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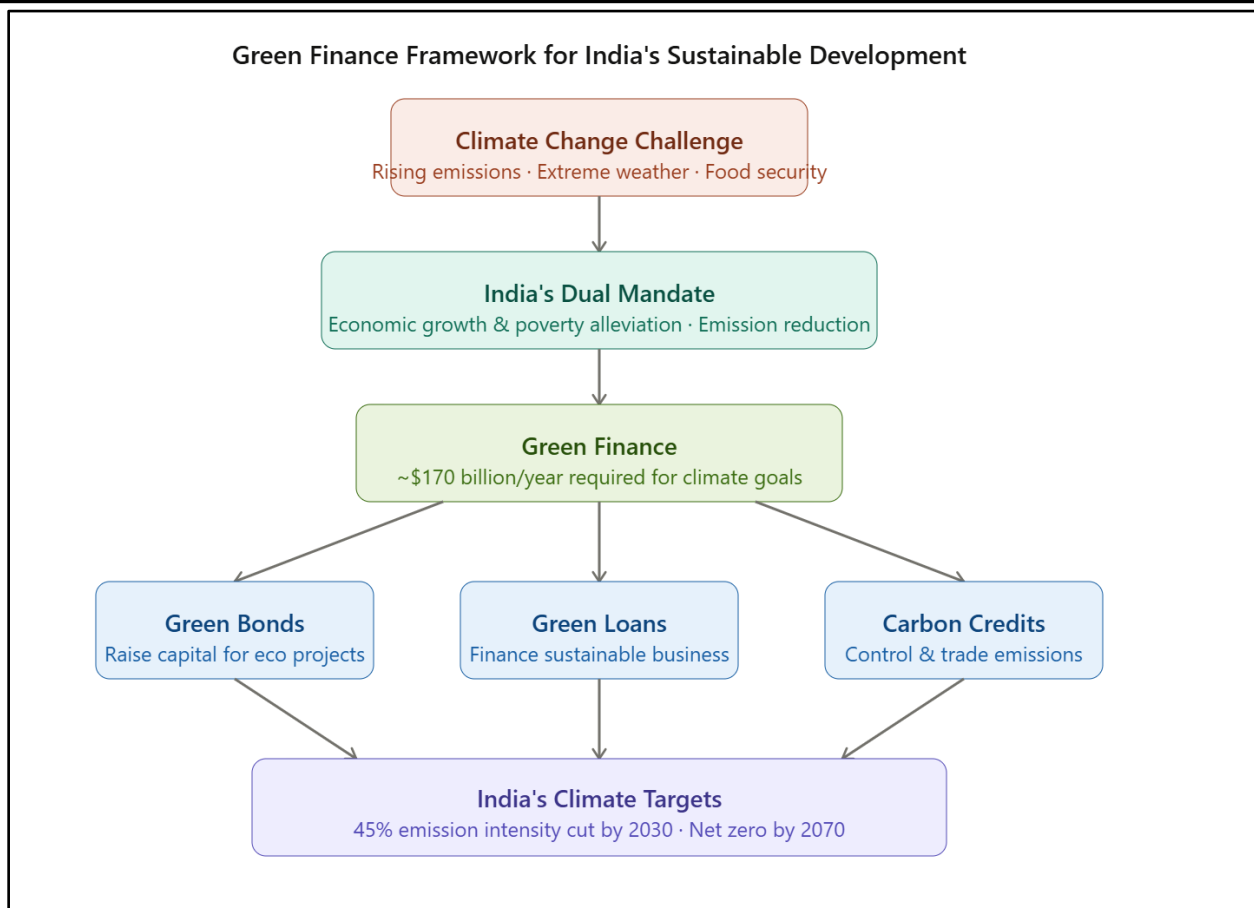
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**GREEN FINANCE IN INDIA: LINKING CARBON EMISSIONS, GREEN BONDS, AND SUSTAINABLE ECONOMIC GROWTH****<sup>1</sup>Riya Rajendra Abhyankar and <sup>2</sup>Dr. Sonali Parchure**<sup>1</sup>Student, Master of Business Administration, Finance, MKSSS's HNIMR<sup>2</sup>Assistant Professor, MKSSS's HNIMR**ABSTRACT**

