



Green Bonds: A Revolutionary Change in Sustainable Finance

Jaskirat kaur

Assistant professor, P. G Department of Commerce & Management

DAV College, Amritsar

Email- jaskiratkaur9463@gmail.com

How to Cite this Article:

kaur, J. (2026). Green Bonds: A Revolutionary Change in Sustainable Finance. International Journal of Creative and Open Research in Engineering and Management, <i>02</i>(04). <https://doi.org/10.55041/ijcope.v2i4.220>

License:

This article is published under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.

© The Author(s). Published by International Journal of Creative and Open Research in Engineering and Management.



<https://doi.org/10.55041/ijcope.v2i4.220>

Abstract

In modern society environmental concerns about climate change, degradation, and carbon emissions, increase global warming, pollution has compel government, regulation authority, public, business to seriously think about sustainable economic growth. In this direction green bonds emerge as revolutionary financial instrument to resolve above concerns. Today new innovative instruments are used to finance environmental sustainable projects. Green bonds allow borrower institutions to raise funds for projects related to renewable energy, climate change mitigation, pollution control, sustainable transportation, and water conservation. Green bond attract investors who have serious concern toward environment protection. Green bonds were created to fund projects that have positive environmental benefits. These bonds represent a significant shift in global finance by integrating sustainability goals with traditional investment mechanisms. This research paper examines the concept, principles, benefits, challenges, and global impact of green bonds, and future prospects of the green bond market.

Keywords: Emissions, Instrument, Sustainable, Mitigation, Conservation

1. Introduction

Green bonds are debt instruments whose sale proceeds used for finance green projects that have positive environment impact. Sustainable infrastructure become need of hours due to fact that today environment purity is going down day by day. Conventional financial instruments are able to mobilize funds but not focus on environment problems. To bridge the gap between investment and environmental sustainability green bonds was coined by world bank in year 2008 which gained popularity all over the world. Green bonds reframe global financial system. It provide opportunity to investors to earn return as well as contribute to environmental sustainability. After Paris Agreement on climate change by 195 parties gave global recognition to the concept of sustainable finance. It integrates environmental, social, and governance (ESG) considerations while taking investment decisions resulting into long-term sustainability, mitigate climate changes. Sustainable finance goal to redirect the route of finance from harmful environment projects to sustainable economic development. This research paper explores how green bonds have revolutionized sustainable finance and examines their growing role in addressing global environmental challenges.



2. Concept of Green Bonds

Green bonds are debt securities issued various bodies such as governments, corporation to finance projects that have positive environmental outcomes. It works likes with traditional bonds, where investors lend money to borrower in return of periodic interest payments but goal is to make contribution in environment protection & preservation so that it can make living able for all spices. Proceeds collected from green bonds exclusively used for environmentally sustainable projects like renewable energy, clean transportation, waste management, energy efficiency, building solar farms etc.

3. Green Bond Principles

The International Capital Market Association (ICMA) has established definite guidelines to ensure the integrity of Green bonds in form of Green Bond Principles (GBP). These principles ensure transparency and credibility in the green bond market. The principles include:

1. **Use of Proceeds** – Funds must utilize for eligible new or existing environmentally beneficial projects.
2. **Project Evaluation and Selection** – Issuers must clearly identify eligible green projects after carefully evaluating risk involve and considering objectives.
3. **Management of Proceeds** – Funds should be regularly tracked and allocated appropriately. It recommend a high level of transparency.
4. **Reporting** – Issuers must provide up to date information of funds and impact of project on environmental . These guidelines boost investor confidence, reduce practice of greenwashing and ensure that green bonds achieve their intended environmental goals.

4. Types of Green Bonds

Green bonds can be classified into several categories based on the issuer and financing structure.

➤ Sovereign Green Bonds

These bonds are issued by national governments to finance large-scale environmental projects in public sector such as renewable energy projects, development of green infrastructure or climate adaptation programs. Its proceeds allocated to eligible green projects of the various Ministries or Departments such as Environment, Forests and Climate Change, New and Renewable Energy, Railways, Housing and Urban Affairs, etc It shows country dedication and commitment in environment sustainability.

