suitable sized portfolio of standardized projects and then using the issuers' guarantees to enhance the credit rating of the overall portfolio and securitizing these.

Overview

ESCOs are challenged as they typically, face commercial financing constraints and receive short-term funding for projects which have much longer payback periods. This innovative financial structuring enabled IDB to contribute to closing the long-term financing gap for ESCOs in Mexico and it supports the ESCOs in achieving their goal of developing small-scale (less than 5 MW) energy efficiency projects and promoting responsible energy consumption.

The bond used two phases to structure the project. In the first phase, that is, Accumulation, the instrument is structured as a credit line of \$50 million to accumulate and aggregate a portfolio of standardized energy efficiency projects by ESCOs. This allows smaller projects, with higher perceived risk, to pool their risks and be better able to access the capital market. In the second phase, that is, Mobilization, these investments are securitized through issuance of green bonds in local debt capital markets. Guarantees from the CTF (to an amount of \$19 million) for the pooled projects, resulted in credit enhancement for the aggregated project due to risk mitigation and thus resulting in lower interest rates and a stronger bond issue.¹The project also received support from Green Climate Fund to enhance its value to over \$180 million.²

¹⁷ Expert views from a state owned financial institution (issuer) in India

¹⁸ Note: Securitization is the process of transforming illiquid assets (such as a group of loans) into a security which is tradeable and hence more liquid.

The majority of green ABS issued has been in the US market, including the issues of solar developer SolarCity and energy efficiency lender Renovate America¹⁹. China too has been focussing on expanding securitization, and with this in mind, in 2012 its Ministry of Finance published guidelines for expanding its securitization pilot programme. It has also formulated policies for financial institutions on using ABS to support SMEs and is encouraging non-bank financial institutions to invest in ABS. This resulted in the ABS issued in 2014 and 2015 being five times more than the total ABS issued till 2014. The Industrial Bank of China pioneered a green ABS in China in 2016, by aggregating a small pool of 42 green loans.²⁰

Barriers for green ABS are largely on the supply-side, as securitization requires a certain volume of standardized underlying assets. This prevents private sector actors from leveraging these mechanisms.

India lacks a deep corporate bond arena, resulting in a limited scope of capital markets. In a move to revive the structured debt market in India and to enable offshore investors to participate in it, in February 2017, the Government announced a tax reprieve for unlisted debt securities, a new bankruptcy code to reinforce creditors' rights and new rules for foreign portfolio managers.²¹ The model of using smaller pools of loans, as done in China, instead of the usual high-volume securitization structure used in developed countries' capital markets, could be more readily applied in the Indian context by banks.

¹⁹ Roadmap for China: Green securitisation, tax incentives and credit enhancements to scale green bonds (Climate Bonds Initiative; International Institute for Sustainable Development)

²⁰ Ibid.

²¹ Financial Times (June 2017). Government reforms unleash India's securitisation market. (Last accessed on January 23, 2018: <https://www.ft.com/content/84f61a50-4b4a-11e7-919a-1e14ce4af89b>)

Innovative Models for Diversifying the Sectoral coverage of Green Bonds

A green bond acts as a labeling of sorts, which states that the financing is addressing climate change and sustainability priorities and is a mark of confidence for responsible investors who might be wary of funding commercial activities in low carbon sectors. The SEBI guidelines have clearly specified a range of sectors and activities in which green bond proceeds can be invested. However, experience tells us that until now, India has learnt to effectively leverage green bonds for financing renewable energy projects only.

An analysis of the stated *use of proceeds* of Indian organizations, who have issued green bonds, shows that 50% of them issued the bond solely to fund projects in renewable energy, while 80% of them included renewable energy as the primary sector for use of funds from the issuance. Also, just 25% of these organizations have started investing in energy technologies, including energy efficiency technologies and equipment as part of their *use of proceeds*. Only four bond issues included sustainable water management projects as part of its use of proceeds, three mentioned sustainable waste management and just one mentioned sustainable land use among its various other focus sectors. These sectors along with certain segments which are essential for climate actions, have been challenging to finance using traditional financing instruments globally, including green bonds. There is a large potential of using inventive models of the instrument for strengthening climate actions in these diverse sectors.