*India is one of the fastest growing economies in the world, but it also faces serious environmental challenges due to increasing carbon emissions. This study examines the role of green finance in achieving sustainable economic growth in India. The research focuses on green bonds and the carbon credit trading system during the period from 2013 to 2024. The study is based on secondary data collected from reports of the Reserve Bank of India, the Securities and Exchange Board of India, the World Bank, and other reliable sources. The findings show that India's green bond market has grown significantly from United States Dollar 1.2 billion in 2013 to United States Dollar 55.9 billion in 2024. The introduction of the Carbon Credit Trading Scheme in 2023 has also provided a structured approach to emission reduction. The study concludes that India is achieving economic growth with reduced carbon intensity. However, challenges such as insufficient funding, greenwashing, and lack of inclusion of small businesses still remain.*

**INTRODUCTION**

Climate change is a problem worldwide. It is caused by things people do like using too much energy and driving cars that pollute the air. This affects farming, weather and peoples lives. India has a job to do. It needs to grow economically and take care of its people but it also needs to reduce environmental damage and control carbon emissions. India has promised to reduce emission intensity by 45 percent by 2030 and achieve zero emissions by 2070. To do this India needs a lot of money, about 170 billion United States Dollars every year. Green finance refers to financial investments that are made in projects and activities that protect the environment and promote sustainable development, such as renewable energy, clean transportation, and pollution control. Green finance helps by putting money into friendly projects like renewable energy and clean transportation. Green finance includes different financial tools like green bonds, green loans, and carbon credit systems. Green bonds are used to raise money for projects that are good for the environment. Carbon credit trading helps companies control their pollution by giving them limits and allowing them to trade credits. These tools make it easier for companies and governments to invest in sustainable projects. In India, green finance is becoming very important because the country is growing fast and energy demand is increasing. At the same time, India is also one of the countries most affected by climate change. Therefore, it is important to balance economic growth with environmental protection. Government policies, financial institutions, and companies are now focusing more on sustainable development. This study focuses on how green finance, especially green bonds and carbon credit systems, is helping India achieve sustainable economic growth while reducing carbon emissions. It also looks at the challenges and opportunities in the development of green finance in India.



**Source: Author**

## OBJECTIVES OF THE STUDY

**The key objectives of this research are:**

1. To analyse the growth of green bonds in India from 2013 to 2024.
2. To study the structure and functioning of the Carbon Credit Trading Scheme.
3. To examine the relationship between economic growth and carbon emissions in India.
4. To evaluate the policy and regulatory framework related to green finance.
5. To identify challenges and provide suitable suggestions for improvement.

## REVIEW OF LITERATURE

**Elettra Agliardi and Rossella Agliardi (2021)**, in their study titled *Corporate Green Bond Announcements and Stock Market Reactions: A Study on the Greenium Effect*, examined the pricing behaviour of green bonds. The study introduced the concept of “greenium,” which refers to the premium investors are willing to pay for environmentally friendly investments. The findings indicate that green bonds are often priced more favourably than conventional bonds, as investors value sustainability, making them a cost-effective financing tool for companies.

**Caroline Flammer (2015)**, in the study *Does Corporate Social Responsibility Lead to Superior Financial Performance? A Regression Discontinuity Approach*, analysed the relationship between environmental responsibility and firm performance. The study found that companies engaging in environmentally responsible practices tend to perform better financially in the long run. These firms also exhibit higher productivity, innovation, and growth, establishing a strong link between sustainability and business success.

**Caroline Flammer (2021)**, in the paper *Corporate Green Bonds*, explored the impact of green bond issuance on corporate environmental performance. The study revealed that companies issuing green bonds show improved environmental outcomes and are able to attract long-term investors. This highlights the dual benefit of green bonds in promoting sustainability while strengthening investor confidence.

**Yong Gao, Xiaohui Zhou, and Guanghui Wan (2024)**, in their research *Green Finance, Environmental Performance, and Corporate Financial Outcomes: Evidence from Emerging Markets*, examined the broader impact of green finance. Their findings suggest that green finance contributes positively to both environmental performance and financial outcomes of firms, indicating that sustainability and profitability can be achieved simultaneously.

