

A Review of Green Finance and Green Bonds Market in India

*Dr. Archana Fulwari

Dept. of Business Economics, Faculty of Commerce, The Maharaja Sayajiro University of Baroda, Vadodara, Gujarat (India)

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*Corresponding Author

Email: archanafulwari@gmail.com

ABSTRACT

One of the most propounded elements of growth in the present era is that development should be sustainable. Development without taking into account its impact on the ecology is bound to be a self defeating process. Investors across the world are increasingly looking for avenues of investment that besides offering a reasonable rate of return, are also environment friendly. Green financing connects the objective of economic growth with environmental sustainability and is becoming increasingly relevant. It entails directing funds towards businesses investing in clean energy and environment oriented technologies, as well as, funding the use of non-conventional energy sources at micro level such as households and institutions. This brings to fore the important role played by banks and financial institutions in incorporating environmental considerations in granting loans and in devoting increased volume of funds to green investments. In this context, this paper explored how the issue of green financing has been approached in India and aimed at examining the trends in green bonds issuance by Indian banks and financial institutions.

INTRODUCTION

Globalization has ushered in vibrancy as well as a sense of urgency in the pace of growth for most countries. Countries seem to be in an unbridled rush to attract investments and accelerate their rates of growth. Advancement in technology and falling barriers to internationalization has added further momentum to the phenomenon. At the same time stakeholders in this growth process are becoming sensitive towards development that is not just economically viable but which also preserves the ecosystem of the world. The realization of the futility of pursuing environmentally harmful path of growth is catching up the collective imagination of a growing number of stakeholders, although much effort is needed to convert the concern into action that is far reaching, viable and sustainable.

The thrust on sustainable development and the vision to transform the world by 2030 have resulted into multipronged efforts towards the 17 goals of sustainable development. Among others, the emphasis on affordable and clean energy, and climate action, are perhaps goals that are more than tangential to the approach by which the remaining goals must be achieved. While many stakeholders are attached to this holistic approach towards development, one of the most important cogs that would keep the process rolling is the availability of finance. More importantly, the role that finance plays in the achievement of sustainable development is not merely finance with its traditional underpinning, rather it is responsible financing with ecological concerns as the prime considerations. This is particularly significant because the goals of sustainable development are not an option but rather the only credible way to progress. At the same time, the hindrance to achieving this is the divergent objectives of financiers who typically look for short term gains and sustainable development which produces fruit in the long run.

Moreover, emerging economies are looking at major increase in the demand for energy in the years to come. The focus is now on attaining energy efficiency rather than capital

formation. This adds to the urgency of bringing about a greater transition to clean energy, further underlying the role of green finance. The significant role of finance is well emphasized in the assertion by Johnson (2015)[1] that dearth of finance compels the use of sub-optimal technical choices for social, economic and ecological implications. The relevance of green finance is well nuanced in the declaration of the UNEP (2016)[2] that green finance has emerged as the underpinning of financial market development.

Green financing is broadly defined as the financing of projects and technologies that develop and use clean energy as well as financing of all those efforts that promote the preservation of the ecosystem and that mitigate that harmful effects of climate change. At the micro level Green Finance involves the use of financial products like loans for conversion to clean vehicles, green housing, roof top solar systems, financing of green modes of transport, etc. (Keerthi, 2013)[3]. Hohne, Khosla, Fekete and Gilbert (2012)[4] define green finance in a broad sense to refer to "... financial investments flowing into sustainable development projects and initiatives, environmental products, and policies that encourage the development of a more sustainable economy..." In this context, of particular relevance are the green bonds which allow firms to raise green finance from domestic and foreign investors with focussed interests in sustainability and responsible investment (Ravat and Narang, 2016)[5]

GLOBAL GREEN FINANCING INITIATIVES

The Rio Earth Summit of 1992 initiated the global mission to address the climate change issues with the adoption of the United Nations Framework Convention for Climate Change – UNFCCC (Ibrahim, Shabudin, Chacko and Asrar, 2016)[6]. The Kyoto Protocol (1997) that was enforced in 2005 gave further impetus to the commitment to stabilize the green house gas concentration. Climate change entails two aspects, namely mitigation and adaption. International and domestic finance is a major cog in achieving this mission. The World Development

Report (2010)[7] estimated that developing countries would require investments to the tune of \$140 to \$175 billion per year over the period of 20 years to mitigate climate change and \$30 to \$100 billion a year between 2010 and 2050 as adaptation investments.

