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Transition Towards a Green Economy: Role of Sustainable Finance in India

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ABSTRACT

This study analyses how sustainable finance drives India's shift to a green economy. Sustainable finance—notably green finance instruments, green bonds, and ESG investing—is vital for funding climate adaptation, resilient infrastructure, and renewable energy. Using a descriptive-analytical approach with secondary sources (RBI, SEBI, Climate Bonds Initiative, and academic literature), the paper maps market growth, regulatory developments, and policy initiatives. Objectives: (i) track market size and growth; (ii) assess contribution to economic growth and energy transition; (iii) evaluate enabling policies and regulations (NAPCC, SEBI guidelines, RBI green deposit guidance); (iv) identify barriers and scaling strategies.

Findings show rapid expansion in sustainable debt (GSS+: green, social, sustainability, sustainability-linked). By 2024 India's GSS+ market reached about USD 55.9 billion, and green bond issuance totalled roughly INR 11,678 crore by March 2026. Banks and policy tools (priority-sector lending, sovereign green bonds, transparency rules) mobilize finance for low-carbon projects, while green bonds and ESG adoption steer investment to transport and renewables. Key challenges include greenwashing risk, high financing costs, fragmented standards, limited investor awareness, and funding gaps for long-term adaptation. Recommendations include blended finance, stronger verification and reporting, standardized taxonomies and disclosures, and capacity building for financial institutions. The paper concludes that pragmatic regulatory and market measures can scale sustainable finance to meet India's climate and development goals.

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1. INTRODUCTION

The introduction provides the background for understanding the framework of sustainable finance and the green economy in India, a country under rapid economic growth and facing serious environmental issues. In this section, we discuss the basic concepts and their interrelations, the urgency of the topic and the specific goals of the study, which provides a comprehensive background for further research.

1.1 Meaning of Green Economy:

A “green economy” refers to an economic system that improves human well-being and social equity while reducing environmental risks and ecological scarcities. It uses renewable energy, efficient resources and social inclusion. In other words, it is an economy that results in improved human well-being and social equity, while significantly reducing the risks to the environment and ecological scarcities. This is in keeping with sustainable development, integrating social inclusion, environmental preservation and economic progress so that future generations will inherit healthy environments. It shifts from resource-depleting industries to clean technology, renewable energy, and circular behaviors.

The United Nations Environment Programme (UNEP) talked about the economy in the year 2011. They said that it is a way to make people’s lives better and to make the Earth a cleaner place. The green economy can help us grow in a way that's good for the Earth and that is what UNEP wants to happen. The green economy is a way to ensure that we can have a life without damaging the planet. The green economy is important because it helps us use natural resources and it helps us reduce waste.

The idea of sustainable development was first introduced in the 1987 Brundtland Report *(Our Common Future),* which defined it as “development that meets the needs of the present without compromising the ability of future generations to meet their needs”. This idea is at the core of the green economy. The idea of the economy is based on three main things: **economic growth**, **social equity**, and **environmental protection** making sure businesses can make money being fair to people and taking care of the environment. The green economy helps people get jobs in areas like farming in a way that is good for the planet and using energy from natural sources. The green economy benefits the environment by decreasing the toxic contaminants we put into the air and water safeguarding animals and plants and making sure we are ready for large changes in the weather. The green economy is, about making sure that the economy and people and the environment are all standing out.

The main goal of this program is to protect the environment. Traditional economies often ignore costs like air pollution, water scarcity and loss of wildlife. These ignored costs cause a lot of harm. The green economy is different. It considers these costs by restoring nature, reusing and recycling things and reducing waste. It also makes companies pay for the carbon they release.

For instance, using infrastructure like solar farms and planting more trees helps us deal with natural disasters like droughts and floods. It also reduces the impact of climate change. The International Renewable Energy Agency thinks that the green economy will create opportunities worldwide. In fact, they expect 42 million jobs in energy by 2050. The economy and environmental protection are crucial for our future. The green economy will help create a future, with green infrastructure and renewable energy. Renewable energy and environmental protection will play a role in this future.

