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## Moving from Growth to Development: Financing Green Investment in India

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## THE INDIA WE WISH TO BUILD

The Indian economy is forecast to grow at seven to eight percent in 2018-19, the fastest rate of growth amongst the G20 countries. India is still amongst the lowest quartile of nations in terms of per-capita income. People's quality of life is held back by, amongst others, the country's inadequate infrastructure.

India's infrastructure challenge is different to that of most other G20 countries. Instead of an *infrastructure transition*, India's journey is one of *infrastructure creation*. It has the option to skip the growth trajectory adopted by many other countries and move straight to an economy fit for the 21<sup>st</sup> century. The old model can be avoided—that of growth replacing cheap labour with fossil fuels, a predominantly primary economy with low value manufacture, and services and rural agrarian development with an uncontrolled urban sprawl. India can move directly to the 21<sup>st</sup>-century paradigm of renewable energy sources, circular-economy materials flows, and high-density planned cities with mass-transport systems.

India's Nationally Determined Contributions (NDCs)<sup>1</sup> includes pledges to reduce the emissions intensity of GDP by 33 percent–35 percent by 2030 below 2005 levels and to increase the share of non-fossil-based energy resources to 40 percent of installed electric power capacity by 2030, with the help of transfer of technology and low-cost international finance. These are ambitious promises and are recognised by analysts as being broadly consistent with a 2°C world.<sup>2</sup>

To achieve these targets, India is setting out on a huge programme of investing in solar PV and wind with targets to have 175 GW of installed Renewable Energy (RE) capacity by 2022; this represents a 50-percent increase in India's current electricity generation capacity of 345 GW.<sup>3</sup> India is also seeking to electrify its mass transportation system through completing the electrification of its broad gauge rail (16,500 km) by 2022,<sup>4</sup> electrifying its vehicle stock between 2015 and 2017. The sale of Electric Vehicles (EVs) and hybrids saw an impressive seven-fold increase, rising from 10,321 vehicles in 2015 to 72,482 in 2017. E-rickshaws have grown to an estimated 1.5m. India has avoided setting targets for electrifying its vehicle fleet; many other countries have done so and it is likely that global car manufacturers will shift their R&D and manufacturing plants away from petrol and diesel drive trains.

According to official data, 1,417 of India's 18,452 villages, or 7.3 percent of the total, have 100 percent household connectivity, but about 31 million homes are still without light in the evenings. Agriculture's contribution to India's GDP

is only 17 percent, yet it provides the livelihood of more than 40 percent of India's 1.3-billion population. The ever-increasing demand for food has put productivity pressure on agriculture, leading to increased mechanisation and increasing its dependence on an increased supply of energy. Agriculture and other land-use projects could greatly benefit from investment in newer capital-intensive technologies like drip-irrigation, farm-level anaerobic digestion of manures and crop waste, and other improved water management technologies.

To date, climate policy action including financing has remained heavily tilted towards mitigation. Given the certainty of extreme weather events rising in frequency and intensity, a high degree of vulnerability and low adaptive capacity of communities, it becomes imperative to climate-proof the economy and strengthen people's capacities to withstand climate shocks. Out of 170 countries surveyed India has the 2<sup>nd</sup> highest vulnerability to climate change.<sup>5</sup> According to the Economic Survey's mid-year report (2017), the direct costs of extreme events spurred by climate change in India are in the tune of US\$ 9-10 billion per annum.<sup>6</sup> Building in adaptation and resilience cover for vulnerable areas/sectors thus becomes critical to creating financing flows for identified assets.

## **THE SCALE OF FINANCE REQUIRED**

Building climate-responsive infrastructure at this scale and speed is an unprecedented challenge. There have been a range of different short and medium-term assessments made about the investment needed. A few of these are given below to show the relative magnitudes. These estimates are largely based on investing in more of the same sorts of infrastructure that have already been built.

According to the High-Powered Expert Committee appointed by the Ministry of Housing and Urban Affairs, about US\$ 550bn (INR 39 lakh crore at 2009-10 prices) is required for the creation of urban infrastructure over the next 20 years. Out of this, about 44 percent was needed for roads and 20 percent for services such as water supply, sewerage, solid waste management and storm water drains.<sup>7</sup> This excludes investment in infrastructure that service the cities' needs like electricity grids and generation which is outside the city, or buildings which are funded by private developers. The Housing for All by 2022 programme aims to construct 20 million houses in seven years with a subsidy of US\$ 1500 per house to cover slum clearance expenditures and US\$ 3400 per house (net present value) for lower income focusing on 1049 towns and cities.

The Government of India has estimated that US\$ 4.5 trillion is needed to meet India's ambitious targets for renewable energy and urban sustainability over the next ten years – around US\$ 450 million per year.<sup>8</sup>

But a truly sustainable infrastructure investment strategy would need to include costs of decarbonised transport systems as an alternative to private cars like metro lines, broad gauge railways and energy efficient buildings. In China, which has rolled out metro lines at the rate India might seek to, the costs of construction varied between 700 and 1200 million yuan per kilometre (US\$105-180 million/km). If India sets out to develop 1000 km of new Metro (equivalent to three more Delhi scale systems) costs could easily reach US\$105-180 billion.