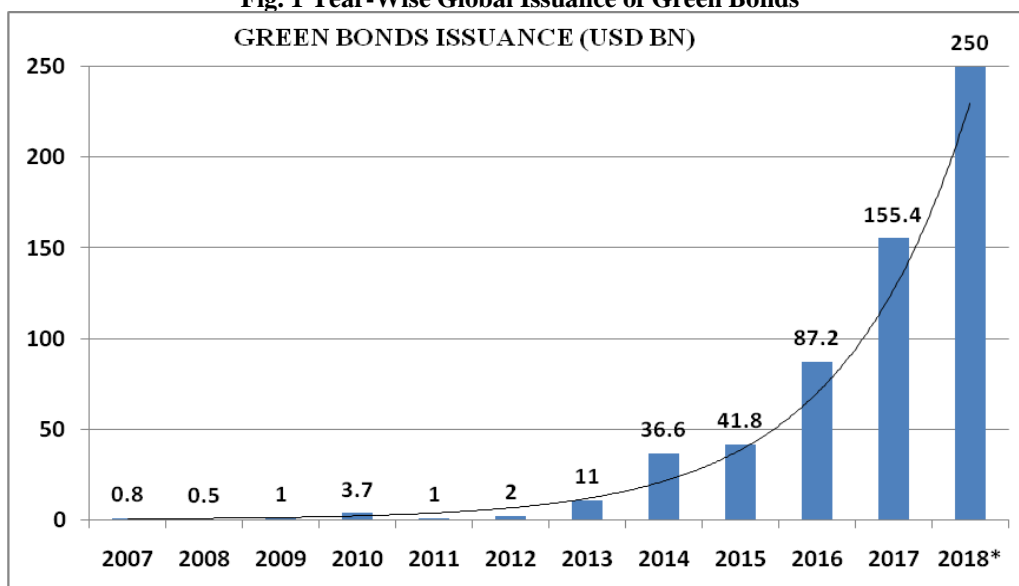
In this context much effort has been made towards availability of green finance. The boost to green financing can be traced to the launching of the United Nations Environment Programme Finance Initiative (UNEPFI) in the early 1990s to which about 200 financial institutions across the globe have vouched adherence. Since then there have been growing efforts around the world to reconcile the tenets of market mechanisms with the goals of sustainable development. The UNEPFI "... advocates for a precautionary approach towards environmental management and suggests integrating environmental considerations into the regular business operations, asset management, and other business decisions of the banks" as quoted in Sahu and Nayak (2008)[8]. The UNEPFI estimates financial requirement to the tune of USD 35 trillion till 2050 to decarbonize by shifting to renewable energy. It sees the financial institutions as "enablers and catalysts of the climate economic transition" (UNEPFI).

According to the World Economic Forum Green Investment Report (2013)[9], there has been an increase in the financing of clean energy asset creation in the developing countries as a result of increased effort towards green growth

strategies. The report underlines the significant role of public finance in accelerating the movement towards green investment by helping scale up private financial flows through guarantees and incentives.

Among the modes of green investment, of particular interest is the development of green bonds as a financing solution for sustainable development. Green bonds are financial instruments whose proceeds are dedicated to green projects. There are two categories of green bonds that have emerged. Green labelled bonds which are certified as Green, and unlabelled green bonds where the proceeds are linked to environmentally beneficial projects (UNEP). Green bonds issuance has been growing exponentially in recent years with more and more developing countries entering into the market. Green bonds were first issued by European Investment Bank in 2007, followed by the World Bank in 2008. In 2010 the International Finance Corporation and governments at various levels also issued green bonds. Figure 1 depicts the exponential growth in the green bonds issued by various countries. The green bonds market is expanding with a total of 37 countries to have issued green bonds in 2017. The market is deepening with 1500 issues by 239 issuers by the end of 2017. Interestingly, 61 percentage of these issuers were new issuers, indicating the bright future of green bonds markets.