1.2 Meaning of Sustainable Finance:

Sustainable finance refers to making financial decisions that support environmental protection, social well-being, and long-term economic stability. It considers a company's treatment of its workers, community, and environment in addition to profit. Green financing is a type of sustainable finance that focuses on environmentally friendly projects such as renewable energy, energy-efficient buildings, and clean transportation. Green financing thus provides the funds required to promote environmentally responsible development.

This idea is closely linked to Environmental, Social, and Governance (ESG) investing, which evaluates companies based on their environmental impact, social responsibility, and governance practices rather than only on financial returns. In other words, ESG investing helps investors judge whether a company is acting responsibly and sustainably.

One of the primary tools in green finance is green bonds. They allow companies, governments, or institutions to raise money for environmentally beneficial projects, while investors receive returns and also contribute to sustainability.

Sustainable finance is the practice of thinking about the environment and people when making decisions. It is also called " Green Finance" in some cases. Sustainable finance is about finding a balance between making money and doing what is good for the world. It looks at the term and thinks about the risks of things like losing biodiversity and climate change. This is different from the way green finance usually works, which's to make as much money as possible in a short amount of time.

Consequently, ESG investing is very important. It looks at investments in three ways:

- How they affect the environment, like waste and carbon footprint.
- How they affect people like labour rights and the community.
- How they are managed, like board diversity and anti-corruption.

“ESG frameworks made popular by organizations such as **Morgan Stanley Capital International (MSCI)** and Sustainalytics help investors identify sustainable investments and avoid environmentally harmful sectors such as coal plants. In India the amount of money being invested in ESG has increased a lot. This is similar, to what's happening around the world. By 2024, $40 trillion will be invested in a way.

1.3 Importance of the Topic:

Finance that is good for the planet is really important for India, this is because India needs to pay for projects that help the country deal with bad weather like heatwaves, floods and not having enough water. Sustainable finance is necessary, for projects that focus on helping India develop and be prepared for the effects of climate change. India has a lot of problems and sustainable finance can help solve these problems by supporting climate-resilient projects.

Sustainable finance supports things like cleaner transportation and energy-efficient buildings. It also funds energy and climate-resilient infrastructure. All these things help reduce our reliance on fuels and make us better prepared for climate change. This is especially important for Indias cities which are growing fast.

The cities need public services, housing, power and transportation. India wants to achieve zero carbon emissions by 2070. Sustainable finance is a tool that will help the country reach this goal. It will also support growth.

Taking examples from countries to see how sustainable finance works. China is using bonds to fund clean energy projects. Germany and Denmark are using financing to increase renewable energy. The European Union is using financial structures to support climate change projects and ethical business practices. These examples show that financial institutions can support goals without hurting the economy.

Given the growing dangers of climate change sustainable finance and the green economy must come together. Rising sea levels put 18 million people living near the coast at risk unpredictable monsoons damage crops and heatwaves make people sick in India. India is the biggest emitter of carbon in the world. The Intergovernmental Panel on Climate Change says India's economy might shrink by 2.8% by 2030 because of climate change.

To fight this sustainable finance helps reduce and adapt to climate change. It supports energy like aiming to produce 500 GW by 2030. India has goals to be sustainable and yet agrees with the UN's Sustainable Development Goals, like clean energy, climate action and decent work. India promised to stop emitting carbon by 2070.

India needs to be sustainable. It has plans like the International Solar Alliance and the National Action Plan on Climate Change. India needs $2.5 trillion more to fight climate change by 2030. Sustainable finance helps with funding through special funds and green bonds.

Sustainable finance helps Indian economy and makes growth less risky and also creates jobs. Renewable energy might employ 3.5 million people by 2030. It also helps women in areas with electricity and solar power. Sustainable finance is good for investors too. It provides returns. In 2024 sustainable finance was worth $3.6 trillion globally. India wants its economy to be $5 trillion by 2027. Ignoring finance could make India less competitive. So sustainable finance is key, to India future.

1.4 Objectives of the Study:

The following goals, which are designed to offer a comprehensive analysis, serve as the foundation for this study-

- Using data from RBI, Securities and Exchange Board of India (SEBI), and Climate Bonds, examine the development, mechanisms (green bonds, ESG), and market size of sustainable financing in India.
- To investigate how green financing contributes to economic growth: Examine how it promotes the shift to a green economy, the expansion of renewable energy, and GDP's contribution while reducing the dangers associated with climate change.
- Examine The **National Action Plan on Climate Change (**NAPCC), SEBI recommendations, and Sustainable Development Goal (SDG) alignment for promoting sustainable financial growth in order to evaluate government actions and regulatory frameworks.
- To recognize obstacles and suggest solutions: Draw attention to obstacles such as greenwashing and suggest ways to scale the influence in the direction of a green economy.

