GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY

PACE-D TECHNICAL ASSISTANCE PROGRAM
Scaling Green Bonds Use in India

August 2017

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Technical Assistance Program

Scaling Green Bonds Use in India

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LIST OF ACRONYMS

Acronyms	Definition
ABS	Asset Backed Security
ADB	Asian Development Bank
BPS	Basis Point, One Hundredth of One Percentage Point
BNDES	Brazilian Development Bank
CBDT	Central Board of Direct Taxes
CBEC	Central Board of Excise and Customs
CBI	Climate Bonds Initiative
CEEW	Centre for Energy, Environment, and Water
CNY	Chinese Yuan
CPI	Climate Policy Initiative
CREBs	Clean Renewable Energy Bonds
CRR	Cash Reserve Ratio
CY	Calendar Year (from January to December)
DCA	Development Credit Assistance
DFID	Department for International Development (UK Government)
ECB	External Commercial Borrowing
EBM	Electronic Book Making
EVI	Emergent Ventures India Pvt. Ltd.
EESL	Energy Efficiency Services Ltd.
ESCO	Energy Service Company
EURO	Official Currency of the Eurozone
EXIM Bank	Export-Import Bank of India
FPI	Foreign Portfolio Investors
FICCI	Federation of Indian Chambers of Commerce and Industry
GEF	Global Environment Facility
GBP	Green Bond Principles
GIIC	Green Infrastructure Investment Coalition

Acronyms	Definition
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GW	Gigawatt
HSBC	Hong Kong Shanghai Banking Corporation
ICICI	Industrial Credit and Investment Corporation of India
IDBI	Industrial Development Bank of India
IDF	Infrastructure Debt Funds
IFC	International Finance Corporation
IFMR	Institute of Financial Management and Research
IIFCL	India Infrastructure Finance Company Limited
IISD	International Institute for Sustainable Development
IL&FS	Infrastructure Leasing and Financial Services Limited
INDC	Intended Nationally Determined Contribution
INR	Indian Rupee
IOCL	Indian Oil Corporation Limited
IREDA	Indian Renewable Energy Development Agency
Libor	London Interbank Offer Rate
LCB	Low Carbon Buildings
LCT	Low Carbon Transport
M	Million
MNRE	Ministry of New and Renewable Energy
NBFC	Non-Banking Financial Company
NDTL	Net Demand and Time Liabilities
NRDC	Natural Resource Defense Council
NTPC	National Thermal Power Corporation
PACE-D	Partnership to Advance Clean Energy – Deployment
PFC	Power Finance Corporation Limited
PSU	Public Sector Undertaking
Q1 CY17	First Quarter of Calendar Year 2017, i.e., (January to March 2017)
QECB	Qualified Energy Conservation Bond

Acronyms	Definition
RBI	Reserve Bank of India
RE	Renewable Energy
RMB	Renminbi
SBI	State Bank of India
SSEF	Shakti Sustainable Energy Foundation
SEBI	Securities and Exchange Board of India
SECI	Solar Energy Corporation of India Ltd
SLR	Statutory Liquidity Ratio
SMEs	Small and Medium Scale Enterprises
SPV	Special Purpose Vehicle
UNEP	United Nations Environment Programme
U.K	United Kingdom
ULB	Urban Local Body
U.S	United States
USD	United States Dollar
USAID	United States Agency for International Development

SUMMARY

India is making an aggressive push to a low-carbon economy with an ambitious target of 175 gigawatt (GW) of renewable energy (RE) by 2022. To achieve this target, it will require massive capital investment and new financing instruments such as Green Bonds that can provide project developers access to scalable, long-term, low-cost debt capital from institutional investors.

This document outlines the journey of the Indian Green Bond market since 2013, the related regulatory developments, and the technical assistance provided by the U.S.-India bilateral Partnership to Advance Clean Energy – Deployment Technical Assistance Program[1]. In particular, the document provides recommendations that can help scale up the Indian Green Bonds market and unlock its potential.

The Green Bond issuance market in India has grown rapidly to USD 1.54 billion in 2016 and is expected to grow to USD 5 billion in 2017 and USD 20 billion by 2020. Three out of eight Indian Green Bond issuers since 2016 were banks and four were energy companies, primarily renewable companies.

The Indian market for Green Bonds has rapidly evolved and regulatory bodies have also started creating the right environment, for ‘green certification’, issue of INR (Masala) Bonds in overseas markets, and deepening the bond market in India. Key ministries in India such as the Ministry of New and Renewable Energy, Ministry of Power, Ministry of Finance, Ministry of Transport, and Ministry of Urban Development have noted the potential of Green Bonds and actively encouraged important public sector institutions to participate. The Securities and Exchange Board of India (SEBI) has prepared draft guidelines to issue Green Bonds and is expected to release the final version soon. Similarly, the Reserve Bank of India (RBI) has taken several measures to improve foreign investments in bonds as well as deepen the local market for bonds.

In the short term, energy companies and banks are expected to be the main players in debt finance, but also the main source of Green Bonds in India. However, new players such as municipalities and states are likely to begin issuing bonds for green infrastructure, following France’s example earlier this year.

The PACE-D TA Program has been actively involved in promoting the use of Green Bonds in India since 2013. The initial focus was on making presentations to financial institutions such as Indian Renewable Energy Development Agency (IREDA), Energy Efficiency Services Ltd. (EESL), Solar Energy Corporation of India Ltd. (SECI), and Indian Railways, highlighting how Green Bonds will be useful in improving costs, access to capital, and asset-liability mismatch for their RE portfolio. In 2016 onwards, the Program’s activities focused on issuers, investors, and verifiers for Green Bonds.

Based on the knowledge capital gained over the years, the Program has key recommendations that can help scale up the market for Green Bonds in India. These include:

[1] The USAID PACE-D TA Program is a part of the overall Partnership to Advance Clean Energy (PACE) initiative,

- **Develop Country-Level Green Finance Framework**: The RBI should develop a framework for standardizing Green Bonds issuances and related financing issues, to align India with other nations that already have similar frameworks.

- **Establish Green Project Pipeline**: There is a critical need for a better insight on the market potential with in-depth analysis of green segments, growth, and issuers, etc.
- **Cornerstone Funds to Provide Credit Enhancements, Aggregation, Warehousing, and Market Making Services Required in the Initial Phases:** India can set up a Corner Stone Fund using the National Clean Energy Fund. Such funds can also attract multilateral capital, especially from institutions such as Global Environment Facility (GEF). This will also clearly outline India's contribution to meet Intended Nationally Determined Contribution (INDCs).

- **Strategic Green Bond Issuance by Public Sector and Government**: While the Indian Green Bond market was kick started by issuances from public sector companies, the momentum needs to be extended for different types of new products and segments. This is important for investor confidence.

- **Develop and Announce Green Standards:** India should have Green Bond Standards that are in sync with the International Standards. This will boost the confidence of the investors and governments that the funds are being used to deliver climate change solutions.

The Program also recommends that the RBI reduces the risk weightage of Green Bonds lowering the related capital adequacy requirements. The RBI may also consider Green Bonds as "Treasury Investments" to increase liquidity and set a target for investment in green securities. Similarly, it is proposed to reduce withholding tax to zero on Green Bonds and introduce Tax-Credit Bonds so that investors receive tax credits when they invest in such bonds.

1. EVOLUTION OF INDIA'S GREEN BOND MARKET

India has rapidly evolved as a market for Green Bonds in 2016 given the fact that there were no large-scale issuances until 2015. Several issues are relating to Corporate Bonds, supported by corporate balance sheets, except a few Project Bonds issued by the RE developers.

