



Green Bonds - Role and scope in India's financial and fiscal landscape



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Abstract

India's financial and fiscal landscape is rapidly changing and evolving. The Government has taken several steps to reduce the country's fiscal deficit. The introduction of green bonds has been a major development in this landscape, providing an innovative way to finance green projects. Green bonds are debt instruments that are issued to finance projects that have a positive environmental impact. They are designed to encourage investments in renewable energy, energy efficiency, sustainable agriculture and other projects that promote sustainability. The Indian Government has taken a number of steps to promote green bonds, including the launch of the Green Bond Market in India in 2015. The Government's efforts to promote green bonds have been successful in encouraging investments in green projects and have helped to create a more sustainable financial and fiscal landscape in India.

This paper examines the role and scope of green bonds in India's financial and fiscal landscape. It discusses the various types of green bonds available in India, the regulatory framework governing their issuance and the potential benefits of investing in green bonds. The paper also highlights the challenges associated with green bonds in India and suggests measures to promote their growth. The paper concludes by arguing that green bonds have the potential to play an important role in India's financial and fiscal landscape.

Introduction

In India, the financial and fiscal landscape has the

potential to benefit greatly from the introduction of green finance solutions such as green bonds. They can provide an alternative method of financing long-term sustainable projects while continuing to serve their traditional role of promoting economic development. They are becoming more popular as an investment option for individuals and institutions looking to invest in environmentally responsible projects. In India, green bonds have been gaining traction in recent years as the country looks to reduce its carbon footprint and transition to a more sustainable economy.

What are Green Bonds?

Green bonds are debt instruments that raise capital to finance environmental or climate-related projects. While green bonds are similar to conventional bonds as they have a fixed or variable interest rate, they differ since they are specifically designated for financing or refinancing environmental projects that have positive effects on the environment or the climate such as the use of renewable energy, energy-efficient transportation, clean energy, sustainable water management and the reduction of greenhouse gas emissions. They are issued by Government, Corporations or International Development Banks.

Types of Green Bonds

Green bonds are defined as debt instruments used to finance projects that have positive environmental and/or climate impact. These bonds are designed to promote the transition to a low-carbon and climate-resilient economy. Green bonds come in a variety of forms, including:

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Table 1: Types of Green Bonds

Sr. No.	Name of Green Bonds	Purpose
1	Climate Change Bonds	These bonds are issued to fund projects that focus on mitigating climate change. E.g. renewable energy and energy efficiency projects.
2	Renewable Energy Bonds	These bonds are issued to finance projects that create and/or use renewable energy sources. E.g. wind, solar and hydroelectric power.
3	Energy Efficiency Bonds	These bonds are issued to finance projects that increase energy efficiency and reduce energy consumption. E.g. building retrofits and upgrades to equipment and appliances.
4	Social or Sustainable Development Bonds	These bonds are issued to finance projects that promote sustainable development such as projects that create jobs, reduce poverty and improve public health. E.g. affordable housing, education and healthcare.
5	Green Infrastructure Bonds	These bonds are issued to finance projects that promote green infrastructure, such as projects that protect natural resources and ecosystems. E.g. urban green spaces, reforestation and water conservation projects.
6	Natural Resources Bonds	These bonds are issued to finance projects that promote the conservation and sustainable use of natural resources. E.g. sustainable forestry management, reforestation, rehabilitation of mined areas and the development of clean energy initiatives.
7	Project-linked bonds	These bonds are linked to specific projects, such as the construction of a wind farm or the development of a public transportation system. E.g. light rail or bus rapid transit system.
8	Asset-linked bonds	These bonds are linked to a portfolio of assets such as a group of wind turbines, a fleet of electric buses, electric vehicle charging stations or construction of a green building.
9	Corporate green bonds	These bonds are issued by companies to finance their own green projects or to refinance existing projects. For e.g. Bonds issued by a major car manufacturer to finance the development and production of electric vehicles (EVs) and related infrastructure.
10	Sovereign Green bonds	These bonds are issued by National Government to finance green projects such as renewable energy, sustainable infrastructure and climate change adaptation.
11	Green bond funds	These are funds that invest in a diversified portfolio of green bonds, enabling investors to gain exposure to the green bond market without having to buy individual bonds. E.g. fund that invests primarily in bonds issued by companies in the renewable energy sector such as solar and wind power companies.

Note: It's important to note that different organizations and countries may have different definitions and criteria for what constitutes a green bond.

Role and Importance of Green Bonds in India's Financial and Fiscal Landscape

The primary role of green bonds in India is to finance or refinance green or climate-related projects. Additionally, they can be used to raise funds for renewable energy projects, clean transportation projects, eco-friendly farming projects and other environmental infrastructure projects. Green bonds also play a role in encouraging Public-Private Partnerships (PPPs) as well as providing incentives to corporate entities to invest in green initiatives. Furthermore, green bonds could potentially lead to a more structured and focused approach to green finance.