Table 2: Analysis of Use of Proceeds of Indian Green Bonds

	Renewable Energy	Energy Efficiency	Low Carbon Transport	Low Carbon Buildings	Sustainable Water Management	Sustainable Waste Management	Energy Sector-Technologies	Sustainable Land Use
Axis Bank	Yes		Yes	Yes				
NTPC	Yes							
REC	Yes	Yes			Yes	Yes		
SBI	Yes	Yes	Yes	Yes		Yes		
Greenko	Yes							
PFC	Yes	Yes	Yes			Yes	Yes	
IDBI	Yes	Yes	Yes		Yes	Yes	Yes	Yes
CLP	Yes							
EXIM Bank	Yes		Yes					
Hero Future Energies	Yes							
IRFC (Indian Railways)			Yes					
PNB				Yes				
L&T	Yes							
Azure Power	Yes							
YES Bank	Yes							
ReNew Power	Yes							
IREDA								
IL&FS	Yes							
EESL		Yes						
Jain Irrigation					Yes			

Source: TERI analysis

Only recently, India witnessed a range of green bonds issued by government entities, including the three major green bonds issued in the second half of 2017 by IREDA, Power Finance Corporation (PFC), and Indian Railways Finance Corporation (IRFC)—but most of these have been focussed on the renewable energy sector alone. There is still a large untapped potential for green bonds in sectors besides renewable energy. The more unconventional investment sectors, such as water, agriculture, forestry, waste, and land, need public interventions to make them attractive and financially viable for private investments. One such intervention is that increasingly, global institutional investors, such as pension funds have mandates for sustainable investments. This could be a key step in making green bonds attractive for the wider public.

The financial sector, both public sector—including the development banks—and the private sector, is playing a vital role in driving the green bond market and pioneering innovative models across the world (*See box 4*). One such example is that of the Forest Bond issued by IFC in Kenya where REDD+ and price support mechanisms were combined to ensure project sustainability. In the Indian green bonds market too, since 50% of the green bonds have been issued by the financial sector, it provides a good opportunity to adopt and experiment with some of these models.

Box 4: International Finance Corporation's (IFC) Forest Bond

Country	Issuer Type	Date
Kenya	Development Bank	2016
Amount	Sector	Credit Rating
\$152 million	Forestry	AAA

What's New

The novel feature of the bond is that investors can choose to have the interest returns paid in either cash or REDD+ carbon credits, or a combination of the two. An additional innovation is in the form of a price support mechanism worth \$12 million from BHP Billiton, under which BHP buys the carbon credits if in case the investors opt for cash pay outs, to help in ensuring that the project can sell a base minimum quantity of carbon credits every year.

Overview

IFC's forest bond was successful in raising financing from private institutional investors from its listing on the London Stock Exchange. It demonstrated the ability of innovative capital-market mechanisms for mobilizing private climate finance for unconventional investment sectors, such as forest conservation. Under this, the sale of the carbon credits will be used to provide financing for wildlife conservation, creating sustainable livelihood opportunities and other benefits for local communities living in and around the Rukinga Wildlife Sanctuary forests, under REDD.

The programme funded by the bond will allow corporates to offset carbon emission through direct investments in forest conservation, at no additional cost of due diligence. All the carbon credits will be third party verified, giving investors full protection. The aim of the bond is also to stimulate investor demand for results-based approaches.

Besides the financial institutions, other types of bond issuers have been exploring innovative models to raise finances for unconventional sectors, where attracting private financing has been challenging in the past. For instance, Seychelles' blue bond is a variation of a green bond, which has scope to be leveraged by other countries, including India, to finance the under-funded water sector (*See box 5*). Globally, blue bond issuances are estimated to have crossed \$10 billion,²² but India has yet to enter the market. Given the increasing water related concerns and the rising financing gap in India's water sector, it is imperative to explore the use of such innovative mechanisms for enhancing private investments in the water sector, since water is included as an important category of green bonds within the SEBI guidelines.

²² The Hindu – Looking towards a greener future (2017). <http://www.thehindu.com/opinion/op-ed/Looking-towards-a-greener-future/article17009199.ece>

Box 5: 'Blue' Bond for the sustainable development of its marine resources

Country	Issuer Type	Date
Seychelles	Sovereign	2017
Amount	Sector	Credit Rating
~ \$20 million	Fisheries and Marine resources	-

What's New

The first ever blue bond, had the added innovation of successfully leveraging a blended financing mechanism. Under this, an ongoing sustainable fisheries initiative in Seychelles, supported by grants and loans from the World Bank and GEF, was combined with the sustainable investment mechanism of a Debt Swap for Conservation and Climate Change Adaptation—through which debt owed by a debtor, can be renegotiated with the creditor to fund specified activities.

