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CASE STUDY

Green Bonds in India – Process and Progress

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Pratibha Caleb, *Senior Project Officer (Sustainability), ICLEI South Asia, India*

Prateek Mishra, *Project Engineer (Energy & Climate), ICLEI South Asia, India*

The impact of climate change poses a significant challenge all over the world, and particularly in developing countries that are vulnerable because of rapid urbanization and a host of other factors. Consequently, these developing nations need to adopt and implement city-specific climate-resilient mitigation and adaptation measures. However, one of the biggest roadblocks to the implementation of these measures is access to funding.

The lack of any concrete advances on finance pledges at the climate change negotiations at COP24 in Katowice, Poland, in 2018, amplifies the need for innovation in financing mitigation and adaptation activities, as well as to insure against loss and damage caused by climate change.

However, developing countries are fast realizing that financial support for loss and damage (which is not governed by a legally binding framework) from developed countries is likely to be very small. While developing countries need to continue to seek clarity on the pathways of financial support under the UN Framework Convention on Climate Change (UNFCCC) regime, they cannot wait for it. Climate risk is real, and it is growing. We all must share the burden and act now.

India, with its rapid urbanization and economic growth, is vulnerable to climate change impacts. While the Government of India has pledged to adopt a low-carbon development pathway that incorporates the required adaptation measures, the country urgently needs to finance green projects that have been launched, such as Smart City, Swachh Bharat and Solar City Missions. Considering the huge projected capital and investment required, the current financing options (such as commercial banks, multilateral financial institutions and non-banking finance companies) would be inadequate.

In such a scenario, green bonds are a promising additional avenue for mobilizing climate finance, offering viable and scalable financing options, and are key to India's sustainable development. The World Bank defines a green bond as "debt security that is issued to raise capital specifically to support climate related or environmental projects" (World

Bank, 2015). It is a fixed income financial instrument that is linked to the promotion and implementation of climate change mitigation and adaptation activities. The issuer of the green bond gets the capital to finance green projects and the investor receives a fixed income in the form of interest and debt repayment. Green bonds enable public and private stakeholders to come together, and for individuals and institutions to take ownership of their activities and invest in more socially and environmentally responsible economic activities.

Context

According to a report released by the Climate Policy Initiative, climate finance flows totaled about USD 391 billion in 2014, of which 38% was public money and the rest came from investments made by the private sector, especially in renewable energy. Further, 75% of the total public climate finance was raised domestically by countries. The climate financing landscape for developing countries indicates that finances usually come through multiple international (multilateral and bilateral aid agencies, and multilateral private firms) and national (domestic budgets and private funds) sources. These funds are in the form of budgetary allocations, taxes, subsidies, energy generation-based incentives, and private equity, besides loans, soft-loans and grants.

Among the many sources of climate finance, specifically in India, the largest portion comes from the domestic budget, both at the national and subnational levels.

Managing the tradeoff between economic growth and reducing greenhouse gas emissions requires significant financial and technical assistance. The Economic Survey of India (2015) indicated that at least USD 2.5 trillion would be required to help India achieve its climate change targets (Singh, 2017). Of this, an estimated USD 206 billion (at 2014-15 prices) would be needed between 2015 and 2030 for implementing adaptation actions in agriculture, forestry, fisheries and infrastructure, besides water resources and ecosystems (MoEFCC, 2015). Additional investments will be required for strengthening resilience and disaster management. In another study, national think-tank NITI Aayog (National Institution for Transforming India) estimated that the mitigation activities for moderate low-carbon development would cost close to USD 834 billion until 2030 at 2011 prices (Swati Agarwal, TERI, 2015).

India needs to move away from the 'business as usual' growth path that only looks at economic growth, and work towards developmental pathways that tackle mitigation, adaptation and loss and damage collectively. This cannot be achieved with public money alone; contributions from the private sector have become critical in ensuring sustainable development. In this context, green bonds have gained a lot of traction of late.

