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India's Sovereign Green Bond Initiative: Financing Sustainability through Green finance

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ABSTRACT

In 2023, India launched its first Sovereign Green Bonds (SGrBs) to mobilize capital for climate-friendly projects, marking a significant step in aligning national financing with sustainability goals. The issuance was part of the Union Budget 2022–23 announcements, with the Reserve Bank of India managing auctions worth ₹16,000 crores. Proceeds were earmarked for renewable energy, clean transportation, and climate adaptation projects, under the Ministry of Finance's Green Framework. The case explores the rationale behind sovereign green bonds, India's positioning in global sustainable finance, and the challenges of balancing investor expectations with environmental accountability. It highlights the role of policy, regulatory frameworks, and investor sentiment in shaping the success of green finance instruments. The narrative also examines the implications for India's climate commitments under the Paris Agreement and its ambition to achieve net-zero emissions by 2070.

Key words: Sovereign Green Bond, Green Bond, Sustainable Finance and Green Finance.

Introduction

India, as one of the fastest-growing economies in the world, faces a dual challenge: sustaining rapid economic development while addressing the urgent need for climate resilience. The country is highly vulnerable to climate change, ranking among the top ten nations most impacted by extreme weather events. With ambitious commitments under the Paris Agreement achieving net-zero emissions by 2070, reducing emission intensity by 45% by 2030, and ensuring that 50% of installed power capacity comes from non-fossil sources India requires innovative financing mechanisms to mobilize capital for sustainable projects. Green bonds, fixed-income instruments earmarked for environmentally beneficial projects, have emerged as a key solution. In January 2023, India issued its first Sovereign Green Bonds (SGrBs), raising ₹8,000 crores. This marked a watershed moment in India's climate finance journey, embedding sustainability into fiscal architecture and signaling strong government commitment.

This clearly elaborate India's Sovereign Green Bond with analysis of financial solution, use of process and management.

Objectives of Study

Understand the design and purpose of sovereign green bonds in India.

Analyze the role of government and regulators in promoting sustainable finance.

Evaluate investor perspectives and challenges in green bond markets.

Literature Review

Definition and Context of Sovereign Green Bonds

Sovereign Green Bonds are government-issued debt instruments where the proceeds are earmarked for environmentally sustainable projects, such as renewable energy, green infrastructure, pollution control, and climate adaptation measures. These instruments are designed to align sovereign borrowing with climate goals and sustainable investment principles under frameworks such as the 'International Capital Market Association (ICMA) Green Bond Principles'. India adopted its own Sovereign Green Bond framework in the 2022 budget to channel investments into low-carbon initiatives. (The Indian Express). India has issued SGBs multiple times since 2022–23, yet faced challenges in investor interest and pricing benefits known as 'greenium'. (The Indian Express)

Growth and Market Dynamics

Chauhan (2025) investigates the evolution of the Indian green bond market, including pricing dynamics and regulatory frameworks. The study highlights structural barriers such as verification costs, limited thematic diversification, and the absence of a robust national green taxonomy.

Abhilash et al. (2023) focusing on the broader Indian green bond market. They reviewed publications (2010–2022) and found that The green bond market has potential but remains underdeveloped. Barriers include high transaction costs, weak frameworks, lack of incentives, and limited stakeholder awareness. Policy measures and stakeholder engagement are critical for market expansion.

Kejriwal (2025) systematically compares green and conventional bonds, highlighting pricing (greenium), liquidity, and credit risk differences, which can inform sovereign issues as well, revealing contextual insights into the market's performance.

Background of Green Bonds

As a large, populous, developing economy, India is confronted with substantial challenges in managing the effects of climate change while advancing economic growth on a low-carbon path. The country is the seventh most affected by weather-related loss events. In its updated Nationally Determined Contribution (NDC) under the Paris Agreement, the Government of India indicated its aim to achieve net-zero emissions by 2070, cut the emission intensity of its economy by 45 percent by 2030 relative to 2005 levels, reach 50 percent cumulative electric power installed capacity, and create an additional carbon sink of 2.5 to 3 billion tons of CO₂ equivalent through enhanced forest and tree cover by 2030, among other targets (Global Climate Risk Index 2021).

Realizing its climate commitments and ensuring sustainable and resilient development will necessitate mobilizing funds from a variety of sources. In 2022, the Government of India announced its intention to issue sovereign green bonds to secure resources for green infrastructure. It was decided that the proceeds would be utilized for public sector projects that contribute to lowering the carbon intensity of the economy (Turhan Kayaalp, B., & Dill, H. 2023).

Green bonds were first introduced globally in 2007 by the European Investment Bank and the World Bank. Since then, they have become a mainstream instrument for financing renewable energy, clean transportation, and climate adaptation. By 2022, the global green bond market had surpassed USD 2 trillion in cumulative issuance. India entered this space relatively late, with corporate issuances beginning around 2015, but the sovereign issuance in 2023 elevated its profile internationally.