2. LITERATURE REVIEW

The World Bank says that we need finance to help our planet. This means we have to use money in a way that does not hurt the environment. One way to do this is by using bonds to pay for projects that are good for the Earth in countries like India. A study by Panse and Sharma in 2023 found out that green banking is very important for finance in India. This is when banks give loans to people who want to build things that are good for the environment like solar panels or wind turbines.

The market for debt in India is getting bigger. By the end of 2024 it was worth USD 55.9 billion. This is a lot more than it was in 2021. Most of the money, 83% is going to green bonds that pay for clean energy. The Securities and Exchange Board of India or SEBI for short has rules for bonds. The government is also issuing bonds, like the INR 16,000 crore they issued in the FY 2023. This is helping India reach its goals for development and reducing carbon emissions.

A report by EY in 2025 said that these rules and the governments green bonds are very important for India's future. Another researcher, Sushma found out in 2021 that we need to make sure we are using the money for green projects and not just pretending to be environmentally friendly. We also need to find a way to make it cheaper for people to get loans for these kinds of projects. Sustainable finance, like bonds are essential for India to achieve its sustainable development goals and reduce its carbon footprint. Green bonds and sustainable finance are crucial, for Indian growth.

Previous studies on finance in India show that sustainable finance in India is now a big part of research in schools and in the market not just something people talk about when making policies. Most research agrees that we need finance in India to make sure the country can deal with climate change especially since India is getting more cities using more energy and having more environmental problems all at the same time.

People think sustainable finance in India is a way to give money to projects that are good for the environment and can handle climate change like what we see in materials from the World Bank. Researchers say things like bonds, ESG frameworks and sustainable finance in India can help fill the gap in money needed for environmental projects and renewable energy.

Green bonds in India can really help with climate change by paying for things like energy efficiency and renewable energy projects. This is what a study on green bond financing in India found out. The study also says that green bonds can do a lot of good for the environment like making the water and air cleaner. The people who wrote the study think that the market for green bonds is not growing very fast because there are not many rules not many people want to invest and it is not clear what makes something a green project.

There are a lot of things that can stop or help green finance grow in India says another study. This study found out that the biggest problems with finance are that the rules are not clear there is not enough money and the laws are not certain. Green finance and green bonds are important and can do a lot of good for the environment and for the people.

In India, green banking and ESG demonstrate how banks are progressively using eco-friendly procedures. This implies that banks take the environment into account when determining whether to lend, offer loans, or make investments. Banks are able to affect business behaviour in this way. Although sustainable finance in India has made some progresses there are still challenges. Businesses must be transparent, about their actions. The public needs to know how crucial sustainable finance is. Rules and regulations are also needed to ensure the system works smoothly.

3. RESEARCH METHODOLOGY

This study uses two research approaches**: a Detailed analysis and a Descriptive method**.

The descriptive approach helps to present the state of sustainable finance in India. It works well since it aids in determining the facts and their importance. To understand how sustainable finance helps the economy, a thorough examination is done. This examination looks at trend's government initiatives and market conditions. The descriptive method is useful for policy-making, which's a key part of this topic. The descriptive approach presents the situation in India. The comprehensive analysis examines trends, initiatives and conditions. Sustainable finance is important, for the economy. This study aims to show how. The study uses a method and a comprehensive analysis to understand sustainable finance.

All of the secondary data used in this analysis came from previously accessible sources, including World Bank publications, RBI market research papers, SEBI reports, and government policy documents. These resources are useful because they offer trustworthy, validated, and current information on finance, green bonds, ESG investing, and financing for renewable energy in India. Without the necessity for surveys or in-person interviews, the topic can also be practically studied by using the information already in existence.