Fig. 1 Year-Wise Global Issuance of Green Bonds



Source: Climate Bonds Initiatives

OBJECTIVES AND METHODOLOGY

Since green financing is an emerging field the present study is exploratory in nature. The paper aims at exploring the status of green finance in India. The objectives of the study are as follows:

- To examine the emergence and growth of green finance in India
- To examine the status of green bonds in India
- To examine the bank credit to non-conventional energy sector

A thorough review of literature has been undertaken on green financing in India and other countries to understand the relative practices in of green finance in India vis-a-vis other

countries. This would throw light on the scope of replication of best practices in the Indian context.

The paper has a particular focus on the green bonds markets. An analysis of the growth rates in the green bonds issues in India has been examined. The data has been obtained from the Climate Bonds Initiative, an international not-for-profit investing organization with the aim of mobilizing USD 100 trillion for green bonds. The trends in bank credit to non-conventional energy sector in India have also been studied over the period of 1996 to 2015, as per availability of data. The data has been sourced from the publications of the Reserve Bank of India.

REVIEW OF LITERATURE

Green financing is a relatively new field in India, particularly in terms of the thrust laid on it in recent times. Most studies on green financing are exploratory in nature. Sahoo and Nayak (2008)[8] report the dismal role of Indian banks and financial institutions in the area of green financing. Drawing lessons from international experience, they particularly highlight the credit risk involved in investments turning into non-performing assets due to possible closure of firms on account of failure to meet environmental standards and thereby affecting the profitability of banks. The authors have used the number of firms that have closed as a measure of risk to banks. This is important because in the coming days as green consumerism increases, it would penalize the errant firms, particularly affecting their export markets. Keerthi B. S. (2013)[3], Sudhalakshmi and Chinnadorai (2014)[10] and Goel (2016)[11] for instance have discussed the recent trends and future opportunities for India in the area of green financing. They assess the role of banks and financial institutions in promoting environmentally sustainable development.

Moldovan (2015)[12] compares the green investments in emerging and developed economies and explores the role of government in incentivising the same. The author cites the much bigger rise in global market capitalization compared to growth in World GDP to suggest the greater role that the financial sector can play in making development sustainable. Rakov (2017)[13] has examined the mechanisms adopted by a few countries in promoting environment oriented projects. Using regression analysis the researcher has found significant impact of state support measures for green funding on the investment by private sector in green projects, in most countries examined by him.

Bergset (2015)[14] has dealt with the challenges faced by green start-ups in procuring finance given the different conditions of risk, return and time horizon of their investments. The author suggests that while green start-ups may find

investors with similar values towards environment protection, asymmetry of information and apprehension of moral hazard creates a gap between the entrepreneurs and the potential investors. As a solution to this, the author suggests the use of intermediaries with specialized knowledge to reduce the mismatch.