➤ Corporate Green Bonds

It particularly popular in industries such as energy, transportation, and real estate, where large-scale environmental projects are feasible.

➤ Municipal Green Bonds

Bonds issued by local governments or municipality to finance city level projects such as clean water systems and waste management.



➤ **Asset-Backed Green Bonds**

These bonds are fixed income generating instrument backed by revenue-generating green assets such as solar power plants or wind farms. Cash flows from the underlying green assets are the primary source of repayment.

5. Scope of Green Bonds

Green bonds are used to finance a wide range of environmentally sustainable initiatives. It has wide application in following areas of national importance.

➤ **Renewable Energy**

Projects such as solar, wind, and hydroelectric power plants are among the most common uses of green bond financing.

➤ **Sustainable Transportation**

Green bonds finance eco-friendly transportation infrastructure, including electric vehicles, metro systems, and rail networks.

➤ **Energy Efficiency**

Funds are used to upgrade buildings and industry infrastructure to reduce energy consumption.

➤ **Waste Management**

Funds are used to setup waste management plant in cities in cope up with the problem of waste produced by public and industries. These projects helps in reducing the negative effects of waste on human health, the environment, and natural resources.

➤ **Water Management**

Green bonds support projects related to water conservation, wastewater treatment, and sustainable irrigation.

➤ **Climate Change Adaptation**

Funds help communities adapt to climate change impacts such as floods, droughts, and rising sea levels.

➤ **Biodiversity Conservation**

Funds used to support the practice of protecting and managing the variety of life on Earth, including species, ecosystems, and genetic diversity. This field aims to prevent extinction, maintain ecosystem functions, and promote sustainable use of natural resources.

6. Benefits of Green Bonds

Green bonds offer numerous advantages for investors, governments, and society.



➤ **Environmental Benefits**

Today our earth is totally disturb by human activity. Urbanization and industrialization paves number of challenges to earth. To maintain environment purity, it is essential to take some corrective actions in earliest manner. these action require huge amount of monetary resources. green bonds provide funding for projects that reduce carbon emissions and protect natural resources.

➤ **Economic Growth**

To boost up the speed of economic growth balance between environment and industrialization is essential. For this purpose national infrastructure should focus on sustainability. Green infrastructure projects stimulate economic development and create employment opportunities.

➤ **Portfolio Diversification**

Green bonds provide opportunity to investors to diversify their investment portfolios in new innovative area as compare to conventional avenue while supporting social causes and earn handsome return.

➤ **Corporate Sustainability**

Companies issuing green bonds demonstrate their commitment to environmental responsibility. They reflect the impression of socially concern rather than only focusing on solely profit making goal. It helps in positioning positive image in public mind and make companies financial viable in long term.

7. Challenges and Limitations

Despite of number of benefits, concept of green bonds face several challenges. Which are listed below:

➤ **Greenwashing**

Sometime issuers entity mislead their investors by falsely claim that projects are beneficial for environment sustainability, but in actual it is not. This practice of green washing create illusion in investor mind & they take wrong decision regarding investment.

➤ **Lack of Standard**

Although International Capital Market Association (ICMA) has established definite guidelines regarding green bonds, but in reality its market is not so much developed till yet due to reason of lack of standard regarding project evaluation, issuance, funds allocation, Reporting. All these factors shrink investor confidence.

➤ **Lack of Awareness**

Many investors and companies in developing countries remain unaware of green bond opportunities.

➤ **Regulatory Complexity**

Regulation related to issue of green bonds are so complex and strict, which are difficult to fulfill. It demoralize the issuer and put hurdle in development of green bond market.