**Mohammad Shahbaz Meo and Muhammad Zahid Abdul Karim (2022)**, in the study *The Role of Green Finance in Reducing CO<sub>2</sub> Emissions: An Empirical Analysis*, investigated the relationship between green finance and carbon emissions. The results showed that increased use of green finance significantly reduces carbon emissions, thereby supporting environmental sustainability and economic development.

**Elham Rasoulinezhad and Farhad Taghizadeh-Hesary (2022)**, in their work *Role of Green Finance in Improving Energy Efficiency and Renewable Energy Development*, analysed how green finance impacts energy usage. The study found that green finance enhances energy efficiency and promotes the adoption of renewable energy sources, leading to long-term environmental benefits.

**Jiazhen Wang, Xin Chen, Xiaoxia Li, Jing Yu, and Rui Zhong (2020)**, in the study *The Market Reaction to Green Bond Issuance: Evidence from China*, examined investor behaviour in response to green bond announcements. The findings indicate that investors react positively to such announcements, as green bonds signal a company's commitment to sustainability, thereby increasing investor confidence and sometimes even boosting stock prices.

**Xiaoling Wang, Qiang Wang, Chao Wu, and Cheng Zhang (2022)**, in their research *Green Finance and Sustainable Economic Development: Evidence from a Panel of Economies*, explored the role of green finance in economic growth. The study concluded that green finance supports sustainable economic development by balancing environmental protection with long-term economic stability.

**The World Bank (2024)**, in its report *Green Bonds: A Climate Finance Tool for Sustainable Development*, highlighted the importance of green bonds in addressing climate change. The report emphasised that green bonds are widely used to finance environmentally friendly projects such as renewable energy and clean transportation, making them a key instrument in global climate finance.

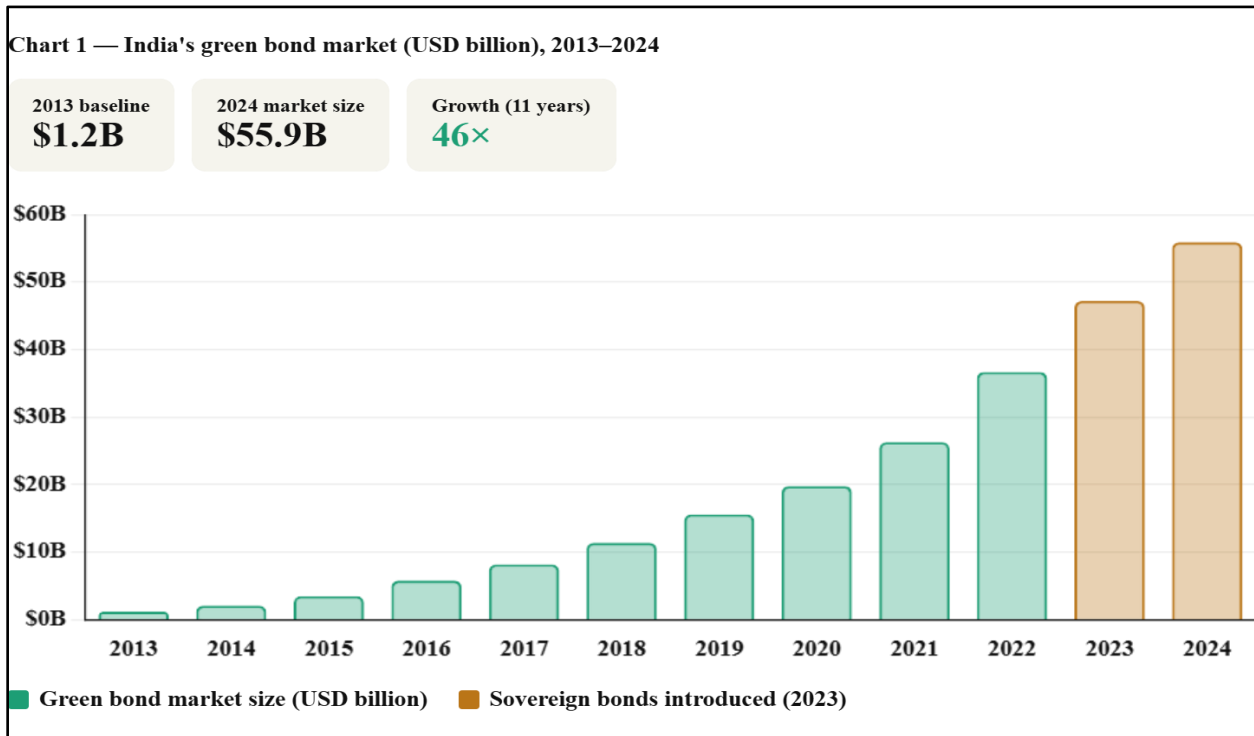
**Daoping Zhang, Zhaoyu Zhang, and Shunsuke Managi (2024)**, in the study *Green Finance and Pollution Reduction: Evidence from Industrial Sectors*, analysed the impact of green finance on pollution levels. The findings revealed that green finance plays a significant role in reducing pollution and carbon emissions, thereby contributing to climate change mitigation and environmental improvement.