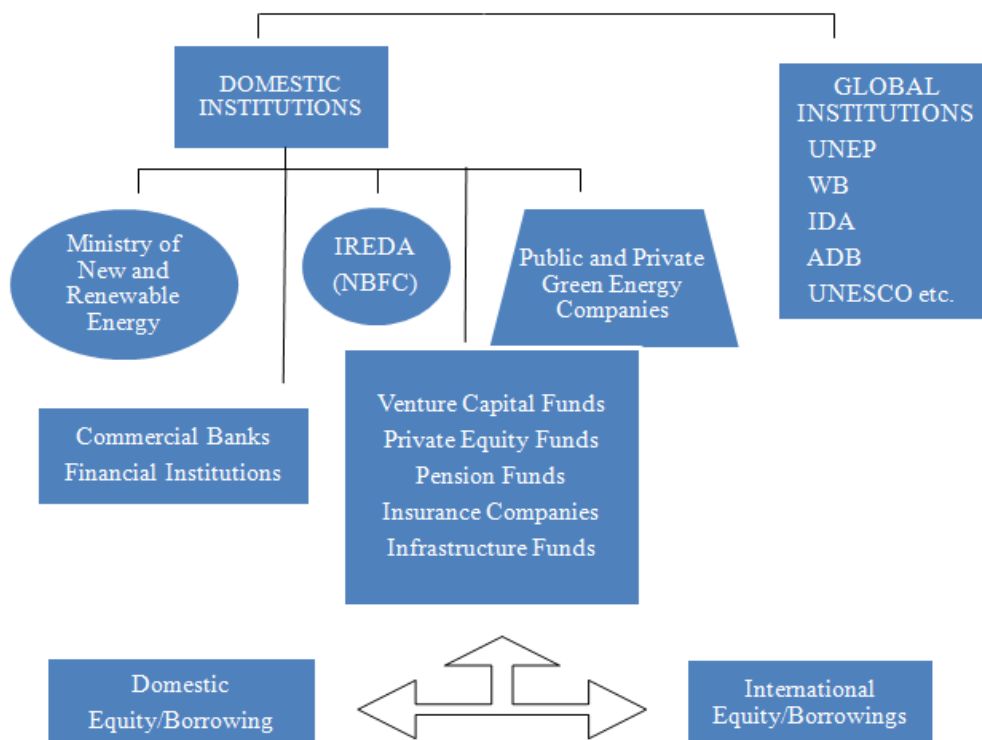
Johnson (2015)[1] suggests equity finance for small scale and long term debt finance for large scale investments in energy markets. However, securitization of investment would give bring in greater investor interest in funding distributed energy markets. Grafakos, Gianoli and Tsatsou (2016)[15] have stressed on the significance of green growth in the context of emerging demographic and urbanization trends. In this context, green finance for use of clean energy at distributed level becomes relevant.

ANALYSIS OF GREEN FINANCE IN INDIA

India is increasingly focussing on enhancing the production and use of clean energy under its commitment to the goals of sustainable development. The government of India has the target of producing 175 gigawatts (GW) of solar, wind, and other renewable energy by 2022. It is estimated that this would require nearly \$150 to \$200 billion of investment. To meet the 2030 targets of climate change mitigation India would require investment to the tune of \$2.5 trillion. This brings into perspective the scale and urgency with which green financing needs to be pursued.

The sources of Green finance in India comprise a wide spectrum of institutions which interact in the domestic as well as global economy. These institutions range from government ministries to private and public sector banks and non-banking companies and non-financial institutions. These domestic institutions raise funds from domestic borrowings and equities as well as from foreign and global institutions. The interactive structure of green finance in India is depicted in the chart.

Structure of Green Finance in India



IREDA which is a non-banking financial institution set up under the Ministry of New and Renewable Energy of the Government of India extends financial assistance for setting up projects related to new and renewable energy sources. As on the fiscal year ending 2017, IREDA has mobilized long term resources by issuance of domestic and international bonds since 1997. While domestic borrowings have been raised for tenure of ten to 20 years, international borrowings have been raised up to 40 years tenure. International borrowings have been sourced from international financial institutions such as IBRD, IDA, EIB, ADB, etc.

| | | |
|--------------------------|-------------------|-------------|
| International borrowings | INR 78.72 billion | 10–40 years |
|--------------------------|-------------------|-------------|