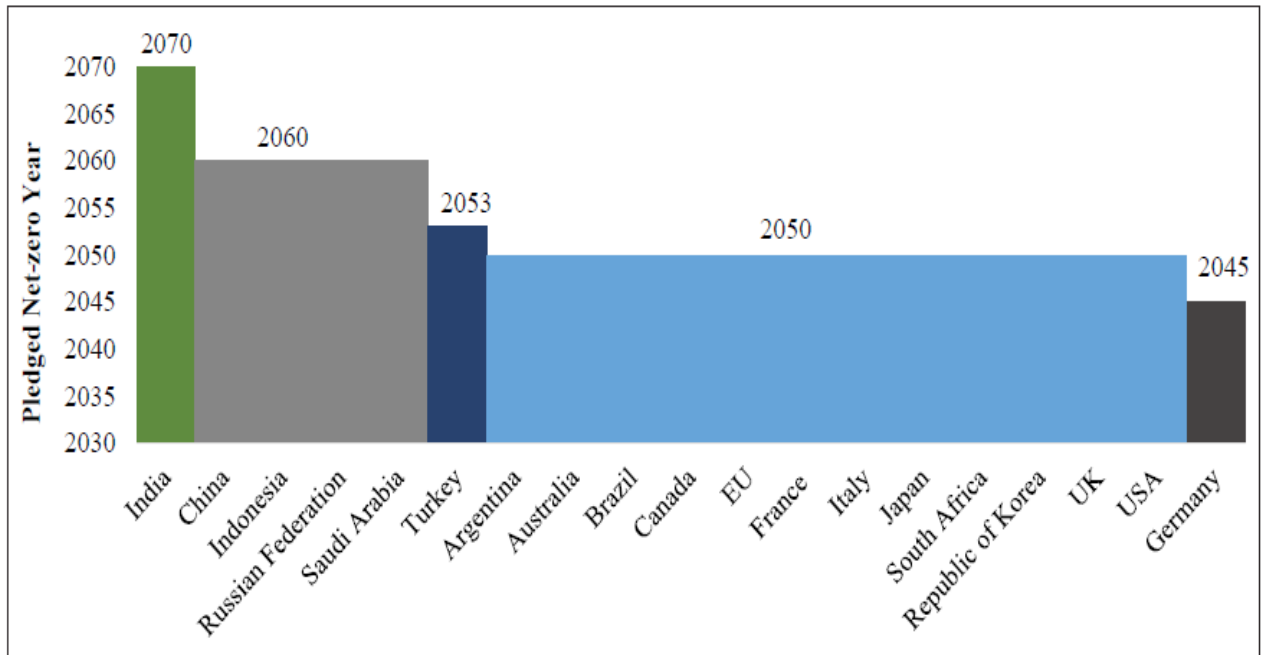
The Government of India has been actively promoting the use of green bonds in the country. In 2015, the Indian Government launched the Green Bond Scheme, which provides tax incentives to companies issuing green bonds. Green bonds are an important tool in India's financial and fiscal landscape as they are considered as an important source of capital for financing green projects. The Government has also set up the Green Bond Fund which provides grants to green projects and the Green Infrastructure Fund, which provides funds to green infrastructure projects. The role of green bonds in India's financial and fiscal landscape is expected to continue to grow in the future. Green bonds are important for India for several reasons:

Table 2: Role and Importance of Green Bonds in India

Sr No.	Particulars	Details
1	Climate change	India is one of the countries, being most vulnerable to the impacts of climate change, including rising sea levels, extreme weather events and crop failures. Green bonds can help finance projects that mitigate these impacts and promote sustainable development.
2	Renewable energy	India has set a target to increase its renewable energy capacity to 175 GW by 2022 and green bonds can help finance this transition to cleaner energy sources.
3	Infrastructure	India is in the process of expanding its infrastructure and green bonds can help ensure that this infrastructure is built in a sustainable and environmentally responsible way.
4	Job creation	Investing in green projects can create jobs in areas such as renewable energy, energy efficiency and sustainable transportation.
5	Access to finance	Green bonds can provide an additional source of funding for Indian companies, Municipal Corporations and Government agencies looking to finance environmentally beneficial projects.
6	Attracting foreign investment	Green bonds can help to attract foreign investment from investors looking to invest in environmentally responsible projects.
7	Improving Global Rating	By issuing green bonds, a country can demonstrate its commitment to sustainable development, which can have a positive impact on its credit rating. This can make it easier for the country to access capital markets and secure lower interest rates on its debt.

8	Diversifying the investor base	Green bonds can also help to diversify the investor base by attracting socially responsible investors that focus on Environmental, Social and Governance (ESG) criteria. This way corporations and even the country can leverage the 'green halo effect'. The effect allows us to expect that if a company's environmental CSR activity receives higher support from the consumers, it is less likely for the consumers to avoid advertisements endorsed by the same company.
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Figure 1: Pledged Net-Zero Year¹



Source: Emissions Gap Report 2022, UNEP

In summary, green bonds can play a significant role in helping India to address the challenges of climate change, promote sustainable development and create jobs and economic opportunities. India has consistently engaged in demonstrating global leadership towards adopting various measures and ensuring a low-emission growth pathway with a commitment to the net-zero emissions goal by 2070.

Objectives

The objectives of the study are:

1. To analyze role and scope of Green Bonds in India's financial and fiscal landscape.
2. To identify the future growth opportunities and challenges for green bonds in India.
3. To discuss global green bonds scenario and to provide a comparative analysis of global growth vs. growth in India.

¹Ministry of Finance, Government of India. Economic Survey - Climate Change and Environment. India Budget. [Online] Ministry of Finance, January 28, 2023. [Cited: February 01, 2023.] <https://www.indiabudget.gov.in/economicsurvey/doc/eschapter/echap07.pdf>.