The total budget of the central government is US\$ 383 billion. As can be seen, the magnitude of the planned investment programme is already a high proportion of total government revenues. While these costs are massive, the net increase in jobs because of adoption of sustainable practices, including a change in the energy mix, the projected use of electric vehicles, and energy efficient buildings will be 2.8 million.<sup>9</sup> “Bold climate action [by the world] can deliver US\$ 26 trillion in economic benefits through 2030 (compared with business-as-usual growth path) and generate 65 million jobs.<sup>10</sup>

India's transition needs to stand at US\$ 2.3 trillion in climate action through 2030. Such a transformation of India's economy will need a mixture of local resources raised through user charges, successful tax collection and domestic savings, particularly from pension funds and insurance. The other source is the international capital market. This will mean fundamental shifts in how the financial system organises itself to integrate risks comprehensively and allocate capital effectively.

Long-term investment is a fundamental requirement in greening infrastructure. The world saves US\$ 20 trillion annually and nearly US\$ 28 trillion of these savings are parked with OECD pension funds alone.<sup>11</sup> Bonds as a financial instrument are particularly well suited to access this financing as they match the scale, long tenor and low risk requirements of these institutional investors.

Bonds also represent a large share of global financial flows with around US\$100 trillion outstanding globally. The majority of these (around 75 percent) are issued in developed countries – mainly the United States (40 percent).<sup>12</sup> A natural destination for these funds, reliably suited for the long term low carbon and climate resilient infrastructure, should be emerging economies like India

where they could earn up to three times the return than they currently do at two percent. However, the current allocation is vastly suboptimal.

To attract capital at scale, the risk perception (and hence the higher cost of capital) around low-carbon investments relative to other projects will need to be lower. With every new Green Bond issuance, this hurdle becomes a tad easier to cross as the market becomes more comfortable with the technologies and the project stability of these investments over the long term is better established.

## **DOMESTIC SOURCES OF FINANCING GREEN INFRASTRUCTURE**

India's large pool of domestic savings (30 percent of India's GDP) are predominantly locked up in physical assets and not open to financial intermediation.<sup>13</sup> Of the household financial savings, more than half are in the form of bank deposits which are short-term and do not match the investment criteria for infrastructure projects which are typically high risk, have large upfront capital costs and pay returns after a long gestation period.

Traditionally, commercial banks and Non-Banking Finance Companies have funded infrastructure projects making up 40 percent of the country's total infrastructure finance and 80 percent of the total debt infrastructure finance in India. The lingering non-performing asset troubles of the banking industry, however, are likely to constrain this source severely in the future. Additionally, banks face an asset-liability mismatch (ALM) when they finance long-term infrastructure loans through deposits of shorter maturity.<sup>14</sup>

The banking regulator, the Reserve Bank of India, has issued regulations and guidelines to define directed lending to specified sectors and influence interest rates, exposure limits, security and other conditions for lending by banks.<sup>15</sup> Priority sector lending, for example, ties 40 percent of aggregate bank credit to sectors including agriculture, energy, and Micro, Small & Medium Enterprises (MSMEs). Priority Sector Lending could play an important role in channeling green finance but has proved to be largely inadequate and ineffective, calling for a systematic review to make it fit for purpose. Because RE is within the energy sector, for example, existing bank loans towards coal plants has restricted lending to the RE sector to avoid over-exposure to energy assets.

Among the capital market instruments, green bonds offer an opportunity to relieve pressure on bank balance sheets. They are fixed income securities whose proceeds go specifically to low carbon climate resilient projects. While US\$ 7.15 billion raised by diverse issuers in two and half years might look meagre in the face of the investment needs, it is positive. With further growth of the domestic renewable energy market and an awareness around the

opportunities in other sectors, the associated risk perception is expected to fall. The recent announcement by the pensions regulator to reduce the minimum credit rating for Indian pension funds from “AA” to “A” is a welcome step and will open up a huge market. Also, the market regulator, Securities and Exchange Board of India’s (SEBI) new framework requires large companies (outstanding borrowing of INR 1 billion and with AA Rating or higher) to raise a fourth of their debt requirement via bonds.<sup>16</sup>

Developing this market also has the potential to address the larger financial challenge. Indian bond markets are not deep (comprising five percent of GDP) and listings of Indian bonds on global financial markets tend to face exchange rate risk which hinders investors’ appetite. Inflation targeting along with other Reserve Bank measures can serve to lower volatility in the exchange markets—allowing India to calibrate its exchange rate depreciation to its stable current account deficit. Given these conditions, bonds become attractive to international investors at inflation-adjusted returns of up to four percent.<sup>17</sup> Masala Bonds also have been a helpful innovation and large players like IREDA and NTPC have tapped this channel to issue green bonds.

## **STATE OF THE INDIAN GREEN BONDS MARKET AND OPPORTUNITIES TO SCALE**

The Indian green bond market had its first green issuance three and a half years ago and 20 green issuances have happened since. By November 2018, the total green bond issuance reached US\$ 7.15 billion making it the 12th biggest issuer in the world by dint of the size of the Indian economy<sup>18</sup> and the sophistication of its financial sector.

Issuing institutions have included non-financial corporates like Greenko, private banks like Yes Bank and also public sector backed entities like IREDA, and the Indian Railway Finance Corporation. The growth in issuance of the green bond market can be seen in Figure 1. The year 2018 has been relatively flat in terms of growth mainly due to tight market conditions. The major issuer in 2018, the State Bank of India, increased its issuance by US\$ 150 million to a total of US\$ 650 million. It is set to issue on a repeat basis like many others in the leading club of issuers.