Table 1: Details of Green Bonds Issuance since February 2015

Date	Issuer	Amount	Coupon	Tenure	Certified/Reviewed	Theme
February 2015	Yes Bank	INR 10 bn	8.85	10	NA	Renewable energy (RE) and Energy Efficiency
March 2015	Export Import Bank of India (EXIM Bank)	USD 500 M*	2.75	5	NA	Low Carbon Transport (LCT)
September 2015	CLP Wind Farms India	INR 6 bn	9.15	3,4,& 5	NA	RE
November 2015	Industrial Development Bank of India (IDBI)	USD 350 M*	4.25	5	Klynveld Peat Marwick Goerdeler (KPMG)	RE, LCT, and Water Management
February 2016	Hero Future Energies	INR 3 bn	10.75#	3 & 6	Climate Bonds Standard	RE
March 2016	PNB Housing Finance	INR 5 bn	8.01	5	NA	Low Carbon Buildings (LCB)
May 2016	Axis Bank	USD 500 M*	2.88	5	Climate Bonds Standard	RE, LCB, and LCT
August 2016	NTPC Ltd	INR 20 bn*	7.38	5	Climate Bonds Standard	RE
August 2016	GreenKo Group	USD 500 M*	4.88	7	Sustainalytics	RE
August 2016	ReNew Power Ventures	INR 5 bn	NA	NA	Climate Bonds Standard	RE
December 2016	Yes Bank	INR 3.3 bn	7.62	7	NA	RE
February 2017	ReNew Power Ventures	USD 475 M*	6	5	Climate Bonds Standard	RE
March 2017	Indian Renewable Energy Development Agency Ltd. (IREDA)	INR 7 bn	8.12 & 8.05	10	Climate Bonds Standard	RE

Yield of a Zero Coupon Bond
* Denote International Issuance
Source: Climate Bonds Initiative and Punjab National Bank's 2015-16 Annual Filings

Total Indian Green Bond issuances since 2015 are valued at ~ USD 3.2 billion. The key features evolving Green Bond market in India include:

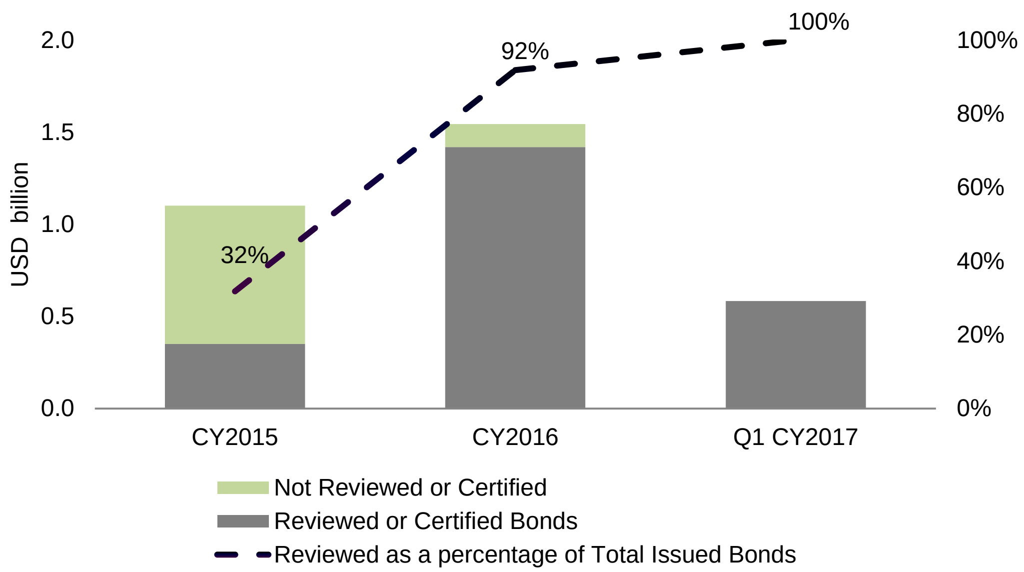
- The market commenced with banks issuing Green Bonds. The share of corporates is now increasing, just as it happens globally.
- The use of green label and certification is increasing with many issuers opting for post issuance certification.
- Corporates issue Green Bonds for tenure of three to five years. Banks opt for longer tenure, i.e., 5-10 years.
- USD and INR are two preferred currencies. The National Thermal Power Corporation (NTPC) and IFC started overseas INR (Masala) Bond market. The growth of Masala Bonds will help issuers avoid the risk of currency exchange and will likely be a preferred mode, as international investors get comfortable with the country risk, sector risk, and credit risk of Indian issuers.

Issuers highlight the following benefits of Green Bonds:

- 'Green' credentials results in access to larger investor pool, as global investors increasingly invest in green activities. The demand for 'green' paper is higher and opportunities to invest are lagging.
- Larger investor interest translates to:
  - Faster access to debt.
  - Improved yield. Many issuers feel that Green Bonds has resulted in improved yields ~15-20 basis points (bps).
- As investors get comfortable with an issuer, the country, and the segment, subsequent issuances can secure improvements in yield, time to access, and tenures.

1.1 GROWTH IN THE USE OF GREEN CERTIFICATION

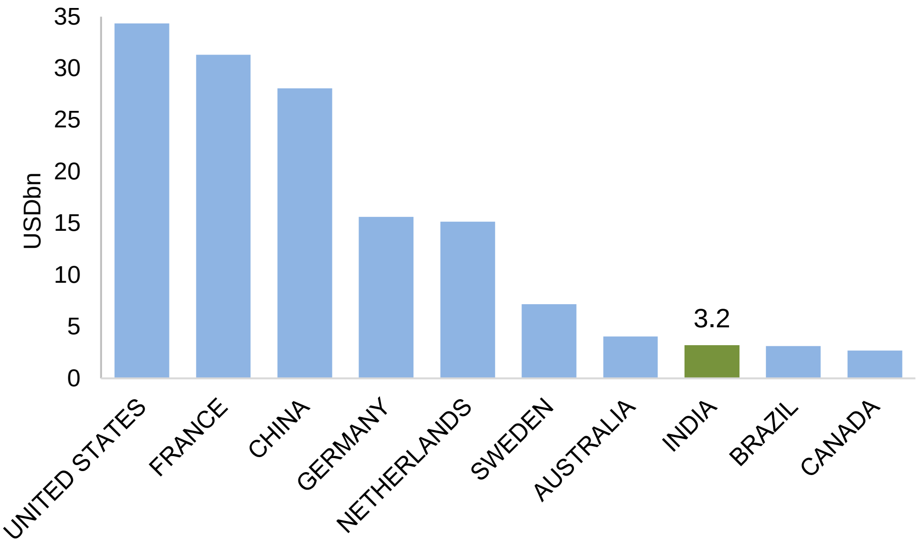
Though Green Bonds have been issued in India for long (IREDA have been issuing Bonds for more than nine years), awareness about green rating started growing from 2016 onwards. The data for 2015 and 2016 shows that issuers (~90 percent) are increasingly adopting Green Certification.



Note: CY Denotes Calendar Year (From January to December), and Q1 CY2017 Denotes the First Quarter of the Calendar Year 2017

Figure 1: Increased Preference for Green Certification in India

1.2 INCREASE IN VOLUMES



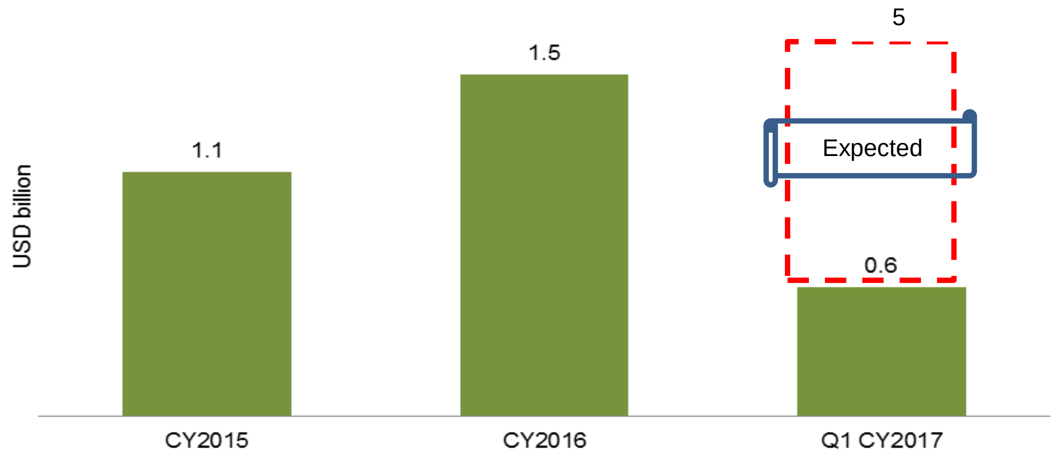
Source: Climate Bonds Initiative

Figure 2: India Ranks Eighth in Green Bonds Issuance

Globally, India is the eighth largest issuer of Green Bonds, with USD 3.2 billion of green debt issued so far.