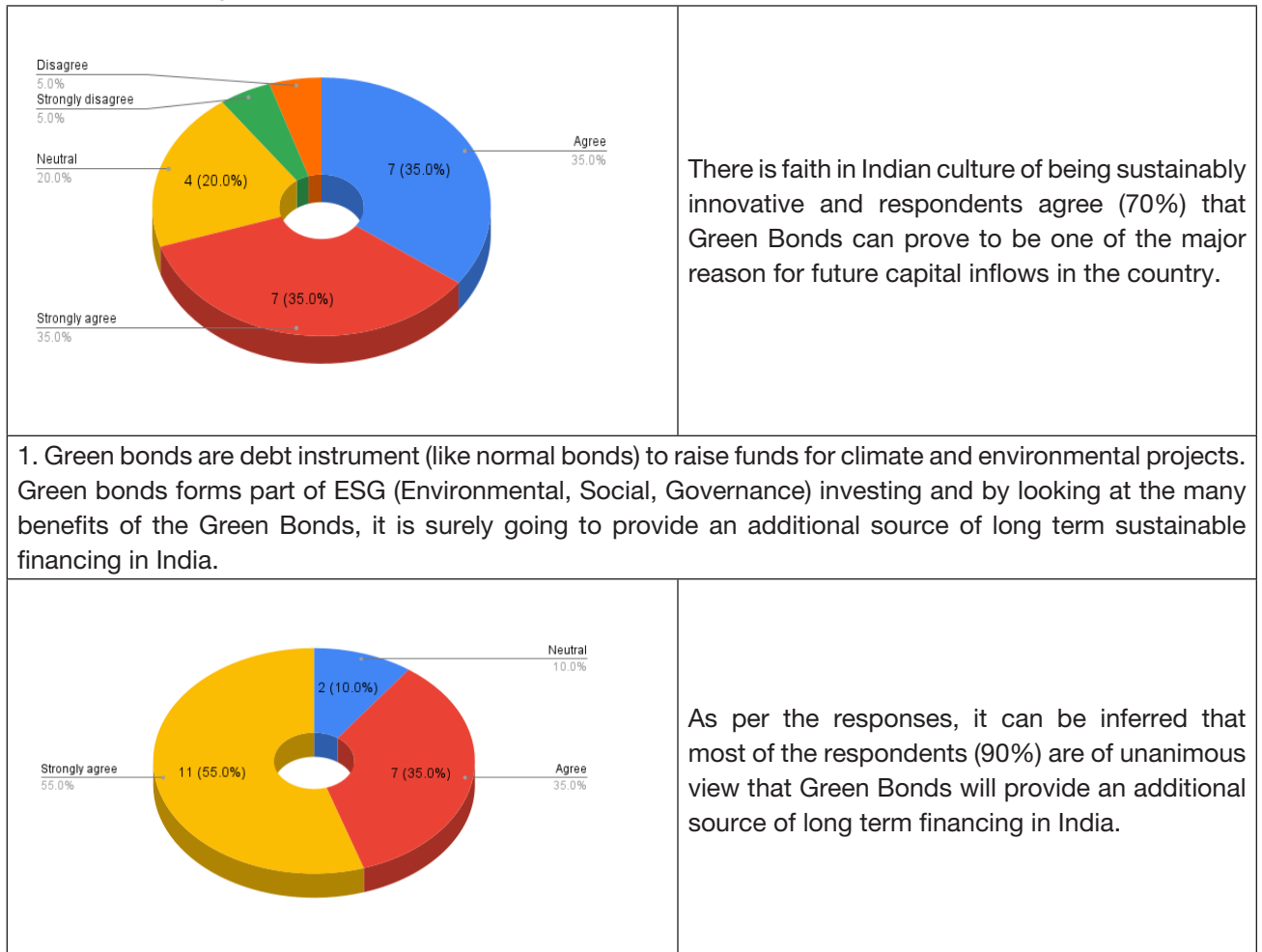
Research Methodology

The study undertook descriptive research and used mixed approaches i.e. Primary & Secondary research method to fulfil the research objectives. The study uses convenience sampling and a sample size of 20 seasoned industry executives, of which most associated to banking or academics. The primary data collection have been done through google form link. The survey questionnaires has been developed based on an extensive review of the literature. The study seeks to understand the “Role and scope of Green Bonds in India’s financial and fiscal landscape”

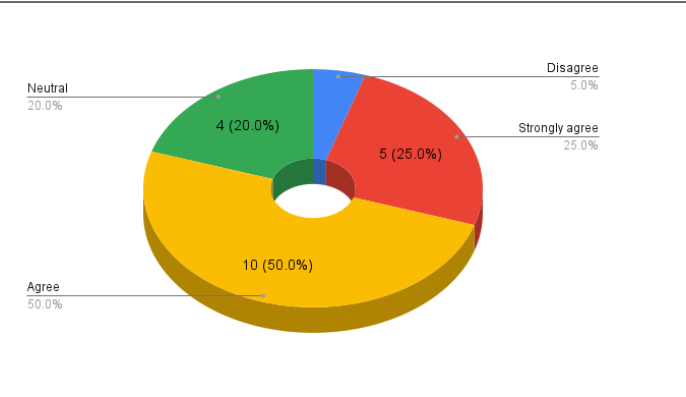
based on the banking experience of senior officials through a five point Likert scale in terms degrees of agreement or disagreement i.e. (i) strongly disagree (ii) disagree (iii) neutral (iv) agree (v) strongly agree, where a value of 1 expresses strongly disagree and a value of 5 expresses strongly agree, to rate the banks’ seasoned industry executive’s opinions. The 10 statements related with Green Bonds are being identified to understand the “Role and scope of Green Bonds in India’s financial and fiscal landscape”. The statistical technique i.e. frequency analysis was used to fulfil the objectives of the study.

Data Analysis and Findings

Figure 2: Pictorial Presentation (Pie Charts) of Secior Bankers' Opinions

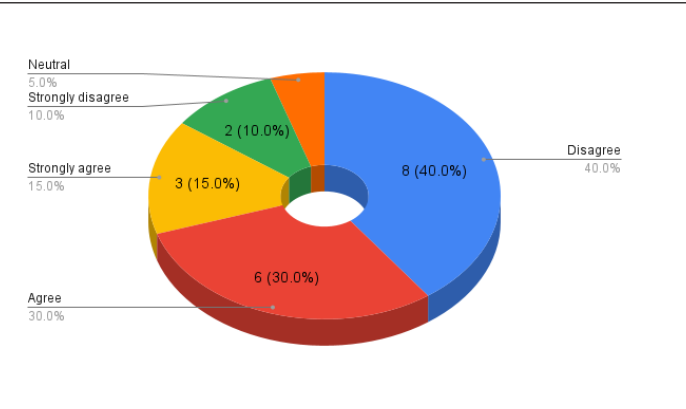


2. Global green initiatives such as the Paris Agreement on Climate Change and the UN Sustainable Development Goals have helped the expansion of Green Bonds markets In India.