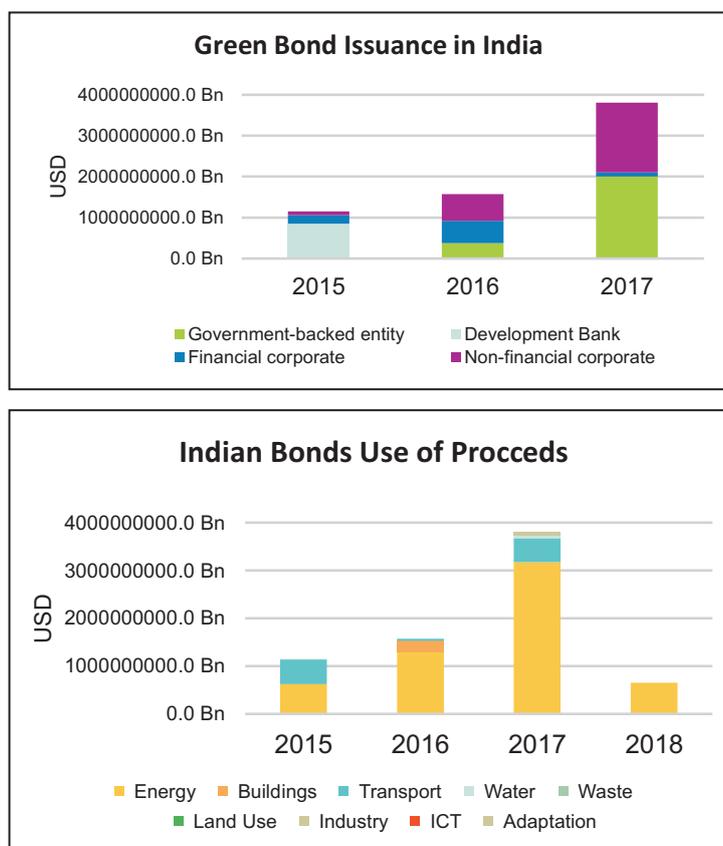
All green bonds have been oversubscribed and have attracted a wider pool of investors than vanilla equivalents by the same issuer. Additionally, greater investor diversification has also led to a pricing advantage - albeit a mathematically conclusive result establishing this assessment is not available mainly due to limited availability of data. However, anecdotal estimates suggest

that pricing advantage for Indian issuers has been between seven to 14 basis points. The experience of the first issuer of Green Bonds, the European Investment Bank shows that its green bonds trade much tighter than an equivalent non-green bond, supporting the argument about a pricing advantage on green bonds.

The latest report on Green Bonds Pricing in the Primary Market (analysis done for US\$ and EUR denominated bonds for January to June 2018) suggests that the spread compression was eight basis points (bp) for green bonds as against seven bp for vanilla in EUR and 18 bp as against 14 bp for US\$ denominated green bonds lending.<sup>#</sup> Even though the gains are currently narrow, they are encouraging.

Additionally, performance in the immediate secondary market showed that 62 percent of green bonds tightened more than comparable bonds seven days after pricing and 90 percent had tightened more than their comparable index. After 28 days, this changed to 59 percent for comparable bonds and 66 percent for comparable index.

**Figure 1: Green Bond issuance in India 2015-Q3 2018**



<sup>#</sup> For details and methodology, please refer to [https://www.climatebonds.net/files/reports/cbi\\_pricing\\_h1\\_2018\\_01l.pdf](https://www.climatebonds.net/files/reports/cbi_pricing_h1_2018_01l.pdf)

Bond proceeds have been used to finance utility scale renewables, energy efficient buildings and large-scale transport infrastructure. These bonds were issued as senior, investment grade debt with credit-ratings usually based on the rating of the issuing organisation. Issuances by ReNew Power and Porbandar Solar Power (which issued climate-aligned bonds)<sup>\$</sup> benefitted from a guarantee from state-owned India Infrastructure Finance Company Limited.

The deals show that credit support can make bond investments from smaller corporates attractive to risk-averse institutional investors. Such credit enhancement could mobilise India's sizeable domestic savings for infrastructure projects, facilitating market access for the private sector and lengthening bond tenors.

As yet, only a narrow range of asset types have been financed through green bonds: renewables have accounted for over 80 percent of issuance. Agriculture and land-use still have substantial unmet investment needs. Green bond issuance so far has not benefitted households and MSMEs.

Adaptation and resilience bonds as an asset class present a huge opportunity and need in the Indian market. Institutions like the National Bank for Agriculture and Rural Development and projects like the Zero Budget Natural Farming run by the Andhra Pradesh Government are exploring the possibility of issuing such bonds. To help kickstart this market, Climate Bonds Initiative and the World Resources Institute are developing criteria to help bring to market high-quality issuances in this category.