Source: IREDA

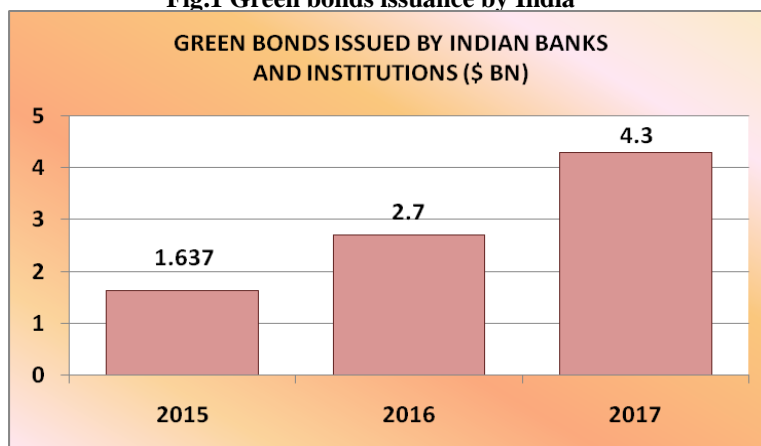
GREEN BONDS ISSUANCE IN INDIA

This is particularly so because funds raised through green bonds are cheaper than rupee debt. The first green bond issuance was done by YES Bank in February 2015 after which the green bond market has grown exponentially in India. Both dollar bonds as well as rupee bonds have been issued by Indian companies in the foreign and domestic markets to raise green finance. Fig.1 shows the total volume of bonds issued by Indian banks and government and private institutions including dollar bonds and rupee bonds.

Table 1. RESOURCE MOBILIZATION BY IREDA SINCE 1997 (as on 31st March, 2017)

| Source | Amount | Tenure |
|---------------------|-------------------|-------------|
| Domestic borrowings | INR 50.15 billion | 10–20 years |

Fig.1 Green bonds issuance by India



Source: Climate Bonds Initiative

It is worth mentioning that Indian green bond issue has been gaining international credentials on account of the practice Indian issuers to seeking certification from external agencies. Climate bonds issued by India increased by 65 percent in 2016 over the previous year and by 159 percent in 2017. However, its share in total issuance of climate bonds by various countries stands at a poor 2.77 percent. Notably, China’s share in global issuance of climate bonds stands at 14 percent (CBI, 2018)[16].

Not only is the Indian green bond issuance witnessing increased dynamism, it is noteworthy that several issues of climate bonds have registered oversubscription, underlining the huge demand for environment-friendly investment avenues that investors are looking for. Notably, the dollar climate bonds issued by the Indian Railways in December 2017 were oversubscribed to the tune of 3.2 times.

The growing trend of green bonds finds resonance in the Reserve Bank of India’s assertion that the coming years are set to be the years of green finance. As a response to this development the government formed The Indian Green Bonds Council (IGBC) in the year 2017 as a joint collaboration of the Federation of Indian Chambers of Commerce and Industry (FICCI) and the Climate Bonds Initiatives (CBI). The IGBC is focussing on developing the market of green loans in India. Efforts on several other counts are also in progress. The Reserve Bank of India is in the process of laying the guidelines for green finance and green bonds. SEBI has laid down rules

for issuance, disclosures and listing of green bonds by Indian issuers. These efforts are expected to bring in greater private participation in green financing.

Bank lending to non-conventional energy sector

Amongst its green initiatives, in 2015 the Reserve Bank of India has included credit to individuals for renewable energy as one of the categories under the priority sector lending by banks. Under the scheme, banks are permitted to extend loans up to Rs. 150 million to borrowers for the purpose of installing solar power generators, biomass based power generators, wind mills, micro-hydel plants and for non-conventional energy based public utilities. The credit limit for individual borrowers is Rs. 1 million under this category.

The government of India is committed to its mission of achieving reduction in emission intensity by 30 to 35 percent by the year 2030 from its 2005 levels. The focus is on increasing the production of wind and solar energy, and recycling waste to energy. As per the World Bank data, USD 3221 million worth of renewable energy projects were completed in the year 2012 in India through private participants. In the year 2014, total investment in renewable energy projects touched USD 7.4 billion.