Volume of Indian Green Bonds Issuance

The Green Bond issuance in 2016 stood at USD 1.5 billion and witnessed a 40 percent increase compared to the previous year. It is expected that India will be one of the largest Green Bond issuers in the coming years, with USD 5 billion issuances expected in 2017.



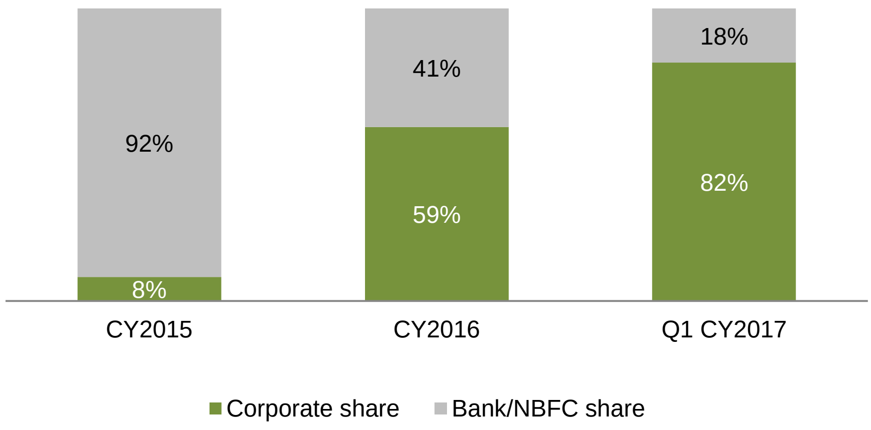
Note: CY Denotes Calendar Year (From January to December), and Q1 CY2017 Denotes the First Quarter of the Calendar Year 2017

Figure 3: Volume of Indian Green Bonds Issuance

1.3 MIX OF ISSUERS

Three out of eight Indian Green Bond issuers since 2016 were banks and four were energy companies, primarily RE companies. IREDA recently issued a Green Bond in March 2017 and it is expected that most, if not all, future bonds raised by the agency will be labeled green.

Figure 4 highlights the increasing share of corporates in Indian Green Bond issuances annually.



Note: Shares Are Calculated Based on the Value of Issued Bonds (in USD)

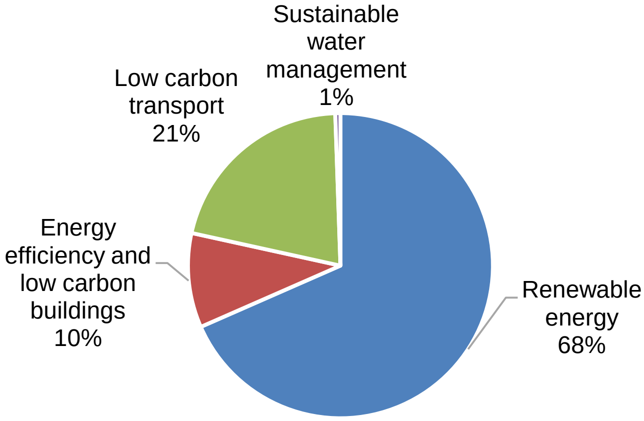
Figure 4: Corporates and Banks/Non-Banking Financial Companies (NBFCs) Share of Annual Green Bond Issuances

Corporates use Green Bonds as a refinancing tool to unlock and replace their existing capital, improve and balance the equity cash flows, and reduce the overall cost of capital, whereas banks use the bonds to lend new projects and balance the asset-liability tenures.

Corporate's share is increasing as the market matures. This is in line with the global trends, where also the share of corporate issuances is increasing.

Notably, India has positioned itself as an international leader in adopting best practice in Green Bond issuance and certification. Since 2016, 70 percent of Indian Green Bonds issued were certified using the Climate Bond Standards. Several issuers opted to go for post issuance certification to strengthen their credentials.

1.4 USE OF PROCEEDS



Source: Climate Bonds Initiative

Figure 5: Use of Proceeds of Green Bonds Issued by Indian Companies

As shown in Figure 5, since 2015, 68 percent of the capital raised by Green Bonds in India has been linked to RE investments, 21 percent to low carbon transport, and 10 percent to energy efficiency and low carbon buildings, and 1 percent to sustainable water management[2]. RE is typically the most familiar “green investment” asset type and is often the first type of debt labeled as ‘Green’.

In future, sustainable transport, particularly railways, has the potential to become one of the largest segments of Indian Green Bond market.

1.5 CURRENCY OF ISSUANCE

The USD is the currency of choice for domestic issuers, with 72 percent of issuance denominated in USD currency.

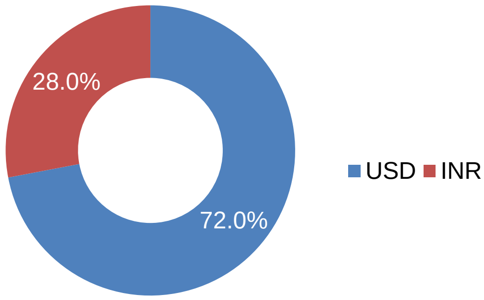


Figure 6: Currency Mix for Domestic Green Bonds, Issued Since 2015

Globally too, USD dominates, although Euro is close to second and Chinese Yuan (CNY) is third.

[2]Climate Bonds Initiative.

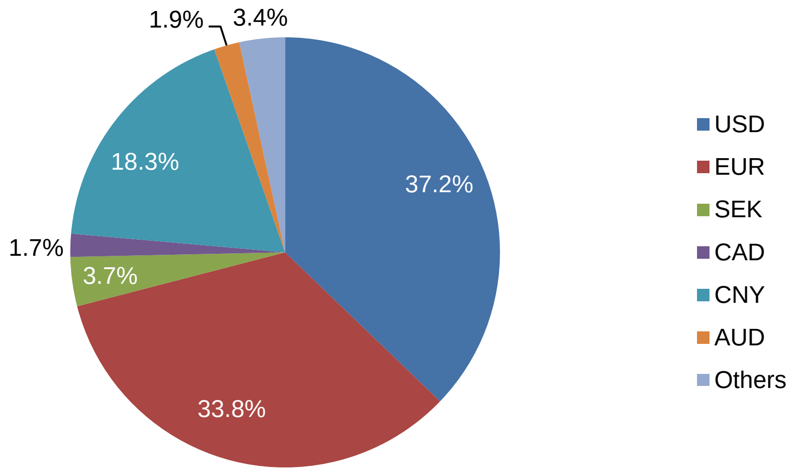


Figure 7: Global Currency Mix for Green Bonds Issued Since 2016

International issuances by Indians are in two denominations:

- Foreign currency denominated bonds, so far in USD
- Masala Bonds (denominated in INR)

While subscribing to Masala Bonds, the investor takes the risk on exchange rate. In case of USD-denominated bonds, the exchange risk is borne by the issuers. Issuers prefer Masala Bonds, as hedging cost and related complexity is avoided.

IFC initiated the use of Masala Bonds in November 2014, raising USD 154 Million and issued the first Green Masala Bonds of USD 49 Million in August 2015. IFC acted as a market maker to create an appetite for Masala Bonds and use the money to subscribe to Indian Bond issuances.

1.5.1 Foreign Currency Denominated Issuance

Since 2016, four out of 12 bonds issued were listed internationally. Singapore has been the destination of all four bonds, with dual listings including London and in one instance, Berlin. The ticket size of bonds issued internationally is significantly larger, ranging from USD 299 million to USD 500 million (average USD 437 million) as compared to domestic bonds, i.e., USD 58.8 million (INR 388 Cr) for domestic issuance. Offshore issuance has enabled Indian companies to tap deeper pools of capital and has granted foreign investors with an opportunity to gain exposure to the Indian economy including Masala Bonds with INR denomination.