Asset backed securitised (ABS) deals have a strong case (covered later in this report) for an uptake and add to the diversification of green bonds into sectors as varied as off-grid RE systems, agriculture, housing and electric vehicles (EV). Affordable green housing is a market of no less than US\$ 1 trillion and the EV's project an investment of US\$ 667 billion. A Crisil assessment suggests that power, transport and urbanisation will corner nearly 78 percent of infrastructure investments.<sup>19</sup>

This also means that private-sector participation has to ramp up considerably. It has been limited by lack of banking credit available for long-term projects on the one hand, and the lack of institutional capacities to

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<sup>\$</sup> Climate aligned bonds are not labelled as green but their proceeds go to projects that have positive climate impacts. Analysis of global issuances for 2018 shows that the universe of climate aligned bonds is USD 1.45 trillion of which labelled green bonds comprise USD 389 billion. (<https://www.climatebonds.net/resources/reports/bonds-and-climate-change-state-market-2018>)

mitigate or manage risk on the other.<sup>20</sup> Importantly, private sector participation is also linked to the challenge of structural and governance reform. The government has focused on revitalising Power Purchase Agreements and other reforms (single window clearance) to encourage greater participation of the private sector.

Additionally, while the demand from international investors clearly exists, a major challenge has been to deliver the deal pipeline. Having credible pipelines across sectors is not merely a function of the market players but also requires systemic policy and market interventions.

Another hurdle in developing this market at scale is the pervasive lack of awareness among borrowers, financiers, and even policy makers and regulators regarding the opportunities presented by climate bonds. The opportunities for investment that exist in India for such investment need to be made more visible domestically and internationally.

To regularise bond issuances, SEBI issued its “Disclosure Requirements for Issuance and Listing of Green Debt Securities” in May 2017. These are a progressive and necessary step but not sufficient on its own to drive the market. The guidelines are largely in line with international standards - the ICMA Green Bond Principles and the Climate Bonds Initiatives Taxonomy. SEBI’s document also includes an indicative list.<sup>@</sup> A key problem is that there is no detailed taxonomy, so issuers have scope to define *green* for themselves. The growth of green bonds will also depend upon innovative combination with other financial structures to drive down the cost of capital for it to be widely accessible for Indian issuers.

## **HARNESSING INTERNATIONAL DEBT CAPITAL MARKET AT AN AFFORDABLE PRICE**

The international capital market invests US\$1-2 trillion per year; it is at the scale and has the long-term nature needed for India’s infrastructure investment. How then should India access international capital markets cheaply? International investors are prepared to accept historically low returns - US Treasury bonds return a yield of 2.87 percent at the time of writing. Cost of debt in India has also fallen albeit not to the level of US Treasury Bonds. The

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Indian government provides investors in 10-year Indian Government Sector Bonds a yield of 7.5 percent.

There is a similar story for green bonds. India's green bonds pay coupons in the range of 2.75 percent-6 percent for a USD denominated issuance, and the range of 7.38 percent -10.75 for an INR denominated issuance, depending upon whether the issuer is a government entity or a renewable company company.

Why is an Indian renewable energy project bond paying in Indian Rupees cost four times than a bond from the US Government paying in American Dollars? It is because lenders do not decide the rate of interest to charge on the ethical benefits of the investment. Their risk models are based on the cold logic of the bond issuer's ability to reliably pay the coupon on schedule, and the capital to be returned as the terms of the bond call for. In this risk model, the Indian Rupee corporate bond pays a triple penalty – higher rates to compete with India's high Government Sector bonds, high costs of issuing in INR because of a volatile and depreciating currency that is expensive to hedge, and the low liquidity of the bond market as a result of thin volumes traded in India's secondary markets.

### **Blended finance can reduce the costs of private capital and increase the volume of lending**

There are several important risk factors that increase the cost of other forms of international finance, besides bonds. The aforementioned currency risk affects all forms of international finance – although it can be mitigated by hedging with currency swaps, given the Indian Rupees traditional stability with respect to the Dollar. There are also various commercial and technical risks: Indian power utilities have sometimes been slow to pay merchant generators monies, for example. The latter factors can be mitigated by the public finance taking a subordinate tranche to the private finance – a mechanism that is known as “Blended Finance”. Such instruments can improve the credit rating of the bond one or two notches making an otherwise unattractive bond attractive to risk averse investors.

Development aid finance is used to mitigate the real and perceived risks of repayment, thus lowering the overall cost of capital. This blending of private and public finance leverages far larger flow of capital than could be achieved by concessional finance alone. A recent report on blended finance runs through different models for using concessional finance to reduce the private sector's exposure to risks. These are shown in Figure 2.