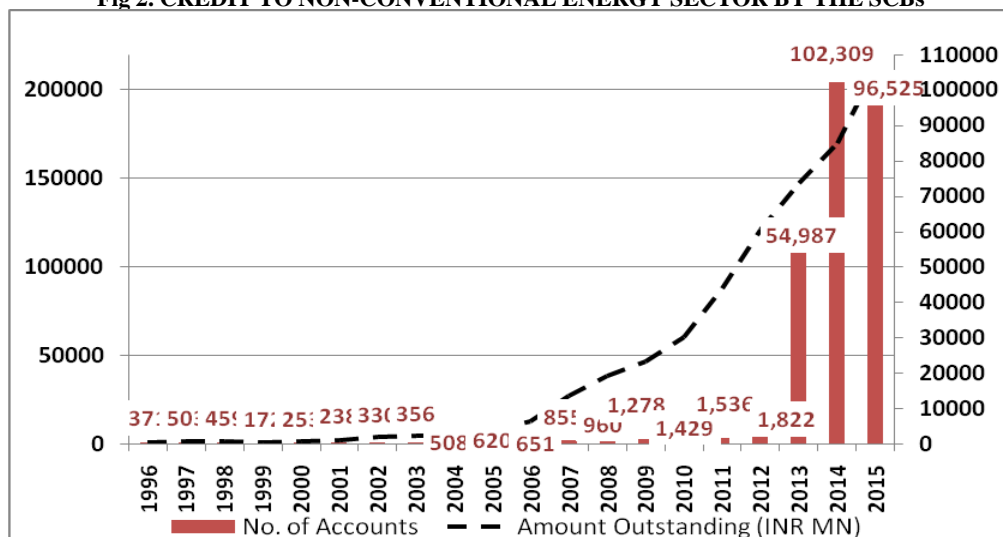
The thrust on production of green energy needs to be complemented by efforts to induce change in energy consumption behaviour as well. The RBI has included credit to

individuals extended under the non-conventional energy sector in the category of priority sector lending of the scheduled commercial banks. The RBI has recommended that banks advance loans up to Rs.100 million to non-household borrowers to set up power generators based on use of solar energy and bio-gases, and for setting up wind mills, and loans up to Rs.1 million to individuals for rooftop solar systems as part of home loans and home improvement loans.

The examination of the scheduled commercial bank lending to the non-conventional energy sector has shown a robust

growth since the year 2012-13 recording a jump from 1822 borrowers to 96525 borrowers in 2014-15 (Fig. 2). Table 1 highlights the substantial growth that has been witnessed in the loans extended by the commercial banks to the non-conventional energy sector. While the growth in the number of accounts grew merely at the CAGR of 6 percent between 1995-96 and 2004-05, for the ten year period from 2004-05 to 2014-15 the growth rate accelerated to 66 percent on compound annual basis. Interestingly, the major section availing this loan is the household sector.

Fig 2. CREDIT TO NON-CONVENTIONAL ENERGY SECTOR BY THE SCBs



Source: Basic Statistical Returns, RBI

Table 1. Growth in Bank Credit to Non-Conventional Energy Sector

| PERIOD | CAGR | |
|--------------------|--------------------|-------------------|
| | Number of Accounts | Loans Outstanding |
| 1995-96 to 2004-05 | 6 | 25 |
| 2004-05 to 2014-15 | 66 | 39 |
| 1995-96 to 2014-15 | 34 | 32 |

CONCLUSIONS AND RECOMMENDATIONS

While the market for green finance is growing in India, government needs to provide policy direction with conviction. Policymakers need to explore possibilities of increased private participation in green financing. This can be facilitated by putting in place strict regulations for environmental considerations and audit by technically sound independent agencies, and on the finance front, by developing a strong secondary market for the distributed green finance products in

the micro-level green practices so as to lend them the scale and liquidity.

Lessons can be drawn from global practices in mobilizing green finance. Looking into the nature of institutions that have issued climate bonds, sovereign and sub-sovereign bonds are found to be the most dominant issuers from most countries, including the first time issuers. This hints at the significant role that governments can play in the green bond markets. In the case of India, green bond issues have come from private and public sector banks as well as public sector undertakings. Clarity on the rules for issuance of green bonds will increase the number of participants. SEBI has made it necessary for green bond issuer to clearly disclose the environmental objectives in the offer documents. It also requires issuers to have systematic tracking of the end use of the proceeds. Further efforts are called for in the area of securitization of green finance so that funds reach small scale green projects like water and waste management, solar panel installations on buildings, etc., which are typically small scaled and geographically scattered.

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