1.5.2 Masala Green Bonds

In August 2016, NTPC, the largest power generating company in India with 43 GW installed capacity, issued its first INR Corporate Green Bond internationally. NTPC entered the market with a five-year INR 10 billion (~ USD 150 Million) bond certified using the Climate Bond Standards. There was a significant oversubscription for this bond, wherein the company received orders worth INR 29 billion (i.e., 2.9 times oversubscribed), and decided to scale up the issuance to INR 20 billion (c. USD 299 Million). This distinctive bond was dual listed in both Singapore and London and achieved a yield of 7.48 percent, higher than that of a comparable USD Bond, but competitive with what could have been achieved through a domestic issuance.

1.6 TERMS OF ISSUANCE

Coupon rates, Currency, and Maturity are three key features of Bond Issuance. The following sections provide an analysis for 2016. As the Indian Green Bond market is nascent, the band for coupon rates is wider across credit ratings, and maturity periods are shorter compared to more mature and developed market.

1.6.1 Coupon Rates

Coupon rates vary based on maturity period, credit rating of the issuer, currency risk, libor, and timing of the issuance. Coupon rates tend to decline as investors comfort with the issuer, the country, and the Green Infrastructure sector improves due to an increase in the number of consumers investing in bonds.

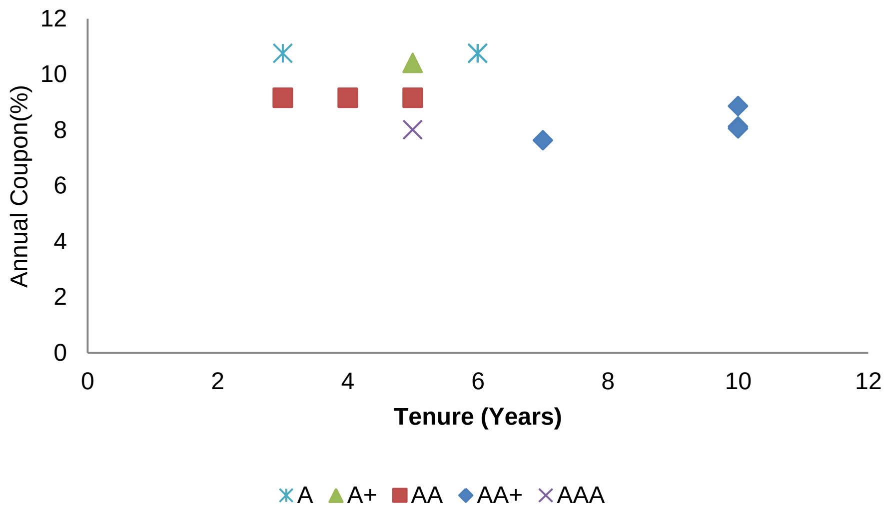


Figure 8: Yield and Tenure for INR-Denominated Green Bonds Issued in India

As shown in Figure 8, the yield premium is 100-125 bps when credit rating moves from AA+ to AA or AA to A+. The most common tenure is five years.

It is interesting to compare the yields on INR Bonds with USD Bonds. Average coupon for domestic issuers is significantly higher, i.e., ~9.0 percent compared with 4.7 percent for international issuance. This significant difference is linked to the currency risk of INR, which varied between 4-5 percent in 2016. The hedging cost used to prevail at 7-7.5 percent/annum in 2014 when Green Bonds activities were initiated in India.

Figure 9 illustrates analysis of USD-denominated Green Bonds.

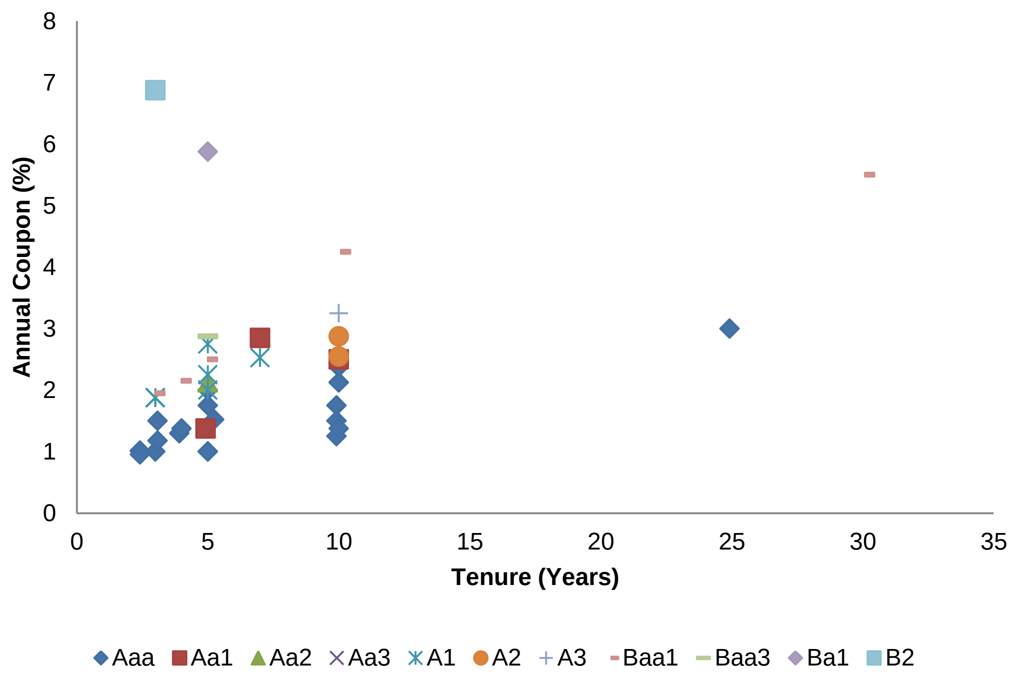


Figure 9: Yield Analysis for USD-Denominated Green Bonds Issued in 2016

As per Figure 9:

- The difference in yield between AAA rated and AA1 rated Green Bonds is ~10 bps per annum for five-year maturity period. These ratings and maturities are the most frequently encountered.
- The yield band for Investment Grade Bonds (between AAA - highest investment grade and BAA3 — lowest investment grade) is 130-140 bps per annum.
- The yield difference between AAA rated 25-year bond (Lone Issuance) and AAA rated 10-year bond varied between 70-80 bps per annum.

The average risk premium in USD-denominated Bonds is lower compared to INR Bonds. This possibly arises due to the depth of bonds market in the U.S., where a vibrant market for lower rated bonds exists. This also points out the potential for using partial risk enhancements in India to improve the yield and access to investors as the benefits outweigh the likely cost of enhancements.

1.6.2 Tenures

In India, the most common tenures for Bond Issuance are in the range of three to five years. Only banks issue bonds of longer tenure, i.e., 10-year long bonds.

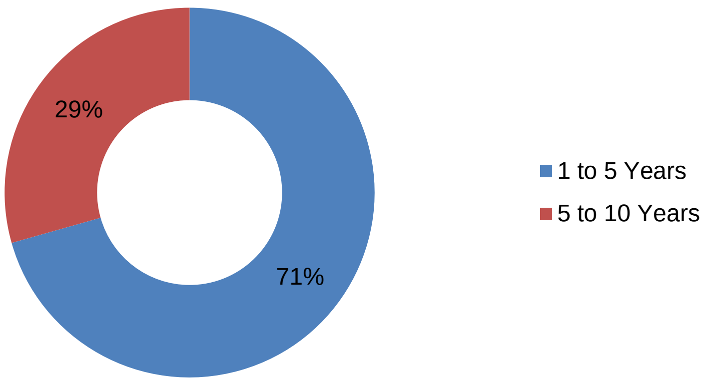


Figure 10: Domestic Green Bond Maturity Profile

Globally, the analysis of Green Bonds issued in 2016 suggested that USD-denominated bond maturity period ranged between 5-10 years with an extended tenure of AAA rated entities (supranational entities or government issuers).

1.7 REGULATORY DEVELOPMENTS

Indian market has rapidly evolved and preference for green certification is growing. Regulatory bodies have also started creating the right environment, for 'green certification', issue of INR (Masala) Bonds in overseas markets, and deepening the bond market in India.

1.7.1 SEBI GUIDELINES FOR GREEN BONDS

SEBI governs the public issue and listing of debt securities issued in India. To alleviate lingering ambiguities regarding definition and process associated with Green Bonds, SEBI issued a consultation paper for issuing and listing of Green Bonds in December 2015 and published in their website seeking public comments. Later, SEBI documented the comments received.