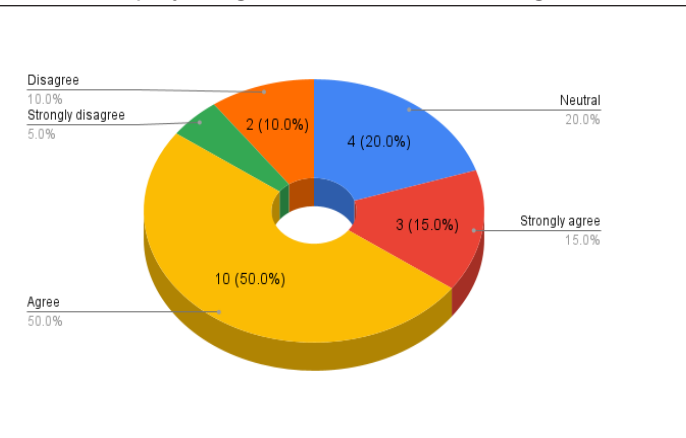
3/4th of the respondents agree that these initiatives have helped the expansion of green bonds market in India.

3. As of mid-June 2022, 25 nations have issued Sovereign Green Bonds worth US\$ 227 billion, according to the research compiled by Climate Bonds Initiative. The Union Ministry of Finance has announced that it would issue Sovereign Green Bonds worth INR 16,000 crore as part of its October-March (H2FY23) borrowing respondents. Are we doing enough to promote Green Bonds markets in India?



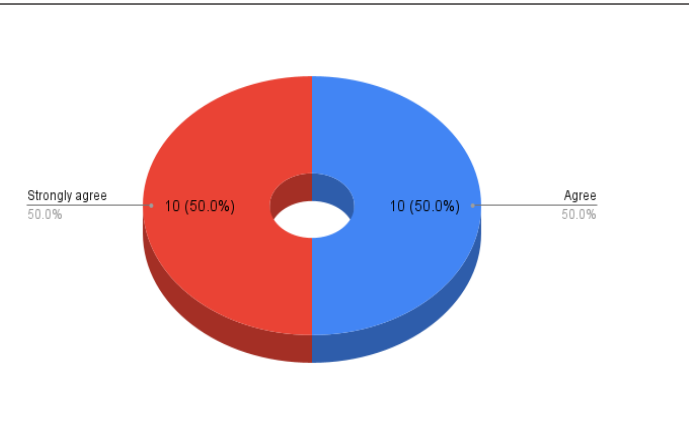
With almost 50% disagreeing to the statement, the responses hint that more efforts are required to promote Green Bonds markets in India.

4. The Green Bond issuance in India in 2021 exceeded US\$ 6.5 billion. Yet they contributed only 0.7% to India's Bond Market and 1.4% to the global green bond market. In spite of such meager contribution, Green bonds will play a significant role for achieving India's net carbon neutrality target by 2070.



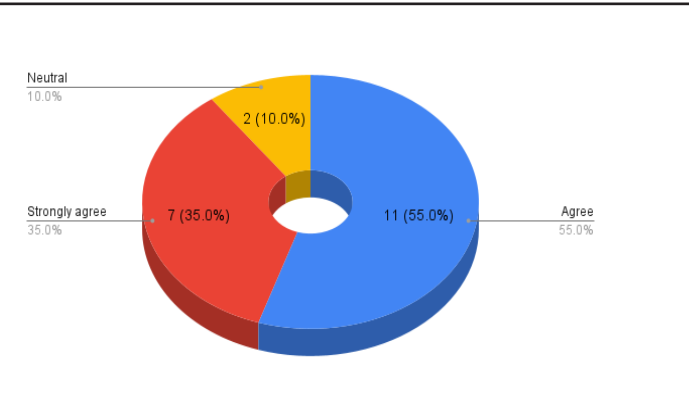
A good proportion of respondents are of the opinion that Green bonds will play a significant role for achieving India's net carbon neutrality target by 2070.

5. Greenwashing (Refers to the practice of making false or misleading claims about the green credentials of a company or a project) makes it difficult to quantify the benefits of green projects and remains a major challenge for the market in green bonds and other sustainable investments.



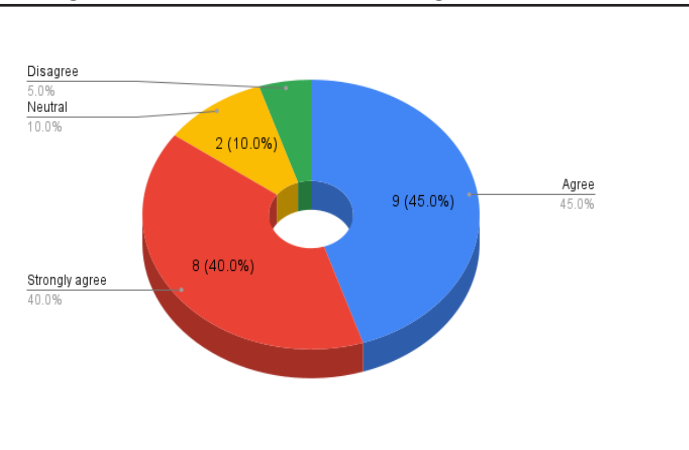
There's a unanimous opinion of the respondents about the greenwashing issues the world at large has acknowledged. Thus, reporting models should be calibrated in such a way to be able to tackle with possible greenwashing.

