

# Securitisation as an enabler of green asset finance in India



**Climate Bonds** INITIATIVE

Produced by Climate Bonds Initiative



Supported by The Rockefeller Foundation



Prashant Vaze, Sandeep Bhattacharya, Neha Kumar, Monica Filkova and  
Diletta Giuliani

Climate Bonds Initiative

Grateful thanks for assistance and comments from Sean Kidney, Chris Moore, Cedric Rimaud and Justine Leigh Bell.  
Design by Godfrey Design.

1.	INTRODUCTION .....	5
1.1.	India needs massive investment in green infrastructure .....	5
1.2.	Investments need to target rural households and small businesses .....	6
1.3.	Local and multilateral banks cannot supply the capital alone.....	8
1.4.	Existing financial regulation deters funding of small-scale infrastructure .....	9
2.	THE ROLE OF GREEN ABS IN FUNDING GREEN INFRASTRUCTURE .....	12
2.1.	What is green ABS?.....	12
2.2.	Benefits of green securitisation .....	13
2.3.	Guide to green bond issuance.....	16
3.	GREEN BONDS IN INDIA .....	17
3.1.	Use of green bonds in financing green investment.....	17
3.2.	Green ABS issuance around the world.....	18
3.3.	Scope for issuing green ABS in India .....	20
3.4.	Examples of potential Indian ABS deals .....	23
4.	MARKET AND POLICY ENVIRONMENT FOR GREEN ABS ISSUANCE IN INDIA.....	25
4.1.	Indian bond market .....	25
4.2.	Factors impeding the issuance of green ABS in India .....	26
4.3.	Factors impeding demand for ABS in India .....	27
5.	RECOMMENDATIONS.....	29
5.1.	Increasing supply of green ABS .....	29
5.2.	Increasing the demand for green ABS.....	30
	APPENDIX 1: EXAMPLES OF A GREEN TAXONOMY .....	32
	APPENDIX 2: FEATURES OF STS SECURITISATION IN THE CONTEXT OF THE EU .....	34
	APPENDIX 3: POTENTIAL STRUCTURES FOR GREEN SECURITISATION IN INDIA .....	36
	APPENDIX 4: EXAMPLES OF INNOVATIVE SECURITISATIONS UNDERTAKEN IN INDIA.....	41

## Glossary

ABS	Asset Backed Security
AUM	assets under management
CDO	collateralised debt obligation
CLO	collateralised loan obligation
CRISIL	<i>formerly</i> known as Credit Rating Information Services of India Limited
ESCO	Energy Service Company
DA	direct assignment
FI	financial institution
GW	giga-watt
IDF	Infrastructure Debt Funds
IIFCL	India Infrastructure Finance Company Ltd
IRDA	Insurance Regulatory Development Authority
IREDA	Indian Renewable Energy Development Agency
MDB	multi-lateral development bank
MFI	micro-finance institution
NBFC	Non-Bank Financial Corporation
NPA	Non-Performing Assets
PRFDA	Home-Pension Fund Regulatory and Development Authority
PV	Photo-Voltaic
RE	Renewable Energy
PPP	Public-Private partnership
PSB	Public Sector Bank
PTC	pass-through certificate
RBI	Reserve Bank of India
RMBS	residential mortgage-backed security
SBI	State Bank of India
SEBI	Securities and Exchange Board of India
SPV	Special Purpose Vehicle
STS	Simple, transparent and standardised

## Exchange rates

Unless otherwise stated, an exchange rate of 70 Indian Rupees (INR) to 1 US Dollar (USD) has been used throughout this report.

1 Crore is 10m



## 1. Introduction

The Indian economy is forecast to grow at 7-8% in 2018-19, the fastest rate of growth amongst the G20. Though the Indian economy has witnessed impressive growth rates over the last three decades, per capita consumption, measured on a purchasing power parity basis, places India 120<sup>th</sup> globally in country rankings, i.e. in the bottom third. More importantly, the difference between per capita incomes of rural and urban Indians remains stark.

The idea of sustainable, inclusive growth must be central to India's development trajectory. However, to make a difference to the rural poor requires investing in and delivering investment in their homes and businesses. Over 60 million people, or 49% of the workforce, are employed in agriculture, largely in the informal economy. Improving the quality of their lives won't occur through trickle-down alone. It requires investment in housing, food production, power generation & distribution and transport in small towns and the villages.

India's financial resources are limited. Climate change and poor local environmental quality are already giving rise to huge health costs and causing great disruption to monsoons. Financial constraints and environmental degradation mean India's investment has to be highly cost-effective and targeted, so it removes pressure on water resources and fossil fuel use and leads to improved local air quality. The challenge is to create a flow of finances from domestic and international capital markets into the small-scale and local investments. Only these can make a difference to the hundreds of millions of people still living in the informal sector.

This report discusses the role green asset backed securities (ABS) can play in helping India finance its green infrastructure and improve the lives of the poor and disadvantaged. However, we acknowledge that securitisation requires specialised structuring expertise, complex credit analysis and a specialised investor base. Green ABS should therefore be seen as complementary to other measures that can be taken to improve the flow of finance, such as greater engagement of banks, which have the ability to aggregate small exposures on their books and finance them with the issue of green bonds or green covered bonds. It is also complementary to the existing portfolio trading market which already allows banks to bundle green loan portfolios and sell the whole portfolio to an investor or a club of investors.

The first section sets out the investment need and details what assets need to be created. The second section describes asset backed securities (ABS) and how they could help unlock funding for environmentally friendly investment projects, including at micro-level (households) and small-scale (small businesses). The third section describes the role that private finance already plays in addressing environmental issues in India and the as yet unrealised uses of ABS in India. Section four describes the market and policy environment for issuing green ABS. Section five makes recommendations for the way ahead.

### 1.1. India needs massive investment in green infrastructure

#### The electrification challenge

In 2015, an estimated 240 million people in India did not have access to electricity, and many more suffered from irregular and poor access. Of those without electricity, almost 92% lived in rural areas. It is estimated that USD4.5tn is needed over the next ten years to meet government's ambitious targets for renewable energy and urban sustainability.<sup>1</sup> As well as mitigating greenhouse gas emissions, this investment needs to be climate-resilient and inclusive, enhancing access to excluded communities.

---

<sup>1</sup> Finance Minister Piyush Goyal said at a panel of governors at the Asian Infrastructure Investment Bank's (AIIB) annual summit. <http://www.newindianexpress.com/business/2018/jun/25/infrastructure-investment-for-usd-45-trillion-a-challenge-finance-minister-piyush-goyal-1833414.html>

India's current electricity generation capacity is 345GW.<sup>2</sup> Around 70% of capacity is thermal power stations,<sup>3</sup> and the rest mainly renewables: hydropower 45GW and other renewables 69GW. Over the last five years, 99GW of additional capacity have been installed in India.

The Government has a target to build 175 GW of renewable energy (RE) capacity by 2022<sup>4</sup> and Prime Minister Modi pledged to more than double non-fossil fuel generation to 450 GW by 2030 during the UN Climate Change Summit in New York<sup>5</sup>. The estimated investment need for this expansion is USD200bn (INR14.4tn).<sup>6</sup> A sizeable share of this deployment will need to come from roof-top solar PV. The Indian government has set a roof-top solar target of 40GW by 2022. Schemes like SRISTI (Sustainable Rooftop Implementation for Solar Transfiguration of India) are being formulated to enhance rural access to electrification and solarise tube-wells and irrigation projects. But the pace of deployment is not keeping up with ambitions. By the middle of 2018 there was only 1.2GW of rooftop solar installed capacity,<sup>7</sup> i.e. well below the level needed to attain the 40GW target by 2022.

### Air quality improvements are vital

There is a need for investment in improved air quality. In a list produced by the World Health Organisation, New Delhi, Gwalior, Varanasi and Kanpur were among the 14 Indian cities that figured in a list of 20 most polluted cities in the world, based on their air quality. The study found that "around seven million people die every year [around the world] from exposure to fine particles in polluted air".<sup>8</sup> On the basis of PM 2.5, the most polluted city is Varanasi, Prime Minister Narendra Modi's constituency.

India is considering setting tough targets to fully electrify its road vehicles by 2030. This will help improve India's poor urban air quality and as the grid decarbonises also reduce greenhouse gas emissions.<sup>9</sup> Other major sources of air pollution from particulate matter - pollutants like sulphate, nitrate and black carbon arise from the inefficient use of energy by households, industry, agriculture and transport sectors, and coal-fired power plants.

### Affordable housing and transport need to keep up with urbanisation

Urbanisation is fuelling an expansion in the need for affordable homes and mass transportation systems in cities. India's urban population is increasing at a speed quite unlike anything the country or the world has seen before. It took nearly 40 years (from 1971 to 2008) for the urban population to rise by nearly 230 million; it will take only half that time to add the next 250 million.<sup>10</sup> It is equally important that this new built infrastructure is constructed to the highest energy efficiency standards to avoid locking-in demands for high levels of air-conditioning decades into the future.

## 1.2. Investments need to target rural households and small businesses

Much of the discrete investment decisions, particularly for home energy efficiency and decentralised renewable energy, will be made by hundreds of thousands of individual building owners, farmers and small businesses.

The aggregated environmental impact of the micro-, small- and medium-sized enterprise (MSME) sector is significant. An estimated 70% of the total industrial pollution load is attributed to MSMEs.

<sup>2</sup> <https://www.ibef.org/industry/power-sector-india/infographic>

<sup>3</sup> [http://www.cea.nic.in/reports/monthly/installedcapacity/2018/installed\\_capacity-03.pdf](http://www.cea.nic.in/reports/monthly/installedcapacity/2018/installed_capacity-03.pdf)

<sup>4</sup> <https://pib.gov.in/newsite/PrintRelease.aspx?relid=180728>

<sup>5</sup> <https://www.thehindu.com/sci-tech/energy-and-environment/prime-minister-narendra-modi-addresses-the-un-climate-summit-in-new-york/article29492091.ece>

<sup>6</sup> [https://www.sebi.gov.in/sebi\\_data/attachdocs/1449143298693.pdf](https://www.sebi.gov.in/sebi_data/attachdocs/1449143298693.pdf)

<sup>7</sup> <https://mnre.gov.in/physical-progress-achievements>

<sup>8</sup> <http://www.who.int/airpollution/en/>

<sup>9</sup> <https://economictimes.indiatimes.com/industry/auto/auto-news/government-plans-new-policy-to-promote-electric-vehicles/articleshow/65237123.cms>

<sup>10</sup> <https://www.mckinsey.com/featured-insights/urbanization/indias-urbanization-a-closer-look>

On the other hand, increases in temperature have been linked to reduced productivity, increased demand for energy for cooling systems, loss of security in terms of water supply (which is an important input for production processes), as well as indirect impacts from changes in precipitation on yields, buildings, and ground water availability. MSMEs, because of a lack of access to finance, are not able to upgrade their technologies and infrastructure that can reduce both gradual and sudden climate shocks.

Regarding agriculture specifically, its contribution to India's GDP is only 17%. However, it constitutes the livelihood of more than 40% of India's 1.3bn population. The ever-increasing demand for food has put productivity pressure on agriculture, leading to increased mechanisation in the farm sector. This in turn has increased the sector's dependence on energy, and energy demand is continually rising. 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, other improved water management technologies. These are just a few of the numerous intermediate technologies that need to be rolled out to make India's development more resilient to climate change.

A recent report by the Council on Energy, Environment and Water (CEEW) highlights that a USD50bn opportunity lies in the deployment of clean energy innovations.<sup>11</sup> The report suggests that:

- Significant market opportunity exists in India's rural economy for mechanisation through clean energy innovations. The total market size of mechanized equipment in the farm sector, for just three activities i.e. pesticide spraying, rice transplanting and harvesting of grain crops is around USD 40 Million.
- Beyond agriculture, clean energy innovations have a market potential of USD13bn, which could transform enterprises engaged in activities such as tailoring, food processing, poultry, and livestock rearing among others.
- The report finds that roughly just 20 livelihood appliances can run effectively on decentralised renewable energy (DRE). These include solar pumps, solar-powered milking machines, milk chillers, sewing machines, cold storage, and knapsack sprayers. Their deployment is limited to a few hundred homes, in comparison to millions of farmers and rural microenterprises in 600,000 villages of India.
- Energy efficiency is critical to making DRE-based livelihood applications economically viable. However, existing livelihood appliances prevalent in rural areas are not designed for efficiency, but for unreliable and subsidised/flat-priced electricity.
- The farm sector market is more difficult to capture than the non-farm due to low utilisation rates of agricultural equipment and the capital expenditure heavy nature of DRE solutions.
- The market for smaller livelihood solutions is highly fragmented and clustered, potentially requiring outreach to hundreds of small and medium scale enterprises.
- Customer awareness and financing are major barriers to adoption of clean energy solutions for livelihood applications.

Climate change is already having detrimental impacts on Indian households. Results from a survey of households in Andhra Pradesh conducted over 25-years found that 14% of households were able to escape poverty while 12% of households became further impoverished and of those who slid into poverty, 44% cited weather-related events as the cause. Meanwhile, millions of farmers take the brunt of gradual changes brought on by deforestation and the transformation of pastures to uncultivable lands. They migrate in the search of basic necessities and new work.

Both climate change mitigation and adaptation related finance thus need to be channelled at scale to the underserved section of enterprises in farm and non-farm sectors, and to the communities for a net improvement in lives and wellbeing. The introduction of a tax reprieve for special purpose vehicles (SPVs) of

<sup>11</sup> [https://www.ceew.in/sites/default/files/CEEW\\_Clean\\_energy\\_innovations\\_to\\_boost\\_rural\\_incomes\\_15Oct18.pdf](https://www.ceew.in/sites/default/files/CEEW_Clean_energy_innovations_to_boost_rural_incomes_15Oct18.pdf)

Securitisation and new rules in favour of foreign investment into the sector have given a much needed support to securitisation in India.

Non-Bank Financial Corporations (NBFCs), many of whom are not as well capitalised as banks, are issuing a range of securitised instruments that typically involve the pooling of small loans to farmers, small businesses, mortgages and car loans. Pooling of small loans allows for a critical mass of assets that create a sufficient volume for accessing the debt capital market, besides allowing for analysis of performance of various similar pools (and subsequent estimation of the risks of the pool in question) which is generally the basis of the credit rating. This, in the light of stringent credit-quality requirements by banks for MSME borrowers, has opened up avenues for financiers to mobilise capital in this new market. Securitisations help shift loans off the balance sheet of the financiers and thereby facilitate greater lending to farmers and small businesses. The higher the availability of capital to underserved sections, the higher the chances that they will be engaged productively, will achieve higher incomes and be in a position to improve their standard of living progressively.