Overview

This bond issue will be used for supporting the transition to sustainable fisheries and the designation of 30% of Seychelles exclusive economic zone (EEZ) as marine protected areas by 2020. Specifically, proceeds from the bond will be disbursed as loans by the Development Bank of Seychelles for approved activities which add value to the blue economy and diversify the fisheries sector, in line with the planned conservation and fisheries management plans. The fisheries sector is a key economic driver, contributing around 30% to Seychelles' GDP, and building resilience into the sector is a national priority for the country. Activities for doing this will include support to increase value addition in the artisanal fishing, aquaculture, and processing sectors, development of a fisheries information management system and capacity building of government officials for improving the governance of fisheries.

The explicit support of reputed international organizations to this planned development of the marine and fisheries sector is an added advantage in attracting international investors for the bond and mobilizing climate finance for Seychelles.

As the green (and allied) bond market grows, it is important that green projects should be prioritized over others, and issuers with strong sustainability credentials enabled to attract a broader investor base, both domestic and global. The existing eligibility criteria and regulatory requirements are an important first-step for the establishment of the green bonds market segment. But as a next step, to strengthen the segment, more transparency and comparability of data to evaluate the effectiveness of bonds in achieving and strengthening climate and sustainability actions is needed. For this, a way of measuring and identifying the effectiveness of green bonds aligned to national priorities is required. Therefore, a framework that evaluates bonds on all aspects of sustainability is the way forward. Many countries and corporations have already moved in that direction. (*see box 6*).

Box 6: Tropical Landscapes Finance Facility's First Corporate Sustainability Bond

Country	Issuer Type	Date
Indonesia	Finance Facility	2018
Amount	Sector	Credit Rating
\$95 million	Forestry	-

What's New

The multi-tranche Sustainability Bond, issued for a private corporate project—PT Royal Lestari Utama (RLU), seeks to contribute substantial environmental and social dividends, along with financial returns. The financing will enable RLU, a joint venture between Michelin and Barito Pacific Group, to set aside and not use the remaining High Carbon Stock (HCS) and High Carbon Value (HCV) forest in its concessions, and instead use them for community livelihoods and conservation, under planned project activities.

Overview

In line with TLFF's objective of leveraging public funding to unlock private finance for sustainable land use, the bond issue will finance climate smart, wildlife friendly, socially inclusive production of sustainable natural rubber through plantations on identified heavily degraded land in Indonesia. The location of the plantation area is such, that it will also serve as a buffer zone to protect a threatened national park—the Bukit Tigapuluh National Park which is one of the last places in Indonesia where elephants, tigers, and orangutans co-exist—from encroachment. The plantation will also provide employment for local communities, generating an estimated 16,000 fair-wage jobs on completion. A partial credit guarantee from USAID was also leveraged for the bond issue.

The TLFF consists of a lending platform and a grant fund, under which long-term loans issued are securitized, along with provision of technical assistance and co-funding of early stage development costs. Its investments are impact focussed, with extensive social and environmental objectives and safeguards being incorporated into the funded projects.

Accelerating the Green Bond Market through Exchanges

Exchanges are institutions facilitating a robust green bond market development, worldwide. Given their unique position in the financial market place, they play a critical role as an intermediary between the issuers and the investors coming from diverse geographies. Now with the evolution of the green finance market, they have an increasing role as – a platform and infrastructure providers; facilitators of cross market standards development; and educators and visibility providers to the emerging asset class -which is much wider and more important than earlier.

Besides, the exchanges are playing an increasing role in informing the market about green standards in a way that helps issuers and investors understand this segment – by making data available to the market. For instance, one such initiative, the Sustainable Stock Exchanges Initiative - a United Nations initiative (network of 65 exchanges worldwide) is working to develop guidance to listed companies around the world in order to promote sustainability in terms of environmental, social and corporate governance transparency. Through their initiative they aim at creating a common standard around reporting the impact of investments to the investors. This in turn aids in providing the necessary confidence to investors to enter the market.