> *"India's ambitious NDCs and Sustainable Development Goals (SDGs) are estimated to cost USD 2.5 trillion and USD 8.9 trillion, respectively, by 2030. Mobilizing this enormous amount of climate and SDG finance would require the development of new and innovative financial mechanisms, and channelization of funds towards sustainable sectors and businesses that not only deliver on climate targets, but also meet the developmental agenda."* - **Namita Vikas**, Group President & Global Head, Climate Strategy & Responsible Banking, Yes Bank

Key Takeaways

- **Green Bonds can accelerate green projects, create green jobs and promote climate resilience.** They help in swift implementation of green projects that provide job opportunities, and promote the economy and climate resilience in a region.
- **Green Bonds can enable high capital requirements.** For projects that require high capital investment, green bonds can be the key. They allow access to capital with lower risks through longer tenure and bullet payments[1] structures.
- Green bonds enable local governments to develop Public-Private Partnerships (PPPs) to accelerate resilient development. The PPP model can change the development landscape and help governments to advance low-carbon development pathways.
- **Green bonds offer investors an attractive basket of investment.** Due to the long-term competitiveness and higher liquidity in the green bond market, they provide the investor a sustainable investment platform with lower risk vehicles.

Benefits of Green Bond Market

A study of the financial and environmental performance of 217 green bonds, issued worldwide by public companies between 2007 and 2018, revealed that they offered financial benefits through better returns on assets and equity. Further, as stringent environmental criteria and guidelines needed to be met, companies issuing these bonds saw a significant reduction in their CO_2 emissions and a boost to their environmental ratings (Flammer, 2019).

The first green bond, called the 'Climate Awareness Bond, was issued in 2007, with European Investment Bank (EIB) issuing the AAA-rated issuance. World Bank issued the 'Green Bond' the following year (World Bank, 2015). From then on, governments as well as several other international organizations issued their own green bonds and the market reached close to USD 10 billion by mid-2012.

1 Bullet payment is a lump sum payment made for the entirety of the loan amount (principal amount) at maturity, as opposed to amortising the bond over its lifetime.

Benefits	Environmental	Social	Economic
Investor Diversification	x		x
Private sector engagement		x	x
Alignment of internal sustainability and finance strategies	x	x	x
Reputation benefits (demonstration of commitment to a low-carbon economy	x	x	x
Ecosystem valuation (investment in natural capital)	x	x	x
Recognition of mitigation and adaptation requirements (Achieving NDC targets)	x	x	
Investment in green skills	x	x	x

Figure 1: Benefits of investing in green bonds and its co-benefits

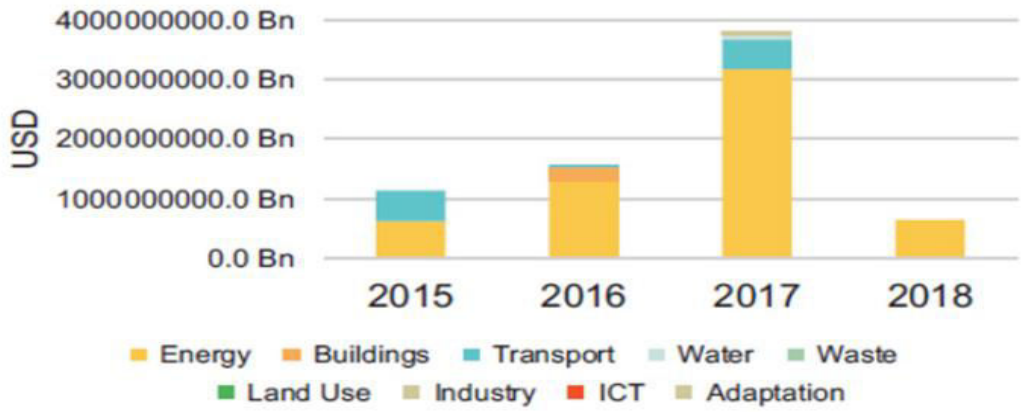
The table above illustrates the benefits of investing in green bonds, with specific co-benefits related to the environmental, social and economic parameters. For example, investment in the protection of urban wetlands[2] would not only preserve the ecosystem, but also save governments from spending billions of dollars on sewage treatment, helping to protect cities from urban flooding, epidemics and social unrest, among others.

