



IMPACT OF GREENEX ON SUSTAINABLE ECONOMIC DEVELOPMENT IN INDIA

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Abstract

The most impending focus area of finance is the concept of green finance and one such most effective field is green bonds. these are the bonds that have been used to proceed with environmentally friendly projects. green bonds have sparked a revolution in thinking about sustainability, and the potential for liquid bond investment to achieve a positive impact. the world banks' first bond received strong support from the market and interest from others, including climate policymakers. world bank green bonds have ten years of successful role in the sustainable revolution. so, the investors in world bank green bonds have helped in energy saving, reforestation projects, and co2 emission reduction. India also signifies socially responsible investing (SRI) through investing in energy efficiency, green infrastructure, renewable energy, and water improvement. science evidence that climate change is rough and there is a pressing need to gear up to save the world. These bonds use their proceeds for environmentally responsible investing. This investment helps in various sustainable and renewing the environmental resources. the study focuses on the concept of green bonds how they are performing and how they have evolved over the period in various sustainable areas. With the help of statistical tools, the study is carried out to know the deep-down concrete structure of green bonds of green finance

Keywords: *Green Finance, Green Bonds, Structure, Evolution, Performance, Sustainability.*

Introduction

Green bonds are fixed-income financial instruments that are used to fund projects that have positive environmental and or climate benefits. They are just like any regular bond with a key difference that the money raised from investors is used exclusively to finance projects that have a positive environmental impact such as renewable energy and green buildings. With most countries stepping up their efforts to reduce carbon emissions, the market for green bonds is zooming. The first green bonds were issued in 2007. The global green initiatives such as Paris Agreement on climate change and the UN Sustainable Developments Goals have helped spur the programs. Strong demand for green bonds is also driving growth with major asset investors from asset managers to insurers and pension funds keen to invest in them. The green bond issuance in India in 2021 was exceptional and is to set a new record in 2022. India issued \$6.11 billion of green bonds in 11 months of 2021. It was the strongest issue since the first issue in 2015. Indian Companies have become increasingly conscious of their carbon footprint. Banks will step up the issuance of green debt to fund their growing lending program to accelerate

India's energy transition. According to the Climate Bonds Initiative, the annual issuance could hit \$ 1 trillion in 2023. It could be a big milestone though it's just a fraction of \$ 130 trillion of the global bond market. Recently fossil fuel industry ranked in more financing than green projects. The climate changes are affecting all of us, but they will hit all the developing nations hardest. Due to potential effects on temperature, precipitation patterns, sea-level changes, and the weather frequency, along with disasters held in agriculture, food and water supplies. Clean water and food security are at risk in the world today.

Green Bonds in Indian Context:

Budget 2022 speech announced the government will increase capital expenditure to a massive Rs 7.5 trillion (US\$100 billion) in the next fiscal year. This is in line with Prime Minister Narendra Modi's announcement of an ambitious Rs100 trillion (US\$1.35 trillion) national infrastructure plan in his Independence Day speech on 15 August 2021. While several economists have applauded the huge push for infrastructure in the budget, there is concern that the budget is not green enough to help India meet its target of net-zero emissions by 2070 and

build climate-resilient infrastructure. The budget announcement that stands out in terms of boosting green investment is the government's promise to issue a sovereign green bond. Since the first issuance in December 2016, 27 countries have issued sovereign green bonds for climate change-related projects and mobilized cumulative capital of US\$194 billion. France is the largest sovereign issuer to date, raising total capital of US\$51 billion, followed by Germany at US\$27 billion and the United Kingdom at US\$21.6 billion. These bonds were oversubscribed by 8-12 times—a sign of huge investor demand. India will need a \$ 10.103 trillion by 2070 to be carbon neutral.