In this context, since 2015, many exchanges and some regulators have demonstrated leadership in growing the market by providing a dedicated channel to the issuers for green bond listing. The Norwegian exchange, *Oslo Børs*, became the first *stock exchange* in the world with a separate list for *green bonds*. In 2016, Luxemburg stock exchange too launched a dedicated green exchange, a platform for green bonds that has since expanded to social and sustainable bonds. Some other notable examples who have opened dedicated channel for green listing are those of the Mexican Stock Exchange (BMV), Borsa Italiana, and the London Stock Exchange (LSE), etc.

In China, both the Shanghai and Shenzhen Stock Exchanges have indexes that represent the performance of labeled and unlabeled green securities in China. The objective was to open this market further to foreign investors, for which it was crucial to promote these indexes domestically. The market can then use these indexes to set up dedicated investment products, like ETFs, or, through the new Bond Connect programme, and make Chinese local currency green bonds available to foreign investors. Similar models may work in the Indian context given the large interest being shown by domestic issuers to enter the green bond market.

Recently in 2017, India's Bombay Stock Exchange (BSE) – the oldest and the largest stock exchange established the country's first International Exchange—called the India INX. India INX is committed to stimulating green financial projects and wishes to promote ESG standards across all issuers. The criteria for issuance of green bonds are currently aligned with global standards established by International Capital Market Association's (ICMA) Green Bond Principles and Climate Bonds Initiative. Until the India INX was launched, majority of the Indian green bonds (nearly 50%) found its way for listing into the London Stock Exchange. This was followed by listing into the Singapore stock exchange and a few on the National Stock Exchange.

In order to accelerate the green bond market in India, these exchanges can play a critical role by creating robust standards which not only adhere to global standards but are also domestically aligned at the same time. In this, the regulators can play a key role to help develop and shape the domestic standards. Some industry experts have indicated that “if we want to see the market grow faster and further, we need a more robust framework going forward, which can mean creating standard definitions and terms of reference, as well as standard obligations related to publishing certain documents on a mandatory basis”. In this, China's regulators have been considerably forward-thinking; where they have asked every issuer to display how proceeds are used to finance green initiatives within prospectus' of conventional bonds as well as green bonds, which is a significant step forward. This they have achieved by creating and adopting a domestically aligned green bond assessment framework. Also, LuxSE and SZSE have partnered with China Central University of Finance and Economics to launch a new Green Bond Index Series to facilitate access to China's green bonds for European investors.

India may learn from some of the above global experiences and develop a domestic framework for evaluating bonds for their greenness.

One, the domestically aligned framework will be adopted as a standardized framework which will provide transparent definitions and evaluation criterion, such that it adheres to the guidelines provided by SEBI and also is robust enough to instill confidence in the Indian green bond issuers.

Second, following the above, in order to ensure and maintain the quality of green bond lists, Indian exchanges may need to reserve the legal right to exclude or remove bonds from the list or segment if they do not meet the ongoing reporting requirements. For instance, Luxembourg's LGX and Borsa Italiana, are already doing so. If an issuer fails to provide information on the actual use of proceeds at least one year after issuance, it will be prevented from being included in the list/segment until its reporting obligations are fulfilled. In this way, exchanges can reinforce transparency in the allocation of green/sustainable bonds proceeds.

Need for a Domestic Green Bond Framework to Enhance Market Transparency

Global Practices

Ever since the green bond market took off, it has been struggling with the question of what makes a bond green. In 2013, when the green bond principle (GBP) came into picture, the market seemed to quickly pick-up around it.

The GBP were designed to be flexible—mainly to avoid giving prescriptive rules around ‘greenness’. They are voluntary process guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market. In a way they have standardized the approach for issuance of a Green Bond globally. Since GBP is not prescriptive in nature, over the years, several standards and models have been developed to fill the gap of evaluating environmental credentials of bonds.

- Market experts indicate that 16–20% of new socially responsible investors have entered the bond market for its green environmental value. If this value loses due to lack of transparency in evaluating projects—India may lose a large base of investor class
- India has issued ‘green bond guidelines’ but do not yet have a project evaluation index to differentiate higher green impact projects from the ones with low impact

In the context of standardizing the credentials of a green bond, the CICERO, Climate Bonds Initiative (CBI) and Sustainalytics have been key actors with their endeavor to create more robust assessments for these bonds. They provide green bond certification services on the basis of their methodology and criteria, which adds either direct or indirect value to the bond issuance .