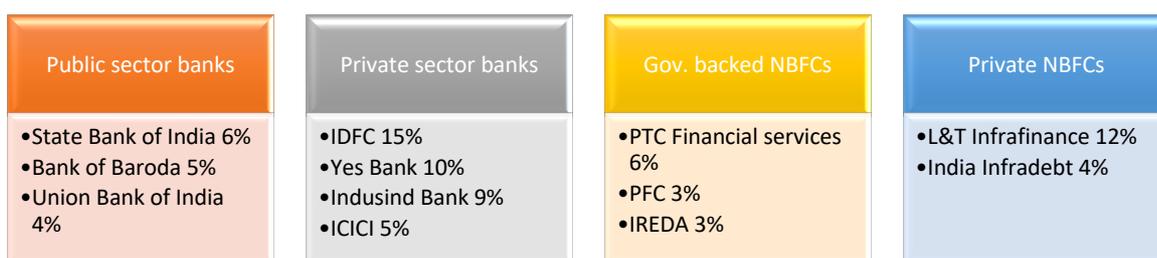
One of the main channels for making this capital available are the micro finance institutions (NBFC-MFIs). In 2015, the Indian government created *Small Finance Banks* (SFBs) which have a greater level of supervision than MFIs, but less than banks. Many MFIs have, however, converted themselves into SFBs. Unlike the MFIs, SFBs take deposits, issue cheque-books and often have networks of physical bank offices.

MFIs have been using the securitisation route and helping banks meet their priority sector lending targets which include lending to agriculture, MSMEs, renewable energy and women. MFIs have not been explicitly geared towards climate-change-oriented financing. Hence MFIs potential for rolling out small loans for climate mitigation and adaptation still remain unexplored. It may be noted that the debt capital market linkage of MFIs is well established. They do so by pooling receivables from many MFIs. These receivables can include both pooled bonds as well as securitisation transactions.

### 1.3. Local and multilateral banks cannot supply the capital alone

Infrastructure funding in India has traditionally relied on private and public sector bank loans. The most prominent form of green financing to date has been the expansion in deployment of renewables. Debt financing for renewable energy (RE) projects is primarily provided through term loans by financial institutions in local currency.

Figure 1: Largest financial institutions that funded the initial renewable energy deployment in 2017



Source: Bloomberg

International financing from agenda banks like The World Bank, International Finance Corporation (IFC), Asian Development Bank and Germany’s development bank KfW dominated during the early growth of India’s solar market. As the market has proven viable, local commercially-driven capital has stepped in, resulting in a shrinking role of development banks. In 2016, they contributed less than 10% of solar financing in India. This in turn has driven down the overall share of international financing. More than 85% of solar financing in India is now from local sources.

Relying just on government or bank finance is unlikely to deliver green investment at the rate or magnitude needed. Firstly, there is an issue of scale. At current deployment costs the target of 40GW of rooftop solar would require mobilisation of INR2.4tn (USD35bn) of capital. Rooftop solar is just one component of the range of investments needed to decarbonise the economy. If affordable energy-efficient housing and transport is brought into the frame, the numbers go beyond what government would finance through direct grants.

The capacity for banks to continue supplying finance is constrained. Public-sector banks' balance sheets are weighed down with non-performing assets (NPAs) as a result of excessive borrowing in the period before 2008/09. These are currently valued at USD61.5bn<sup>12</sup> and account for around 10% of the overall balance sheet total. The new Insolvency and Bankruptcy Code (IBC) of 2016 helps banks repair their balance sheets by setting stricter time limits to resolve legal proceedings against delinquent debtors, but it will take years to go through the long list of delinquent debtors.

NBFCs are the other main source of capital currently. They hold around 10% of total assets in the financial system.<sup>13</sup> They include Indian Renewable Energy Development Agency (IREDA), Housing Development Finance Corporation (HDFC) and other specialised financing organisation, as well as MFIs. The balance sheets of NBFCs are often much less capitalised than banks and operate in segments considered more risky and so are weaker than those of banks. The volume that may be lent by these organisations is often constrained by credit exposure limits. Once these are reached, lending is rationed, potentially frustrating access to finance for projects or purchases.

To address the inadequacy of relying on bank balance sheets alone the Government of India and international funders have established programmes for refinancing green loans and to subsidise the cost of credit to grid connected renewable energy projects:

- **Refinance scheme for promotion of renewable energy.**<sup>14</sup> This scheme was formed by IREDA with the proceeds of National Clean Energy Fund (NCEF). The refinancing is provided to banks and financial institutions for lending up to 30% of the loan granted by them. Banks/FIs pay an interest rate of 2% to IREDA. The current technology scope covers small hydro power (SHP) & biomass combustion projects, which are connected to the grid.
- **MNRE-UNDP/GEF Biomass Power Project Refinance Scheme.**<sup>15</sup> The scheme refinances applicable projects at concessional interest rates to reduce the cost of debt for biomass power projects. It provides refinance funds to banks and financial institutions from the Ministry of New and Renewable Energy (MNRE)-UNDP/GEF Biomass power project "Removal of Barriers to Biomass Power Generation in India". This project ran until 2015 and established 1.4GW of grid-connected biomass at the time with support of USD5.6m from the Global Environmental Facility (GEF).

These programmes need to be replicated many times over and at much bigger scale. Addressing the USD200bn funding needs for renewables and the even bigger sums for greening existing and new buildings will mean having a long-term and consistent strategy to provide a long-term signal to international capital markets that India is open to business.

#### 1.4. Existing financial regulation deters funding of small-scale infrastructure

Conventional financing has often focussed on the larger scale projects and not household or MSME-scale projects. The literature points towards the fact that the conventional credit market – retail banks – has failed to

<sup>12</sup> <https://corporatefinanceinstitute.com/resources/knowledge/other/non-performing-assets-in-indian-banks/>

<sup>13</sup> Asia Development Bank (2017) "Securitization in India: Managing Capital Constraints and Creating Liquidity to Fund Infrastructure Assets"

<sup>14</sup> <http://www.energetica-india.net/articles/ireda-ncef-refinance-scheme> [last accessed on 19th November 2018]

<sup>15</sup> <http://www.ireda.in/writereaddata/IREDA-%20NCEF%20Refinance%20Scheme.pdf> [last accessed on 19th January, 2017] &

[http://www.in.undp.org/content/india/en/home/operations/projects/environment\\_and\\_energy/removal\\_of\\_barrierstobiomasspoweraenerationini/ndiaphasei.html](http://www.in.undp.org/content/india/en/home/operations/projects/environment_and_energy/removal_of_barrierstobiomasspoweraenerationini/ndiaphasei.html) [last accessed on 19th November 2018]

provide access to capital to poor households not connected to the grid. Because of lack of adequate information about the low-income borrowers, their inability to offer collateral as security, and relatively small volumes of credit, bank lending to the low-income has remained inordinately inadequate. This translates into consistently sub-optimal life and livelihood choices resulting in low quality of life, fluctuations in income, and a tendency to survive over the short-term rather than investing in sustainable options that help give long-term benefits.

The situation is similar with regard to MSMEs. They play a huge role in job creation and there are about 63 million such enterprises engaged in manufacturing, services and trade. More than half of them are in rural areas. MSMEs account for nearly 29% of India’s economic output and for 110 million jobs.<sup>16</sup>

*Table 1. Present terms being offered to renewable energy borrowers by mainstream financial institutions*

	Short term debt	Long term debt (Project Finance)
<b>Sources of capital</b>	Regional/rural banks Commercial banks NBFCs Equipment financiers / Indian DFIs	Commercial banks Export-import banks International DFIs Indian DFIs
<b>Terms and conditions of financing</b>	Company should have: 1. a record of at least 3 years of financial statements 2. 2-3 years of operating track record; and 3. the ability to provide collateral sufficient to ensure debt repayment	Company should have: 1. a record of at least 3 years of financial statements and proven profitability. 2. Profitability / debt service coverage ratios (DSCR of 1.3-2 is the norm) 3. Guarantees from the promoter
<b>Tenor</b>	6 months – 5 years	5 – 15 years
<b>Risk appetite</b>	Low	Low
<b>Interest rates for Rupee debt</b>	10% to 18%	9.5% to 14%

The above table shows conventional banks offer similar interest rates for short- and long-term debt. The expectation for long-term debt is 9.5% - 14% differs little for the short tenor loans’ 10% - 18%. The larger range for the latter reflects the wide differences in credit worthiness between households.

Lack of availability of finance has been a major barrier for small-scale distributed renewable energy (DRE) projects. Energy efficiency projects where energy service companies (ESCOs) go to offices and manufacturing sites to recommend, finance, build and operate energy-saving schemes are another essential business model for saving energy and GHG emissions. However, the ESCO businesses need debt capital at rates between 9.5-14% for tenures ranging from 5 to 15 years in order to get healthy cash flows and to generate competitive returns on equity<sup>17</sup>. Factors restricting their access to finance include:

- **Lack of non-recourse finance for energy efficiency projects:** Many financial institutions do not perceive energy efficiency measures as a separate project. Thus, they are unwilling to provide loans without any lien

<sup>16</sup> NSSO 2015-16

<sup>17</sup> Interviews with intermediaries and ESCOs.

on assets of the parent entity. This makes it difficult for the implementing organization to raise finance for new projects, as most utilise their borrowing limits for their core business.

- **Risk mitigation procedures:** Lenders of both short-term and long-term debt have risk mitigating norms that result in stringent terms and conditions. As a result, ESCOs not only need to address these stringent conditions (which include Profitability/Debt service coverage ratios, guarantee from the promoter etc.) but also to demonstrate further comfort for the lender through either corporate backing or significant operational scale.
- **Lack of long-tenor loans for small projects:** Utility-scale projects can benefit from longer tenor loans as the asset class is well established. This is not true for small household level loans.
- Bank and Non-Banking Finance Companies have been the primary source of funds for Green Projects. It is worthwhile to note that, as of December 2017, India's bank non-performing loans (NPLs) were at 9.98%, which is the sixth largest of any banking system in the world.<sup>18</sup> These high NPLs restrict credit growth as it affects banking sentiment, and thus banks themselves were wary of funding corporate expansion plans<sup>19</sup>, since many of the firms had accumulated bad debts. The new Insolvency and bankruptcy code is widely believed to have remedied many fundamental issues in this regard. There has been speedy resolution of some of the long standing NPL cases – and globally, it has been observed that introduction of such a code results in a significant jump in credit growth.<sup>20</sup>

Addressing these systemic challenges means providing small-scale projects access to non-bank sources of finance. This report discusses the role green asset backed securities (ABS) might play in enabling vast numbers of households and MSMEs to access the capital markets for alternate sources of finance. ABS issuances are complicated- and NBFCs can simply issue a secured bond to refinance a pool of assets. Off-balance sheet solutions such as ABS are, however, quite relevant as NBFCs are often less capitalised than banks. The recent NBFC related liquidity crisis has resulted in the pick-up of volumes of ABS, as bonds issuance has fewer takers.

---

<sup>18</sup> <https://www.thehindubusinessline.com/opinion/indias-npas-and-the-global-scenario/article24145872.ece>

<sup>19</sup> <https://qz.com/india/1182735/bank-credit-growth-indian-corporates-return-to-borrow-but-the-big-bucks-are-missing/>

<sup>20</sup> <https://economictimes.indiatimes.com/markets/stocks/news/ibc-likely-to-boost-credit-growth-sbi/articleshow/60217463.cms>

## 2. The role of green ABS in funding green infrastructure

### 2.1. What is green ABS?

Securitisation refers to the process of transforming a pool of illiquid financial assets (for example mortgages or lease receivables for a rooftop solar PV system) into tradable financial instruments: the so-called asset backed securities (ABS). Securitisation enables lenders, like banks, and leaseholders, like car financing companies, to sell pools of loans or lease, or other receivables, to institutional investors to generate new lending capacity. This allows lenders and leaseholders to overcome funding constraints and continue to provide loans/leases to its customers.

ABS transactions are often structured in tranches of different credit characteristics to appeal to investors with different risk tolerance. Moreover, by creating a senior/subordinated structure, investors in senior tranches benefit from credit enhancement, which can lower their risk, increase their credit rating and lower the coupon requirement. Credit enhancement can also be provided in the form of cash reserves, guarantees, first loss pieces, extensive over-collateralisation, and similar mechanisms.

Green ABS are securities where the collateral assets or the assets that would be funded with the proceeds (the investment assets) conform to established guidelines such as the Climate Bonds Taxonomy.<sup>21</sup> The originating financial institution can take advantage of the growing international demand for climate change related investments.

Figure 2: The securitisation of an asset pool

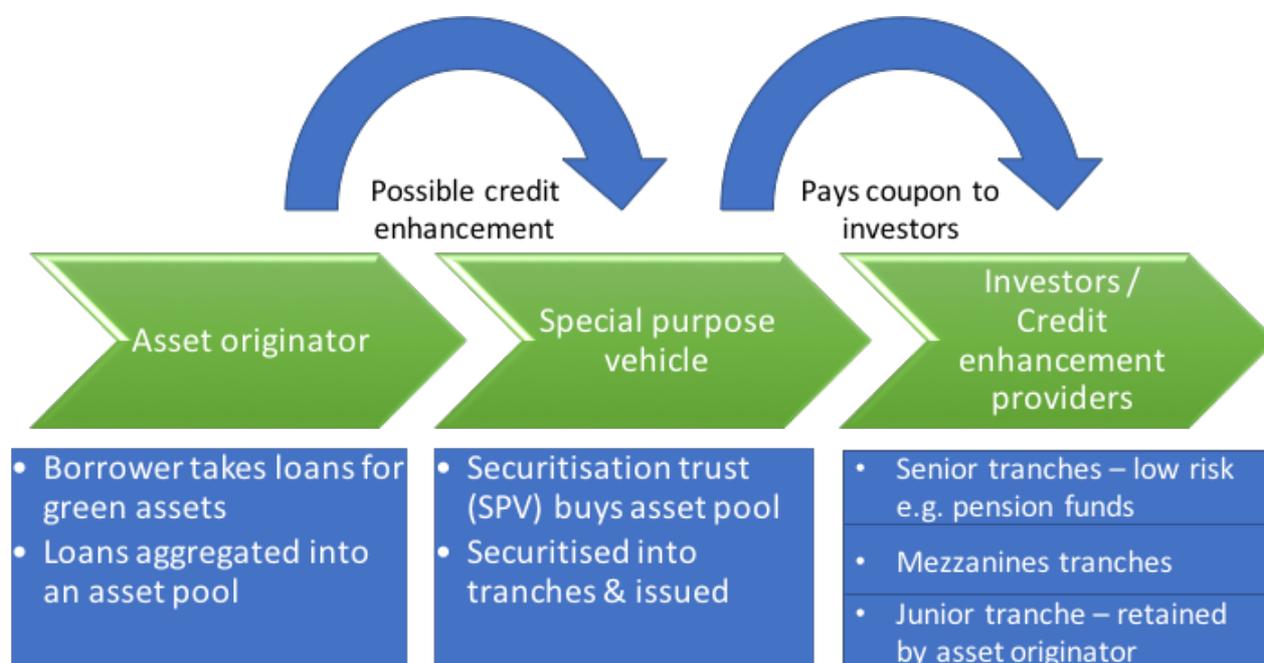


Figure 1 shows the transformation of an asset pool into securities. The collateral, i.e. the pool of assets, is ring-fenced in a Special Purpose Vehicle which is bankruptcy remote from the issuer. It exists off-balance sheet, and the investors' returns are drawn from the cash flows off the underlying assets, such as loans, leases or receivables. ABS are issued in different tranches of seniority providing different investors a range of products to match their risk-return appetites. Usually the senior tranche will be of investment grade. If its rating is

<sup>21</sup> See Annex 1

constrained by the originator's or the country rating<sup>22</sup>, it may be enhanced by as much as six notches by a greater level of subordination of other tranches, greater over-collateralisation (more security provided as collateral), a guarantee by a more credit-worthy entity or other risk mitigation mechanism.