India entered the green bond market in 2015, when YES Bank issued the first green bond for financing renewable and clean energy projects, specifically wind and solar projects. Investors in green bonds now range from mainstream investor markets to more niche market players, which include institutional investors such as pension funds, insurance companies and their investment managers, public agencies such as central banks and national governments, and corporations, besides commercial banks, retail investors and dedicated green bond funds (Kala & Garg, 2015).

In the Asia-Pacific region, India is the second largest emerging green bond market with a total of USD 7.2 billion issued till 2018. This is only second to China which accounts for 18% of the total global issuance and is also the second largest market of 2018 with over USD 30 billion of issuance (Climate Bond Initiative, 2018).

The proceeds from these bonds have been used mainly to finance utility-scale renewables, energy-efficient buildings and large-scale transport infrastructure. Investment in adaptation actions in agriculture and land use continues to remain unexplored, despite the international fund access focusing largely on adaptation measures. A report from the Climate Bond Initiative (CBI) noted that 68% of the green bond funds in India had been set aside for renewable energy projects, 21% for the low-carbon transport sector and 10% for low-carbon buildings (Climate Bonds Initiative, 2017).

[2] act as giant sponges that absorb flood waters, as well as filter the water that seeps into aquifers, thus helping in replenishing the city's main water sources, i.e., groundwater. Further silt-rich soil and abundant plants in wetlands function as water filters, which absorb some harmful toxins, agricultural pesticides, industrial waste and also help to treat sewage from households.



Source: (Kumar, et al., 2019)

Figure 2: India Bonds Use of Proceeds

Significant amounts of funding from domestic green bonds have been for sectors that have more visible outcomes, such as renewable energy and infrastructure. As can be seen in the above graph, there has been considerable investment in the renewable energy sector, but almost negligible investment in land use and adaptation space. For example, the Indian Railway Finance Corporation (IRFC) set up a Green Bond Framework for financing the dedicated freight corridor and electrification of railways, which raised USD 500 million from 10-year green bonds through India INX[3] and GIFT City. In June 2019, Adani Green Energy issued green bonds worth USD 500 million through India INX, at a coupon rate of 6.25%; they were three times over-subscribed at a time when infrastructure companies struggled to raise funds.

Beyond renewable energy, the Kerala Infrastructure Investment Fund Board - the first sub-entity in India to tap the offshore rupee international bond market - raised a total of USD 312 million in the senior secured fixed-rate bond and has a five-year tenor with 9.723% coupon (London Stock Exchange, 2019). The bond is aimed at accessing capital from international investors to promote non-conventional energy sources and to develop carbon-neutral infrastructure, especially after the devastating floods that resulted in the loss of life and property of millions in the state (Kerala Infrastructure Investment Fund Board, 2018).

Measures to Ensure Growth

To avoid 'green-washing', i.e., non-green purposes, the Securities and Exchange Board of India (SEBI) published its official green bond requirements for Indian issuers in January 2016. India was the second country after China to develop national-level guidelines for green bond issuance.

Some of the broad categories where monies may be invested as per the guidelines are:

- Renewable and sustainable energy (wind, solar, etc.)

[3] India International Exchange Limited (India INX) is India's first international exchange in International Financial Services Centre (IFSC) located at the Gujarat International Finance-Tec City (GIFT City). It is a subsidiary of BSE (Bombay Stock Exchange) Limited.

- Clean transportation (mass transportation)
- Sustainable water management (clean and/or drinking water, water recycling, etc.)
- Climate change adaptation
- Energy efficiency (efficient and green buildings)
- Sustainable waste management (recycling, waste to energy, etc.)
- Sustainable land use (including sustainable forestry and agriculture, afforestation, etc.
- Biodiversity conservation

The guidelines also mention that this is an indicative list and may include other categories as specified by the Board.