Comparative Insights

<i>Country</i>	<i>Year of First Sovereign Green Bond</i>	<i>Amount Raised</i>	<i>Key Focus Areas</i>	<i>Lessons for India</i>
<i>France</i>	<i>2017</i>	<i>€7 billion</i>	<i>Renewable energy, biodiversity</i>	<i>Importance of transparent reporting</i>
<i>Indonesia</i>	<i>2018</i>	<i>USD 1.25 billion</i>	<i>Climate resilience, transport</i>	<i>Attracting global investors despite emerging market risks</i>
<i>India</i>	<i>2023</i>	<i>₹8,000 crore</i>	<i>Renewable energy, afforestation, clean transport</i>	<i>Need to expand retail participation and diversify instruments</i>

Sources: data from world bank

India's Sovereign Green Bond Framework

The Government of India, with technical assistance from the World Bank, developed a Green Bond Framework to ensure transparency, credibility, and alignment with international standards. The framework identifies eligible sectors such as renewable energy, clean transportation, energy efficiency, sustainable water management, pollution prevention, and afforestation. Governance safeguards were strengthened through the establishment of a Green Finance Working Committee to oversee project selection and monitoring, while annual allocation and impact reporting was mandated to prevent greenwashing. The framework was aligned with the International Capital Market Association's Green Bond Principles and independently reviewed by CICERO (Government of India, 2022; World Bank, 2023).

Financial Solution

Green bonds represent debt instruments that facilitate funding for expenditures and projects yielding environmental advantages. They have emerged as one of the innovative financial mechanisms utilized by various entities including sovereigns, corporations, and multilaterals to finance climate initiatives. As of February 2023, the global cumulative issuance of green bonds has reached \$4 trillion. A total of twenty-nine sovereigns have engaged with the green bond market, issuing an equivalent of \$290 billion² (World Bank calculations with data from Bloomberg terminal) and Bloomberg NEF as of February 28, 2023. In order to attract investors who are keen on sustainable investments, green bonds are anticipated to conform to the Green Bond Principles established by the International Capital Market Association. India has adhered to these Principles in developing its Sovereign Green Bond framework, as detailed below (Turhan Kayaalp, B., & Dill, H. 2023).

Issuance Details

<i>Parameter</i>	<i>Details</i>
<i>Issuance Period</i>	<i>January–February 2023</i>
<i>Total Amount Raised</i>	<i>₹8,000 crores</i>
<i>Tranches</i>	<i>Two tranches of ₹4,000 crores each</i>
<i>Tenor (Maturity)</i>	<i>5-year and 10-year bonds</i>
<i>Coupon Rates</i>	<i>Marginally lower than comparable government securities, indicating the presence of a greenium (pricing advantage due to higher investor demand for sustainable assets)</i>
<i>Investor Base</i>	<i>Domestic institutional investors, banks, insurance companies, and foreign ESG-focused funds</i>
<i>Investor Response</i>	<i>Bonds were oversubscribed, demonstrating strong investor appetite</i>
<i>Retail Participation</i>	<i>Limited, due to lower awareness among retail investors</i>

Use of Proceeds

In its Framework for Sovereign Green Bonds, the Government of India has identified nine categories of projects that may be funded through the proceeds of sovereign green bonds – these include renewable energy, energy efficiency, clean transportation, climate change adaptation, sustainable water and waste management, pollution prevention and control, sustainable management of living natural resources and land use, green buildings, as well as the conservation of terrestrial and aquatic biodiversity. Eligible expenditures are restricted to government spending, and there will be a concerted effort to allocate all proceeds within a period of 24 months following the issuance (Turhan Kayaalp, B., & Dill, H. 2023).

Process for Project Evaluation and Selection

The Government of India has instituted a dual-level governance framework for the assessment and selection of projects that may utilize funds from green bond issuances. The primary selection of projects falls under the jurisdiction of the ministry or department responsible for executing the project or program. A Green Finance Working Committee has been formed to supervise and validate significant decisions related to green bond issuances, as well as to select, review, and approve projects proposed by the ministries or departments for financing through green bond proceeds. This Committee is led by the Chief Economic Adviser and comprises members from implementing departments, the Ministry of Environment, Forests and Climate Change, the Niti Aayog (India’s leading public policy think tank), and the Ministry of Finance (MoF).

Management of proceeds

The proceeds from sovereign green bonds will be deposited into the Consolidated Fund of India and will be managed by the Public Debt Management Cell of the MoF. The Ministry of Finance will establish an information system to maintain, monitor, and disclose details regarding green bond issuance,

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allocation of proceeds, and information pertaining to eligible projects (Turhan Kayaalp, B., & Dill, H. 2023).

Reporting

The Government of India has pledged to offer investors transparent reporting on the allocation of green bond proceeds as well as the environmental impact of the financed projects. The MoF will oversee the preparation of post-allocation reports under the guidance of the Green Finance Working Committee. The allocation and utilization of Green Bonds will be subject to audit by the Comptroller and Auditor General (CAG) of India (Turhan Kayaalp, B., & Dill, H. 2023).