**Figure 2: Financial instruments to mitigate project risks**

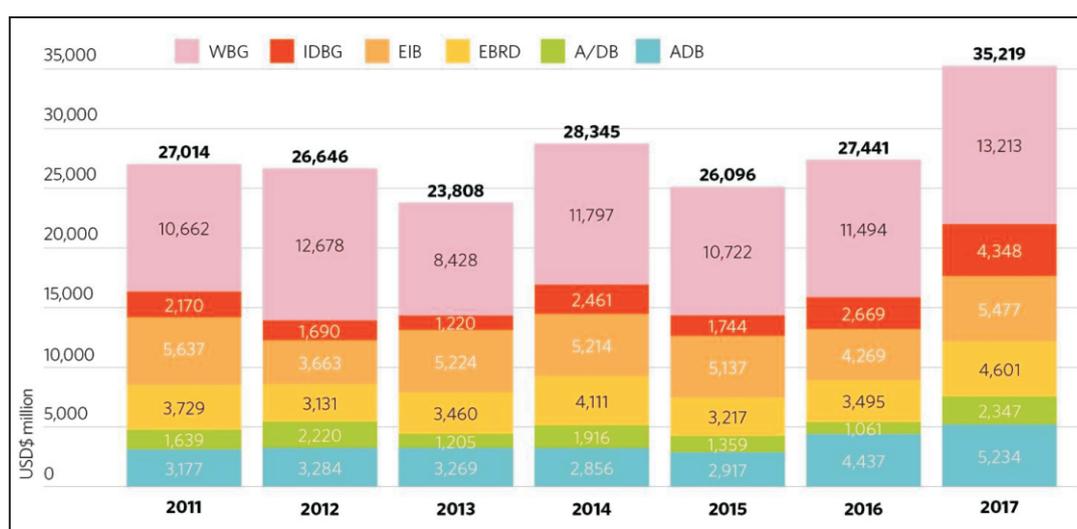
INSTRUMENTS	RISK									
	MACRO		CREDIT / COMMERCIAL			TECHNICAL	FINANCE	INFRA SPECIFIC		
	Political/ country risk	Currency risk	Credit risk	Liquidity risk	Demand risk	Corruption risk	Operation risk	Access is capital	Lack of pipetions	Off-shore risk
1. Guarantees										
2. Insurance										
3. Hedging										
4. Junior/ subordinated cap										
5. Securitization										
6. Contractual mechanisms										
7. Results-based incentives										
8. Grants										

Source: Better Finance

### Sources of concessionary finance

The main multilateral sources of finance to fund green infrastructure are multilateral development banks (MDBs), development aid budgets from OECD countries and China and the climate finance initiatives that arose from the UN-Climate Change Convention (UN-FCCC).

**Figure 3: Total reported MDB climate finance commitment 2011-17 (in US\$ million)**



Source: Joint Report on Multilateral Development Banks' Climate Finance

MDBs have been substantial investors in energy infrastructure for decades. Historically their focus has been through an economic development rather

than climate change lens. This has changed recently, however, and renewables and energy efficiency rather than fossil fuels now make up the lion's share of their disbursements. In 2017, spending on climate finance from the major development banks was US\$35 billion, an increase of US\$8 billion compared to 2016.

Of the MDBs whose geographic focus includes India, the World Bank Group's IFC is the largest source of climate funds (around US\$13 billion), followed by the Asia Development Bank (US\$5.2 billion loans including lending on commercial and non-commercial terms). While the recently established Asia Infrastructure Investment Bank and the BRIC's New Development Bank are still in the process of scaling up their lending, their criteria are broadly similar to the older regional development banks.

### **BLENDING FINANCE BY THE MDBs AND NATIONAL DEVELOPMENT BANKS**

Recognising the scale of investment needed to green emerging economies, a shift in philosophy is taking place within MDBs to make more efficient use of their balance sheets. Instead of offering direct loans the MDBs are increasingly being asked to use their balance sheets for the credit enhancement of private sector loans. MDBs reported private finance mobilisation in 2015 of US\$ 10.9 billion which increased by 43 percent the following year to US\$ 15.7 billion<sup>21</sup>. A report issued by Milken and OECD foundation examined the use of credit enhancement to leverage private sector capital to amplify the size of investment<sup>22</sup>. In the four-year period between 2012 and 2015, the most common tools used were guarantees, syndicated loans and credit lines which together mobilised US\$81 billion of private finance.

The extent to which blended finance is used by MDBs varies. The World Bank Group's MIGA is focused on using blended finance, the IFC has established a blended climate finance team which uses a mixture of concessional finance instruments (i.e. soft loans, equity, guarantees) to undertake pioneering projects that directly combat climate change and have a strong potential to transform markets. Other MDBs make limited use.

Examples of successful blended finance projects include IFC's Managed Co-Lending Program for infrastructure where three third-party institutional investors together invested US\$1.5 billion. The 10 percent first-loss tranche is supported by guarantees by the Swedish International Development Cooperation Agency. The infrastructure fund itself is managed by IFC.

Meanwhile, the EBRD has provided €89 million interim liquidity facility to support the €288 million euro-denominated Elazig hospital bond in Turkey.<sup>23</sup>

**UN-FCCC finance mechanisms:** Under the UN-FCCC's 1997 Kyoto Protocol, legally binding mitigation targets were set for developed economies. During negotiations for successor agreements like the Paris Agreement targets have also been adopted by developing economies on the same voluntary basis as the developed economies. This was accompanied with the creation of "climate finance" mechanisms to help developing economies finance the mitigation of and adaptation to climate change as their economies develop.

The climate finance mechanisms agreed under the Paris Agreement are implemented by the Global Environment Facility and the Green Climate Fund. The GCF is responsible for financing mitigation, adaptation and REDD projects. It is the main mechanism for co-financing India's efforts to develop mitigation infrastructure under the UN-FCCC. So far, the fund has received pledges from donors of US\$10.2 billion, receipts of US\$7 billion and committed to disburse US\$4.8 billion to around 100 projects. In India, alongside Tata Cleantech Capital and private sector developers, it has co-financed a US\$250 million project to offer a line of credit for rooftop solar; the aim is to finance 250 MW of new solar<sup>24</sup>.