The process for issuing Green Bonds is similar to issuing of other bonds, although there are a few additional disclosure requirements pertaining to the periodic reporting of fund allocation. The features of new regulatory requirements covers the definition of Green Bonds, external review, tracking of proceeds, disclosure requirements, and follows general structure of Green Bonds Principles.

Key features of SEBI's concept paper on Green Bonds include:

- Existing SEBI Regulations, i.e., SEBI (Issue and Listing of Debt Securities) Regulations, 2008 shall govern the issuance and listing of Green Bonds. However, the issuers will have to create additional disclosures regarding the earmarking of funds towards green projects, and the description of those projects.

- Definition of what constitutes a ‘green’ asset for the purposes of issuing a Green Bond “may be specified by SEBI from time to time”.
- Requirement of independent third party review or certification is optional.
- Escrow account for tracking proceeds of the Green Bonds is not mandatory. However, the issuers are required to disclose the procedures/systems to be practiced to track the proceeds of the issue, including “the investments made and/or investments earmarked for eligible projects” and the external auditors should verify the same.
- Green Bond issuers should disclose use of proceeds, list of projects to which proceeds have been allocated to in their annual report and the periodical filings submitted to stock exchanges.

1.7.2 Need for Green Standards and Certification

Without commonly accepted Green Standards, confusion prevails amongst investors and issuers as to which assets qualify as Green.

Therefore, it is recommended that both RBI and SEBI should use well accepted Green Standards while formulating their guidelines for Green Bonds as the Indian debt market attracts international investors. Examples of such standards are International Capital Markets Association’s Green Bonds Principles as well as the Climate Bond Standards.

1.7.3 Tax Treatment

The concessional withholding tax rate for coupon paid on bonds is 5 percent till 2020. This is applicable to all foreign investors subscribing to Indian Bonds. Any capital gains arising from transfer of INR-denominated Bonds from one non-resident investor to another is also exempt[3].

1.7.4 RBI Measures to Deepen the Domestic Bond Market[4]

After passage of the Finance Act of 2016[5], RBI made several efforts to grow the Corporate Bond market. The reforms include:

- Allow Foreign Portfolio Investors (FPI) to invest directly in Indian Corporate Bonds.
- Allow Corporate Bonds to be used as underlying security for bank repo operations.
- Allow banks to issue INR-denominated Bonds in international markets.
- Enable brokers and primary dealers to become market makers and to access repo markets.
- Allow banks to extend credit guarantees from 20 percent to 50 percent of the outstanding debt to improve the credit ratings of bond.
- Infrastructure Bonds raised by banks, which include bonds for RE, have been exempted from computation of Net Demand and Time Liabilities and are therefore, not been subjected to Cash Reserve Ratio/Statutory Liquidity Ratio requirements.
- Set up dedicated debt segment on the exchanges with Electronic Book Making.

[3]Central Board of Direct Taxes (CBDT) Guidelines Issued on October 29, 2015.
[4]Report of the Working Group on Development of Corporate Bond Market in India, August 2016.
[5]Central Board of Excise and Customs (CBEC), Finance Act 2016.

1.7.5 RBI Guidelines for Issue of Masala Bonds

In September 2015, RBI published guidelines for the issue of INR-denominated (Masala) Bonds. In these guidelines, RBI relaxed the following stringent External Commercial Borrowing (ECB) conditions:

- Any corporate and Infrastructure Investment Trust can issue INR-denominated Bonds.
- Banks can issue Masala Bonds to meet Tier-1/Tier-2 capital needs.
- The all-in-cost ceiling for such bonds will be 300 basis points over the prevailing yield of the Government of India securities of corresponding maturity.
- Allow debt liability to equity ratio (as applied to ECBs).
- Cap on Masala Bond issuance to be USD 926 Million under automatic route.

However, the on-lending restrictions to other entities, as in the case of ECBs, is complicated for RE developers providing bonds to finance special purpose vehicles (SPVs). This restriction should be relaxed for subsidiaries holding projects whose cash flows service the bonds.

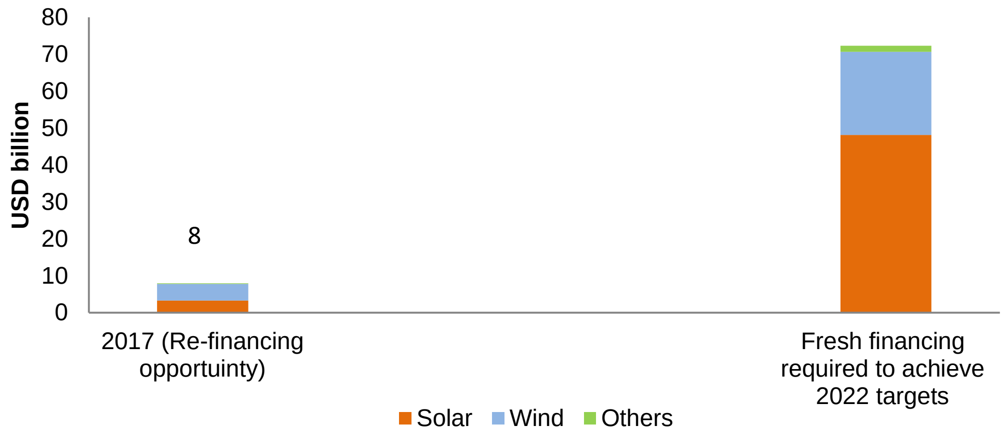
2. POTENTIAL FOR GREEN BONDS IN INDIA

India's Green Bond market is expected to reach USD 5 billion or more in 2017. Although, significant increase can be witnessed when compared with USD 1.5 billion issued in 2016, it is still below the market's full potential. China, for example, has demonstrated that with the right incentives and regulatory guidance, Green Bonds issuance can grow rapidly. In 2016, the issuance grew from nearly zero to USD 36.2 billion, accounting for 39 percent of global issuance.

2.1 ESTIMATES OF MARKET POTENTIAL

This paper focuses only on RE and energy efficiency segments, although a significant Green Bond demand will be generated from segments such as sustainable transport, smart cities, water, waste, sustainable agriculture, land use, and afforestation and so on. Massive investments are expected in railways (electrification and use of RE and energy efficiency), metro networks in cities, electric vehicles, and related infrastructure. India plans to shift to 100 percent electric vehicles by 2030.

India has set a target of 175 GW of RE by 2022 from current capacity of ~57 GW. This will require additional investment of USD 72 billion (considering 70:30 debt to equity split).



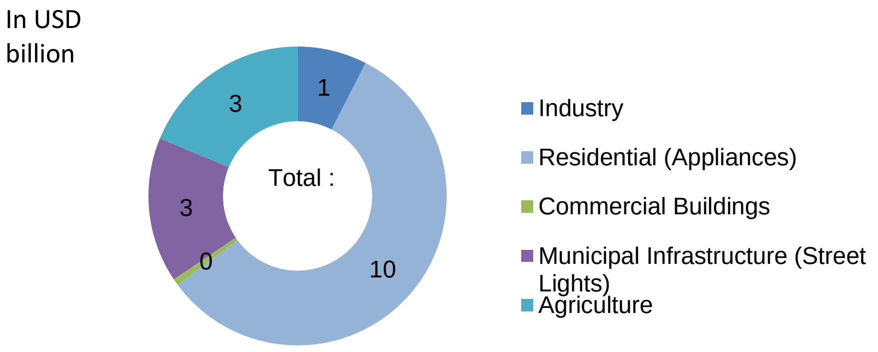
Note: Considered 70:30 Debt to Equity Split, Used foreign exchange rate of 65 to convert data from INR to USD

Figure 11: Potential Debt Required for Renewables

In India, clean energy loans of USD 8 billion borrowed last year, can be financed through Green Bonds, apart from the estimated potential of USD 72 billion for future investments.

Besides, India has significant energy efficiency potential with programs for energy efficiency in agriculture, residential, and industrial sectors. Energy Efficiency Services Ltd (EESL), a Super Energy Service Company (ESCO) sponsored by the Government, is taking up rapid strides to launch new programs. It is estimated that USD 17 billion of debt may be required for energy efficiency related activities[6]. This excludes solar power agricultural pump programs, which can provide additional requirement of USD 10-15 billion debt.