Outcomes

Following the announcement of the issuance schedule, on January 25, 2023, the Indian government released the first tranche of its inaugural sovereign green bond, totaling INR 80 billion (approximately \$980 million). The offering took place in the domestic market and included two maturities: 5-year and 10-year, each amounting to INR 40 billion. The 5-year bond was oversubscribed by 2.4 times, receiving a total of 96 bids, and was allocated among 32 bidders with a 7.1% annual coupon/yield. The 10-year bond saw an oversubscription of 3.8 times and was allocated among 57 bidders, offering a 7.29% annual coupon/yield. On February 9, 2023, the Indian government announced the issuance of an additional INR 80 billion (\$968 million) in sovereign green bonds, with maturities of 5 and 10 years, each worth INR 40 billion (equivalent to \$484 million). In the second tranche of issuance, the 5-year bond was oversubscribed by 1.7 times, comprising 62 bids. The 10-year bond was oversubscribed by 2 times, with a total of 91 bids. Both reopenings were allocated to 24 bidders (Turhan Kayaalp, B., & Dill, H. 2023).

<i>Issue Date</i>	<i>Amount</i>	<i>Tenor</i>	<i>Coupon / Yield</i>	<i>Oversubscription</i>
<i>January 25, 2023</i>	<i>INR 40 billion (USD 490 million)</i>	<i>5 years</i>	<i>7.10% / 7.10%</i>	<i>2.4x</i>
<i>January 25, 2023</i>	<i>INR 40 billion (USD 490 million)</i>	<i>10 years</i>	<i>7.29% / 7.29%</i>	<i>3.8x</i>
<i>February 9, 2023</i>	<i>INR 40 billion (USD 484 million)</i>	<i>5 years</i>	<i>7.10% / 7.23%</i>	<i>1.7x</i>
<i>February 9, 2023</i>	<i>INR 40 billion (USD 484 million)</i>	<i>10 years</i>	<i>7.29% / 7.30%</i>	<i>2.0x</i>

Source: Reserve Bank of India Press Release

Challenges and Risks

This research utilizes a descriptive methodology to analyze the development, operational features, challenges, and investor expectations related to Sovereign Green Bonds (SGBs), focusing on India as a case study. The study spans the years 2016 to 2023 and adopts a conceptual framework to investigate the market's progression. The results indicate that by incorporating science-based solutions, fiscal policies, and investments, SGBs offer an innovative approach to linking green finance with

environmental issues. These insights are expected to guide future SGB frameworks and strategies aimed at directing funds towards urgent global sustainability challenges. With backing from the central government, Sovereign Green Bonds have gained increasing popularity. The proceeds from SGBs are allocated to green initiatives, including projects aimed at reducing greenhouse gas emissions, utilizing alternative energy sources, and advancing renewable energy, as well as efforts to decrease reliance on carbon-based energy and combat climate change. As governments strive to achieve UN climate change objectives, global interest in SGBs is anticipated to rise (Yadav, A 2024).

Decision Dilemma

Sovereign Green Bonds (SGBs) have emerged as a crucial instrument in financing sustainable public infrastructure and bridging the green finance gap. By mobilizing funds specifically for eco-friendly projects, SGBs empower governments to synchronize economic growth with sustainability objectives, including the transition to renewable energy, enhancing urban resilience, and improving energy efficiency. The adoption of SGBs bolsters investor confidence through the diversification of funding sources and the promotion of transparent use-of-proceeds frameworks along with comprehensive impact reporting. The issuance of SGBs acts as a catalyst for private investment in green infrastructure by establishing benchmarks and showcasing the viability of sustainable projects, thus nurturing a more extensive green finance ecosystem. Nevertheless, to optimize impact, governments must guarantee the effective allocation of funds, enforce rigorous monitoring systems, and tackle challenges such as market volatility and gaps in institutional capacity. By enhancing collaboration among stakeholders, SGBs can significantly propel sustainable development goals while alleviating climate risks, thereby setting a standard for long-term environmental and economic stability (Mahesh, K. M., Dinesh, N., & P. S. Aithal. 2025).

Conclusion

India's sovereign green bond issuance in 2023 marked a historic step in embedding climate priorities into fiscal architecture. It demonstrated investor confidence, created benchmarks for corporate issuers, and aligned with India's Paris Agreement commitments. However, challenges remain in scaling the market, diversifying instruments, and ensuring transparency.

India launched its first Sovereign Green Bonds in 2023, raising ₹8,000 crores to finance climate friendly projects. The initiative was supported by the World Bank, which provided technical assistance to design the framework. Green bonds are fixed-income instruments earmarked for projects like renewable energy, clean transportation, and afforestation. India, being the sixth largest issuer of sustainable bonds globally, faces the dual challenge of economic growth and climate resilience. The sovereign issuance aimed to mobilize private capital, signal government commitment, and align with India's Paris Agreement targets net-zero by 2070 and reducing emission intensity by 45% by 2030. The case highlights the policy framework, investor response, and the dilemmas of balancing fiscal prudence with environmental responsibility. It also examines how green bonds can catalyze corporate ESG adoption in India.

The case underscores that green finance is not just about raising capital it is about reshaping development pathways. For India, sovereign green bonds are both a financial innovation and a moral commitment to future generations.

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