CICERO Shades of Green Framework: CICERO uses a framework that evaluates bonds on the basis ‘Shades of Green method’ to rate bonds Light, Medium, and Dark Green. The framework aims to give investors a better insight into the climate risk and the environmental quality of green bonds. The framework is aligned to the global GBPs, while also assessing the use of proceeds with a climate risk lens. Additionally, the framework reviews how the issuer is selecting and evaluating appropriate green projects for the bond. It aims to provide transparency on climate risk for investors, and a makes available a simple identification method for high-quality green bonds.

In addition to them, there are other second party opinion providers — who evaluate the project’s green eligibility for funding based on their own assessment methods.

On top of all those taxonomies and assessment services, there is an array of indexes, stock exchange segments, and terminals that come up with their own criteria for assessing a bond as green. A number of ratings agencies and financial institutions have created indices to exclusively cover green bonds. In March 2014, Solactive launched the first green bond index, followed in July by S&P with their S&P Green Bond Index and the S&P Green Project Bond Index. Bank of America Merrill Lynch launched their index in October 2014 and finally in November 2014, MSCI collaborated with Barclays to launch family of green bond related indices. Each of these indices has various eligibility criteria for inclusion of green bonds.

However, interestingly over the years, a growing number of green bond assessors are viewing the significance of the bonds not typically referencing them to green bond criteria alone. Increasingly, the Social and Sustainability

credentials of a bond have become a need of the market²³. Some notable cases on this are elaborated in the box below.

Box 7: SDG-linked Bonds

World Bank SDG-Linked Bond: The first SDG-linked bond was issued by the World Bank, raising €163 million from institutional investors in France and Italy. Its returns are directly linked to the performance of the Solactive Sustainable Development Goals World Index, which includes 50 companies that based on methodology developed by Vigeo Eiris' Equitics, dedicate at least one-fifth of their activities to sustainable products, or are recognized leaders in their industries on socially and environmentally sustainable issues.

HSBC SDG-linked Bond: HSBC issued a \$1 billion Sustainable Development Bond, the first SDG-linked bond from a corporate. This was structured similarly to a conventional use of proceeds green bond, with reporting annually on whether the proceeds were allocated in line with a framework—a framework within which proceeds will be used to meet seven of the 17 SDGs:

- Increasing access to essential healthcare (SDG3: good health and well-being), education (SDG4: quality education), clean water, and sanitation (SDG6);
- Increasing the share of renewables in the global energy mix (SDG7: affordable and clean energy);
- Building sustainable cities (SDG11: sustainable cities and communities) and transport systems (SDG9: industry, innovation, and infrastructure); and
- Helping communities adapt to the effects of climate change (SDG 13: climate action)

In order to be eligible, businesses or projects must derive at least 90% of their revenues from activities that are in line with the SDGs. Eligible businesses can use the loans for general corporate purposes as long as it does not fund expansion into categories funding expansion outside eligible categories.

Green Bond guidelines in India

As discussed above, SEBI laid out the green bond guidelines in India in 2016. While SEBI was in the process of finalizing the guidelines, it invited comments on the consultation paper to discuss issues around defining a bond as 'green'. When the guidelines were released, it was seen to be an incredible step forward to provide policy directions to the industry, however the guidelines did not include a clear definition/or a defining criteria of what will be considered 'green'. Instead the guidelines stated that SEBI shall evaluate all green bond projects from case-to-case basis.

For green bond market to remain a credible financier of projects that have positive environmental impacts, it is essential to adequately define what types of projects are eligible as green. If left to issuers, the definition of 'green' can be interpreted in a wide variety of ways and may cause confusion in the market. Besides, keeping the definitional requirements open to evaluation from case-to-case basis also instills a lack of transparency in the market. An elaborate domestic framework for evaluation of 'what is green', within the context of national priorities, may be necessary to identify projects that are worthy of being labelled as green projects. It is important to align these to the global GBP and other widely used green bond standards, so that there is fungibility between Indian green bonds and global green bonds and to maintain the attractiveness of Indian green bonds. Industry perspectives tell us that such a framework would be helpful in mobilizing the sector and bringing about clarity in this respect²⁴.

In China, the China Securities Regulatory Commission (CSRC) released green bond guidelines, encouraging the Shanghai Stock Exchange and Shenzhen Stock Exchange to set up green bond lists and develop green bond indices to further boost China's green bond market (Box 8).