The above-mentioned SEBI guidelines supported the growth in the green bonds markets in India in many ways: the two major ones were by helping investors to monitor and verify the environmental effectiveness (i.e. environmental benefits) of their investments, thereby building trust in the bond and widening the potential investor base; and secondly, by helping to streamline the Government's commitments to climate change and adaptation measures.

Guidelines for Transparency

Under the Green Bonds Principles defined by the International Capital Market Association (ICMA), the bond must also align with four core components:

- Use of proceeds, i.e., predefine the use of proceeds as the financing or refinancing of green projects or assets
- Process for project evaluation and selection - outlining how the bond issue would happen
- Management of proceeds
- Reporting, i.e., the issuer agrees to some level of transparency and reporting on the use of the proceeds and also on the impact over the life of the bond.

Green Bonds that meet the above criteria are called 'labelled green bonds'.

Apart from the national guidelines, the credibility of the green bonds is built on meeting the certified standards. At the international level, the London-Based Climate Bonds Initiative (CBI) is considered to be one of the leading certification entities for climate bond standards (CBI developed the Climate Bond Standards). In order to receive the Climate Bond Certification stamp of approval, the prospective issuer of a green bond must appoint an approved third-party verifier, who will provide a verification statement that the bond meets the CBS green credentials (Climate Bonds Initiative, 2019). The first

certified green bond in India to receive a third-party verification by KPMG and CBS was the $44-million Hero Wind Energy green bond in January 2016.

However, there has also been criticism on the adoption of international standards as it may not apply completely to the local context. There have been suggestions that credit rating agencies, such as Credit Rating Information Services of India Limited (CRISIL), CARE Ratings Limited and ICRA Limited, may be appropriate entities to tailor the standards to fit the Indian context, and also to ensure that the international credibility of the green bonds is not lost.

Stakeholders

Investors in green bonds range from the investor market to more niche market players. These include:

- **Commercial banks:** e.g. YES Bank in India. They are the most active of all financial institutions and their issuance has nearly doubled from 2017.
- Institutional investors such as pension funds, insurance companies and their investment managers: e.g., Government Pension Investment Fund of Japan (GPIF)[4]
- **Public agencies such as central banks and national governments:** e.g., The Reserve Bank of India (RBI) has included the renewable energy and agriculture sectors. Under this provision, banks must dedicate a certain portion of their overall lending book towards the priority sector, which in turn ensures a credit flow into these sectors (Lakhi & Somani, 2018).
- **Corporations:** e.g., Unilever issued a four-year corporate bond of £250 million (USD 411 million) - a 2% fixed-rate, sustainability bond - that was linked to their 'Sustainable Living Plan'. The proceeds of the bond were for projects that improved energy and water efficiency in the company's internal operations. The criteria for each of the projects to be included were that they must reduce CO_2 emissions or water use by 50% if a new project, or 30% if a retrofit, against a 2008 company baseline (Boulle, 2014).
- **Retail investors:** They are individual investors (rather than institutions) who demand that issuers direct capital flows to green projects, and push institutional investors to better address climate change risks.
- **Dedicated Green Bond Funds:** e.g., Allianz IG Green Bond Fund[5] that began in 2018
- **Supranational investors:** e.g., World Bank, European Investment Bank, Asian Development Bank

[4] GPIF is the largest pension fund in the world that has developed a framework for ESG investing in fixed income. In July 2017, they announced a selection of three new benchmarks created for the pension plan so as to direct Japanese equity investments to Environmental, Social and Corporate Governance (ESG) and socially-themed investments (World Bank, 2017).

[5] To read more, go to link: https://lu.allianzgi.com/en-gb/pro/our-funds/allianz-green-bond

Lenders/Bankers	Developers	State	Green Bond Investors
Releases capital for re-financing new projects • Asset liability mismatch can be corrected • Economic value from sponsoring infrastructure Development Funds	*Long-term, low cost debt- will improve equity returns* • Potential exit for part/full equity, investors; thus, can scale up faster • Encourage emergence of development and construction finance options and risk mitigation products	*Help scale-up green investments- meet NDC targets* • Tap long term investors- positive impact on foreign reserves • Ability to work well with emerging climate regimes and funds • Climate resilient economy	*Low operational risks in the invested green assets* • Liquidity • Fulfilment of climate mitigation and adaptation targets • Vale of assets improve with time, as green infrastructure becomes more competitive vis-à-vis conventional infrastructure development