## 2.2. Benefits of green securitisation

In the Indian context ABS provide issuers and investors a number of benefits.

- **Meeting Priority Sector Lending targets:** In India the major driver for securitisation in India has been bank Priority Sector Lending (PSL)<sup>23</sup> targets. The Reserve Bank of India (RBI) mandates banks to lend at least 40% of their Adjusted Net Bank Credit to specific sectors: agriculture; education; export credit; housing; micro, small and medium enterprises (MSMEs); small-scale renewable energy; social infrastructure; and others. Agriculture and micro-enterprises have further sub-targets.
- **Helping match investors' liabilities with asset tenors:** Investors of ABS can include pension and insurance companies with long-dated liabilities. For a life insurer, prepayment of loans is a significant risk, so they need to maintain assets with long tenors. As a result, these companies have been significant investors in long dated paper historically and can become major supporters of long dated ABS. An ABS program can vary maturities according to the existing demand in the market and replenish the collateral pool with new assets during the life of the ABS program. One risk, however, is that lending to MSMEs is typically of short-tenor, while the investor base is looking for long-dated securitised deals. Securitisation may be well-suited for green financing by allowing banks to offer longer-dated loans.
- **Potentially cheaper finance:** By aggregating loans, which can be refinanced through a bond, the underlying investment can access a broad range of fixed income investors. This may result in lower funding costs for NBFCs than balance sheet funding from banks. Securitisation and similar instruments like commercial investment vehicles that provide investors direct access to low-carbon infrastructure including renewable energy can reduce the cost of renewable energy substantially according to a study published in 2018 by Global Commission on the Economy and Climate.<sup>24</sup>
- **Providing higher yielding investments:** The creation of equity and mezzanine tranches play an important part in the success of securitisations. They provide investors with a higher yield than vanilla bonds with an equivalent credit rating. This is particularly interesting for tranches with a rating (AAA or AA), as they offer an attractive yield pick-up over government securities, while carrying an equivalent rating. Until recently, there was limited investor appetite for such bonds in the Indian market, but this is beginning to change.
- **Limiting sector exposure:** As well as constraints in the overall capital account, a prudent bank will limit exposures to any given sector. The rapid growth in credit lent to a single sector, such as renewable power, could cause banks to reach exposure limits. For the investor, a selection process targeting a diversified pool of underlying loan (by geography, by types of borrowers, by types of assets) can limit the concentration risk of the collateral pool.
- **Increasing lending capacity:** If a lender has exhausted its lending capacity, ABS allows the bank to offload loans so it can originate new loans. This is actually not a major constraint in India as many mainstream banks in India have experienced slow growth in lending recently and have adequate capital reserves.

ABS are a powerful tool to allow originators of loans to off-load their loan books. But there is also the potential for ABS to be misused to transfer poor quality loans to unwary investors – what economists term *moral hazard*. To guard against this, financial regulators may impose rules restricting the manner and extent to which the

<sup>22</sup> India's current credit rating is Baa2 (stable) by Moody's, BBB- (stable) by S&P and BBB- (stable) by Fitch.

<sup>23</sup> <https://m.rbi.org.in/Scripts/FAQView.aspx?Id=87>

<sup>24</sup> BETTER GROWTH BETTER CLIMATE The New Climate Economy Report, [https://www.unilever.com/Images/better-growth-better-climate-new-climate-economy-global-report-september-2014\\_tcm244-425167\\_en.pdf](https://www.unilever.com/Images/better-growth-better-climate-new-climate-economy-global-report-september-2014_tcm244-425167_en.pdf)

original issuer is able to off-load risks from their balance sheet to investors. These may take the form of the issuer having to hold the assets on their own balance sheet for a minimum period of time (“seasoning”), retaining a percentage stake in the asset pool or retaining some or all of the junior / equity tranche. As discussed later, Indian regulators have made use of such provisions to shield investors, even sophisticated ones like mutual funds (MF), from risk. But if regulations constrain investors’ ability to purchase securitised assets too much, they can diminish the usefulness of ABS to the issuer.

To help the ABS market’s development in India, mezzanine tranches are typically placed with development agencies like GuarantCo (a private infrastructure investment company established by five of the G12 governments) and the International Finance Corporation. This provides credit enhancement to more senior tranches placed with investors.

Investors in high yield bonds also include NBFCs managing the funds of Ultra High Net Worth Individuals and also from Alternative Investment Funds, which have been growing fast over the last three years. Other such entities managing funds that invest in high yield investments are Piramal Enterprises, Edelweiss Capital, SSG Capital, AION Capital, KKR, Goldman Sachs, Karvy Capital etc.

The hesitance about the use of ABS on the part of regulators is understandable. The global financial crisis that started in 2007 stemmed from the pooling of risky subprime mortgages, originating banks in the US with questionable credit approval practises (for example, loans were approved without proper confirmation of income), with loan originators incentivized through bonuses upon the signing of the loans without any consequences in case of non-performance, and the subsequent selling of the same in the capital market, without a minimum holding period. Many borrowers had no credit scores and the loans had “teaser elements” i.e. low interest payments in the initial years (teaser periods) and which interest would increase substantially. The mortgages were repackaged through securitisation, creating investment-grade securities through tranching and subordination. Since then regulators in Europe and USA have adopted the stance that the problem is not securitisation *per se*, but the misuse of securitisation to mask poor quality lending practices and have forced issuers of ABS securities to retain a share of the first-loss exposure, where most of the risks lies.

The real reasons for the subprime debacle are to be found not in the securitisation methodology, but in the bad quality of the collateral pools used in the securitisation of subprime mortgages. Criteria for the identification of Simple, Transparent and Standardised (STS) securitisation were issued in July 2015 by the Bank for International Settlements (BIS).<sup>25</sup> The EU subsequently changed its securitisation framework and adopted an approach to STS in 2017 in connection with the creation of a Credit Market Union in the EU.<sup>26 27</sup> The European Banking Authority released its STS guidelines in December 2018.<sup>28</sup> In Europe regulators treated STS products favourably requiring lower capital retention. Appendix 2 outlines the EU’s definitions of STS. Such standards have helped to rehabilitate securitisation allowing residential mortgages and other small loans to access low cost capital.

For a successful growth of the securitisation of green loans in India, it is important to support banks in designing loans that can easily be sold (or participated out) to an SPV. This is normally included in the loan documentation in the form of a clause allowing the bank to sell the loan to a new lender. Sometimes, banks are reluctant to allow for this transfer as it may affect the way their borrowers perceive the commitment that the bank is making. However, for a successful risk transfer, this is paramount to support the emergence of securitised transactions in the Indian market.

For securitisation to truly support capacity building for green projects, it is necessary that banks be able to complete a true sale of the green loans to the securitisation vehicle. Retaining the risk of the assets is prohibitive. In India, under RBI regulations, the equity risk retained by an originator must be deducted from

<sup>25</sup> <https://www.bis.org/bcbs/publ/d332.htm>

<sup>26</sup> [https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-markets/securities-markets/securitisation\\_en](https://ec.europa.eu/info/business-economy-euro/banking-and-finance/financial-markets/securities-markets/securitisation_en)

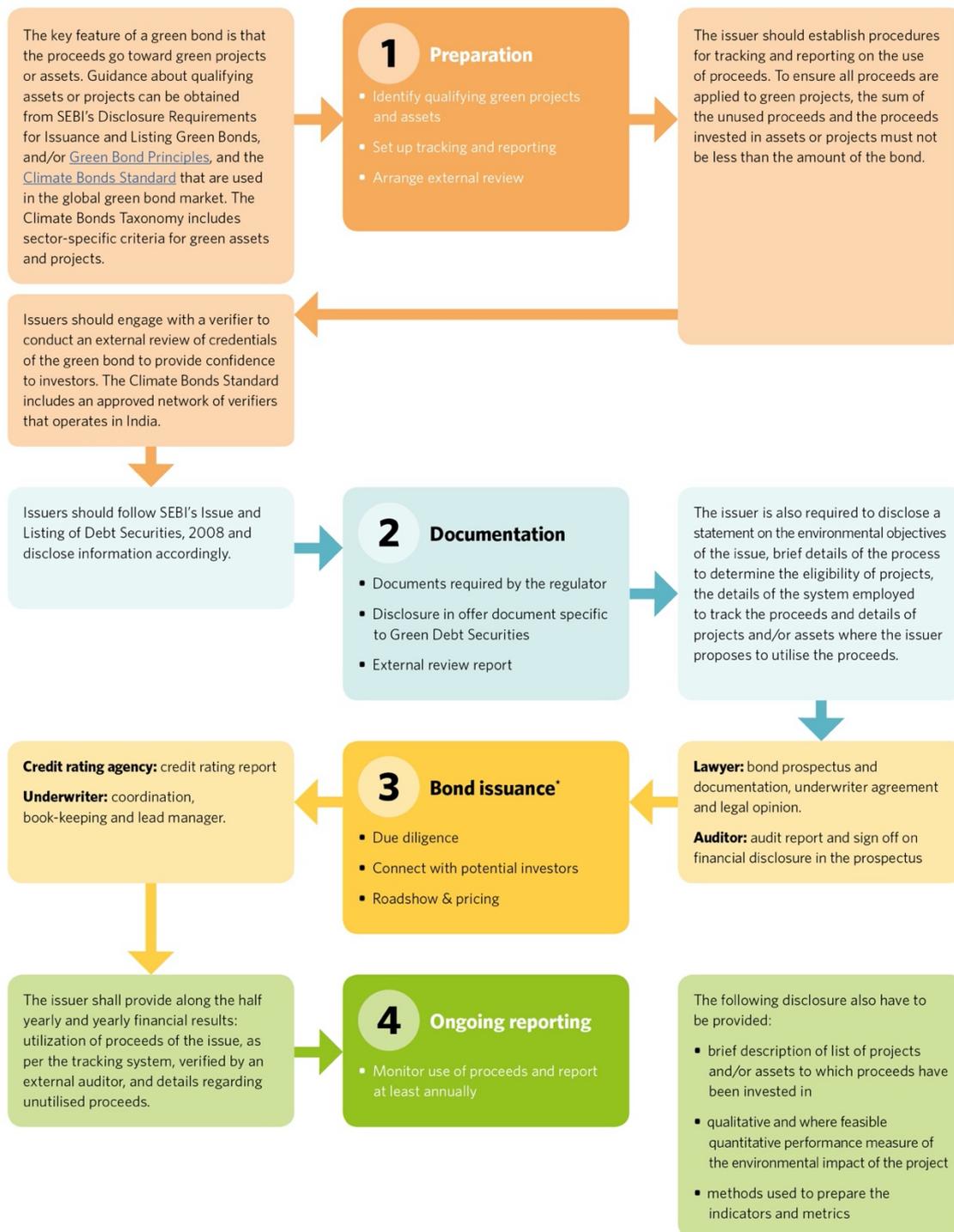
<sup>27</sup> [http://europa.eu/rapid/press-release\\_IP-17-1480\\_en.htm?locale=en](http://europa.eu/rapid/press-release_IP-17-1480_en.htm?locale=en)

<sup>28</sup> <https://eba.europa.eu/-/eba-publishes-final-guidelines-on-the-sts-criteria-in-securitisation>

common equity capital, while the BBB-rated tranche carries a risk weighting of 100%. There is a strong incentive to shift the assets off a bank's balance sheet to increase lending capacity. Finding a third party to provide a credit enhancement against any shortfall in the collection of the underlying loans may be an option. The ability to set up securitisation vehicles that comply with existing regulation on capitalisation is key to grow the securitisation market in India. Apart from securitisation another option for recapitalising banks' balance sheets, common in India, is called "direct assignment" (DA). In DA, the loan receivables are sold to a third party through a bilateral agreement without the use of an SPV and without being publicly listed. Because the arrangement is private, no price for the transaction is disclosed to the market and the direct assignment does not create a tradable or liquid security. DA is a more cost-effective and straightforward mechanism for transferring assets off balance sheets than ABS. The laxer regulatory and tax treatment of DA has contributed to the popularity of DA.

A variety of different structures can be used to pool and securitise ABS depending on whether the underlying assets are pre-existing mortgages or an open-ended warehouse from which loans are issued before they are securitised. Some model structures are set out in Appendix 4.

## 2.3. Guide to green bond issuance



### 3. Green bonds in India

#### 3.1. Use of green bonds in financing green investment

*Yes Bank* issued the first Indian green bond in 2015; this was soon followed by Export-Import Bank of India and IDBI later that year. In order to regularise and further promote green bond issuance, the Securities and Exchange Board of India (SEBI) issued its "Disclosure Requirements for Issuance and Listing of Green Debt Securities" in May 2017. The guidelines on issuance of green bonds in India<sup>29</sup> are in line with international standards: the ICMA Green Bond Principles and the Climate Bonds Initiatives Taxonomy. The document includes an indicative list of eligible assets (see Appendix 1) and provides details about the process issuers must follow to issue a green bond, namely:

- define which of eight broad categories funds will be spent
- specified disclosures including environmental objective
- decision making to decide project eligibility
- procedures for tracking fund allocation, and
- annual monitoring of spending of funds.