This research is limited to India and it looks at how we can make finance more sustainable. It talks about things like bonds and investing in companies that are good for the environment. The research also looks at how we can use money to help create renewable energy. It wants to know how these financial tools can help our planet and make the world a better place for everyone. The report looks at what's happening now with sustainable finance in India including new laws and what institutions are doing to help.

The study does not include responses from people or interviews, because it only uses data that has already been collected and published. So, the conclusions are based on how reliable and available official documents and reporters. Sustainable finance is changing fast, means that market trends may change after the study was done. The conclusions are only as good, as the documentation and published reports they are based on. Sustainable finance is an evolving field. Several market trends might change after the study's time frame.

SUSTAINABLE FINANCE IN INDIA

Green bonds are a prime example of the expansion in sustainable finance in India. According to SEBI data, issuers such as L&T, IREDA, and municipal corporations will have issued approximately INR 11,678 crore by March 2026. From early issuers in 2017 (like L&T's INR 667 crore) to 2026 (like Greater the Chennai several tranches totaling INR 1,233 crore), the market's growth is indicative of maturing investor interest.

In India sustainable finance has become a part of the country's financial and climate discussions. It now includes things like bonds, ESG investing, green banking loans for renewable energy and financial planning for climate change. The main idea is to fund projects that help the environment reduce carbon emissions and make the economy stronger in the run. This is especially important for India because the country needs to grow while also meeting its climate and energy goals. Sustainable finance helps India achieve these goals by supporting projects that're good for the environment and the economy. The country has to balance its growth with its obligations to reduce carbon emissions and transition to clean energy.

According to Climate Bonds, **G**reen, Social, Sustainability, and Sustainability-linked bonds (GSS+) debt will reach USD 55.9 billion by 2024 (an increase of 186% since 2021), with green debt accounting for the majority at 83%, mostly for transportation and renewable energy. Benchmarks were set by sovereign green bonds (INR 477 billion) and despite worldwide maturities, INR 2 billion was issued in 2025.

To Illustrate- Green Bond Issuances Trend (INR Crore, Cumulative)

Year Range	**Key Issuances**	**Total Raised**
2017-2020	L&T, Tata, IREDA	~1,712
2021-2023	Municipal corps, REITs	~3,500+
2024-2026	L&T, KPI Green, Chennai	~6,466+

Total: 11,678

a. Green Bonds and **Environmental, social, and governance** (ESG) Investing:

Green bonds are used to fund energy projects. Companies like KPI Green Energy and Brookfield Real Estate Investment Trusts (REIT) issue these bonds. For example - KPI Green Energy issued a bond INR 670 crore that will mature in 2025. Brookfield REIT also issued a sustainability-linked bond INR 2,000 crore.

Banks are now adopting ESG investing. The Reserve Bank of India is encouraging banks to lend money for energy projects. Many banks are supporting wind projects.

b. Renewable Energy Finance and Role of Banks:

The Reserve Bank of India has a priority sector lending program. As part of this program banks invest in bonds and green infrastructure to support renewable energy finance. This helps to increase the amount of money for renewable energy projects.

ESG funds are investing in companies that work on energy projects, such as Avada and Renew. This is because these companies are working towards a zero goal, which is good, for the environment. Sustainable Debt Growth (USD Billion):

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2021	2024
~19	55.9

186% increase.

Indian companies are expected to follow sustainability rules by investors and this is another reason why investing in companies that are good for the environment and society is becoming very important. Companies that do not care about the environment or how they are run may not get much money from investors they may have to pay more to borrow money and people may think badly of them. Whereas, companies that do well in these areas may get more money and be worth more in the long run. This means that investing in companies that are good for the environment and society is not just the right thing to do it also makes sense for businesses.

India wants to use a lot of energy and to do this it will need a lot of money to invest in solar wind, biomass, storage and other things. Sustainable finance helps by providing money for these projects. This is done with the help of banks, markets and other financial organizations. Without these funds, many of these projects would be too expensive to start. Banks play a role in this process.

In India banks are where people usually go to get money and the decisions they make about who to lend to: can have an impact on the economy. When banks lend money to projects that're good for the environment they make it cheaper for these projects to get started and more likely to succeed. Some banks are now using ESG rules to decide who to lend to. They are helping companies invest in things that save energy protect against climate change and use updated technology. This shows that banks can be more than a place to get money and they can also help make the world a better place.