Figure 3: Benefits of Green Bonds for various stakeholders (Kala & Garg, 2015)

Additionally, the demand for green bonds can come from a range of investors, who include domestic investors. Domestic capital markets have an important role to play in mobilising private capital to finance domestic development. By giving companies the ability to borrow domestically in local currencies, the domestic capital market can also reduce currency mismatches for borrowers, thus reducing risks.

Key Recommendations

To be a success, the green bond market development must be coordinated, with engagement across key market players in the private and public sectors. Committees with representatives from Central Banks, Ministries, Development Banks and other financial sector and corporate players are emerging around the world, including in Brazil, the US, China and Colombia, as well as India, Indonesia, Mexico and Nigeria, besides Turkey.

A market development committee will advance an enabling environment through generation of conducive policies, incentives and robust green definitions. This would help in defining a more sustainable financial strategy for the country, as it will encourage and support the movement of capital flows towards environmental solutions, preparing a new way of doing business.

Further, the presence of supportive policies and the absence of restrictive ones, on both the issuer side and the investor side of green bonds, can play a key role in the development of a green bond market. Especially important and effective are environmental policies and regulations that support the demand for and supply of green projects and assets. These include (Williams, Jones, & Pickin, 2017):

- Environmental standards and enforcement
- Environmental licenses and permits
- Environmental taxes (i.e., carbon, landfill, emission and resource-use taxes)
- Annual reporting by companies and public sector entities on key environmental indicators
- Inclusion of environmental risk in fiduciary duty

ASEAN Green Bond Standards

ASEAN countries, represented by the ASEAN Capital Markets Forum, released the ASEAN Green Bond Standards, a set of voluntary guidelines based on the international Green Bond Principles, made specifically for the ASEAN region:

The main aim of these guidelines was to enhance transparency, consistency and uniformity, so as to reduce issuance and investment costs that often occur when foreign investors come in.

Some of the key elements are (Climate Bonds Initiative, 2019):

- The issuer or issuance of the green bond must have a geographical or economic connection to the region;
- Fossil fuel power generation projections are excluded;
- Information on the process for project selection and the use of proceeds, as well as external review reports must be made publicly available on a designated website;
- An external review of the green bond framework is particularly recommended for the management of proceeds and annual reports;

It is recommended that the external providers disclose their relevant credentials and expertise and the scope of the review conducted.

Success Factors

As mentioned above, India entered the green bond market when YES Bank issued a USD 161 million bond for a 10-year period. This bond received an AA+ rating and was oversubscribed by almost over two times, thus showcasing a huge demand for such financial instruments in the market (YES Bank, 2019). Following the success of this bond, YES Bank issued another green bond in the same year, of USD 50 million for 10 years. The entire issue was subscribed by the International Finance Corporation, which then issued an AAA-rated 'Green Masala Bond[6]' on the London Stock Exchange for the same amount. This move is said to have capitalized the YES Bank green bond and lowered the cost of lending to green projects.

The advantage of such bonds has been the keen interest that foreign investors have shown to support infrastructure development in India. This has ensured more credibility of the bond as it needs to meet the international investors green bond eligibility criteria. For example, the YES Bank green bond needed to meet the IFC green bond eligibility criteria, which were based on the development bank's expertise in financing green infrastructure.

Additionally, the unique aspect of this bond was that it was a rupee denominated bond. IFC issued the bond on the London Stock Exchange, the proceeds of which were invested in

[6] Masala bonds are bonds issued outside India but denominated in Indian Rupees, rather than the local currency. The term was used by IFC to evoke culture and cuisine of India.

the YES Bank green bond, which in turn supported investment in renewable energy and energy efficiency in India. This arrangement allowed the borrowers in India to raise low-cost capital overseas without bearing the exchange rate risk. Further, international investors were lending to IFC (considered to be a more credible borrower, rather than a relatively lesser-known Indian borrower).