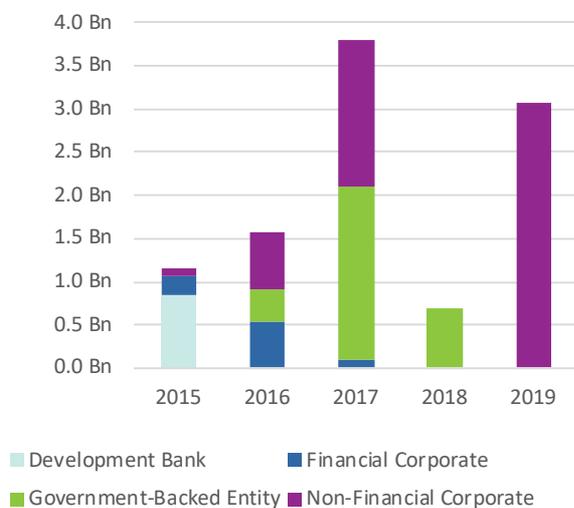
There is no detailed taxonomy, so issuers have scope to define *green* for themselves. For instance, the category *renewable and sustainable energy*, covers not just renewable energy but also "other sources of energy which use clean energy" opening the door for green bonds to continue funding in fossil fuel power generation with energy efficiency technology and limited carbon capture, which are excluded from the Climate Bonds Taxonomy.

As of December 2019, total green bond issuance in India was USD10.3bn, which in June 2019 made India the 15<sup>th</sup> largest issuer of green bond globally. By comparison, India is the 6<sup>th</sup> or 7<sup>th</sup> largest economy by nominal GDP and has a reasonably sophisticated financial sector. Issuing institutions have included non-financial corporates like Greenko, private banks like Yes Bank and also public sector entities like IREDA, housing finance companies, microfinance companies (by pooling their liabilities & receivables) and the Indian Railways. The growth in issuance of the green bond market can be seen in Figure 3.

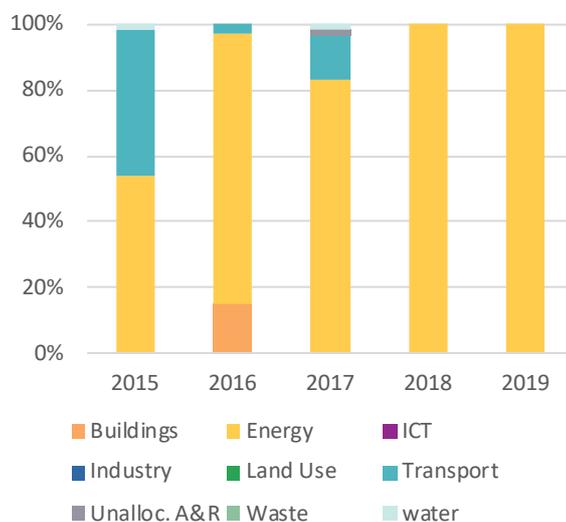
<sup>29</sup> <http://www.sebi.gov.in/sebiweb/home/detail/32793/yes/PR-SEBI-Board-Meeting> [last accessed on 18th January, 2017]

Figure 3: Green bond issuance in India 2015-2019

Green bond issuance by issuer type



Green bond issuance by use of proceeds



Source: Climate Bonds Initiative

Bond proceeds are used to finance utility scale renewables, low-carbon buildings and large-scale transport infrastructure. Credit ratings from at least one of the international rating agencies - S&P, Moody's and Fitch - are available for 46% of the green bonds (by count), which, in part, reflects the use of private placements. Half the Indian green bonds by volume carry an investment grade rating of BBB- and these come from government backed entities such as Indian Railway Finance Corporation, State Bank of India, Rural Electrification Corporation and the Export-Import Bank of India, as well as Axis Bank. Non-financial corporates are generally not rated or rated sub-investment grade, with credit ratings ranging from B+ to BB.

Deals from ReNew Power and Porbandar Solar Power (who issued unlabelled bonds financing climate-aligned assets) 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 substantial domestic savings for infrastructure projects, facilitating market access for the private sector and lengthening bond tenors.

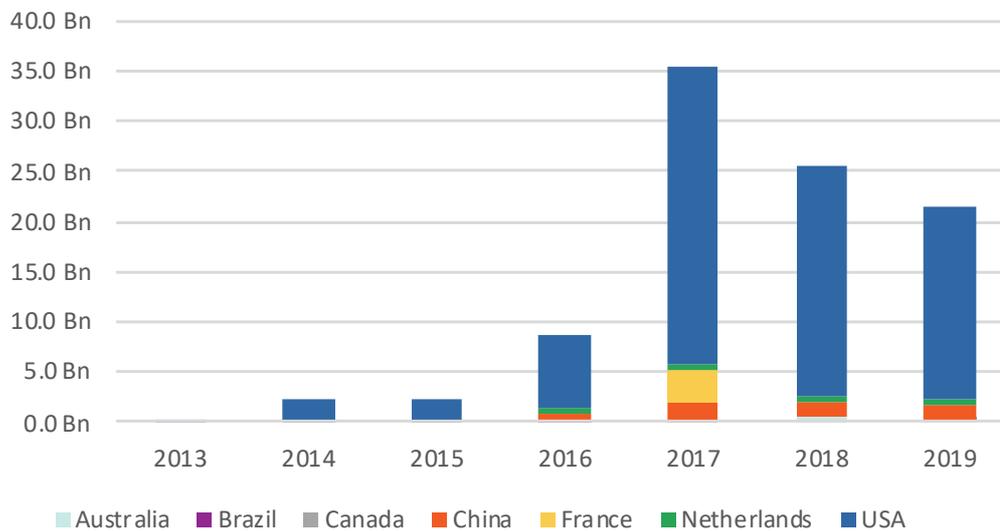
As yet only a narrow range of asset types have been financed through green bonds. Renewables account for over 80% of allocations and have been used to fund utility scale and mid-sized renewable projects of several MWs generation capacity such as China Light Power (CLP) and GreenKo. Green bond issuance so far has not benefitted households and MSMEs, which instead continue to rely on the informal sector, NBFCs like microfinance institutions and public sector banks with their networks of local branches, to fund their capital needs. These organisations' have not issued green bonds to finance or refinance existing pools of suitable loans. Agriculture and land-use, for example, have substantial unmet investment needs.

### 3.2. Green ABS issuance around the world

So far, there have not been any issuances of green ABS in India. Globally, the US dominates in green securitisations issuance. In 2016, green ABS made up 10% of global market share. In 2017, it saw a rapid growth to 22% thanks to the US government-sponsored Federal National Mortgage Association (Fannie Mae) boosting MBS issuance off the back of its Multifamily Green Initiative program and publishing its labelled Green Mortgage-Backed Securities (MBS) deal list. In 2018, securitisation's share fell back to 15% as a result of lower

issuance from the US (hence lower absolute volume) and financial institutions doubling their green bond issuance (and gaining market share).

Figure 4: Growth of green ABS issuance (USD)



Source: Climate Bonds Initiative

The box below gives three examples of green ABS in other countries. In each case green ABS's allowed loans too small to be issued as individual bonds to be packaged and refinanced through the bond market. These small loans were for residential roof-top solar, waste-water treatment and electric vehicle purchase, assets classes that would support India's sustainable development goals. In the first example the green ABS secured a lower cost of finance than a comparable non-green ABS by the same issuer.

#### FlexiGroup refinancing of rooftop solar consumer loans

In its first green bond deal in 2016, Australia-based FlexiGroup Ltd included a green tranche of AUD50m (USD 39m) in a wider ABS transaction of AUD260m, secured on consumer receivables.<sup>30</sup> The tranche refinanced residential rooftop solar PV systems. The green ABS tranche received Certification against the Solar Criteria of the Climate Bonds Standard. The bond was the first Certified Climate Bond within an ABS from Australia.

The green tranche closed 5 basis points tighter than the non-green notes of the same seniority rank issued at the same time by FlexiGroup and backed by the wider pool of consumer receivables in the first such deal (2016). In its 2017 deal, the green tranche priced 3 basis points lower, and the same as the vanilla bond in the 2018 deal.

<sup>30</sup> <https://www.climatebonds.net/2016/04/sunny-side-flexigroup-issues-first-australian-green-abs-proceeds-solar-5bps-pricing-benefit>

### Toyota green ABS for low carbon transport

Toyota Finance, the US lending and leasing arm of Toyota Car Manufacturers, has issued three green ABS in 2014 (USD 1.75bn), 2015 (USD 1.25bn)<sup>31</sup> and May 2016 (USD 1.6bn). The first received particularly strong investor demand and was upsized to accommodate investor interest.

The bonds were fully backed by the cash flows of an auto loan and lease portfolio. The proceeds were earmarked for funding 'green' Toyota and Lexus Hybrid and Electric vehicles that meet specific emissions hurdles.

As an example, the 2014 ABS pool was estimated to be able to finance the purchase of 39,900 vehicles from a list of eight different models with specific criteria. The vehicles were also required to satisfy standards of energy efficiency in regulations set by the California Environmental Protection Agency's Air Resources Board.

### Chongqing Fuling Dragon Bridge Industrial Park Development<sup>31</sup>

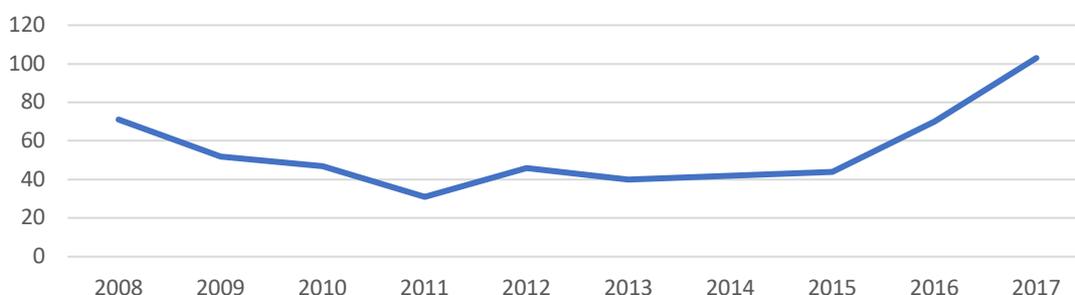
The ABS deal was USD52.7m with a 15-year tenor. The underlying assets are the waste-water treatment fees for the next 15 years from five subsidiaries of the company. The proceeds of the issuance will be used to construct new and to upgrade existing wastewater treatment stations for its subsidiaries. The investment targets the reduction of local pollution, an improvement in the surrounding environment and a reduction in water usage.

### 3.3.Scope for issuing green ABS in India

Figure 5 shows the issuance of securities between 2008 and 2017. Issuance fell by more than 50 per cent between 2008 and 2011 and were largely stagnant until 2015. Between 2015 and 2017 ABS volumes trebled to INR 103,000 crore (INR 1030 bn).

FY2017 saw a growing number of non-banking finance companies (NBFCs) as well as high net-worth individuals investing in Pass Through Certificates PTCs primarily due to the higher yields attached to those instruments. The PTC market also benefitted from a growing investor base as a number of asset management companies (AMCs) restarted investments in securitisation transactions in FY2017 following the tax relief. NBFCs and AMCs made up the bulk of the investments in non-Priority Sector Lending (PSL) securitisation.

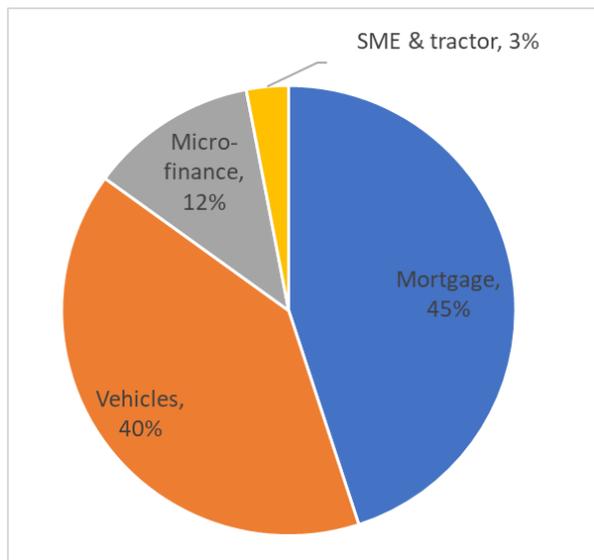
Figure 5: Annual volumes of Indian Securitisation Market FY 2008 -2017 (INR '000 crore)



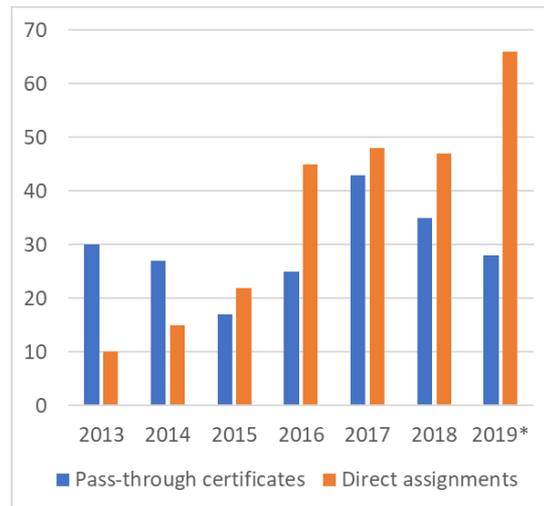
<sup>31</sup> [https://www.climatebonds.net/files/files/2018-](https://www.climatebonds.net/files/files/2018-08%20CN%20Chongqing%20Kangda%20Environmental%20Protection%20Industrial%20Co_%2CLtd.pdf)

[08%20CN%20Chongqing%20Kangda%20Environmental%20Protection%20Industrial%20Co\\_%2CLtd.pdf](https://www.climatebonds.net/files/files/2018-08%20CN%20Chongqing%20Kangda%20Environmental%20Protection%20Industrial%20Co_%2CLtd.pdf)

Types of asset pools issued as ABS in 2017



Balance between issuance as PTC and DA (INR '000 Cr)



Source: CRISIL<sup>32</sup>; \* ICRA estimate

There are opportunities to introduce *green* securitisation in India either through asset classes that are already being securitised in India or through new asset classes that are not yet securitised in India but could be. As can be seen in the pie chart existing pools of assets that are already securitised include mortgages (around 45% of the issuance securitisation market in 2017), loans for vehicles (40% of ABS issuance cars, two-wheelers), receivables for tractors and other small business loans.

Indian banks' loan volumes have since risen<sup>33</sup>: total loans grew by 11% year-on-year by January 2018, this trend has continued in the quarter ending August 2018.

### Tagging of existing green assets

A relatively straightforward means for kick-starting a green ABS market is identifying assets that meet green bond criteria ("green tagging") within existing loan pools, then bundling these assets and issuing them as a green security. This does not directly give rise to new green investment but can have two important benefits:

- It can widen the pool of investors by attracting the attention of international investors with specific green mandates to include in their portfolios.
- There is also some evidence that green assets have favourable risk characteristics. In the UK, Bank of England research suggests that the level of delinquency in loans to energy efficient properties is lower than those to standard homes.<sup>34</sup> One UK bank has offered a 0.1% discount on interest rates to their green mortgages. This creates an incentive for homeowners to invest in improving their homes' energy efficiency. Given the lower rate of falling into arrears there is a rational basis for discounting the mortgage rate.