It seems unlikely that the UN-FCCC funds will reach the size to move the dial on India's overall infrastructure spending. They can, however, play an important role in financing pure-play resilience projects, which do not generate a tangible income stream and are thus unable to attract private finance.

In the most recent Biennial assessment by the UN-FCCC<sup>25</sup> funding through the climate change funds rose from US\$1.4 billion in 2015 to US\$ 2.4 billion in 2016; those from the multilateral development banks (MDBs) rose from US\$23.4 billion to US\$25.5 billion. These figures refer to disbursements *spent in all developing countries* not just India. India and other G77 countries should continue to press for an expansion in resources the developed world feeds into climate finance, but there is recognition that grants and concessional finance can only ever provide a small proportion of the resources needed.

India has also graduated from its low-income status and is now a lower middle-income country according to World Bank classification, which means that priority for and terms of concessional lending from the World Bank will change. Thus, market-based finance will need to be aggressively accessed.

The state of play of green bonds market is thus as much about the increase in issuances as it is about readying the support system that enables it.

## **ACTIVATING THE DRIVERS FOR SCALING UP GREEN ISSUANCES IN INDIA**

Green Bonds are fundamentally oriented towards large volume deals (greater than US\$ 100 million in international issuance and US\$ 50 million in domestic issuance). The greening of India's economy, however, needs to be assessed through both the high-volume individual deals (utility scale RE, Rail or metro transport etc) as well as aggregating large number of smaller assets and making them attractive for market investments.

In combination with other sources of capital like mainstream lending or alternative financing instruments like blended finance, green bonds' with their taxonomy (various science backed voluntary frameworks in use globally), simplicity of structure and attractiveness to 'green investors' can steer access to long term cheap capital.

In the next three to five years, following enablers can help achieve wider familiarity and use of green bonds:

### **GREEN SECURITISATION**

Securitisation, the process of transforming a pool of financial assets (for example, mortgages or lease receivables) into tradable financial instruments, has great potential to mobilise institutional capital at scale. A securitisation can be defined as 'green' when cash flows backing it come from low-carbon assets. The introduction of a tax reprieve for unlisted debt securities and new rules in favour of foreign investment into the sector have given a fillip to securitisation in India. Financial institutions are issuing a range of securitised instruments that typically involve the pooling of small loans to farmers, small businesses, mortgages and car loans. Overall, the volume of securitised deals in 2017 stood at US\$ 7.4 billion, and has been showing an upward movement despite a shallow bond market.

This avenue of market borrowing in the light of worsening credit by banks to the MSMEs, has the potential to make finance more accessible to small borrowers, especially as the Non Banking Financial Companies (NBFCs) are able to shift loans off their balance sheets and facilitate greater lending to farmers and small businesses. That the NBFC lending to the MSME sector has also been growing at an annual rate of 35 percent is a reassuring and stable trend that can prove to be an effective way for capital flows to climate smart activities.

Green securitisation's benefits include meeting priority sector lending targets,<sup>^</sup> helping match investors' liabilities with asset tenors as investors of ABS include pension and insurance companies with long-dated liabilities, cheaper finance by aggregated loans to a scale they can be refinanced; providing higher yielding investments by creating equity and mezzanine tranches in the process of securitisation, and managing exposure limits under credit.

One of the main channels for making this capital available are the Micro Finance Institutions (NBFC-MFIs). The MFI sector (including loans from banks and small finance banks) have a cumulative portfolio of INR 1.23 lakh crore. MFIs have been using the securitisation route and in fact have been helping banks meet their priority sector lending targets. Even though this is the case, MFIs themselves have not been explicitly geared towards climate change oriented financing. Hence a lot of areas that MFIs could tap remain unexplored. Deploying clean energy innovations, for example, in the rural sector alone presents a US\$ 50 billion opportunity.<sup>26</sup> Energy efficiency, decentralised renewable energy systems; low income green housing, a range of other water-related efforts, including recycling and technologies to reduce use, drip irrigation and various climate-proofing products, such as improved roofing and insulation are a ready candidate for green securitisation.

Currently, most of the financing options, especially in rural and agricultural financing are in the form of short-term value chain finance, either internally between buyers, traders and sellers or from financial institutions to one or more of the most secure value chain enterprises or companies. This does not provide an adequate avenue to finance investments, especially ones of a longer-term nature. The use of green ABS for refinancing asset classes that are already familiar to the market is an attractive way of introducing green ABS into the market in a relatively low-risk way for several different asset classes. Green ABS can thus help diversify the Indian green bond market and enlarge the scope of green financing as a whole.<sup>&</sup>

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<sup>^</sup> In India the major driver for securitisation have been bank Priority Sector Lending (PSL) targets. RBI mandates banks to lend at least 40 percent of their Adjusted Net Bank Credit to specific sectors: agriculture; education; export credit; housing; micro, small and medium enterprises (MSMEs); renewable energy; social infrastructure; and others. Agriculture and micro-enterprises have further sub-targets.

<sup>&</sup> OECD predicts that by 2035, nearly 44 percent of global volume of green bonds would be asset base securities (ABS) currently occupying only six percent of the market share, which mean that the market of green ABS will need to grow quickly to be 45 times larger in annual issuance by 2035. This initial assessment indicates that a large portion of investments will be made by relatively small and a large number of project developers. This has implications for how bonds could be used to fulfill these needs, particularly for households and SMEs.