6. Not having any global standard or recognised legal definition of Green Bonds makes it difficult to identify the authenticity of Green Bonds, increasing the scepticism around the effectiveness of such bonds.



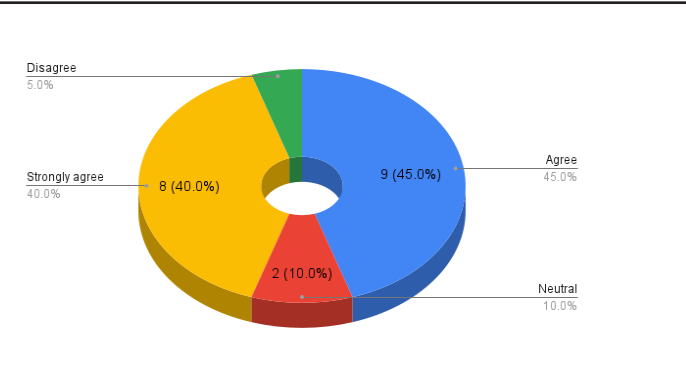
Most of the respondents (90%) echo the same view about non-availability of global standard or recognised legal definition of Green Bonds.

7. The Green Bond Market has grown rapidly during the last decade. However, it has not realized its true potential and yet to reach the scale necessary to address the challenges posed by the imminent climate change and the need for enhanced green finance.



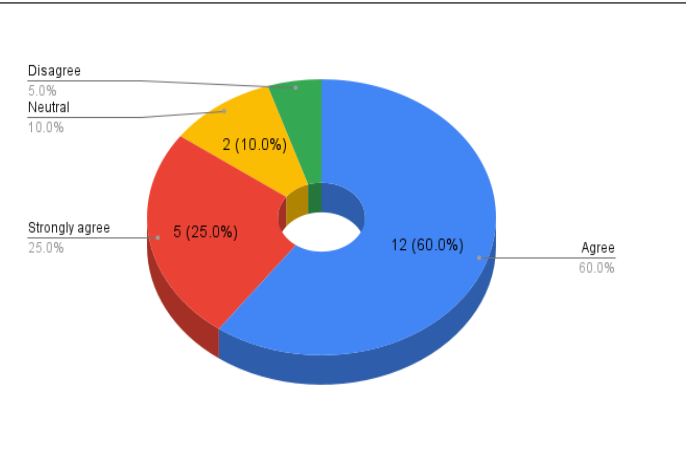
Most of respondents (85%) acknowledge that green finance market needs more efforts from the regulators and the Government for the intention for its existence to be justified.

8. Addressing the concerns like greenwashing timely and making them more lucrative for investors, can attract private investments in green projects, which may help in expansion of Green Bond Market in India?



We can possibly infer from the responses (85%) that to bring in trust factor, pro-active work should be done to address issues like greenwashing.

9. For a country like India, success of Green Bonds is a distant dream, for its Bond Market itself isn't mature enough. As a first step, the bond market has to be strengthened (both primary and secondary) with regulations and services aligned to our investors need.



A strong and matured bond market is the need of the hour (85%) and the first step in shaping a healthy green bond market.

10. India can be a game-changer for the International Green Bonds market for it has always proved to be sustainably innovative. Green Bonds can prove to be one of the major reasons for future capital inflows in the country and reflecting the green commitment of the land.

Future Growth and Scope of Green Bonds in India's Financial and Fiscal Landscape

In terms of their scope, green bonds can be used to finance projects across the country in both rural and urban areas. They can help to create green jobs and promote green growth, which are essential for the development of India's economy. Additionally, green bonds can be used for various types of investment activities including research and development, capacity building and project implementation. The

Government of India is committed to support the growth of green investments and the use of green bonds is seen as a key part of this strategy.

As more companies and investors become aware of the benefits of green bonds, the market for these bonds is likely to grow. Green bonds can help to fund projects that reduce carbon emissions, promote a more sustainable economy, attract foreign capital and promote the development of green technologies. In addition, green bonds can help to reduce the cost

of financing green projects and provide a way to raise funds for green investments, create jobs, spur economic growth, create a more sustainable financial and fiscal landscape in India and increase the visibility of green projects, which can help to attract more investors and increase the overall demand for green investments.

Lastly, it is expected that green bonds can help India achieve its climate change goals as outlined in the Paris Agreement. The future growth of green bonds in India is expected to be positive for several reasons:

Table 3: Future growth of green bond in India

Sr. No.	Particulars	Details
1	Government support	The Indian Government has shown support for the development of the green bond market in India through policy and regulatory measures. This will continue to drive the growth of the market. Issuance of sovereign green bonds by the Government provides confidence to the public in similar bonds being issued by other corporations and institutions and also the issuers feel confident of raising funds through this medium. For example, just after the Indian Government's maiden sovereign green bond issuance, SBI has announced to raise \$500 million via green bonds in India.
2	Increasing demand for renewable energy	India's ambitious renewable energy targets are expected to drive increased demand for green bonds as a means of financing renewable energy projects.
3	Growing awareness	As awareness of the benefits of green bonds grows among investors and issuers, more companies and organizations are likely to consider issuing green bonds.
4	Attracting foreign investment	India's growing green bond market can help attract foreign investment from investors looking to invest in environmentally responsible projects.
5	Impact investing	With increasing interest in impact investing, green bonds can be an attractive option for investors looking to align their investments with their values.
6	Increasingly stringent environmental regulations	As India becomes more serious about addressing environmental issues, more stringent regulations will drive the need for more green investments, leading to increased demand for green bonds.
Note: - It's important to note that the growth of the green bond market in India will also depend on other factors such as the overall economic conditions, investor sentiment and competition from other forms of financing.		