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.

<sup>32</sup> CRISIL (Aug 2017) Securitisation Market Overview 2016-17 <https://www.crisil.com/content/dam/crisil/our-analysis/reports/Ratings/documents/securitisation-market-hits-a-trillion-propelled-by-PTCs.pdf>

<sup>33</sup> <https://qz.com/india/1182735/bank-credit-growth-indian-corporates-return-to-borrow-but-the-big-bucks-are-missing/>

<sup>34</sup> <https://bankunderground.co.uk/2018/10/16/insulated-from-risk-the-relationship-between-the-energy-efficiency-of-properties-and-mortgage-defaults/>

## Mortgages on low-carbon buildings

Commercial mortgages on multi-family housing are the largest pool of assets already being securitised under Fannie Mae's Agency green MBS, while Dutch mortgage lender Obvion has already done three green RMBS deals, secured on residential mortgages to homeowners.

In India, around INR300bn of MBS are being issued annually. Green ABS could be issued by identifying green properties using either the energy efficiency performance characteristics of the buildings (the use of energy or greenhouse gas emissions per square metre) or suitable proxies such as green building certification schemes. There are a variety of standards available or in development in India.

- More than 1,500 projects have been certified under the India Green Building Council's Green Building Rating System.
- Close to 200 projects have a LEED rating.
- 500 (mainly residential) properties have a GRIHA<sup>35</sup> rating.
- The IFC's Edge Tool has been used on only 10 projects to date but has good potential for low-cost housing.
- The Energy Conservation Building Code for commercial buildings is under development. It will be made mandatory for all new buildings, though enforcement is likely to be a challenge.

None of these schemes are commonly used, nor have they been assessed to determine their stringency in enhancing buildings' energy efficiency. Governments need to introduce incentives to increase experimentation and capacity building within the industry to design low and net zero buildings and regulate to enhance standards. In the future, these schemes and the data they gather could be used to tag mortgages as green.

Home improvement loans used to install rooftop solar could also be supported. Dutch bank ABN Amro created a green mortgage programme in 2016, which allows home upgrades such as rooftop solar to improve energy efficiency, and financed it with an unsecured senior green bond issue. In the US, rooftop solar financing backs Solar ABS and PACE ABS deals.

## Electric vehicle loans

Electric vehicles offer huge advantages over petrol or diesel in terms of air quality. As India decarbonises its electricity grid, EVs will also offer substantial carbon benefits. Between 2015 and 2017, the sale of EVs and hybrids saw an impressive seven-fold increase, rising from 10,321 vehicles in 2015 to 72,482 in 2017. In a matter of a few years, e-rickshaws have grown to an estimated 1.5m and are expected to double by 2021.<sup>1</sup> Battery-powered auto rickshaws are also gaining popularity and leases can be securitised and tagged as green.

Charging stations for such vehicles can also form a collateral pool or use of proceeds for ABS. Chinese company TGOOD, for instance, issued an ABS secured on equipment leases to raise financing for the installation of EV charging stations across the country. This is a promising sector for securitisation, as the securitisation of vehicle loans already represents a large pool of investment opportunities and can offer diversification opportunities to investors who are already familiar with these types of transactions.

## Agriculture microfinance

Microfinance is cash intensive and demonetisation in late 2016 created asset quality pressure and curbed related ABS issuance volume in 2017. Nonetheless, agricultural credit has grown rapidly and is mainly disbursed by commercial banks followed by regional rural and cooperative banks.

As the securitisation of microfinance is already established in India, the application of this instrument to sustainable farming and land management practices can help meet the sector's financing needs. However, the homogeneity of assets pools suitable for securitisation may be an issue to find sufficient assets in this sector.

<sup>35</sup> Green Rating for Integrated Habitat Assessment – it is a national rating system promoted by MNRE and TERI

## Establishing new green asset classes

A second approach is to identify green assets not presently funded through ABS, or even through bonds. Securitisation of new asset classes offers the potential for raising finance for sectors that are underserved by conventional banking.

*Receivables from solar hold great potential* to feature in securitised deals given the Indian government's ambitious renewable energy goal of 175GW of installed capacity by 2022. The tariff competitiveness for solar PV projects has improved over the last three years and more local capital has stepped in, in particular Indian commercial banks and non-banking financial companies. These institutions would be well placed to issue green securitisations.

*Waste management needs upgrading:* Waste management will need to evolve from “collect and dump” to “collect, segregate, process and recycle”. Waste to energy facilities can be part of the solution and will require funding. It may be difficult to find a homogeneous pool of assets that would satisfy the criteria for a securitisation, however.

The use of ABS for asset classes unfamiliar to the market will need to be piloted with public support given the Indian bond market is largely dominated by government issued G-Sec and other highly secure bonds issued by public sector entities and large corporates. If these challenges are addressed, to make a green securitisation commercially viable needs a minimum asset pool of some USD100m. Time is needed to accumulate a sufficient volume of small loans to reach this size. There are various models as to how the instrument should be structured while a viable pool of loans is aggregated. Three securitisation models are given in Appendix 3 and covered bonds, an alternative approach to securitisation, is covered in Appendix 4. These are summarised below:

- *Securitisation using single or multiple originators:* Originators issue loans, perhaps across different states, and sell the loan pool to a specially-created, single-purpose, bankruptcy remote SPV, which issues ABS bonds to investors to finance the acquisition. Homogenous loan conditions would speed up the assembling of the asset pool. Creating multi-originator platforms can further shorten the time required to assemble a pool.
- *Securitisation using warehouse:* a short-term or revolving warehousing finance facility would be extended (usually by bank) during the risky ramp-up phase. Once a viable number of loans secured warehoused loans transferred to an SPV for securitisation. The use of blended finance to support such warehousing facility could help develop such securitisation program.
- *Future flow securitisation:* The asset being transferred by the originator is not an existing claim against existing obligors, but a future claim against future obligors. Otherwise, the approach is the same as for other securitisations.
- *Structured Covered bond:* This is a dual-recourse bond that provides an alternative to securitisation for banks and typically benefits from better capital treatment than securitisation. In a covered bond, the loans remain on the issuer's balance sheet, but a cover pool is created and regularly monitored. The issuer is the main obligor and funds coupons and repayment from its general operations. If, however, the issuer defaults, the assets in the cover pool can be realised to finance payments due to investors. Covered bonds are regulated by covered bond regulation, but the dual-recourse approach can be applied even when there is no covered bond law in the jurisdiction. The regulatory risk treatment of such instrument, however, may make these types of instruments less attractive to traditional lenders.

### 3.4.Examples of potential Indian ABS deals

The market has seen some interesting structures develop. Socially conscious Indian businesses are developing innovative financial instruments to match investors and small-scale sustainability projects. Securitisation structures have also involved multiple originators mainly engaged in microfinance and small business loans.

A multi-originator securitisation is a refinancing pool created by combining loans of small and medium originators to create a well-diversified portfolio of a critical size that can be taken to the market. Northern Arc Capital's (formerly IFMR Capital) Mosec was launched in 2010. It brings together loans of many micro-finance institutions and provides them access to the debt capital markets<sup>36</sup>. The first collateralised loan obligation (CLO) of USD15m was issued in June 2014 by the NBFC Northern Arc Capital's (formerly IFMR Capital) and it involved 11 originators. Northern Arc Capital (Formerly IFMR Capital) aggregates loans provided to financially excluded households and businesses – micro finance, affordable housing finance, small business finance, agricultural finance and vehicle finance – and bundles them for investors. Its assets comprise pooled non-convertible debentures. This and SIMPA, another pioneering project, are explained in greater detail in Appendix 5.

---

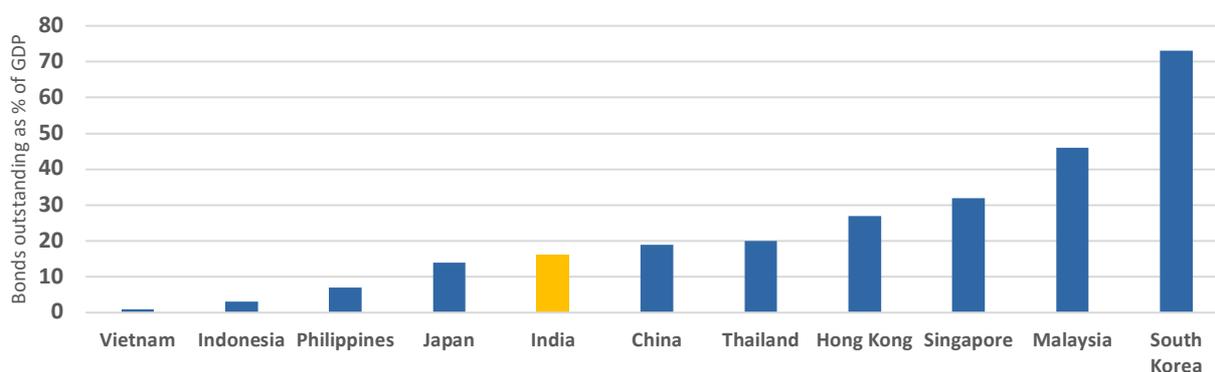
<sup>36</sup> <http://capital.ifmr.co.in/mosec/>

## 4. Market and policy environment for green ABS issuance in India

### 4.1. Indian bond market

India has a sizeable corporate bond market by dint of the size of its economy. Outstanding debt in October 2018 was INR27.4tn<sup>37</sup> (USD391bn) which is around 16.3% of GDP. The largest class of issuer and their shares market shares are: corporates 40%, NBFCs 25% and housing finance companies 20%. The existing stock of Indian ABS will be within these figures, though some of the PA allocations will be outside these figures.

Figure 6: Bond market depth compared to other Asian economies



Source: CARE Ratings, Asian Corporate Bond Market – A comparison with India, March 2018

Judged by international standards, corporate issuance in India is a low share of GDP compared to OECD countries and middle of the pack within Asia. Government is by far the largest issuer of debt. Government borrowing is currently around 69% of GDP, and its debt instruments G-sec dominate the debt capital market. The commercial environment for growing green ABS in India have to be seen through the broader perspective of the overall corporate bond market within India.

There are some deep-seated challenges facing bond issuance in India. Indian corporates have to pay high coupons (as the coupon rates of the basic government security is itself high compared to international standards) for issuing debt. This is a consequence of the high coupon government pays on its debt; forcing up the costs of finance for Indian corporates. In January 2018 the 10 year G-Sec yield was 7.3 per cent, compared to 2.6 per cent for USA.<sup>38</sup> The difference cannot be explained solely by differences in inflation rates and reflects the difference in credit ratings (India is rated Baa2/BBB-/BBB- by Moodys/S&P/Fitch, while the USA is rated Aaa/AA+/AAA) and foreign investors' reluctance to fund bond issuance in India because of perceived illiquidity, policy and exchange rate risks.

Local investors demand for corporate paper with less than AA rating is limited because of the high credit standards institutional investors have to apply if they wish to purchase bonds. Only around 10 per cent of the market has a credit rating of below AA reflecting the low demand for such products.

There is also an asset liability mismatch presently. The majority of bonds have maturities of 2 to 5 years because of the lack of secondary markets in which to trade bonds. This lack of liquidity reflects the buy and hold strategy

<sup>37</sup> [https://www.sebi.gov.in/media/speeches/oct-2018/chairman-s-speech-at-the-crisil-s-5th-annual-seminar-on-expanding-india-s-corporate-bond-market-bonds-of-growth-assessing-the-supply-demand-matrix-october-24-2018\\_40787.html](https://www.sebi.gov.in/media/speeches/oct-2018/chairman-s-speech-at-the-crisil-s-5th-annual-seminar-on-expanding-india-s-corporate-bond-market-bonds-of-growth-assessing-the-supply-demand-matrix-october-24-2018_40787.html)

<sup>38</sup> Ministry of Finance (2018) Economic Survey [http://mofapp.nic.in:8080/economicsurvey/pdf/001-031\\_Chapter\\_01\\_ENGLISH\\_Vol\\_01\\_2017-18.pdf](http://mofapp.nic.in:8080/economicsurvey/pdf/001-031_Chapter_01_ENGLISH_Vol_01_2017-18.pdf)

strategies of the domestic investors but makes them unsuitable for the long tenors needed by much infrastructure.

But there are reasons to be hopeful. The Indian Government is keen to see the corporate sector expand its use of bonds financing. Proposals in the Union Budget of 2018-19 mandate large corporates to use bond financing to fund a quarter of borrowing needs. In response to this the regulatory investment grade as set by Pension Fund Regulatory & Development Authority has been reduced from AA to A. Stamp duty rates have been standardised across states.<sup>39</sup>

The 2016-17 Budget announced the setting up of a credit enhancement fund managed by IIFCL to help make BBB infrastructure bonds credit-worthy. In summer 2018, there were rumours of an INR5bn fund being set up, but no definite plans have emerged.

## 4.2. Factors impeding the issuance of green ABS in India

Potential issuers of green ABS face some challenges that add to the cost and complexity of using this instrument.

**Small primary green loan markets:** While there is ABS structuring and credit analysis expertise in India there has not been much origination of green loans that can be repackaged into ABS. The only loans that have substantial volumes are loans to utility scale solar and wind projects.

**Small loan market:** In sectors like energy efficiency and rooftop solar there is currently only a small volume of underlying loans, i.e. insufficient value of loans being disbursed for a cost-effective securitisation to be undertaken at a later stage. There are initiatives underway to address this issue, which include training of bankers in energy efficiency technicalities, implementation of schemes that look at credit support, and ramping up and popularisation of DREEM (Decentralized Renewable Energy Evaluation and Monitoring) tool. But greater policy support may be necessary to increase underlying demand for the investment.

**High relative transaction costs:** retail assets like electric vehicles and residential rooftop solar-PV involve lending of USD20,000. Fixed costs like issuing contracts and fees add to the costs of the transaction. These can be minimised by using standard documentation to reduce transaction times and administrative costs and help create the volumes needed. Such standardisation also helps in jurisdictions where STS (described in section 2) are treated more leniently by regulators in terms of regulatory capital costs. As of now STS regulations are not applicable in India. Transaction costs can be mitigated through aggregating over multiple originators. This can be mitigated by the digitalisation of lending and the use of standard loan contracts.

Some of the challenges are specific to green investment projects.

**Greater allocation of capital to low-carbon sectors is not always a priority:** the Indian banking system has a history of focussing its lending on sectors identified by government as high priority. Low-carbon is not identified as a separate priority but is instead subsumed within other sectors. For instance sustainable agricultural practices like drip-irrigation, natural fertilisers sit under agriculture. The list of priority sectors already recognises renewable energy as a priority sector which is welcome.