## **RESEARCH METHODOLOGY**

This study is descriptive and analytical in nature. It is based on secondary data collected from reports, journals, and official publications. The study covers the period from 2013 to 2024. The analysis focuses on green bond growth, carbon emissions, and economic indicators to understand the relationship between finance and sustainability.

DATA ANALYSIS AND INTERPRETATION:

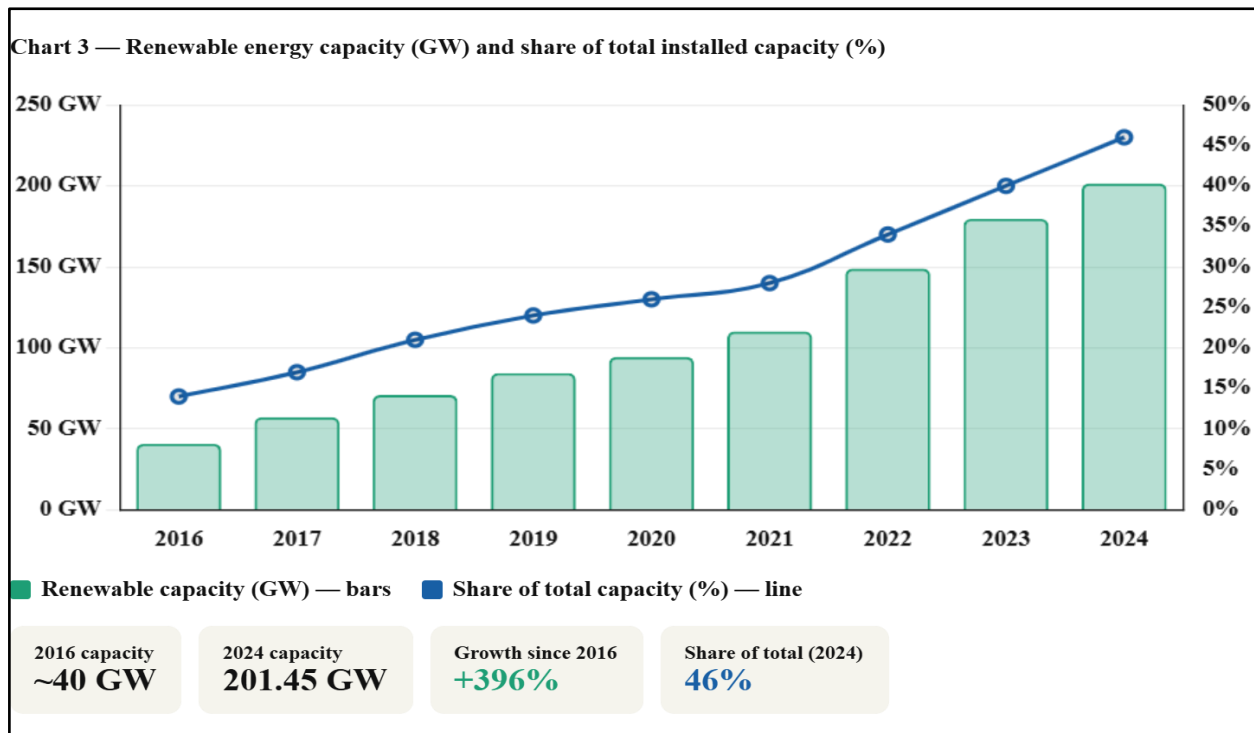
GROWTH OF GREEN BOND MARKET IN INDIA-



Source: Author

India's green bond market has grown a lot from 1.2 billion United States Dollars in 2013 to 55.9 billion United States Dollars in 2024. The government introduced green bonds in 2023, which helped investors feel more confident. Cities like Vadodara and Indore have also issued bonds, which shows that green finance is growing at all levels. Most of the money from bonds is used for renewable energy projects like solar and wind energy. This helps reduce our use of fuels. Money is also used for transport and energy efficiency projects, which reduce pollution.