²³ The SDGs and the bond market. <https://www.environmental-finance.com/content/analysis/the-sdgs-and-the-bond-market.html>

²⁴ Expert views from financial institutions (issuer) in India

Box 8: Domestic Green Bond Framework - China

Country	Framework	Date
China	China Green Bond guideline	2015
Issuer	Sectors	Guidelines
China Securities Regulatory Commission	All	Guidelines by Peoples Bank of China Guidelines by National Development and Reform Commission

The Need

The definition and classification of the green bond is based primarily on the environmental performance of the green bond endorsed projects. The different focus on environmental performance by various institutions (CBI, Barclays MSCI Green Bond index, etc.) reflects the different focus on problems to be solved, which stems from the differences in stage of development and natural environments in different countries and regions.

Rationale and Principle

In addition to challenges from climate change, China is facing other issues, such as severe environmental pollution, aggravated resource constraints, and deteriorated ecological degradation. As a consequence, China stated the need for a framework that takes these multi-dimensional environmental benefits as the defining standard; take special consideration of environmental benefits in GHG emission reduction, pollution reduction, resource conservation, ecological protection; and prioritize projects with direct and marked environmental benefits, and those that accord with national industrial policy.

Based on the considerations above, the framework shall adhere to the following basic principles: i. Conforming to national conditions: focussing on improving the ecological environment and easing resource pressure, and following the lead of national industrial policy at the current stage; ii. Highlighting environmental benefits: supporting projects with marked environmental benefits and positive spillover effects; iii. Being simple and clear: taking into account the fact that most of the capital market practitioners are non-environmental professionals, and thus employing definition and classification method that is easy to follow and operate; iv. Making continuous adjustment: timely updating the framework according to technological advancement, policy adjustment, standard updates, and changes in resource and environmental conditions; v. In line with international practice: taking international standards and practices as reference to develop domestic definition and classification method, in order to facilitate international cooperation in green finance.

Currently, the market players in India adhere to the global definitions of green and conform to a variety of indexes and frameworks that are available in the market. But a closer look at the SEBI green bond guidelines indicate that for India, an evaluation framework for green bond, will need to be much wider than the current definitions available and will be clearly aligned to the domestic priorities. The following inferences were drawn clearly from the guidelines provided by the regulator:

- SEBI Guidelines aligns itself to the three important global principles**—The Green Bond Principle, The Social Bond Principle, and The Sustainable Bond Principle. Therefore, it is essential to develop a domestic framework which strengthens the guidelines provided by SEBI.
- Not all projects listed under SEBI guidelines are only 'green'**: When investors come to a 'choice for certainty' regarding raising funding for green bonds, it is essential that the listed projects for which the bond is raised is 'overwhelmingly green'. This is where projects related to clean water, forestry, and climate change adaptation at most times fail to raise money.
- Not all green project categories are directly comparable to each other**: For instance, the impact on emissions per unit of investment from setting up renewable energy projects is not the same as that of low carbon public transport, although both may lead to a green impact. Therefore, some weightages along the different categories listed by SEBI will be required in order to substantiate their impact to the interested investors. This would help in guiding the investors towards their chosen impact category.
- Some sectors are complex**: Some of the sectors within the SEBI guidelines are complex sectors and that's why

it is so important to have strong environmental expertise in order to model the impact of green bonds in these industries from a climate perspective.

5. **Understanding climate risk and life-cycle is important:** To be fully transparent on the green criteria of a building, it is not only sufficient to report on its emissions, but one also needs to consider urban planning, including material used, resilience to disasters and extreme weather. A binary check box does not reflect the sustainability aspect of projects, nor does it account for the relative levels of risk for each country.
6. **Missing local context:** While there is lot of merit in having a global verification and assessment methods, but one can create a global standard for evaluation—as it does not account for country differences. Some stakeholders are concerned that given the country’s unique needs, a certification standard should be tailored to the Indian context, rather than completely adopting the existing international standards.²⁵ In this context it will be useful to benchmark an India-specific green rating framework against international standards (perhaps those provided by Sustainalytics and CICERO) will help provide the international investors with needed transparency and confidence to invest in Indian green bonds.