Future Growth Opportunities and Challenges for Green Bonds in India²

India is one of the fastest-growing economies in the world and is expected to become the third-largest economy by 2030. This provides a great opportunity

for green bonds to be used to finance projects that have a positive environmental impact. It also has a large population and a growing middle class, which provides a large potential market for green bonds.

²RBI. Green Finance in India: Progress and Challenges, RBI Bulletin January 2021. RBI. [Online] RBI, January 31, 2021. [Cited: January 15, 2023.] https://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/04AR_2101202185_D9B6905ADD465CB7DD280B88266F77.PDF.

Table 4: Future Growth Opportunities and Challenges for Green Bonds In India

Sr. No.	Opportunities	Challenges
1	Expansion of Green Bond Market: India has the potential to become a major player in the global green bond market. The Government can create a conducive environment for the growth of green bonds by providing tax incentives, creating a supportive regulatory framework and encouraging public-private partnerships.	Increasing Investor Awareness: Despite the growing popularity of green bonds in India, there is still lack of awareness among investors about the benefits of investing in green bonds. This is due to the fact that green bonds are relatively new in India and there is lack of education and information about them.
2	Financing Renewable Energy Projects: India has a large renewable energy sector, which provides an opportunity for green bonds to be used to finance projects in this sector. India also has ambitious plans to increase its renewable energy capacity. Green bonds can be used to finance these projects, which will help the country meet its renewable energy targets.	Developing a Robust Regulatory Framework: The Indian Government has taken some steps to promote green bonds such as introducing tax incentives for green bonds and setting up a green bond exchange. However, there is still a need for a more robust regulatory framework to ensure that green bonds are issued in a transparent and responsible manner.
3	Financing Sustainable Infrastructure Projects: India is in the process of building a large number of infrastructure projects. Green bonds can be used to finance these projects, which will help the country meet its sustainability goals.	Improving Access to Capital: In India, access to capital remains a challenge. This is due to the fact that green bonds are still relatively new and there is a lack of liquidity & lack of tax incentives in the market, which makes it difficult for investors to trade and invest in them.
4	Financing Sustainable Agriculture Projects: India is in the process of modernizing its agricultural sector. Green bonds can be used to finance sustainable agriculture projects, which will help the country meet its sustainability goals.	Developing a Standardized Framework: There is a need for a standardized framework for green bonds in India, which ensure issuing them in a consistent and transparent manner. Lack of standardization makes it difficult for investors to compare different green bonds.
5	Financing Sustainable Transport Projects: India is in the process of modernizing its transport sector. Green bonds can be used to finance sustainable transport projects, which will help in achieving the sustainability goals.	Increasing Transparency: Lack of transparency in the green bond market, makes it difficult for investors to assess the environmental impact of the projects they are investing in. Transparency is essential for the success of green bonds in India. This includes providing investors with clear and accurate information about the projects that are being funded by green bonds. Greenwashing, also called “green sheen” is also a big challenge. It refers to a form of advertising or marketing spin in which green marketing are deceptively used to persuade the public that an organization’s products, aims and policies are environmental-friendly.
6	Financing Sustainable Water Projects, Waste Management Projects and Forestry Projects: India is in the process of modernizing its water sector, Waste Management sector and Forestry sector. Green bonds can be used to finance sustainable water projects, waste management projects and forestry projects.	Developing a Sustainable Market: The green bond market is still relatively small compared to the overall bond market and there is a lack of liquidity in the market. This can make it difficult for investors to buy and sell green bonds. The Indian Government needs to take steps to ensure that the green bond market is sustainable in the long-term. This includes providing incentives for investors to invest in green bonds and ensuring that the projects funded by green bonds are of high quality.

Global Green Bonds scenario

The global green bond market has been growing rapidly in recent years and it is considered to be one of the fastest-growing segments of the fixed-income market. With the growing focus on the environmental sustainability of projects, green bonds have become widely accepted as an instrument to raise funds to support climate and environmental projects and command a relatively lower cost of capital vis-à-vis regular bonds.

Major countries that resorted to green bonds to raise funds include the UK, France, Germany the USA and China.

- In the United States, Green bonds have been issued by Municipal Corporations, State Government and other Corporations, as well as by International Organizations such as the World Bank.
- In Europe, green bond issuance has been led by France, Germany and the United Kingdom, with the European Investment Bank being one of the largest issuers of green bonds.
- In China, green bond issuance has been growing rapidly, driven in part by the

Government's ambitious renewable energy targets and the need to finance large-scale infrastructure projects.

- In Canada and Australia, green bond issuance has been relatively limited so far, but the market is expected to grow as more Canadian and Australian issuers look to finance environmentally beneficial projects.

Overall, green bond market is becoming more mature and globalized, with a growing number of countries and regions issuing green bonds. This trend is expected to continue in the future as the need for financing environmentally beneficial projects becomes more pressing.

The Global Growth of Green Bonds vs. Growth in India: Comparative Analysis

Green bonds are becoming increasingly popular as investors look for ways to invest in projects that have a positive environmental impact. Overall, the global and Indian green bond markets have both experienced rapid growth in recent years. This growth has been driven by increased investor demand for green investments, as well as increased issuance from Government and corporations.

Table 5: Comparative Analysis: Global Growth of Green Bonds Vs. Growth in India

Sr No.	Global Growth	Growth in India
1	The global green bond market has grown rapidly in recent years. According to the Climate Bonds Initiative, the global green bond market grew from \$37 billion in 2013 to \$167 billion in 2018. This represents a CAGR of over 40%. This growth has been driven by increased investors demand for green investments, as well as increased issuance from Government and corporations.	The green bond market in India has also grown rapidly in recent years. According to the Climate Bonds Initiative, the Indian green bond market grew from \$1.2 billion in 2013 to \$7.2 billion in 2018. This represents a CAGR of over 50%. This growth has been driven by increased investor demand for green investments, as well as increased issuance from Government and corporations.
2	IMF data indicates that green bonds of value around US\$ 620 billion were issued across the world in the year 2021, in which countries issued green bonds of value US\$ 587.7 billion and international organisations issued bonds of value US\$ 32.3 billion.	As per SEBI's data on green debt securities, during the period of 2017 to September 2022, 15 Indian corporates have issued green bonds of value Rs. 4,539 crore. Most of these are related to renewable energy generation, while one is slated to be used for the tertiary treatment of wastewater.