[6]Based on the Assessment Provided in World Bank Report Titled "Utility Scale Demand Side Management (DSM) Opportunities and Business Models in India".



Source: World Bank Report titled "Utility Scale DSM Opportunities and Business Models in India"
Note: Considered 70:30 Debt to Equity Split, Used foreign exchange rate of 65 to convert data from INR to USD

Figure 12: Debt Requirement for Energy Efficiency Programs

2.2 POTENTIAL PIPELINES FOR 2017

Discussions with potential issuers and plans presented by them in international event such as Green Infrastructure Investment Coalition (GIIC) 2016 (London) indicate that the total pipeline of issuance over the course of 12 months could be much higher, in the range of USD 5-10 billion and even as high as USD 20 billion within the next two to three years.

Following are the list of potential issuances expected to be issued, in future:

- State Bank of India's Climate Bond certified benchmark offering of USD 500 million for the overseas market can be between USD 2-5 billion over the next few years.
- Indian Railways Finance Corporation's USD 1 billion certified Climate Bond.
- Institute of Financial Management and Research's (IFMR's) certified Climate Bond.
- IREDA's certified Climate Bond.
- Repeat issuances by:
    - Yes Bank
    - India Export-Import Bank
    - IDBI
    - Axis Bank
    - Hero Future Energies
    - NTPC

    - New issuance by banks, infrastructure financing, and energy companies[7]

[7] In the Next Two to Three Years, EESL Is expecting to Issue USD 200 M ABS Bond; IDBI USD 2-3 billion; Hero Future Energy USD 1.7 billion; SkyPower May USD 250 M, Leap Green Energy USD 200-USD 500; IREDA USD 3.1 billion, NTPC USD 300 M in 2018 and Yes Bank USD 100-250 M. Companies That Have Expressed Interest; Yet Not Indicated the Dollar Amounts Include Axis Bank, ICICI, IL&FS, EXIM Bank, IDFC, and Metro Transport Authority of Andhra Pradesh.

- India's first green Asset Backed Security (ABS);
    - *CBI is in discussion with four prospects.*

2.3 NEW ENTRANTS AND NEW ISSUERS

In the short term, energy companies and banks will not only be the main players in debt finance, but also the main source of Green Bonds in India. With time, however, new players are likely to begin issuing bonds for green infrastructure, including municipalities[8], states and possibly, following France's example earlier this year, the Government of India may decide to issue a sovereign Green Bond.

Subsequent to the development of Green Bond market, new players may emerge as below:

- Debt aggregators, to pool loans from banks or developers and issue Green Bonds using securitization of cash flows from the pool.
- Asset aggregators including Infrastructure Investment Trust, use bonds to improve and balance distributable cash flows, besides reducing the cost of finance.
- Third Party Providers of credit enhancement, insurance[9], and other risk mitigation products.

2.3.1 Participation Of Supranational Development Finance Entities

Supranational entities such as World Bank, Asian Development Bank (ADB), IFC, and others can support creation of some of the new products. For example, Punjab National Bank Housing Finance Ltd. issued Green Bonds in 2016, of INR 5 billion (USD 75.8 M) to help construct green residential buildings, facilitate development of affordable housing, and create more jobs in India. This was subscribed by IFC using the proceeds of Green Masala Bonds issued by them. It also subscribed to similar issuances by Yes Bank.

2.3.2 Warehousing and Asset Backed Securities

The distributed nature of renewables and energy efficiency projects lends itself to warehousing of loans and raising of ABS. The first "green ABS" issuance is expected in 2017 and Climate Bonds is engaged with four potential ABS issuers for ensuring certification and facilitating issuance. IFC is also creating a warehousing facility for solar rooftop debt and will raise Green Bonds to support the debt.

2.3.3 Market Making by Government or Quasi Government Organizations

An initial 'demonstration' pipeline of Green Bond issuances by quasi government organizations such as electric utilities, mass transport companies, infrastructure financing corporations, state owned banks, and other state enterprises engaged in building out India's

[8] 94 cities Are Rated as Urban Local Bodies to Prepare for Municipal Bonds': Live Mint May 15, 2016. 55 of These Urban Local Bodies (ULBs) Have Secured Investment Grade Rating. These Are All Potential Issuers of Green Bonds as Many Investments will Be in the Area of Transport, Water, Waste, Energy Efficiency and So on, All areas where Green Certification can be obtained.

[9] Finance cost can be lowered and the investment flows can be increased with the introduction of appropriate insurance products. Therefore as tariffs for renewables plummet the demand for insurance products are expected to increase.

infrastructure, will be liked by investors because of higher credit rating of such issuers and create a path for private issuers in future.

State-owned enterprises can emulate and learn from entities like NTPC and IREDA. The former raised USD 310 million in August 2016 and the bond is listed at the London and Singapore stock exchanges. Following its footsteps, Neyveli Lignite Corporation, Power Finance Corporation, Power Trading Corporation, and Rural Electrification Corporation are likely to float Green Bond offerings worth USD 1 billion.

2.3.4 Credit Enhancement

The first Indian Green Bond with credit enhancement was issued by ReNew Power Ventures. ADB and India Infrastructure Finance Company Limited (IIFCL) jointly guaranteed 28 percent value of the bond issuance. This increased the credit rating from BBB to AA+ and drew more institutional investors. The maturity period for this bond is 17.5 years (maturing in March 2033).

USAID, through its Development Credit Authority (DCA) initiative provides partial credit (risk enhancement) guarantees to mobilize financing for RE projects. DCA guarantee can cover various credit transactions, including term loans, financial leases, wholesale loans, or other structured debt instruments. DCA guarantee covers the following scenarios:

- Guarantee given to lender, for a project. Applicant is the developer.
- Guarantee against a loan portfolio of a lender. Applicant is the lender.
- Guarantee to investors for bonds issued by a developer. Applicant is the developer.
- Portable guarantee provided to a borrower to borrow from any lender. Applicant is the borrower.

Infrastructure Debt Funds (IDFs) were designed as mutual funds or NBFCs to refinance long-term infrastructure assets. NBFCs and IDFs can raise resources from long-term investors such as pension funds and insurance companies, using Green Bonds.

IIFCL is actively developing credit enhancement products. The Export-Import Bank of India (EXIM) is planning to provide hedging and credit enhancement support to issuers in foreign currency.

Apart from simple credit enhancement, IFC has proposed different credit ratings using tranches from a loan portfolio. This is likely to be used in the proposed warehousing facility.

2.4 MARKET BUILDING ACTIVITIES

In late 2016, the first meeting of the India Green Bond Council was convened (in collaboration with FICCI) to work collectively to grow the Indian Green Bond market. Members range from SBI, IDBI to Infrastructure Leasing and Financial Services Limited (IL&FS), and Institute of Financial Management and Research (IFMR). The Council is expected to meet four times in 2017, as well as host several market education sessions (for potential issues) in different State capitals. Investor outreach was started with three major investors joining the Council (Industrial Credit and Investment Corporation of India (ICICI) Prudential Asset Management Company Limited, SBI Life, and Life Insurance Corporation of

India). A Green Infrastructure Investment Forum, focusing on potential Green Bond issuance, (similar to the USAID-supported event held in London in June 2016) will be held in the second half of 2017.

A meeting of the Council in Mumbai, in February 2017, has considered reports on how to grow a Green Municipal Bond market in India, steps to grow green securitization, and measures for regulators to consider.

3. Key Action Areas For Developing Indian Green Bond Market

A summary of key priorities, arising from experiences in other global markets, is provided below.