Disaggregating the SEBI framework tells us that it is indeed a green plus framework which goes beyond green activities alone

SEBI Categories	SEBI Sub-categories	Alliance with 'Green' (Green Bond Principle)	Alliance with 'Social' (Social Bond Principle)	Alliance with 'Sustainable' (Sust'ble Bond Principle)
Renewable energy	Wind, solar, bioenergy, other sources of energy which use clean technology			
Sustainable Energy	-			
Transport	Clean transportation			
	Mass/Public transportation			
Sustainable Water Management	Clean and/or drinking water			
	Water recycling			
Climate Change Adaptation	-			
Energy Efficiency	Broader energy efficiency			
Buildings	Efficient and green buildings			
Sustainable waste management	Recycling			
	Waste-to-energy			
	Efficient disposal of wastage			
Sustainable Land Use	Sustainable forestry and agriculture,			
	Afforestation			
Biodiversity Conservation	-			

Source: TERI Analysis

²⁵ Greening India's Financial Market: How Green Bonds Can Drive Clean Energy Deployment (CEEW, NRDC, IREDA). 2016. <http://ceew.in/pdf/CEEW%20NRDC%20-%20Green%20Bonds%20Can%20Drive%20Clean%20Energy%20Deployment%20-%20-%203%20May%202016.pdf>

New Directions - Developing a Domestic Green-Plus Rating Framework

It is seen from a global study that increasingly the green bond market is witnessing a gradual movement beyond the labelled green bond market towards new instruments and asset classes (Box 9).

Box 9: DC Water’s Municipal – Environment Impact Bond

Country	Issuer Type	Date
United States	Municipal Corporation	
Amount	Sector	Credit Rating
\$25 million	Water	-

What’s New

This impact bond is structured as a ‘Pay For Success’ transaction which allows the issuer, DC Water, to pay for outcomes instead of projects, thus being able to support innovative methods and solutions. The bond structure will provide DC Water with upfront financing for constructing the required green infrastructure for the water sector, but the performance risks of managing and operating the systems are shared between DC Water and the investors.

Overview

The proceeds from the tax-free 30-year bond issue, will be used to construct green infrastructure practices designed to mimic natural processes to absorb and slow surges of stormwater during periods of heavy rainfall, ultimately reducing the incidence and volume of combined sewer overflows that pollute the District’s waterways.

Payments will however vary based on the proven success of the actions, which will be periodically measured and evaluated through an established methodology.

The EIB payments are structured as follows: If a high performance benchmark—*stormwater runoff reductions being greater than 41.3%*—is met, DC Water will make a one-time additional outcome-based payment to investors of an agreed upon amount. If the low performance benchmark—*runoff is reduced less than 18.6%*—is met, then investors will make a one-time risk share payment to DC Water. A performance measurement of *between 18.6% and 41.3% reduction in runoff* will result in no additional payment other than the basic principal and interest payable on the bond.

DC Water is not new to experimenting with innovative financing techniques. They had previously issued a green ‘century’ bond of \$350 million with a 100 year maturity, with payments spread across the tenure. This allowed them to lock in the prevailing rates at the time, which were perceived to be lower.

The pace of this movement will however depend upon the trusted benchmarks for investments that are available in the market. Transparency and governance over the use of proceeds as well as green quality will play an increasingly important role in investment decisions. Methods for assessing the ‘green’ quality of an investment will bring visibility and enable price discovery for investors. Mr Sean Kidney, founder of the CBI and a leading green bond market expert concedes that “although green bond standards currently focus on climate change, but this is likely to change over time.” “Besides, there is a growing concern in the market regarding green-washing of projects where some 90% of green bonds appear to have been issued as transactions to save yield, look good, or *greenwash*, with no actual impact on the ground,” as per Mr Razzouk – CEO Sindicatum. It is important for the one to consider how this issue can be handled. For this, we suggest a framework which evaluates projects for its Green-Plus characteristics in a robust and consistent manner yet is flexible enough to not impact the fungibility of international and domestic investors in India.

TERI's Green Bond-Plus Rating Framework

Country	Sector	External Links
India	Adheres to SEBI guidelines	Conforms with Global standards such as GBP, CBI

Overview

TERI aims to build a green bond rating framework for India which addresses all of the concerns raised in the sections above. The framework shall be called the 'Green Bond Plus Rating Framework' and shall be developed in consultation with the key organizations and policymakers working in the area of developing the green bond market in India including the Ministry of Finance, MoEFCC, SEBI, Rating agencies, such as CRISIL, ICRA, assessors, and standards like CICERO, Sustainalytics and Climate Bonds Initiative, etc.