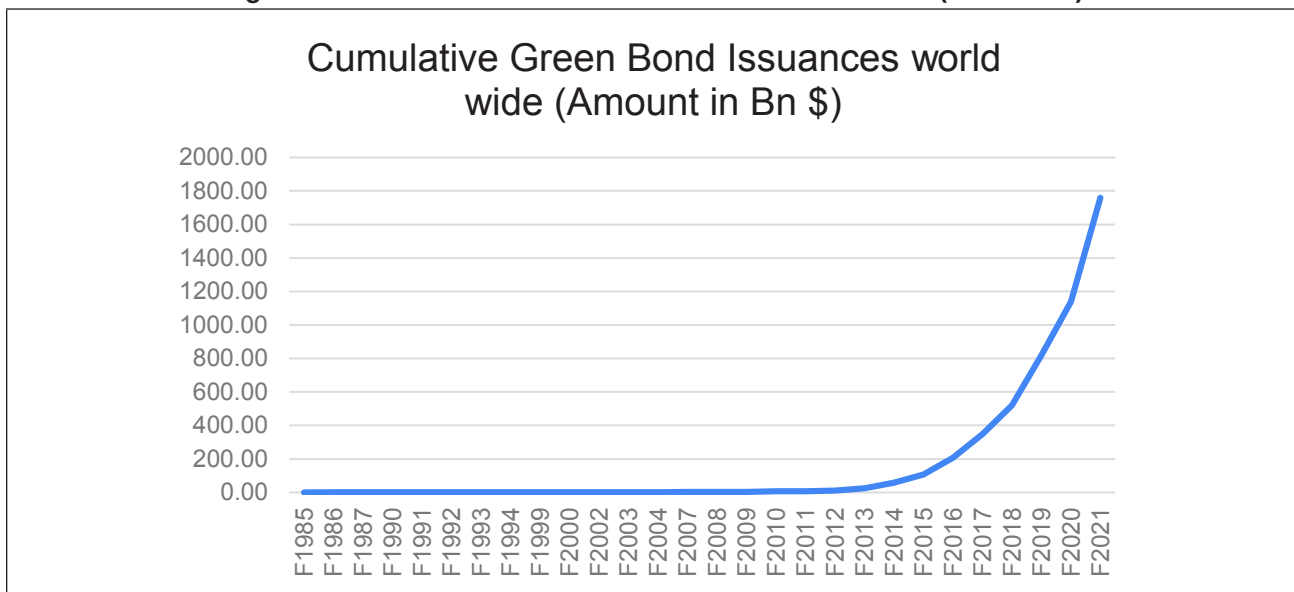
3	Emerging market green bond issuance is expected to grow to more than USD 100 billion by 2023, according to a report from Amundi and the International Finance Corporation (IFC) (Amundi & IFC, 2021).	India has made its debut in Sovereign Green Bonds in the year 2023 with the maiden Sovereign Green Bond (SGrB) auction of Rs. 8,000 crore held on 25.01.2023 got oversubscribed owing to robust demand from various market participants, primarily banks. ³
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Indian Government initiatives for Sovereign Green Bonds: The final Sovereign Green Bonds framework⁴ of India has been issued, which has been designed to comply with the components and key recommendations of the International Capital Market Association (ICMA) Green Bond Principles (2021). A Green Finance working committee has also been set up to oversee and validate key decisions on the issuance of Sovereign green bonds, which has the mandate to select the projects for allocation of proceeds, do a time-bound review of the allocation and carry out annual reporting along with an impact assessment of the proceeds from sovereign green bonds issued.⁵

Pointers from IMF Data

- Green bonds have been issued since 1985 (US and Norway) and have been growing with a CAGR of 47% in the last 27 years and a CAGR of 77% in the last decade.⁶

Figure 4: World Wide Cumulative Green Bond Issuances (1985-2021)



- Till 2021, for most of the green bonds issuance have been in Euro and US Dollars followed by Chinese Yuan. Only \$3.15 bn worth of green bond issuance had happened in Indian Rupee which is approx. 0.18 %.