So, the investments made by the developed countries are needed for the hour. In addition to it, more financial incentives from the Indian government will also be crucial to accelerating the growth of the nation's green bond market. In this context, the government was looking at the domestic markets, and rupee-denominated the tenure would be like any G-sec tenure. So before deciding on quantum the RBI will come out with a framework, which will have details about projects or sectors that would qualify for funding under sovereign green bonds. The green bond initiative by the government should bring in a new set of investors to India's debt market even as the Budget was silent on India's inclusion in global bond indices. So it will be a green future in India.

Important projects launched by Green Bond Investment in India:

Renewable Energy and Energy Efficiency

1. Power system development project
2. Rampur Hydropower Project
3. Grid- Connected Rooftop Solar Program
4. Shared Infrastructure for Solar Parks Projects

Clean Transportation

1. Sustainable Urban Transport
2. Eastern Dedicated Freight Corridor -II
3. Andhra Pradesh Water Sector Improvement

Agriculture, Land Use, Forests, and Ecological; Resource

1. Maharashtra Project on Climate Resilient Agriculture
2. Meghalaya Community-led Landscapes Management Project
3. Tamilnadu Irrigation Agriculture Modernization Project

Benefits of Investing in Green Bonds:

1. A way to help in environmental causes through investing.
2. Green bonds that make it easy to invest in baskets of green bonds.

3. Green bonds provide a way to earn that income are exempted from tax.
4. The green angle attracts a growing number of people who want to act against and fight climate change.
5. Higher demand for green bonds equals lower cost of money, by the business and the savings are passed on to the investors in the form of a dividend or used at the cost of funds.

Review of Literature

The attraction toward green bonds has increased due to the increased awareness about the climate. This has been evidenced by various other studies,

Van Renssen, claim that the investment in green bonds has become tenfold between the years 2010 to 2014.

Timbers et al. emphasized that 84% of the private capital requirement for climate funding can come through green bonds alone.

Hart & Ortiz, institutional investors have played a major role in the current progress of these bonds. It has been comprehended that there is a growing interest in real estate financing by green bonds in particular.

Renneboog, Ter Horst, and Zhang, find that there is a major section of people who are ready to accept lower returns only to fulfill their social objectives.

Richardson, was of the view that finance has become a cornerstone in this Socially Responsible Investing movement that now has been existing for a while. It is now seen as a discipline to keep the environment under check.

Statement of Problem

Even though Green Finance and Green bonds have long-stated importance it is still growing from the day of their issuance. The first green bond was issued in 2007 it has gained importance since then. It has always gained much focus because it has a major impact on the sustainability and environmental aspects. green bonds have sparked a revolution in thinking about sustainability, and the potential for liquid bond investment to achieve a positive impact. the world banks' first bond received strong support from the market and interest from others, including climate policymakers. world bank green bonds have ten years of successful role in the sustainable revolution. so, the investors in world bank green bonds have helped in energy saving, reforestation projects, and co2 emission reduction. India also signifies socially responsible investing (SRI) through investing in energy efficiency, green infrastructure, renewable energy, and water improvement.

science evidence that climate change is rough and there is a pressing need to gear up to save the world. These bonds use their proceeds for environmentally responsible investing. This investment helps in various sustainable and renewing the environmental resources. the study focuses on the concept of green bonds how they are performing and how they have evolved over the period in various sustainable areas. With the help of statistical tools, the study is carried out to know the deep-down concrete structure of green bonds of green finance.

1. The above problem is discussed in form of research questions:
2. How well the green bond market is evolving in India?
3. Is there any relationship between greenex indices and select macro-economic factors?

.Analysis and Interpretation

Table 1.1, Growth and Trend Analysis of Greenex indices for the Year 2016 in India

Month	Price	Growth	Trend
FEB 2016	1980.43	2176.664	2183.131
MAR 2016	2179.51	2209.386	2216.672
APR 2016	2246.18	2242.599	2250.213
MAY 2016	2343.54	2276.312	2283.753
JUN 2016	2398.19	2310.532	2317.294
JUL 2016	2504.77	2345.266	2350.835
AUG 2016	2526.08	2380.523	2384.375
SEP 2016	2466.77	2416.309	2417.916
OCT 2016	2510.39	2452.633	2451.456
NOV 2016	2373.92	2489.504	2484.997
DEC2016	2329.4	2526.929	2518.538

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.1 shows the month-wise trend and growth of green bonds in greenex indices for the year 2016, which has an increasing trend and

Objectives of the study

1. To study the concept of Green Bond in sustainable development.
2. To examine the growth of green bonds in financial markets.
3. To analyze the relationship between the green bonds market concerning the GREENEX Indices on the Indian Economy.