Objectives

1. Determine the specification and sub-categories for each category specified by SEBI
2. Clearly defining the eligibility criteria of projects in these sub-categories to ensure that they are green and sustainable
3. Establish a metric for evaluating the sustainability impact of the project through life cycle assessment that is aligned to national priorities
4. Align each sub-category in alignment to the existing national policies, where available
5. Provide weightages for evaluating the green, social, and sustainability element of each project.
6. Provide a final rating to a project such that they are comparable along the different project categories (such as projects in forestry are comparable to those from transportation)

Approach

1. Pre-issuance evaluation of stated use of proceeds
2. Post-issuance monitoring and verification of use-of-proceeds

Outcome

The framework will be designed to be such that a particular rating across each sector/sub-sector will be comparable to each other and signify the same degree of quality of the bond on greenness.

The framework will include mandatory criteria, which will be applicable for all bonds from any sector that is categorizing itself as a green or sustainable bond. In addition, bonds will be rated on some non-mandatory criteria, which will differ on the basis of the sub-category of the project (eg. differ for forestry and renewable energy projects).

Final assessment and rating will lead to differentiating a general green bond from a superior green bond and will provide transparent information to the investors.

Next steps

1. To identify relevant SDGs to choose and operationalise. To develop metrics and indicators to assess them;
2. To decide on weightages that are essentially subjective and determined within political processes;
3. To evaluate projects within this joint SDG framework called the Green-Plus framework. Determining methodologies on reviewing the green indicators and SDG indicators independently, and/or together.

Recommendations

There are several measures which can be undertaken to enhance the Indian Green Bonds segment. On the basis of our analysis and understanding, to sum up, we recommend the following steps, which are most likely to accelerate the market.

Each of these, requires further detailed assessment and pilot implementations, to develop the most effective frameworks, processes and deployment strategies.

- There is a clear need for government support to drive the segment to its full potential. The government, through its various entities, is already boosting the market by participating in it and issuing green bonds. But there is scope for direct interventions to strengthen the disclosure and transparency aspects with a level of standardization, to further grow the segment. Some other such interventions could include the creation of a guarantee fund, to use for credit enhancement through various methods to make priority green bonds attractive; certain concessions, including tax-exemptions, could also be leveraged to grow domestic demand for green bonds; issuing a sovereign green bond could also be done, which is a clear signal of the government's support and interest in green bonds.
- There is scope for involving national development banks, including SIDBI and NABARD, to design projects with elements of aggregation and credit enhancement, to direct funding to the untapped sectors.
- The new India based international exchange could start with a focus on green bonds to attract more international investors who are looking to support climate actions in developing economies. This will require support in the form of national guidelines and a clear and robust framework for evaluating green bonds.
- Develop business models to provide pricing benefits to green bond issuers by combining funding support from the Green Climate Fund (GCF).
- RBI may consider expanding its priority sector lending guidelines to include some of the sectors that are currently part of SEBI guidelines to make them lucrative to the bond issuers
- Policy makers may consider utilizing existing domestic funds for securitization including funds such as National Disaster Relief Fund (NDRF) for issuing catastrophe bonds for disaster resilience and adaptation-based activities at the national level.

About Us

We are an independent, multi-dimensional organization, with capabilities in research, policy, consultancy and implementation. We are innovators and agents of change in the energy, environment, climate change and sustainability space, having pioneered conversations and action in these areas for over four decades.

We believe that resource efficiency and waste management are the keys to smart, sustainable and inclusive development. Our work across sectors is focused on

Promoting efficient use of resources across sectors

Increasing access and uptake of sustainable inputs and practices

Reducing the impact on environment and climate

Our research, and research based solutions have had a transformative impact on industry as well as communities. We have fostered international collaboration on sustainability action by creating a number of platforms and forums. We do this by translating our research into technology products, technical services, as well as policy advisory and outreach.

Headquartered in New Delhi, we have regional centres and campuses in Gurugram, Bengaluru, Guwahati, Mumbai, Panaji , and Nainital. Our 1200-plus team of scientists, sociologists, economists and engineers delivers insightful, high quality action-oriented research and transformative solutions supported by state- of-the-art infrastructure.



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