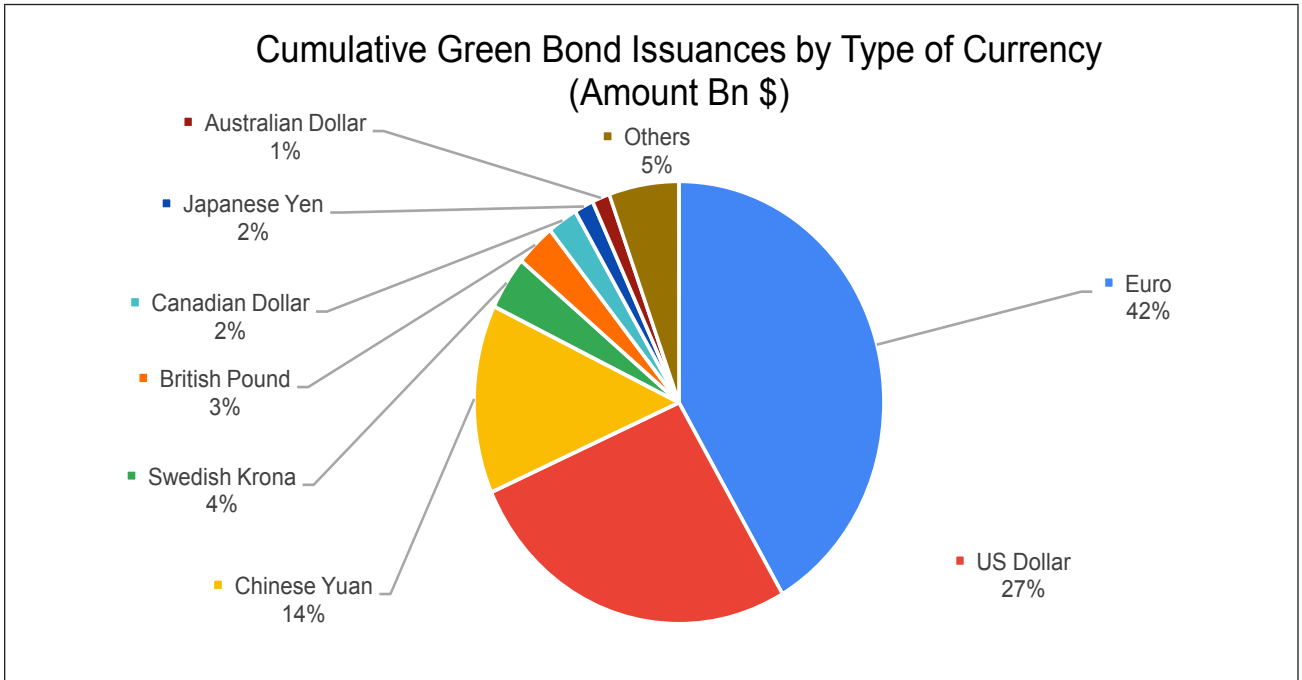
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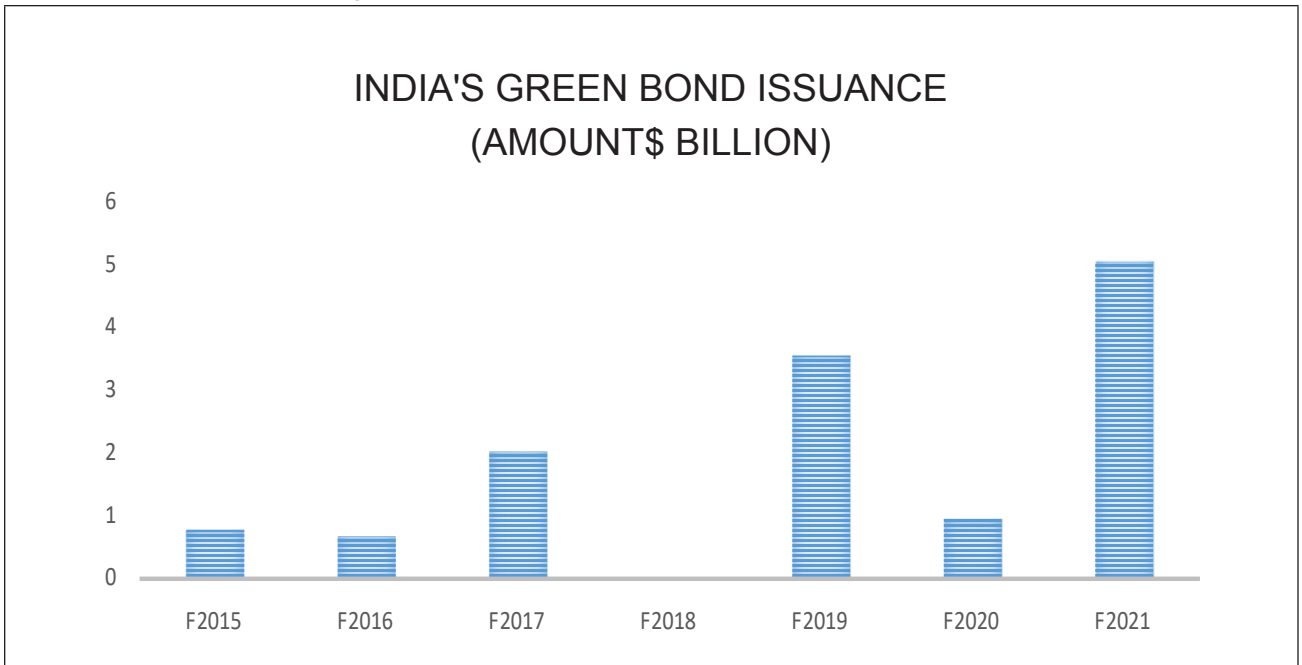
⁶International Monetary Fund. Climate Change Dashboard. [Online] 2022. [Cited: January 15, 2023.] https://climatedata.imf.org/datasets/8e2772e0b65f4e33a80183ce9583d062_0/explore.

Figure 5: Cumulative Green Bond Issuances- Currency Wise (1985-2021)



- India's journey of Green bonds issuance started in the year 2015 and has since then been growing at CAGR of 37% (No issuance in year 2018).

Figure 6: India's Green Bond Issuances (2015-2021)



- Compared to other green bonds, Sovereign Green bonds are way younger having started their journey in FY 2016 with Republic of Poland being the front-runner. The share of Sovereign Green Bonds has been merely 11% of the universe of green bonds. India took its first step towards Sovereign Green Bonds in January 2023.

Conclusion

Green bonds have become an important part of India's financial and fiscal landscape. They provide an effective way to finance projects that promote sustainability and environment protection. The Government has taken steps to promote the use of green bonds by providing incentives and tax benefits to investors. The success of green bonds in India has been encouraging and has opened up new avenues for financing sustainable projects. The Government should continue to promote the use of green bonds and create a conducive environment for their growth. This will help India move towards a greener and more sustainable future. India can also leverage the second mover advantage by learning from the mistakes of the West and proactively tackle issues like greenwashing, low greenium and green bond audits.

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