## **GREEN TAGGING OF ASSETS AND BUILDING PROJECT PIPELINES**

The lack of credible project pipelines is a clear and present bottleneck to scaling up. It thus needs no emphasis that increasing the visibility of assets that lend to green/sustainability criteria which will help attract investors. That is true across all sectors.

One way to increase visibility is to develop green tagging tools for different sectors to identify assets and their climate impact. Green tagging is also needed for identifying green loans in the books of financial institutions to help structure green securitisation. It can prove to be an effective supply-side measure to match future demand.

Market players, research institutions and government agencies will need to collaborate for data and criteria development, and for wide adoption of these tools. Governments at the federal and state levels can use this to tag green allocations in budget outlays as well as embed it in the design of state investment plans for climate change mitigation and adaptation. The first steps in this direction are underway to develop a tagging tool for the agricultural sector.

## **BACK LABELLING OF BONDS AS GREEN AND CREATION OF GREEN FUNDS**

Existing bonds from large issuers can also be labelled as green if they fit the criteria. For example, Indian Railway Finance Corporation, which is a bond market regular that issued its first green bond in December 2017 can label its existing eligible bond portfolio as green. This can immediately infuse 'green' liquidity into the market paving the way for more green issuances.

Domestic retail savings are an attractive, untapped pool that can be mobilised for green. Mutual fund industry players can create dedicated green funds in their portfolio to help move retail savings to green investment. They can also channel them to platforms like green Alternate Investment Funds like the one being planned to be floated by IREDA. The fund will invest in debt securities (issued by developers) backed by cash-flows of operational projects. It will be a vehicle to shift debt financing in clean energy from loan financing to capital markets with a target return of 8 percent.

## **NEED FOR A NATIONAL CLIMATE INVESTMENT STRATEGY**

In tandem with the bottom-up market drivers discussed above, India now needs to push the policy lever up another notch to pace up the flow of green

finance at scale and better manage real and perceived risks, insufficient returns on investment, capacity and information gaps. Green bonds, in particular, need to be seen in conjunction with other instruments as an effective means to shift capital at scale to priority sectors, and as an opportunistic means to inject transparency, scrutiny and new liquidity into the Indian bond market.

While there has been a consistent demand for a progressive domestic framework on taxonomies and climate-related disclosure for financial institutions, which is in sync with international norms, some existing instruments which could promise a good basis to take things forward have either not found their institutional home or have been side-lined at the behest of another priority.

The case of the Responsible Finance Guidelines which were developed through a process of consultation with market participants by the Indian Banking Association in 2015 is illustrative<sup>27</sup>. These guidelines went into cold storage when the RBI announced its plans to come up with a green finance strategy around the same time. It is however yet to publish a draft. The idea of the regulatory nudge by the RBI is touted by all market participants as necessary but the central bank itself has been rather passive in engaging with the topic of climate risk to financial stability and as a source of additional finance.

Measures such as the Clean Environment Cess (taxing coal) for environmental purposes were phased out in 2017, and subsumed under the introduction of the centralised Goods and Services Tax. India does not have a national carbon tax or emissions trading scheme, nor are any schemes planned. Last five years or so have seen a series of incentives being tabled for deepening and widening the green bonds and green finance markets in India. Almost all of them have been voiced in several dialogues with little attendant policy action.

The government needs to elucidate the link between growth, low carbon and climate-resilient models, and the scale and nature of the shift required, and design the financial pathways to achieve optimal outcomes.

A high-priority task is thus for the Government of India to anchor a clear national climate investment strategy with a long-term, economy-wide view. It will help recognise the preparedness levels of different sectors and decide on the right mix of capital instruments to be deployed. It should be used to minimise the mounting hidden costs due to mis-pricing of climate risks and externalities, introducing standards and definitional criteria for green finance, coordinating regulatory action, proactively empowering the states for realigning capital raising plans in sync with climate and SDG targets. Such a

strategy must include a recognition of the fiscal and non-fiscal incentive structures for sectors that need support.

## **ENGAGING WITH INTERNATIONAL POLICY DRIVERS FOR DOMESTIC AND GLOBAL LEVERAGE**

As a result of high-level declarations by the G20 and the Financial Stability Board, a plethora of policy initiatives are being coordinated to green private finance. Engaging with these will enhance the country's credibility with international investors especially those with ESG mandates. India can also help shape the agenda and ensure that the interests of a lower income country are fully articulated, the economic advances being made by the country are recognised, and sustainable investment opportunities are amplified.

India presents the largest RE (and other green investment) opportunities among emerging economies that follow market principle<sup>28</sup>. The country's active engagement in international policy processes is thus not only desirable but also necessary. More importantly, engagement will help re-orient the domestic investment community to the climate agenda focusing its attention on the risks of stranded assets and ensuring that that investments in climate infrastructure are cognisant of a range of climatic change scenarios.

The purpose of the international initiatives is to protect financial systems from the sorts of disruptions wrought on the world economy by the financial crisis in 2008 through ensuring the finance sector manages climate risks and avoids abrupt changes in asset values ("stranding" of assets) through climate mitigation policy and damages through climate change itself.