8. Notable examples of green bonds in India

India has become one of the leading emerging markets for green bonds due to its growing renewable energy sector. The Reserve Bank of India and the Securities and Exchange Board of India have introduced policies to promote sustainable finance and encourage green bond issuance. Many Indian corporations and other bodies issued green bonds to finance different projects, out of some are listed below:

➤ Ghaziabad Nagar Nigam Green Municipal Bonds

Ghaziabad has taken a landmark step in promoting sustainable infrastructure and urban resilience by successfully issuing India's first Certified Green Municipal Bond, raising ₹150 crore for the development of a cutting-edge Tertiary Sewage Treatment Plant (TSTP) designed to treat and reuse wastewater. With a treatment capacity of 40 MLD, the TSTP is connected to a sprawling 95 km pipeline network, delivering treated water to over 1,400 industrial units across Ghaziabad. This step reflects Ghaziabad's commitment to creating a sustainable future for its citizens.

➤ Indore Municipal Corporation Bonds

Indore released its first green bonds in February 2023, soon after the city hosted a five-day summit in January which aimed to encourage domestic and foreign investment in the government's development efforts. The face value of each bond is Rs.1000 and comprises of four separately transferable and redeemable principal parts (STRPP) each of face value Rs.250. The total size of Rs.244 crore (\$29.7 million). Funds to be used to reduce IMC's financial burden related to the drinking water needs of the city.

➤ Vadodara Municipal Corporation Bonds

VMC issued a landmark ₹100 crore municipal green bond in March 2022 to finance sewage treatment projects under the AMRUT scheme.

9. Future Prospects of Green Bonds

The future of green bonds is highly promising as global awareness of environmental issues continues to grow. Following factors indicate that green bond market will be very prosper :

➤ Focus on ESG

Now investors pay attention on environmental and social factors when making investment decisions. they mainly want to their divert their hard earn many to those projects, which promised to generate positive impact on sustainable growth.

➤ Government Policy Framework

Governments of many nation are coming up with policies that encourage sustainable finance and green investments. It also indicate promising future of Green bonds at world level

➤ Technological Innovation

Technologies such as blockchain may improve transparency and tracking of green bond proceeds.



10. Conclusion

Green bonds represent a revolutionary transformation in the financial sector by aligning investment opportunities with environmental sustainability. They enable governments, corporations, and financial institutions to mobilize capital for projects that address climate change and promote sustainable development. Since their introduction in 2008, green bonds have grown into an important component of global sustainable finance. They offer numerous benefits, including environmental protection, economic development, and investment diversification. However, challenges such as greenwashing, lack of standardization, and regulatory complexities must be addressed to ensure the credibility and effectiveness of green bonds. With stronger regulatory frameworks, increased investor awareness, and continued global commitment to sustainability, green bonds are expected to play a vital role in financing the transition toward a greener and more sustainable global economy.

References

1. Abhilash, Shenoy, S. S., Shetty, D. K., & Lobo, L. S. (2023). Green Bond As An Innovative Financial Instrument In The Indian Financial Market: Insights From Systematic Literature Review Approach. 1-15.
2. Ghosh, A. (2017, January 5). State of Green Bonds in India by Abhirup Ghosh :: SSRN. Papers.Ssrn.https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2894278
3. Manaktala, S. (2020). Green Bonds in Sustainable Finance: Exploring the Case of India. Available at SSRN 3644116.
4. Mehta, A., & Jain, R. (2021). Evaluating the Financial Performance of Green Bonds in India.
5. Prajapati, D., Paul, D., Malik, S., & Mishra, D. K. (2021). Understanding The Preference Of Individual Retail Investors On Green Bonds In India: An Empirical Study. *Investment Management And Financial Innovation*, 176-189.
6. Sen, Sankar, ChitraBhanu Bhattacharya, and Daniel Korschun. 2006. "The Role of Corporate Social Responsibility in Strengthening Multiple Stakeholder Relationships: A Field Experiment." *Journal of the Academy of Marketing Science* 34 (2): 158–166.
7. Schumacher, K. (2020). Green bonds: the shape of green fixed-income investing to come. *Journal of Environmental Investing*, 10(1).
8. Sinha, D., & Kumar, M. (2019). Challenges and Policy Recommendations for Indian Green Bond Market. *Asian Journal of Finance and Economics*, 6(2), 67–79.