Good Practices

Unlike in a number of countries where renewable energy and the transport sector have taken the major share of the green bond market, in Indonesia almost 30% of the green bond proceeds are earmarked for sustainable land use, including sustainable agriculture, afforestation and rainforest conservation, and climate change adaptation measures.

A significant example is that of the Tropical Landscapes Finance Facility, which issued USD 95 million for sustainable rubber plantation in Indonesia in 2018 (Mulder, 2018). The proceeds were used to finance a sustainable rubber plantation on heavily degraded land in the Jambi and East Kalimantan provinces of Indonesia. The plantation covered 34,000 hectares out of 88,000 hectares; the remaining land was used for conservation, aquaculture, land restoration and smallholder plantations, including of bamboo, cocoa, coconut and coffee, besides palm and rubber (Climate Bond Initiative, 2018).

The first green sukuk[7] was launched by Tadau Energy in July 2017, amounting to USD 58 million, to finance a solar park. In March 2018, the Republic of Indonesia surpassed this amount with a green sukuk worth USD 1.25 billion, making it the fifth nation globally to have placed a green sovereign bond (Climate Bonds Initiative, 2019). Indonesia has thus made great strides in the financing of its economy through the green bond market.

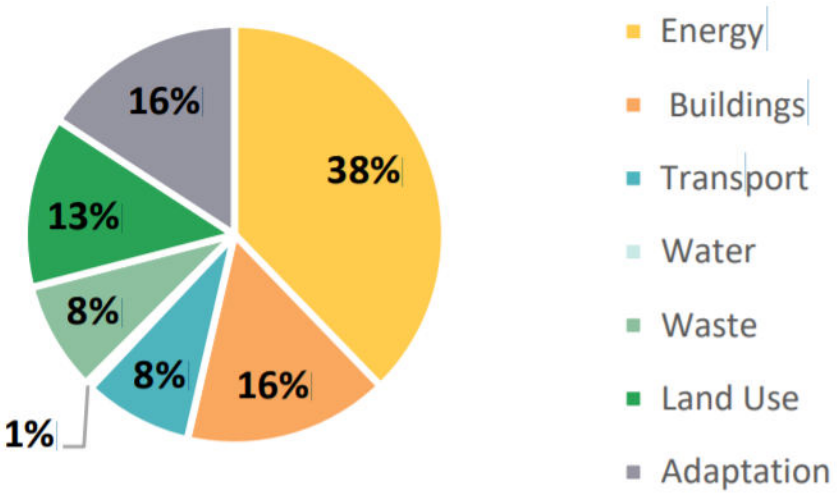


Figure 5: Allocation of Indonesian green bond proceeds (Climate Bonds Initiative , 2019)

[7] Green Sukuk are Shari'ah-compliant investments in renewable energy and other environmental assets. They address Shari'ah concerns for protecting the environment. To learn more, go to https://www.climatebonds.net/projects/facilitation/green-sukuk

Available Resources and Assistance

Green bonds can be an excellent tool for countries wanting to finance green infrastructure, show moral leadership on climate change and sustainability, and reach a new pool of domestic and international investors, including the growing class of millennials.

As climate change continues to be an acute threat to global development and creates unique challenges, governments must look at ways to build a more resilient future for their countries.

The LEDS Global Partnership, as part of the Global Green Bond Partnership, issued a Green Bond Roadmap resource that walks issuers step-by-step through the process of issuing a green bond. This online resource provides links to examples of key documents and approaches undertaken by issuers around the world and can be found at: https://www.globalgreenbondpartnership.org/green-bond-roadmap.

Additional resources on green bonds:

- Green bond finance and certification (2017), BIS
- The Green Bond Principles (GBP) 2018

Step-by-Step Guides

- Green Bond Pledge: How to Issue a Green Muni Bond: A Step-by-Step Guide
- IFC: Guidance for Sovereign Green Bond Issuers
- Green Bonds - The Process
- CBI's emerging market report - Roadmap with Common Milestones

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