The hypothesis of the study

There is no relationship between Greenex Index and Select Macro Economic Factors.

Research Methodology

The study is analytical.

Source of data:

The data are a secondary source of information, the data are collected from the world bank group, international finance corporation, and the National Stock Exchange of India

growth rate over the period hence it can be concluded that there is a growing and increasing pattern of investment in green bonds in India.

Table 1.2, Growth and Trend Analysis of Greenex indices for the Year 2017 in India

Month	Price	Growth	Trend
JAN 2017	2460.08	2493.46	2490.79
FEB 2017	2513.32	2522.433	2521.479
MAR 2017	2564.05	2551.743	2552.168
APR 2017	2580.38	2581.394	2582.857
MAY 2017	2676.12	2611.389	2613.546
JUN 2017	2630.34	2641.733	2644.235
JUL 2017	2750.13	2672.429	2674.925
AUG 2017	2675.55	2703.482	2705.614
SEP 2017	2629.49	2734.896	2736.303
OCT 2017	2806.8	2766.675	2766.992
NOV 2017	2760.38	2798.823	2797.681
DEC 2017	2868.32	2831.345	2828.37

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.2 exhibits the month-wise trend and growth of green bonds in greenex indices for the year 2017, which has an increasing trend and growth rate over the period, and hence it can be

concluded that there is a growing trend and increasing pattern of investment in green bonds in India.

Table 1.3, Growth and Trend Analysis of Greenex indices for the Year 2018 in India

Month	Price	Growth	Trend
JAN 2018	2923.23	2828.395	2828.189
FEB 2018	2776.41	2820.397	2820.304
MAR 2018	2647.66	2812.423	2812.419
APR 2018	2832.29	2804.471	2804.534
MAY 2018	2767.51	2796.541	2796.649
JUN 2018	2765.55	2788.634	2788.764
JUL 2018	2869.23	2780.749	2780.879
AUG 2018	2999.01	2772.886	2772.994
SEP 2018	2759.91	2765.046	2765.109
OCT 2018	2656.69	2757.228	2757.224
NOV 2018	2725.81	2749.432	2749.339
DEC 2018	2714.11	2741.658	2741.453

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.3 examines the month-wise trend and growth of green bonds in greenex indices for the year 2018, which has a decreasing trend and growth rate over the period hence it

can be concluded that there is a fluctuating pattern of investment in green bonds which is decreasing in India.

Table 1.4, Growth and Trend Analysis of Greenex indices for the Year 2019 in India

Month	Price	Growth	Trend
JAN 2019	2620.16	2693.866	2695.517
FEB 2019	2625.54	2702.076	2703.744
MAR 2019	2788.04	2710.31	2711.971
APR 2019	2832.27	2718.569	2720.198
MAY 2019	2836.57	2726.853	2728.426
JUN 2019	2808.16	2735.163	2736.653
JUL 2019	2644.92	2743.498	2744.88
AUG 2019	2614.95	2751.859	2753.108
SEP 2019	2693.22	2760.244	2761.335
OCT 2019	2814.93	2768.656	2769.562
NOV 2019	2787.55	2777.093	2777.789
DEC 2019	2822.89	2785.556	2786.017

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.4 examines the month-wise trend and growth of green bonds in greenex indices for the year 2019, which has a slowly increasing trend and growth rate over the period

hence it can be concluded that there is an increase in the pattern of investment in green bonds in India.