- **Share Country-Level Green Finance Framework:** The People's Bank of China Research Bureau, in partnership with UNEP, published a report on 'Establishing China's Green Financial System' in 2015. This report included wide ranging components of a Green Finance System such as Green Banking, Environmental and Social Responsibility of Investments, Green Funds, Green Bonds, Initial Public Offering of companies engaged in Green Activities (Green IPO's), Green Indices, Environmental Markets, Environmental Disclosures etc. This was followed-up by Guidelines for Green Bond issuance in 2016. China stands out as an example as it has already issued ~39 percent of global Green Bonds in 2016. Presently, China is the third largest issuer in the world.
- **Establish Green Project Pipeline:** A well-analyzed and widely shared analysis of green segments, potential sizes, growth, and issuers can provide investors with better insights into the market potential and build their interest.
- **Strengthen Local Bond Markets:** Local markets play an important role, as India does not depend only on international investors. Local markets will also attract retail investors to invest in 'Green'.
- **Strategic Green Bond Issuance by Public Sector and Government:** Indian Bond market was kick started by public sector issuances. This needs to continue and be extended for different types of new products and segments. Investors have confidence on public sector and governments and prefer to invest in them in the initial phase of market evolution. Once settled, it becomes feasible for private sector to tap them.
- **Develop and Announce Green Standards:** Green Bond Standards should be in sync with the International Standards, and uniformly applied to give a clear signal to the investors. Green Certification signals a minimum acceptable due-diligence behind the bond.

The following tools have been used globally to support the evolution of Green Bond market.

- **Strategic Public Green Bond Investment:** Public sector units and financial institutions should anchor initial issuances for any segment or product. Globally, IFC, World Bank, and ECB plays this role. Green Banks have been set up by many countries to play this role at the country level. India can also look at creating a similar institution.
- **Credit Enhancement:** Credit enhancement reduces the interest and makes issuance investible by a larger set of investors. In India, the scope and size of such enhancements should improve.
- **Provide Tax Incentives:** Positive experience in the U.S, Brazil, and other countries highlight the power of tax incentive in opening up infrastructure investments.
- **Develop Instruments to Aggregate Assets and Structure Risks:** Aggregators and warehousing structures can support collection of small and distributed assets into an investible portfolio. Aggregation also enables risk diversification and risk stripping.

These structures will be required in India, with few public sector or development financial institutions taking the lead.

- **Cornerstone Funds Set Up by the Government to Provide Credit Enhancements, Aggregation, Warehousing, and Market Making Services Required in the Initial Phases[10]:** India can set up a Corner Stone Fund using the National Clean Energy Fund. Such funds can also attract multilateral capital, especially from institutions such as Global Environment Facility (GEF). This will also clearly outline India's contribution to meet Intended Nationally Determined Contribution (INDCs).
- **Create standard documentation** (e.g., for loan, lease, and power purchase agreements) that can be easily aggregated and securitized.

The RBI will play an important role in shaping the growth of Green Bonds in India.

Some of the key recommendations for RBI's consideration to facilitate this growth include:

- Reduce risk weightage of Green Bonds lowering the related capital adequacy requirements.
- Improve cost for banks issuing Green Bonds e.g., require lower CRR/SLR.
- Consider Green Bonds as "Treasury Investments" to increase liquidity.
- Establish a numerical target for investment in green securities.
- Tax exemption will increase the domestic market interest in Green Bonds globally:
  - Reduce withholding tax to zero on Green Bonds.
  - Introduce Tax-Credit Bonds and apply to bond investors who receive tax credits when they invest in such bonds.
  - Introduce Tax-Exempt Bonds to reduce the yield required on such bonds.

[10] India Can Set Up Such Fund Using National Clean Energy Fund.

4. EXAMPLES OF GREEN BOND PROMOTION GLOBALLY

Green Bonds are rapidly increasing and an analysis of INDCs of 21 countries indicates that USD 23 trillion will be required for Green Investments during 2016-2030[11]. Globally, Green Bonds and Climate Finance related initiatives are being undertaken. Some interesting examples include:

- In 2016, People's Bank of China published **Green Bond Guidelines** and definitions driving issuance from almost zero to RMB 238 billion (USD 36.2 billion). The bank also released **Guidelines for Green Finance System in 2015**.
- The Brazilian Development Bank (BNDES), Brazil's giant national development bank, and IFC announced dedicated funds **(Cornerstone Funds)** to invest in Green Bonds.
- In 2016, Poland issued the world's first **sovereign Green Bond** (USD 784 million).
- The French Banking Association proposed implementing **preferential risk weightings** for green investments by adding a **"green support factor"**.
- Bangladesh and Brazil are two countries where the **Central Bank has been a leader** in engaging climate change. Bangladesh became the first Central Bank to announce they will target some of their **reserves for Green Bond** investment in October 2015. In Bangladesh, the Central Bank provides refinancing at **preferential interest rates** for loans provided to RE.
- A single public sector entity offers a model of combined **warehousing and credit enhancement** facility. European Investment Bank and the European Commission have used this to support the securitization of loans to small-and-medium scale enterprises (SMEs).
- The Inter-American Development Bank 2014 pilot project for securitization of energy projects in Mexico used **warehousing and asset backed securitization**.
- A number of central banks have started purchasing Green Bonds as part of their **reserve management program,** such as Morocco's Bank Al-Maghrib.
- U.S. federal government supports **Tax Credit Bonds** under Clean Renewable Energy Bonds (CREBs) and Qualified Energy Conservation Bonds (QECBs) program. allows for the issuance of taxable bonds by municipalities for the purposes of clean energy and energy conservation. Seventy percent of the coupon from the Municipal is provided by a tax credit or subsidy to the bondholder from the federal government.
- Brazil provides **tax exemption** on issues for infrastructure purposes including RE.
- In 2016, Kenya's Capital Markets Authority proposed to provide **tax incentives** on Green Bonds.

[11]CBI Analysis.

5. The Program's Participation In Promoting Green Bonds

The Program has been actively involved in promoting the use of Green Bonds since 2013.

5.1 GREEN BONDS IDENTIFIED AS AN IMPORTANT DEBT INSTRUMENT FOR SCALED-UP FINANCING

The Program's report on 'Financing RE in India' released in October 2013, identified Green Bonds as one of the seven new instruments, for large-scale debt flow into RE sector.

Green Bonds offered the benefits of attracting long term, large, institutional investors, reduced interest rates, fixed interest rates[12], longer tenures (necessary for RE projects), and being appropriate for 're-financing of operating projects'.

Before 2013, there was lack of knowledge and experience on the benefits of labeled Green Bonds in India. Globally too, the total Green Bond issuance was just ~ USD 10 billion in 2013.

5.2 BUILDING MOMENTUM DURING 2013-2015

The voices supporting Green Bonds started to grow in 2014. Climate Policy Initiative (CPI) prepared various papers on new ideas to support hedging[13], enhancement against credit, political risks, and active participation of the state to support green financial instruments such as Green Bonds. FICCI, Climate Bonds Initiative, and UNEP prepared a report on 'Designing a Sustainable Financial System for India' and supported the creation of Green Bond Market in February 2015. Centre for Energy, Environment and Water (CEEW), Natural Resource Defense Council (NRDC) and Shakti Sustainable Energy Foundation (SSEF), proposed the use of Green Bonds for fulfilling financing targets for India's Wind Mission. [i]

Focusing on public sector, which normally establishes green finance markets, as well as important private sector players, the Program carried out several activities to create awareness during 2013-2015. These include:

- Presentations to financial institutions such as IREDA, EESL, IIFCL, Solar Energy Corporation of India Ltd, and Indian Railways, highlighting how Green Bonds will be useful in improving costs, access to capital, and asset-liability mismatch for their RE portfolio.
- Organized webinars for potential issuers, corporates, and financial institutions. Increase in participant interest was witnessed.
- Delivered multiple presentations to MNRE, which showed keen interest in promoting Green Bonds, and subsequently held dialogue with industry players. MNRE seized a formal target and encouraged important development financial institutions such as Power Finance Corporation Limited (PFC), IREDA, and IIFCL to decide a short-term target for raising USD 5 billion through Green Bonds.

[12]Indian Banks Offer Floating Interest Rates With Reset Clauses.
[13]USD: RE Hedging Costs Ruled at 7-7.5 Percent in 2014.