The influential Task Force on Climate-related Financial Disclosures (TCFD) calls for firms to disclose exposure to physical risks from climate change (assets at risk from extreme weather, sea-level rise, drought), financial risks from policies to mitigate climate change such as stranded assets (less effort has been put into TCFD's identification of litigation risk). Financial institutions are also asked to strategically engage with these issues disclosing their exposure to outside stakeholders and establishing internal procedures for board level oversight.

India has not initiated any formal engagement with TCFD yet while regulators in many countries and regions like the EU are beginning to implement TCFD recommendations. Currently their approach is to encourage voluntary participation but over time it is expected regulations will harden and firms will become more directed. This is because the current voluntary

approach produces analyses that cannot be easily compared, and does not ensure efforts are ambitious enough to meet policy needs. Three important initiatives are given below.

**G20 Green Finance Study Group:** It produced several well-regarded diagnosis of why the finance sector disregards or undermines the environment. This built on earlier work that China has done through its China Green Finance Committee.

**Central banks and supervisors Network for Green Financial Systems:** This is a group of 18 central banks, supervisors and five international organisations that are working together, on a voluntary basis. Its work includes: presentation of climate-related physical risk indicators, assessing exposure to banks, monitoring returns on equity, stress test on banks and insurance companies balance sheets and analysis of financial institutions' vulnerability to transition risks.

**Harmonisation of the definition of 'green':** The EU and China are taking a lead in implementing policies to green the financial sector. This is still at the proposal stage in the EU and includes a unified EU classification system ("taxonomy") to determine which economic activities are environmentally sustainable. The Chinese authorities recently unified their two different green standards (defined by the People's Bank of China and the National Reform and Development Council). Interestingly the ASEAN countries have also collectively defined a standard of "green" investment that altogether excludes fossil fuels.

## RECOMMENDATIONS

This paper argues that India could leap-frog the growth paradigms adopted by many other countries by directing investment to solve its carbon emissions, equity and climate impacts challenges. The financing will need to come from a combination of domestic and international sources. Offshore issuances, aided by the MDBs could provide a huge learning experience, to structure issuances. It is important to make policy changes to incentivise investment in green technologies.

The recommendations below should set the direction.

**Establish a "green" taxonomy:** The SEBI disclosure requirements for green bonds and securities is a valuable first step in helping India define long-term sustainable investments and mobilising green finance, but it does not go far

enough. The next step must be to establish a comprehensive set of criteria for defining “green” assets in sync with international frameworks. This would meet an urgent market demand for definitional consistency, standardisation, and comparability important for issuers, investors and appropriate public policy interventions

**Formulate a national green investment strategy:** The government should set out a “green” investment programme in consultation with the states and the private sector defining its vision, direction and priorities for investment in both mitigation and adaptation efforts. This should necessarily include levels of preparedness of different sectors to determine the right mix of capital source, smart time bound incentive structures and institutional ownership and strategies to build bankable pipeline.

**Review and redesign Priority Sector Lending to introduce green sub-sectors with targets:** Banks have a special role to play in primary lending to households and businesses. Priority Sector Lending sub-targets should be set on the basis of green taxonomy. This recommendation will help track and motivate financial flows into the green economy but other measures will be needed to kick-start bank lending.

**Implement governance and structural reforms to attract greater private sector financing:** This measure is required in multiple areas ranging from public procurement to land acquisition and tax administration. Any set of incentives could turn ineffective without addressing the root causes of risks, in effect keeping the private sector participation lower than optimal.

**Drive down the cost of capital by increasing the supply of bridging structures:** Systematically use MDBs and domestic credit enhancement structures like the IIFCL and IREDA to increase the credit rating and lower the cost of capital to up the deal flow of issuances. Resolution of cost and regulatory hurdles in accessing this facility should be taken up on priority.

**Use the ABS to broaden the green bond market:** Green bonds have typically been used to fund large companies, backed by the companies’ balance sheets. Asset Backed Securitisation allows funding for assets secured on the strength of the cash flows earned by the assets themselves, and independent of the credit scores of the borrower. This opens up capital markets to mortgages, vehicle loans, agricultural and distributed renewable energy assets that have reliable income flows. ABS deals have grown despite a shallow bond market and the segment presents opportunities for green issuances to diversify into new sectors.

**Further increase pension and insurance companies' investment in green bonds:** Government has signaled its desire for corporations to increase share of funding from debt capital markets by issuing bonds. There has been some relaxation by the pensions regulator in the minimum credit rating allowed for bonds. It needs to follow through by further loosening constraints on domestic savings being invested in the real economy, subject to appropriate risk mitigation products being used.

**Proactively engage with international policy dialogues and markets:** It is not only important to do so to adequately project the opportunities that exist in India but also to emphasise on the changes required vis-à-vis the investor outlook and international country risk-rating systems.

**Enable cities and sub-national government:** Cities are responsible for establishing the framework for delivery of much of the green infrastructure — waste collection and resource recovery, water and sewerage, intra-urban transport and housing. There is a need to depoliticise the delivery, and ensure that competent bodies build and operate the infrastructure. There is also a need to ensure user charges and local taxes can pay the debt service costs. Models like Hong Kong's MTR system show how an integrated "Property + Rail" can be operated to invest surpluses from increases in values of property near to subway stations to finance the construction of the investment. [ORF](#)

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