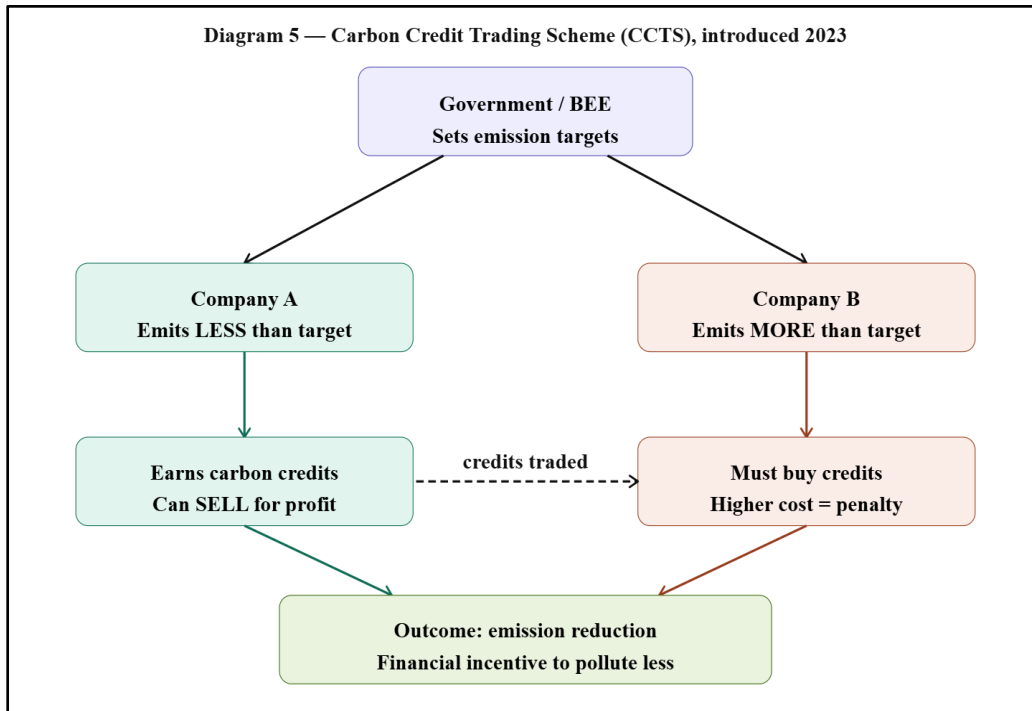
RENEWABLE ENERGY GROWTH IN INDIA (2016–2024)



Source: Author

The chart shows that India's renewable energy capacity has been going up steadily. It was 40 GW in 2016. Now it is 201.45 GW in 2024. That is a jump. India's renewable energy capacity has grown by 396 percent. This means renewable energy is now a part of India's total installed capacity. It used to be 15 percent. Now it is 46 percent. India's power sector is changing a lot. Renewable energy is becoming a part of India's power sector. India is moving towards energy sources like never before. This shift is very important. India's shift towards sustainable energy sources is very strong. Green finance is playing a role in this change. It is helping India to make this transition to energy. Renewable energy is the future for India.