**Lack of clear definitions:** While some sectors like renewable energy are easily understood, others like sustainable agriculture require a more careful examination of precise activities to assess their impact on the environment. Only then will it be possible to identify green investment.

**Green tagging tools for issuers:** At least in the early stage of the market's development, green ABS will be issued by identifying environmentally friendly assets from existing loans pools. To do this lenders have to evaluate their loan books and identify qualifying loans. To gain creditability in the eyes of investors issuers should consider using green labelling schemes like national standards or Climate Bonds Initiative's internationally recognised

<sup>39</sup> <https://rbidocs.rbi.org.in/rdocs/AnnualReport/PDFs/2ECONOMIC88A5CC5468FA4639A767862F5921304A.PDF>

taxonomy. These allow banks to identify loans that conform with accepted green standards. Specific standards are available for an increasingly broad range of assets (energy, buildings, water infrastructure, transport, forestry), but there are some sectors where green tagging is harder to devise (e.g. sustainable agriculture) or metrics may not be available (e.g. low carbon buildings and energy efficiency metrics). Use of green tagging helps reduce the transaction cost of green deals that see additional costs as a barrier to entering the market.

**Credit profile of green underlying assets:** The credit profile of some of the newer technologies and companies is not high enough to be purchased by the insurance companies and pensions funds that are subject to tight regulation regarding the credit profile of their investments. India has mechanisms for credit enhancement. For the very first green bond issuances in 2015, the IIFCL and ADB successfully provided a first loss partial credit guarantee to green bond issuances by ReNew.<sup>40</sup> This allows the bond issuance to be enhanced to a maximum rating of AA+ by India Ratings & Research (A Fitch Group Company). But the IIFCL model is seen as too complicated for smaller projects, so there have not been many issuances.

### 4.3. Factors impeding demand for ABS in India

Indian Green loans are mostly loans to utility-scale RE projects. These projects are generally based on PPAs that are up to 25 years, and thus are ideally financed by long term debt. The main long-term investors in any market are the life insurance and pensions industries. Both these segments accumulate money for a long period and thus need correspondingly long assets. Mutual funds are often also long-term investors.

Attracting a large number of investors to finance projects, which are later securitised, depends on commercial arrangements which ensure that cash flows from the project are ringfenced, collateral is safeguarded and is bankruptcy remote from the originator. The ease of enforcing security contracts impacts on the popularity of this kind of structure. As per the World Bank Data for ease of enforcing contracts, India ranks 164<sup>th</sup> of 190 countries. Its quality of judicial processes is scored at 10.3 on a scale of 18, and the time to enforce a contract is around 4 years.<sup>41</sup> Only four countries surveyed have enforcement times slower than India's. The new Bankruptcy Act may mitigate some of this, but major resources are needed to expand the judicial infrastructure. The new Insolvency and Bankruptcy code and Also, commercial courts, which were introduced in the statute, need to be operationalized with sufficient number of benches.

**Regulations governing Indian mutual funds, pensions and insurers:** The main long-term investors in any market are the insurance (specifically, the life insurance Industry) and the retirement benefits industry. Both these segments accumulate money for a long period and thus need correspondingly long assets. Most renewable energy concessions are 20 years or even more, and thus need corresponding assets of long tenure. However, the existing regulations on these classes of investor impose caps on the share of assets under management can be held in securities, and also set minimum credit ratings for assets purchased. Such ratings can be difficult to achieve for ABS.

**Mutual funds:** Mutual funds used to be active investors in securities but during FY2012 the income tax authorities sent tax notices to trustees of several securitisation transactions—which the trustees in turn passed on to the investors, even tax-exempt ones like mutual fund (MF) houses—asking them to pay tax on income generated through pass through certificates (PTCs). Between 2011 and 2016 (when the tax issue was reversed) they ceased investing completely. Since the publication of the Finance Act in 2016 mutual funds have begun to re-enter the securitisation market.<sup>42</sup>

<sup>40</sup> [https://www.business-standard.com/article/companies/iifcl-s-credit-enhancement-debuts-with-renewable-energy-issuance-115092301088\\_1.html](https://www.business-standard.com/article/companies/iifcl-s-credit-enhancement-debuts-with-renewable-energy-issuance-115092301088_1.html)

<sup>41</sup> <http://www.doingbusiness.org/data/exploretopics/enforcing-contracts> & <http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf>

<sup>42</sup> <https://www.crisil.com/Ratings/Brochureware/News/Securitisation-takes-off-trillion-rupee-market-beckons.pdf>

**Insurers:** The insurance regulator of India, IRDAI (Insurance Regulatory and Development Authority of India), allows investment by insurers in only highly rated mortgage backed securities. Insurance companies' funds are governed in manner that at least 40% of assets are invested in Government Securities or state government paper. Investment in ABS have been capped at 10% by IRDAI.

**Pension funds:** Pension funds in India also face restriction in making investments in securitised instruments. Mortgage backed securities and asset backed securities, monitored by SEBI, form a part of the miscellaneous investments to be made by pension funds, and the upper cap for such investments has been fixed at 5%. The pension regulator PFRDA also restricted pension funds to investing in bonds that are rated at AA or above.<sup>43</sup>

**Foreign investors:** Until 2016 foreign investors were prohibited entirely from investing in the Indian ABS market. Now that the restriction has been lifted it is expected that more investors will take interest in this asset class.

---

<sup>43</sup> <http://npstrust.org.in/images/InvGuidwef10thSept2015.pdf> [last accessed on 20th January, 2017]

## 5. Recommendations

India needs to invest in hundreds of thousands of small, dispersed projects: roof-top solar and other renewables, energy efficient buildings, sustainable agriculture practices and mass transportation systems to allow the country's enviable rates of economic growth reach its masses. This move to a sustainable economy is not an act of *transition* from a polluting to a sustainable state, but an act of *creation* leapfrogging the unsustainable practices found in other countries straight into sustainable economic development. India has the unique privilege of being the one major economy whose NDC and planned trajectory of growth are both consistent with a 1.5-degree world. As a developing economy it will first need to mobilise initially internal savings, and later as it gains greater credibility international financial resources to fund this investment.

Poorer households and MSMEs often are poorly served by conventional banks. As well as bank, such households have relationships with MFIs and SFBs. By leveraging existing client networks, these FIs can finance RE systems at scale and in a cost-effective manner. But these FIs need access to affordably priced capital.

Green securitisation has important role to play in financing this change. Green securitisation allows these lenders to replenish their balance sheet through the capital markets and issue more loans.

To date India has not seen issuance of any green securitisations. The levy of a distribution tax between 2013 and 2015 severely dented market confidence. With the necessary clarification in place, there has been growth in securitisation. By 2016 it had recovered to 2008 levels, and by 2017 it grew again by a half. Volumes in 2019 Q1 have shot up, helped by clarifications on applicability goods and service tax, liquidity pressures in the market resulting in unavailability of short-term funds, and a regulatory clarification from RBI. The securitisation market has developed notable innovations, especially the MOSEC which securitised lending by many micro-finance institutions that lent to 4 million low-income households which was developed by Northern Arc Capital (formerly IFMR Capital).

Progress continues to be made. In April 2019 RBI announced<sup>44</sup> it would constitute a Committee on Development of Housing Finance Securitisation Market to review the existing state of mortgage securitisation in India and various issues constraining market development. Moreover, to develop the market further, the Reserve Bank of India has constituted a Committee for the Development of Housing Finance Securitisation Market.

The recommendations below will help mainstream such innovations. The first three recommendations are measures to increase the issuance of green securities, the last three recommendations seek to increase the demand for green securities.

### 5.1. Increasing supply of green ABS

**Recommendation 1:** Extend the classification for *Priority Sector Lending* to embrace all green assets along the lines of international taxonomies

**Who:** Reserve Bank of India and Ministry of New and Renewable Energy

The most important driver for bank lending is the minimum lending levels for priority sectors. At least 40% of the adjusted net bank credit or credit equivalent amount of off-balance sheet exposure (whichever is higher) must be deployed in the priority sector. The earmarked sectors already include renewable energy.

The first recommendation is that green investment is identified as a priority sector for the setting of bank PSL targets. To operationalise this RBI would need to a standard list of assets to determine what would qualify as green under priority lending. This would allow banks to identify qualifying assets either among existing exposures such as mortgages and vehicles (green tagging) or originate fresh loans. Aligning definitions and

<sup>44</sup> [https://www.rbi.org.in/Scripts/BS\\_PressReleaseDisplay.aspx?prid=47156](https://www.rbi.org.in/Scripts/BS_PressReleaseDisplay.aspx?prid=47156)

disclosure requirements with international best practices can facilitate foreign investor participation in green deals.

Banks could also discharge their targets by purchasing pass through certificates (i.e. Green ABS) or direct assignments off other originators like MFIs.

Reserve Bank of India can introduce some incentives for green securitisations, such as relaxing the obligation to keep “skin in the game” in the form of an investment in the most risky part of the capital structure.

[Recommendation 2: Extend the provision of credit guarantees for all investments in all household and MSME level green investment](#)

**Who: Ministry of Finance through the Small Industries Development Bank of India (SIDBI)**

Indian regulators require domestic institutional investors to only invest in highly rated bonds to protect the ultimate beneficiaries from risky investments. However, this makes it more difficult for issuers of green securities since the asset class is still new and the loans are made to smaller borrowers. The earliest issuances of green bonds have benefitted from partial credit guarantees from multilateral banks and IREDA. Credit enhancement schemes continue to be provided for select technologies.

[Recommendation 3: State-level pooled funds as warehousing facilities](#)

**Who: Government of India**

Green funds could be set up for facilitating warehousing facilities. These funds could be either provided by the government or private initiatives, and could be funded / aided under several of the Government’s green initiatives. Such funds would allow pooling of assets across originators, making it easier to achieve the scale necessary for securitisation to be viable. The ADB and Government of India have proposed a warehousing facility for rooftop solar projects in India through the Punjab National Bank, which essentially is a prototype of these structures.<sup>45</sup>

## 5.2. Increasing the demand for green ABS

[Recommendation 4: Relax the limits on volume and credit quality for investment by insurance companies and pension funds](#)

**For: Insurance Regulatory and Development Authority of India (IRDAI) and Pension Fund Regulatory and Development Authority (PFRDA)**

In most countries insurance companies and pension funds are important investors in invest grade (BBB- and above) corporate bonds. In India, until autumn 2018 these investors could only invest in bonds (including pass through certificates and ABS) with a credit rating of AA or above. ABS structures currently are rarely rated AA or above. Additionally, pension funds can invest in ABS only to the extent of 5% of their total investments.

These investors do not have similar restrictions on their equity portfolios, which are arguably quite risky assets, and reducing the minimum permitted credit rating to create a fairer treatment between the investor’s debt and equity holdings should be explored.

Following the 2018-19 budget’s announcement to increase the share of bond financing of corporate borrowing to 25%, the pensions regulator has reduced the minimum credit quality to A. This is a welcome change but does not go far enough, and other regulators should follow suit.

The following changes, if allowed by regulators, would allow these classes of investors to invest freely in the Green ABS market:

<sup>45</sup> <https://www.adb.org/sites/default/files/project-document/199461/49419-001-ffa.pdf>

- a. Insurance companies and pension funds may be allowed to invest in ABS projects that have a rating between BBB and AA as determined by two accredited credit rating agencies
- b. Pension funds may be allowed to invest in Green ABS beyond the specified limit of 5%.

Recommendation 5: Create an alternate dispute resolution system which creates a binding settlement process to ensure monies are promptly paid

**Who: Contracting parties in the ABS, contracting parties for the underlying loan / lease arrangements**

The slowness of the Indian courts at resolving financial disputes is an impediment to attracting international finance into the country. Senior bonds are intended to be a low risk investment, but if, in the event of a default, the process of recovering monies from the SPV's underlying assets is slow or unwieldy then this is a significant risk for investors in terms of time to recovery and level of recovery given the additional costs. The Government is implementing a number of improvements to the legal system. In 2015, the Government passed the Commercial Courts Act, which creates dedicated commercial benches across India, to be staffed by judges focusing on commercial matters though it will take time to resolve the backlog of cases.

Investors might also be able to avoid the court system altogether. This can be achieved by making use of a binding Alternate Dispute Resolution systems to settle claims. Academics have considered various options for settling financial disputes in Hong Kong<sup>46</sup> ranging from UK style Ombudsman to a mutually agreed binding resolution system.

In India the Arbitration and Conciliation Act 1996 provides a legal framework for domestic disputes.<sup>47</sup> A special alternate dispute resolution (ADR) body for reviewing and investigating disagreements between parties is established. Parties involved in an ABS and the underlying collateral-related contracts agree to be bound by the arbitration decision and provide confidence to market participants. It is expected that the body or council overseeing the ADR will be from the peer community drawn from the financial community of issuers and lenders. They will be supported by a small secretariat that drafts recommendations for the council's consideration as per the contracted agreement. It is important that the contracts covering the ABS and its underlying loans and security are framed to agree a process and jurisdiction for using ADR to settle disputes.

Recommendation 6: Create standard documents for popular retail assets

**Who: Banking trade associations**

Presently, there is no standard set of documents for lending activities in India. Lenders have the discretion to structure their documents as per their needs. However, to reduce the complexities in bundling up credit facilities together for green securitisation, there is a need either for a standard template for loans, or for agreement on the number of critical elements a loan should include.

Such template should also focus on including specific clauses to allow the easy transfer of loans (through a true sale or a participation) to an SPV for the purpose of inclusion in a securitisation vehicle. This may include a minimum holding that the bank is obliged to retain on its book to ensure that it can demonstrate a continued commitment to its client (as loans are an important relationship instrument for banks when they deal with their clients).

In the US, the National Renewable Energy Laboratory (NREL) of the Department of Energy has set up a working group for solar securitisation that includes industry actors.<sup>48</sup> The group has worked to develop standardised loan

<sup>46</sup> <https://digital.law.washington.edu/dspace-law/bitstream/handle/1773.1/1163/21PRPL485.pdf?sequence=1>

<sup>47</sup>

[http://www.nishithdesai.com/fileadmin/user\\_upload/pdfs/Research%20Articles/AN\\_OVERVIEW\\_OF\\_LITIGATION\\_AND\\_DISPUTE\\_RESOLUTION\\_IN\\_INDIA.pdf](http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Articles/AN_OVERVIEW_OF_LITIGATION_AND_DISPUTE_RESOLUTION_IN_INDIA.pdf)

<sup>48</sup> <https://financere.nrel.gov/finance/content/solar-securitisation-and-solar-access-public-capital-sapc-working-group> [last accessed on 20th January, 2017]

contracts for solar panels, as well as operations and management standards. The TeraWatt Initiative is working towards a similar goal in support of the International Solar Alliance.