Table 1.5, Growth and Trend Analysis of Greenex indices for the Year 2020 in India

Month	Price	Growth	Trend
JAN 2020	2831.49	2331.983	2320.347
FEB 2020	2584.69	2392.114	2390.11
MAR 2020	2034.65	2453.795	2459.873
APR 2020	2380.64	2517.066	2529.636
MAY 2020	2433.29	2581.969	2599.399
JUN 2020	2545.36	2648.545	2669.162
JUL 2020	2729.03	2716.838	2738.925
AUG 2020	2775.87	2786.892	2808.688
SEP 2020	2778.56	2858.752	2878.451
OCT 2020	2810.97	2932.465	2948.214
NOV 2020	3129.06	3008.079	3017.977
DEC 2020	3414.91	3085.643	3087.739

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.5 examines the month-wise trend and growth of green bonds in greenex indices for the year 2020, which has an

increasing trend and growth rate over the period hence it can be concluded that there is a positive pattern of investment in green bonds in India.

Table 1.6, Growth and Trend Analysis of Greenex indices for the Year 2016 in India

Month	Price	Growth	Trend
JAN 2021	3442.14	3533.613	3517.680
FEB 2021	3637.76	3625.060	3620.580
MAR 2021	3715.89	3718.872	3723.480
APR 2021	3758.95	3815.113	3826.379
MAY 2021	3981.41	3913.844	3929.279
JUN 2021	4032.52	4015.131	4032.179
JUL 2021	4101.30	4119.038	4135.079
AUG 2021	4367.49	4225.635	4237.979
SEP 2021	4490.97	4334.990	4340.879
OCT 2021	4568.14	4447.175	4443.778
NOV 2021	4398.44	4562.263	4546.678
DEC 2021	4508.53	4680.330	4649.578

Source: compiled from Greenex Indices (Rs. In Crore)

Table 1.6 examines the month-wise trend and growth of green bonds in greenex indices for the year 2018, which has a fluctuating

trend and growth rate over the period hence it can be concluded that there is a fluctuating pattern of investment in green bonds in India.

Table 1.7, H_0 = There is no relationship between Greenex Index and Select Macro Economic Factors

Correlations						
	Greenex	GDP	BM	BOP	ER	INF
Green	1					
GDP	.187	1				
BM	.054	.585	1			
BOP	.126	.914	.022	1		
ER	.028	.052	.118	.238	1	
INF	.163	.974	.021	.023	.248	1

*. Correlation is significant at the 0.05 level (2-tailed).

Source: compiled from Greenex Indices

Table 1.7 reveals the relationship between the Greenex Index and Select Macro Economic Factors in India. It is clear from the results that there is no relationship between Greenex indices and select macro-economic factors because the impact or the relationship of green indices will reflect on the growth and development of climate and environment aspects rather than on the economic development. This forms the main reason for no relationship among them and apart from that Gross domestic product has a high positive relationship between broad money, the balance of payment and inflations. Hence, we can conclude by accepting the null hypothesis saying there is no relationship between Greenex Index and Select Macro Economic Factors.

Findings of the study

1. There is an increasing trend and growth rate over the year 2016
2. There is an increasing trend and growth rate over the year 2017.

3. There is a decreasing trend and growth rate over the year 2018.
4. There is a slowly increasing trend and growth rate over the year 2019
5. Which has an increasing trend and growth rate over the year 2020.
6. which has a fluctuating trend and growth rate over 2021
7. It is clear from the results that there is no relationship between Greenex indices and select macro-economic factors because the impact or the relationship of green indices will reflect on the growth and development of climate and environment aspects rather than on the economic development

Conclusion

From the above analysis, we can understand that there is a standard growth of green bond investment over the period, and a systemized increase in the investment of green bonds is evident from the greenex index. This shows that BSE GREENEX of India also plays a significant role in environmental sustainability

and helps in overcoming the important components of the sustainable goal in enhancing the concreteness of safeguarding the environment in various senses. It is clear from the relationship that these bonds have been specially developed for go green which invests in equipping with sustainable maintenance, not on the concept of economy-wise development.

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