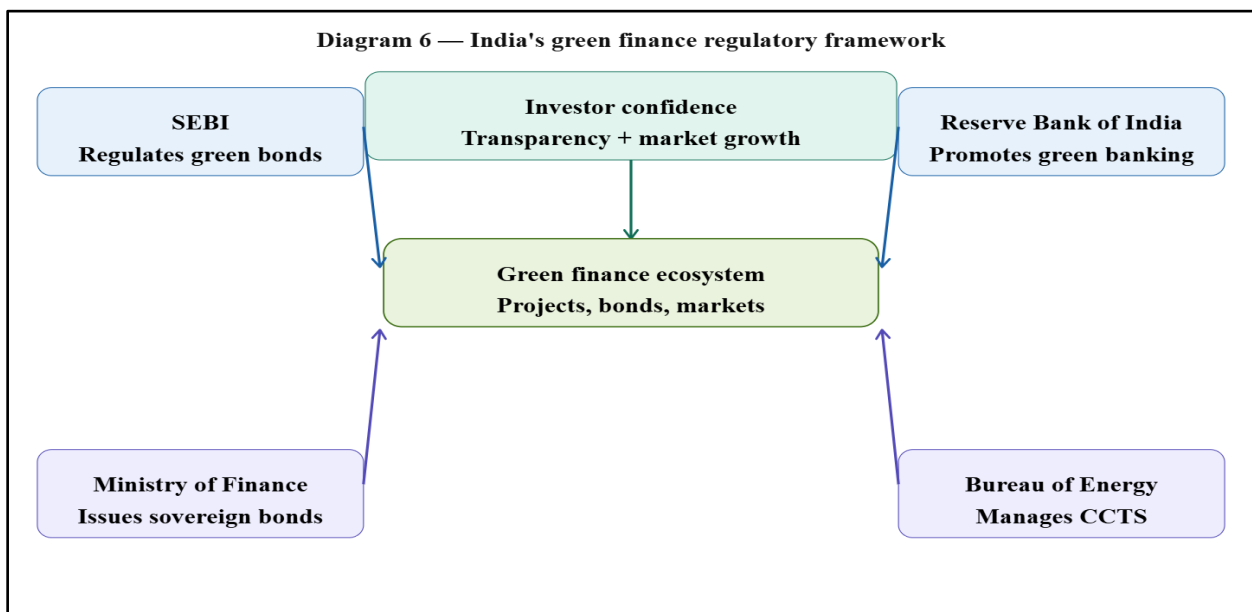
**CARBON CREDIT TRADING SCHEME**



Source: Author

The carbon credit trading scheme was introduced in 2023 to control emissions. Companies are given targets for reducing emissions. If they do better than their target they can sell their credits for money. If they do worse they have to buy credits, which costs them money. This scheme covers industries that use a lot of energy like steel and cement. It helps Indian companies compete in the market.