Standardisation for electric vehicles and residential solar rooftop loans could be carried out and could be effective to enable aggregation of such loans into a warehouse, facilitating the deal size needed to sell off the security into capital markets. Standardisation does not lead to inflexibility – lenders and borrowers are still free to make amendments, but the availability of a standard set of documents avoids heterogeneity and the need to write documentation templates every time.

India might also go further. In response to the crisis, the EU undertook reforms. The Securitisation Regulation proposed by the EU Commission aims to integrate all of EU under a single securitisation regulatory regime for the purpose of creating an EU Credit Monetary Union. It also introduces "simple, transparent and standardised" (STS) securitisation (see Appendix 2) that would receive more favourable regulatory treatment, at least compared to other securitisation transactions.

## Appendix 1: Examples of a green taxonomy

### Climate Bond Initiative

ENERGY	TRANSPORT	WATER	LOW CARBON BUILDINGS	INFORMATION TECHNOLOGY & COMMUNICATIONS	WASTE & POLLUTION CONTROL	NATURE BASED ASSETS	INDUSTRY & ENERGY-INTENSIVE COMMERCIAL
Solar 	Rail 	Built (grey) infrastructure 	Residential 	Power management 	Recycling 	Agricultural land 	Manufacturing 
Wind 	Vehicles 	Green and hybrid infrastructure 	Commercial 	Broadband 	Other Recovery 	Forests (managed and unmanaged) 	Energy efficiency processes 
Geothermal 	Mass transit 		Retrofit 	Resource efficiency 	Disposal 	Wetlands 	Energy efficiency products 
Hydropower 	Bus rapid transport 		Products for building carbon efficiency 	Teleconferencing 	Prevention 	Degraded Lands 	Retail and wholesale 
Bioenergy 	Water-bourne transport 				Reuse 	Other land uses (managed and unmanaged) 	Data centres 
Wave and Tidal 	Alternative fuel Infrastructure 				Pollution Control 	Fisheries and aquaculture 	Process & fugitive emissions 
Energy distribution & management 						Coastal infrastructure 	Energy efficient appliances 
Dedicated transmission 						Land Remediation 	Combined heat & power 



**Climate Bond Certified**

 Certification Criteria approved  
 Criteria under development  
 Due to commence

### SEBI list of qualifying assets for issuance and listing of green bonds<sup>49</sup>

“Further, for assigning the status of the bonds as Green, the broad categories of areas where such monies may be invested may be one or more of the following:

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

However, it is to be noted that this is an indicative list and may include other categories as specified by Board.”

<sup>49</sup> [https://www.sebi.gov.in/sebi\\_data/meetingfiles/1453349548574-a.pdf](https://www.sebi.gov.in/sebi_data/meetingfiles/1453349548574-a.pdf)

## Appendix 2: Features of STS securitisation in the context of the EU<sup>50</sup>

Simplicity	Transparency	Standardisation
<p><b>Sale or assignment</b></p> <p>The transfer of assets must be affected by a sale or assignment.</p>	<p><b>Historical data provision</b></p> <p>Prior to investment, the originator, sponsor and issuer must provide the investor with access to data on static and dynamic historical default and loss performance, such as delinquency and default data for substantially similar assets. This data must cover at least five years for retail exposures and seven years for non-retail exposures. The basis for claiming similarity must be disclosed</p>	<p><b>Risk retention</b></p> <p>The risk retention rules in the Securitisation Regulation (CRD &amp; BASEL III) must be complied with</p>
<p><b>Representations and warranties</b></p> <p>The originator, sponsor or original lender must provide representations and warranties to the best of their knowledge that the underlying assets are not encumbered or otherwise in a condition likely to adversely affect enforceability of the sale or assignment</p>	<p><b>External verification</b></p> <p>There must be external verification a sample of the underlying assets by an appropriate and independent party, including verification that the data disclosed in respect of the underlying exposures is accurate, with a confidence level of 95</p>	<p><b>Hedging</b></p> <p>The interest rate and currency risks in the securitisation must be mitigated (via derivatives or otherwise), and the mitigation measures disclosed. Only derivatives to hedge interest rate and currency risk are permitted in the securitisation portfolio, and these must be documented and underwritten according to common international standards.</p>
<p><b>No active management</b></p> <p>There must be pre-determined eligibility criteria in place that do not permit active portfolio management on a discretionary basis of this criterion, managed Collateralised Loan Obligations would not qualify as STS.</p>	<p><b>Cash flow model</b></p> <p>The originator or sponsor must provide investors a liability cash flow model before pricing and on an ongoing basis</p>	<p><b>Standard referenced rates</b></p> <p>Any referenced interest payments for either the assets or liabilities of the securitisation must be based on generally used market interest rates, not complex formulae or derivatives</p>

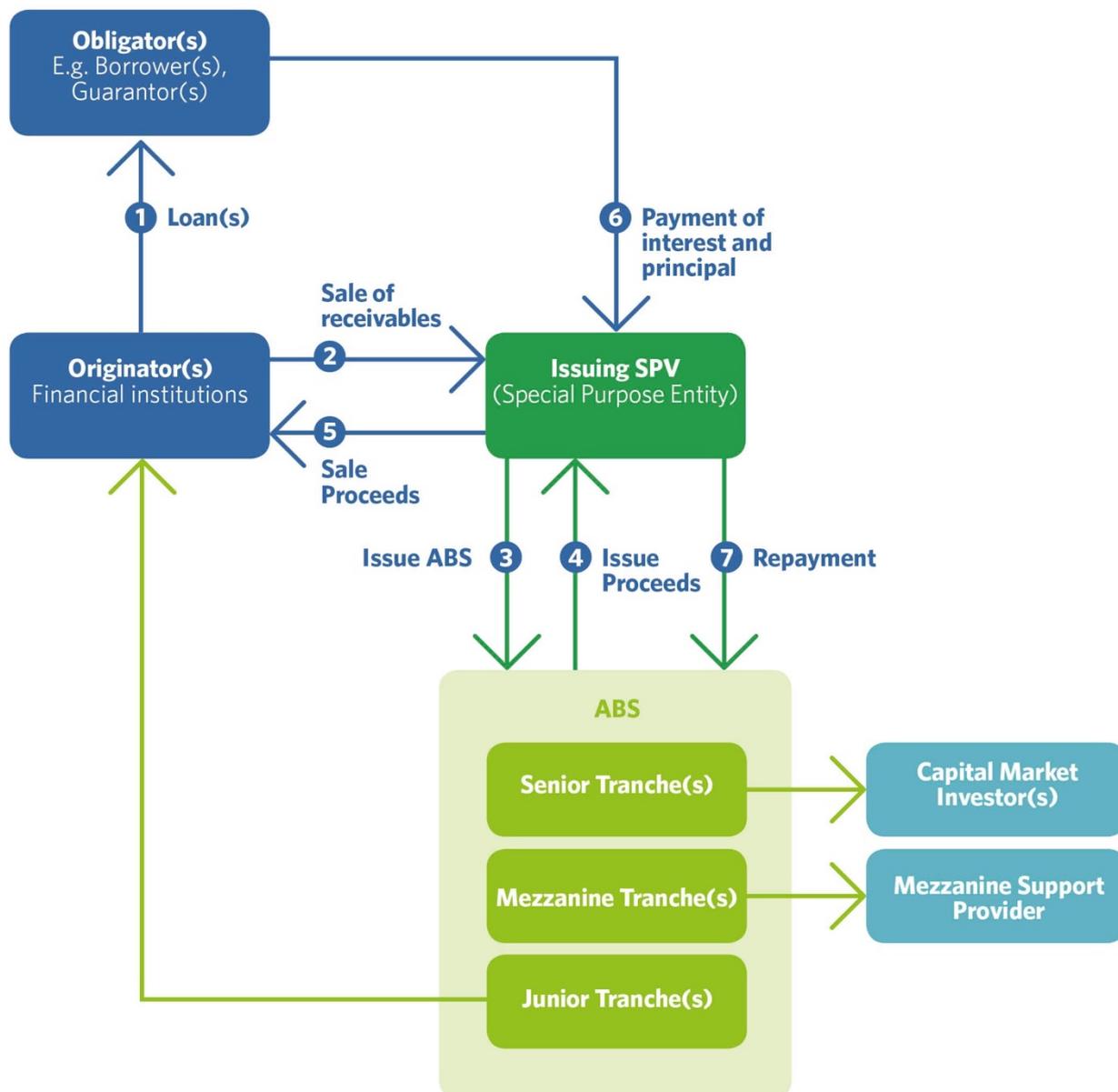
<sup>50</sup> The Proposed Securitisation Regulation published by Clifford Chance, September 2015

Simplicity	Transparency	Standardisation
<p><b>Homogeneity</b></p> <p>The securitised assets must be homogeneous in terms of asset type and may not include transferrable securities. Securitised exposures must be enforceable obligations with full recourse to debtors</p>	<p><b>Disclosure of documentation</b></p> <p>The originator, sponsor and issuer must comply with the transparency requirements of the Securitisation Regulation. In addition, there is a requirement to provide certain information, including deal documentation, prior to pricing in at least draft or initial form.<sup>51</sup> Final documentation is required to be provided no later than 15 days following closing.</p>	<p><b>No reverse waterfalls</b></p> <p>Where an enforcement or acceleration notice has been delivered, principal receipts must be distributed in order of seniority, with no substantial amount of cash trapped in the securitisation on each payment date. There is a ban on provisions requiring automatic liquidation of the underlying exposures at market value</p>
<p><b>No re-securitisations</b></p> <p>The underlying exposures may not include assets that are themselves securitisations</p>		<p><b>Early amortisation triggers</b></p> <p>The transaction must provide for early amortisation triggers. These must include, at minimum: (i) a deterioration in the credit quality of the underlying exposures to or below a pre-determined threshold; (ii) the occurrence of an insolvency-related event with regard to the originator or the servicer; and (iii) the value of the underlying exposures falling below a pre-determined threshold.</p>

<sup>51</sup> This is potentially problematic as it could lead to serious and differing liability risks under the Prospectus Directive regime as implemented in each of the EU Member States.

## Appendix 3: Potential structures for green securitisation in India

### Securitisation structure involving single originator

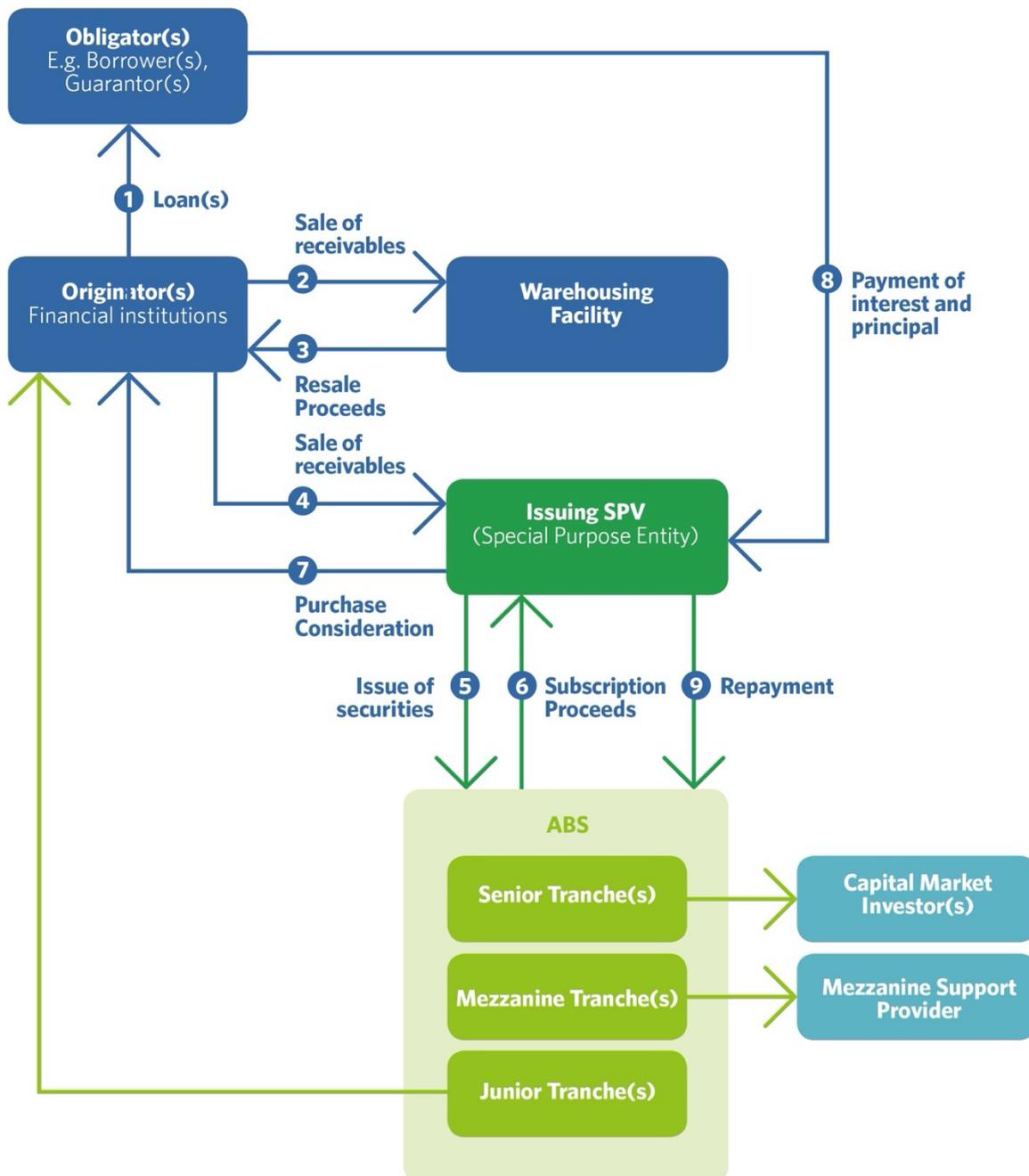


- The originators identify and bundle the qualifying assets for securitisation. The portfolio is then sold to a special purpose vehicle (SPV), which is set up solely for the purpose of the transaction and is used to ringfence the assets from the operations of the selling originator.
- The SPV issues multiple tranches of rated Asset Backed Securities (ABS), to the investors. Of the ABS issued by the SPV, the junior most tranche is subscribed by the originator itself so as to absorb the first loss arising out of the portfolio as per requirements of applicable RBI regulations.
- Out of the proceeds received from the investors, the originators are paid off by the SPV.
- The receivables now flow from the obligors to the SPV, out of which the interest and principal due to the investors are serviced.