- Published a comprehensive ‘Issue Paper on Green Bonds’ in December 2014, covering different types of bonds, pricing of bonds, rapidly growing green allocations by investors, etc. It was well received by the industry and financial institutions.
- Green Bonds and Investment Trusts (both identified in the RE Finance Report of the Program) were chosen as important means of financing to build up RE-Invest. MNRE organized the first International Investor event in February 2015. The Program prepared a presentation on Green Bonds and Investment Trusts at RE-Invest 2015.
- 100 GW solar and 175 GW RE targets were announced in 2015. Green Bond was promoted as an important financial instrument for achieving this. In September 2015, the Program delivered a presentation to large Public Sector Undertaking (PSU) (such as Indian Oil Corporation Limited, NTPC, and Railways who had occupied solar target of 27 GW in RE-Invest -2015), outlining how Green Bonds can be issued to finance their RE programs. Several PSUs have either already issued Green Bonds or are contemplating the issuance.

5.3 ACTIVITIES SINCE 2016

In 2016, the awareness and interest in Green Bonds grew significantly driven by a number of initiatives by the industry, Ministry, and other stakeholders.

The Program had significant engagement with issuers and investors. Since the start of 2016, the Program had advised and provided investor access services to five out of eight issuers in India. Seven issued bonds are certified under Climate Bond Standards. Two issuers of non-certified bonds (Yes Bank and Greenko Group) indicated that they expect to use certification for their next Green Bond issuance.

Emergent Ventures India, the lead Finance and RE Deployment Consultant under the Program, has supported verification of 20 percent of all Green Bonds issued so far and 100 percent of all Green Bonds certified in 2017.

The Program’s activities for growing Green Bonds market in India focused on issuers, investors, and verifiers. The Program organized a series of roundtables and conferences for these stakeholders in 2016.

- **April 2016:** Indian issuers, investors, and underwriters attended the Roundtable at the National Stock Exchange in Mumbai.
- **May 2016:** Two Roundtables in New Delhi focusing on RE producers and financing of Indian Railways (sustainable transport).
- **June 2016:** Roundtable in London introducing EESL to investors and other energy services companies.
- **June 2016:** Investor conference in cooperation with the Green Infrastructure Investment Coalition at the London Stock Exchange, where 12 potential Indian issuers presented their five-year pipeline of financing needs to an audience of 140 finance professionals, including 35 investment firms (see box on India Forum of the GIIC).

- **October 2016:** "Green Bonds State of the Market 2016"[14] report launch in Mumbai and New Delhi and the first meeting of the Indian Green Bonds Council in partnership with FICCI.
- **December 2016:** Roundtable of Indian buy-side investors organized in partnership with ICICI Bank in Mumbai.

In addition to roundtables and events, the Program held several one-to-one meetings with potential issuers, verifiers, industry groups, investors, regulators, stock exchanges, and public servants providing input and support for building and participating in a dynamic Indian Green Bond market.

A number of influential stakeholders had lent their voice and support during 2016 including the Department for International Development (DFID), IFC, World Bank, GIZ, NRDC, and USAID. This has led to an increase in the market confidence with important private developers as well as banks participating in the market. More than 40 international investors showed active interest in Indian issuances. However, service providers of adequate capacity are inactive regarding the placement of bonds as well as green certifications.

5.3.1 India Forum of the GIIC

On June 30, 2016, the London Stock Exchange hosted an inaugural **India Forum of the GIIC,** which brought together the European institutional investors, Indian green infrastructure developers and financiers, development banks, and perspectives from India and UK governments.

GIIC is an initiative led by Climate Bonds, UNEP Inquiry, and the Principles for Responsible Investment, with over 40 members from across the finance sector. GIIC is focused on increasing investment in green infrastructure assets globally.

Twelve Indian project developers and financiers presented their five-year infrastructure pipelines to investors. Presenters outlined plans to issue USD ~18 billion of Green Bonds in the next five years, primarily to raise capital for renewables and energy efficiency projects. The opportunities in Equity investment were also discussed. PowerPoint presentations included updates on India's evolving macroeconomic conditions by Bloomberg New Energy Finance and the National Institute for Public Finance and Policy. The opportunities for risk bridging were also discussed.

"*There is a fundamental policy shift in India so that 'green and clean' is becoming*

[14] www.climatebonds.net/resources/publications/bonds-climate-change-2016

mainstream. We are not underselling the structural problems we have, but we are doing something about it."
Dr. Rathin Roy, Director, National Institute of Public Finance and Policy

Engagement with London-based investors and banks continued after the Forum. Bilateral meetings between participants were scheduled for the following day. GIIC also organized group meetings between potential Green Bond Issuers and Blackrock, the world's largest asset manager; and the Hong Kong Shanghai Banking Corporation (HSBC), a leading investment bank.

"The Obama-Modi deal opens the way for new collaboration. Presently, our total aid exposure is not being met. India is now the least risky country we invest in."
Mr. Christopher Adams, Field Investment Officer, USAID

Development banks and agencies present at the Forum also spoke of their expanding role in facilitating low-carbon investments in India. USAID will provide credit enhancement and loan guarantee facility of up to USD 100 million for RE projects of equal to USD 500 million.

ANNEXURE I: INTERNATIONALLY ACCEPTED DEFINITIONS OF GREEN

- **Green Bonds:** These bonds function like any other type of bond. However, these bonds have an added characteristic, viz., the proceeds must be in support of "green" projects such as RE deployment, water, clean transportation, and climate adaptation. These are an effective tool to raise funds for RE projects while meeting the environmental targets of the investors and climate targets set by the government.
- **Green Bond Principles (GBP):** These are voluntary guidelines for Green Bond Issuance process launched in 2014 and last updated in 2016. It is developed based on the design and reporting characteristics of Green Bonds and focuses on the use of proceeds for qualified purposes. GBP includes establishing sound management processes for the use of proceeds and independent reviewers for both environmental credentials and robust reporting practices. The Principles identify sectors that can be included as green such as RE, energy efficiency, sustainable waste management, sustainable land use (sustainable forestry and agriculture), biodiversity conservation, clean transportation, sustainable water management (clean and/or drinking water), and climate change adaptation.
- **Climate Bond Standards:** These seek to provide common, science-referenced classification for the Green Bond market, of what is green. The Climate Bond Standards Board, which represents investors with USD 34 trillion of assets under management, oversees the development of Standards. The Board convenes scientists, investors, and other specialists in expert committees to develop clear and science-based criteria to identify the assets and projects that can be financed with Green Bonds. The newly updated Climate Bond Standards also set up issuance processes for Green Bonds, in line with GBP.
- **Green Bond Indices:** These apply different filters for what qualifies as a Green Bond, and therefore, plays a major role in enforcing robust green credentials in the market, in addition to the external reviews initiated by the issuers, as set out above. Globally, the bulk of assets under management are passive investments tracking indices. Green Bond indices are an important mechanism to ensure the market is scalable, yet environmentally rigorous.
- **External Reviews and Assurance[1]:** There is a range of mechanisms to verify that Green Bonds finance appropriate assets. The most common mechanism for Green Bond issuers is to use an external review to provide investors with increased confidence in the green credentials of the bond in both the pre-issuance and post-issuance phases.
    - *Pre-Issuance Phase*: External reviews provide investors with information particularly on the types of green projects the bond will fund and the management processes the issuer has in place to ensure the funds are allocated only to these green projects.
    - *Post-Issuance Phase*: External reviews assure investors that the funds are allocated as promised in pre-issuance phase, and provide more information on the environmental impact of the bonds. External reviews are an important improvement on issuer disclosure (first party review), as they provide an independent check on the validity of the issuers' claims for the environmental credentials of Green Bonds. Another benefit of external review is to help educate new Green Bond issuers on what information investors are seeking so they can be confident of the environmental

credentials of Green Bonds. External reviews can include use of proceeds, management or proceeds, and reporting procedures. In the Green Bond market, external reviews are derived in the form of second party review or third party certification.

- *Second Party Review*: A second party organization is an external organization with environmental expertise, arranged by the issuer to check the issuance framework and green credentials of the bond. Often, second party also works with the issuers to help them with the initial development of Green Bond framework, which the second party provider then subsequently evaluates. External help in developing Green Bond framework is valuable for the issuers, particularly for first time issuers. However, it reduces the independence of the second party in reviewing the issuer's framework, as the second-party provider is then reviewing their own work.
- *Third Party Certification*: The third party verifier, arranged by the issuer, reviews the bond against relevant criteria for the environmental credentials of projects and assets, as defined in well accepted standards. The verifier also checks compliance against standard criteria for management of proceeds and reporting as also developed by the standards provider.

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