**POLICY AND REGULATORY FRAMEWORK**

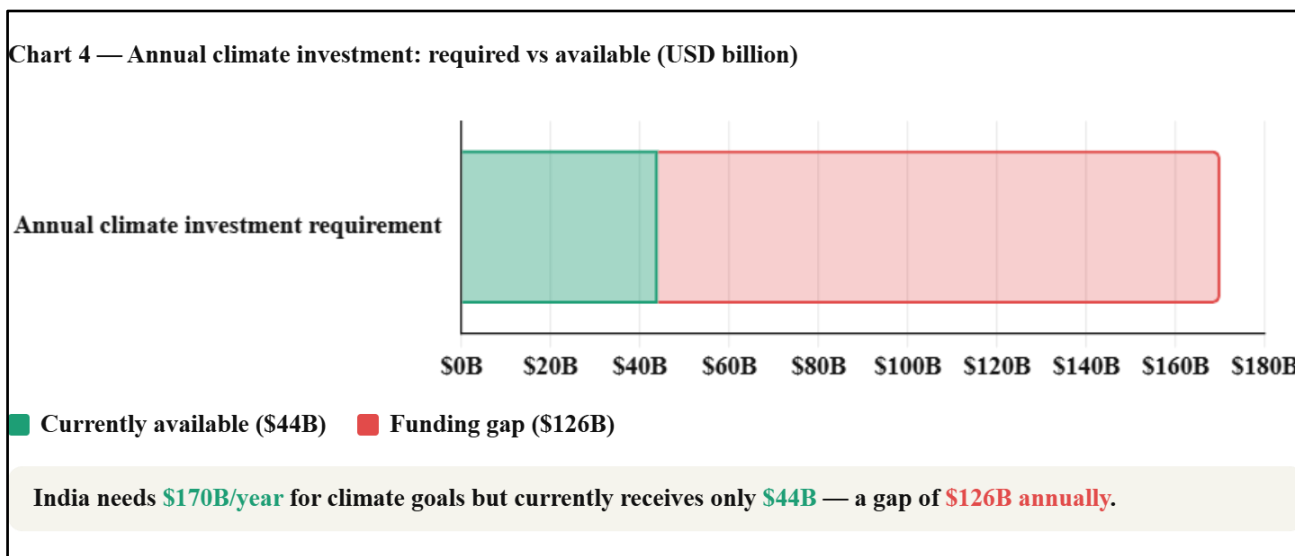


Source: Author

The Securities and Exchange Board of India regulates bonds and makes sure everything is transparent. The Reserve Bank of India promotes finance through banking policies. The Ministry of Finance issues sovereign bonds. The Bureau of Energy Efficiency manages the carbon trading system. All these things help green finance grow in India.

**FINDINGS**

1. India’s green bond market has grown rapidly over time. This indicates that there is increasing awareness and investment towards environmentally sustainable projects. It also shows that both government and private sectors are actively participating in green financing activities.
2. Government policies have strongly supported green finance. Various initiatives by regulatory authorities have created a favourable environment for investors and companies to invest in green projects. This support has helped in building trust and expanding the market.
3. Economic growth has become more environmentally efficient. India has been able to increase its economic output while controlling the growth rate of carbon emissions. This reflects better use of resources and adoption of cleaner technologies.
4. The carbon trading system is a major step towards emission control. It introduces a financial mechanism where companies are rewarded for reducing emissions and penalised for exceeding limits. This encourages industries to adopt sustainable practices.
5. A large funding gap still exists. Although green finance is growing, the available funds are still much lower than the required amount for achieving climate goals. This gap highlights the need for increased investment from both domestic and international sources.



**Source: Author**

6. Small businesses and rural areas are not fully included. Most green finance benefits are concentrated among large companies and urban areas. This creates inequality and limits the overall effectiveness of sustainable development efforts.

**LIMITATIONS OF THE STUDY**

This study is based on information that already exists. This means that we had to rely on reports and publications which might not show what is really happening on the ground. If we could get information we might be able to learn more. The carbon market in India is still very new. Since the Carbon Credit Trading Scheme just started we do not have all the information we need to know how well it is working. This makes it hard to know if it is really making a difference. It is hard to measure how much good green finance is doing for the environment. Things like reducing emissions and being sustainable take time to happen. So it is hard to know for sure if green finance is working in the near future.

**CONCLUSION**

India has made a lot of progress with finance over the last ten years. The fact that green bonds are becoming more popular and that new policies are being introduced shows that the country is moving in the direction. India has shown that we can grow our economy and protect the environment at the same time. We have reduced the

amount of carbon we produce while still growing our economy. However there are still challenges that we need to overcome. We need to fix problems like not having money for green finance, people pretending to be green when they are not and not including everyone in green finance. In the future we should try to make green finance available to all parts of society. This includes businesses, farmers and people who live in rural areas, who are not getting as much help as they should be. We need to make sure that everyone is included if we want to be sustainable in the term.

### MANAGERIAL IMPLICATIONS

The government should make strict rules to stop people from pretending to be green when they're not. They should make guidelines and watch closely to make sure that only real green projects get money. This will make things more transparent. Make investors more confident. We should give financial help to small and medium sized businesses. We can give them deals, subsidies and low-interest loans that are good for the environment. This will help them be more sustainable and participate in finance. We should make the carbon market stronger so it can work better. We need to introduce pricing watches closely and be transparent so the system is more effective and reliable. Banks and financial institutions should give green loans. They should make financial products like green loans and green deposits to encourage people to invest in projects that are good for the environment. Companies should be more sustainable. Tell us more about what they are doing. They should use eco- technologies and give us clear information about how they are affecting the environment. This will help them attract investors and improve their reputation.

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