The structure can also be adapted to multiple originators, whereby multiple financial institutions or leaseholders sell loan pools to a warehouse or directly to the SPV. Multiple originator structures can be used to achieve geographical diversification and would also be better from scalability perspectives. It is important that the different originators harmonise their loan and/or lease documents and protocols to ensure that the SPV has a homogenous asset pool.

*Securitisation using warehousing facilities*

Warehousing facilities may be useful in refinancing the ramp up of the receivables while the originator is still building up the pool to arrive at the critical mass where securitisation will happen. The warehousing facilities are typically granted by banks. While a normal refinancing facility will be for a long tenure generally matching with the tenure of the underlying loans, a warehousing facility is for only the ramp up period. Banks will find it much easier to finance the build-up of the assets, than to finance their hold up on the balance sheet of the originator. The transaction flow has been described below:

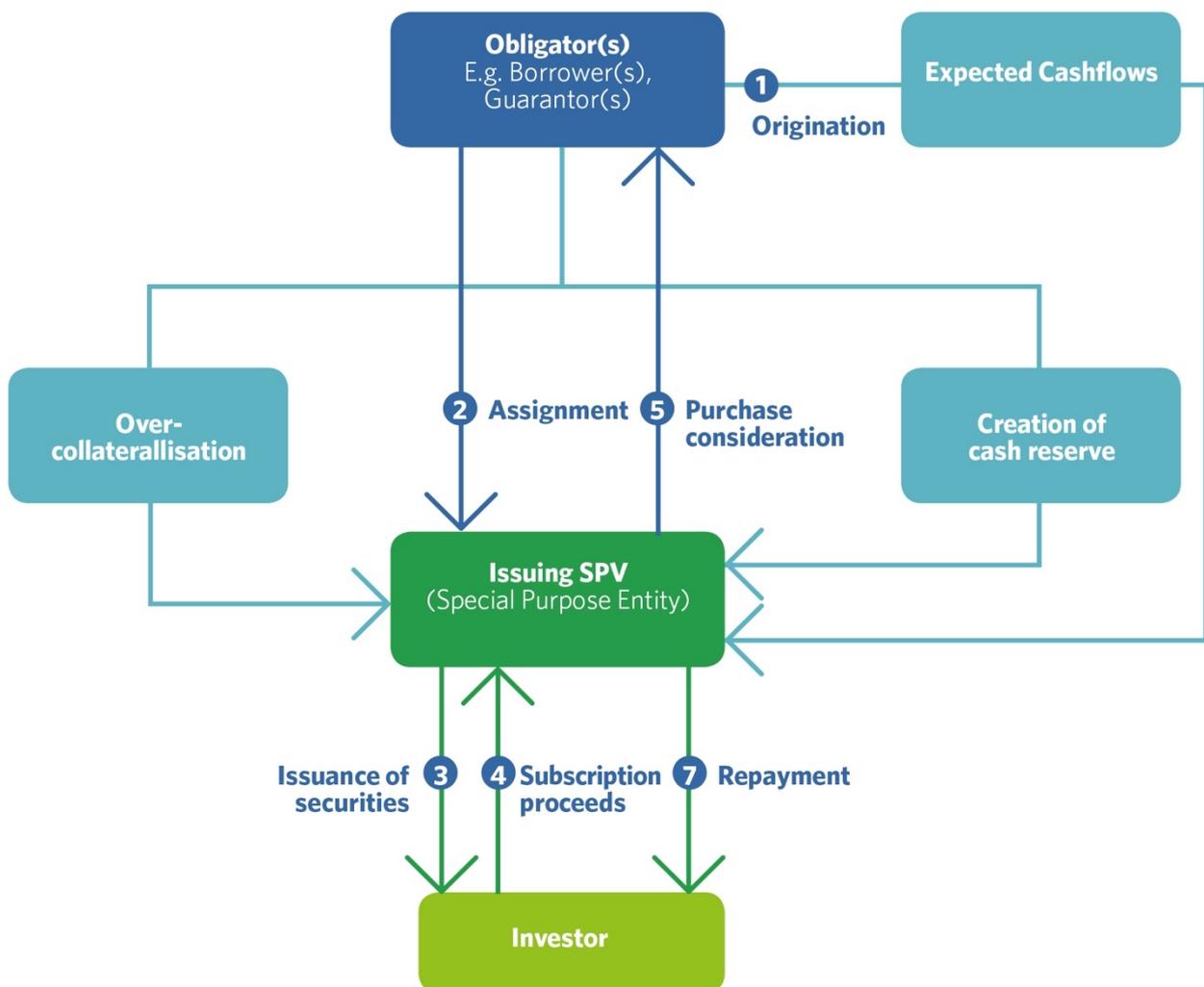


- The receivables will be parked into a warehousing facility until a substantial amount is accumulated. Once the desired volume is ramped up, the same shall be sold back to the originator.
- The originator upon buy back of receivables from the warehousing facility shall transfer it to the issuing SPV.
- The SPV issues more than one, typically three, tranches of rated Asset Backed Securities (ABS), to the investors. Of the ABS issued by the SPV, the junior most tranche is subscribed by the originator itself so as to absorb the first loss arising out of the portfolio.
- Out of the proceeds received from the investors, the originator(s) are paid off by the SPV. The receivables now flow from the obligors to the SPV, out of which the interest and principal due to the investors are serviced.

*Future flow securitisation*

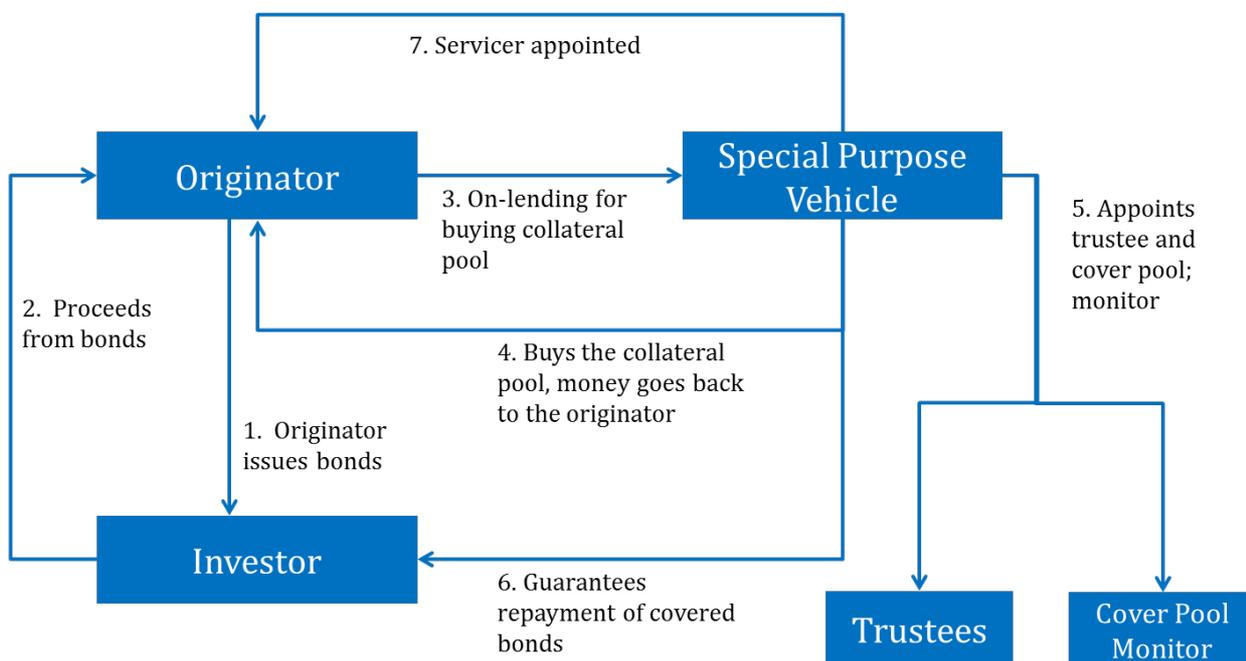
The structure can be similar to the ones already discussed, except for the fact that in this case the asset being transferred by the originator is not an existing claim against existing obligors, but a future claim against future obligors. In other words, the claims are yet to be created, against obligors who are yet to be identified. For example, securitisation of receivables to be created out of the generation and distribution of power is a future flow transaction.

The transaction flow has been discussed below:



- The originator will identify expected cash flows and transfer them to the Issuing SPV.
- The transfer will be subject to over-collateralisation and formation of cash reserve, to be undertaken by the originator and held by the SPV. While the over collateralisation will take care of the credit risk of the receivables, the cash reserve will provide the necessary liquidity support to the transaction as happens in many such transactions.
- In future flow securitisation, sometimes a single tranche of securities is issued by the SPV and the rating of such security, typically, is determined by the credit rating of the originator of the receivables.
- The expected cashflows will now flow to the SPV, out of which the principal and interest due on the securitised instruments.

*Potential structure for green Structured covered bonds in India*



- Originator issues the covered bonds to investors and the investor remit the subscription proceeds.
- In Continental Europe, the originator retains the loans on its balance sheet, while in the UK the originator creates a vehicle to segregate the assets in a cover pool and funds the transfer of the assets into the vehicle, which means the assets stay on balance sheet. In both cases, the risks and rewards associated with the receivables are retained by the originator. Covered bonds are a funding mechanism – not a risk transfer mechanism.
- The SPV structure used for UK covered bonds is presented above as a potential structure for India. In this structure, the SPV guarantees the repayment of subscription proceeds to the investors.
- During the entire transaction, the payment from the obligors shall flow to the originator and the originator shall continue to service the covered bonds obligations out of its own cashflows.
- If the issuer defaults on its payment obligations, the cover pool assets are enforced to raise funding to pay any outstanding amounts to investors.

## Appendix 4: Examples of innovative securitisations undertaken in India

### Northern Arc Group (formerly IFMR Group)- Using structured finance to implement financial inclusion

The role played by securitisation in masking poor quality sub-prime mortgages which precipitated the 2008 financial crisis was cast a long shadow over structured finance and securitisation. But Northern Arc Capital's (Formerly IFMR Capital) approach towards structured finance is reversing the perception of structured finance being a threat to financial systems. The business has been at the forefront of promoting financial inclusion and primarily works with small and medium sized financial institutions across five asset classes of microfinance, small business finance, affordable housing finance, vehicle finance and agriculture finance to develop their access to debt capital markets.

The main operating company Northern Arc Capital (formerly IFMR Capital), a NBFC was founded in 2008. Besides the operation of the NBFC, the group also manages funds through a wholly owned subsidiary Northern Arc (formerly IFMR Investment). This platform provides growth capital to high quality originators in sectors that impact the financially excluded.

Northern Arc Capital (formerly IFMR Capital) makes extensive use of structured finance for capital market innovations that augment the supply of growth capital to financial inclusion sectors. The modus operandi of Northern Arc Capital's (formerly IFMR Capital) business is as follows:

- Identification of high-quality Originators working across sectors of microfinance, small business finance, affordable housing finance, vehicle finance, fintech, agricultural finance and corporate finance. The originators are mostly NBFCs and HFCs with limited access to capital markets because of their size, vintage and other reasons.
- Performing a due diligence of such Originators as per proprietary underwriting framework.
- Based on the requirements of Originators, IFMR Capital designs customized products which are marketed to investors.
- To maintain risk alignment, IFMR Capital retains its skin-in-the-game by investing in the products structured by it and/or participating in the deals as a guarantor or credit-enhancer.
- Financial structuring expertise is leveraged to achieve efficient pricing for clients, simultaneously meeting the requirement of investors like mutual funds, banks, insurance companies, NBFCs, Alternative Investment Funds, etc.
- Financial tools such as repackaging, securitisation, and credit enhancement are utilised to tailor products to match the risk profiles of different categories of investors
- Backed by millions of data points over a decade of operating in the space, Northern Arc Capital (formerly IFMR Capital) has developed proprietary models to track the performance of investments on a regular basis. It has a strong on-the-field monitoring team which regularly visits the management and end customers of partner entities to detect possible stress scenarios as early as possible.

Northern Arc Capital (formerly IFMR Capital) arranged world's first Multi Originator Securitisation (MOSEC™) of micro loans by pooling together loans from multiple Micro Finance Institutions (MFIs). Launched in January 2010, the MOSEC program has unlocked financing of over INR 45 billion (USD 700 million), bringing in financing to the lives of more than 4 million low-income households.

Northern Arc Capital (formerly IFMR Capital) has also pioneered pooled bond/loan issuance program which is on-balance sheet counterpart of MOSEC. Under the program, the investors take exposure on the balance sheet of participating entities while deriving comfort from a common guarantee provided by a highly rated credit enhancer. The banks also get the priority sector benefit in the program if the participating entities are MFIs. Till date, close to INR 20 billion funding has been provided to entities under the program.

As a product extension, Northern Arc Capital (Formerly IFMR Capital), through its wholly owned subsidiary Northern Arc Investments (formerly IFMR Investments), has also developed a fund management platform for providing growth capital to high quality originators in sectors that impact the financially excluded. These high-quality originators form its existing client base. Thus, Northern Arc investments (formerly IFMR Investments) today manages five Alternative Investment Funds (AIFs) with cumulative AUM of over USD115m. These closed-ended funds have tenor from 3.5 years to 10 years, and provides funding to investee companies ranging from secured, unsecured, subordinated and short- term debt. Through these funds, Northern Arc Investments (formerly IFMR Investments) has played a pivotal role in diversifying the sources of borrowing, reducing refinancing risk and developing bond market access for these issuers who, otherwise had limited access to the capital market.

### Simpa Networks

Simpa Networks (<http://simpanetworks.com/>) finances and distributes small solar devices like solar panels with integrated LED devices to its poorer customers - payment is in instalments. It has partnered with RBL Bank Ltd (<https://www.rblbank.com/>). SIMPA sells and services the product and collects the loan instalments, RBL Bank provides USD 5 million capital to fund the purchase of the equipment.

The distribution of these kind of appliances to “the bottom of the pyramid” customers is not limited to SIMPA networks, but nor is the idea mainstream. Another similar program the Partnership to Advance Clean Energy-Deployment (PACE-D) sponsored by USAID has enabled seven MFIs to supply solar devices (initially lanterns) which they sell through their distribution network as well as provide loans to finance the purchase. As of December 2017, over 350,000 such products have been sold – impacting nearly a million Individuals. The product size and capacity has been increasing (solar home systems are becoming popular).

The final effect of the SIMPA- RBL Bank transaction is that SIMPA Networks can leverage its operational strength while relying on the balance sheet of another institution- *an effect that is similar to that of Securitisation*. It can be fairly expected that with growing momentum in these solar appliances -larger portfolios will result which will facilitate Securitisation transactions.