4. GOVERNMENT INITIATIVES

The Indian government is doing a lot to help the country move to a green economy and make finances more sustainable. The government's main objectives are to address climate change, expand renewable energy, develop sustainable infrastructure, and strengthen financial regulations. Together, these measures create the policy framework needed to encourage and support the growth of green investment.

The National Action Plan on Climate Change (NAPCC), along with missions such as the National Solar Mission and the National Mission for Enhanced Energy Efficiency, promotes clean energy, resource efficiency, and lower emissions. These initiatives also create demand for funding in energy-efficient, solar, and climate-resilient projects, supporting India's sustainable finance and climate goals.

India is encouraging investment in solar, wind, and other clean energy sources through supportive policies. These policies help expand electricity generation, strengthen the power grid, and reduce dependence on fossil fuels. The government is also improving regulations to make it easier for banks and investors to finance renewable energy projects, which require substantial capital to grow at scale.

The rules set by the Securities and Exchange Board of India for bonds are very important. They help build investor confidence, improve transparency, discourage unfair practices, and reduce greenwashing in the market.

The Sustainable Development Goals and India's sustainable finance initiatives are closely linked. Goals such as affordable and clean energy, industry and innovation, sustainable cities, and climate action are supported by sustainable finance, showing that it is not only about protecting the environment but also about inclusive development.

Overall, government policies, regulations, and climate missions are helping direct investment toward clean energy and sustainable growth. This is likely to make green finance an even more important part of the Indian economy in the future, with solar and wind energy playing a major role.

5. CHALLENGES IN SUSTAINABLE FINANCE

People often wonder if green projects are really legitimate because they do not know enough about them. This is because companies are not very open about what they're doing. Investing in projects is also very expensive, and it is hard to know if it is a good idea. Such secrecy makes people unsure if they should invest. Even when there are people watching to make sure everything is okay, some companies still say they are doing more for the environment than they really are. Such behaviour makes people trust them less. The problem is that there is no clear definition of what it means for something to be considered green. There are also rules and standards, which makes it confusing. All of this makes it hard for green projects to get the money they need to grow.

Although India's sustainable finance industry is growing, it still faces big challenges, one major issue is regulation. There are problems like coverage, different standards, and no clear definition of what is "green". These issues make it hard for the industry to grow. High costs of financing assessment of risks and fake promises from some companies also hurt trust in the industry. Many investors, businesses, and even some banks do not understand the benefits of finance. They prefer investment methods because they are familiar and easy to understand.

Another challenge is that big green projects need a lot of long-term funding. Investment is still not enough. The industry needs to find ways to overcome these challenges to grow. The lack of knowledge about finance is a big problem. Green finance can help the environment. People need to understand its benefits. India's sustainable finance industry needs to work on these issues to become stronger. Businesses and local governments in India are having a time. They are trying to do something about climate change. They do not have enough money. This shows that money is really important for sustainable finance to work in India.

The thing is, there is a problem with greenwashing. Some companies say they care about the environment but actually they do not really change the way they do business. This makes people less sure about investing in things that are supposed to be good for the environment like bonds. To fix this we need to keep an eye on what companies are doing and they need to be more open about it.

Another thing that gets in the way is that the rules are not clear. India needs to have the rules everywhere for companies to be sustainable and they need to be better at reporting what they are doing. They also need to make it clear what makes a company sustainable. When the rules are not clear it is hard for investors to figure out if a project is really good for the environment. All these problems show that sustainable finance in India could be really big but to make it work people need to know more about it and companies need to be more open and the government needs to support it.

6. FINDINGS AND CONCLUSION

Sustainable finance is really helping India become a more inclusive country, by using utilizing bonds, sustainable banking and investing in companies that are good for the environment. This way money is going to projects that're good for the earth and people. India has made a lot of progress in finance and thus the government and investors are very interested in it. Green bonds are becoming very popular which shows that India is serious about taking care of the environment while still growing its economy. Sustainable finance is also helping India use renewable energy create jobs and be better prepared for climate change. It is even helping companies be more responsible. There are still some problems that are holding sustainable finance back. Some companies are pretending to be green when they're not which is called greenwashing. There are also no rules, which makes it hard for investors to know what they are getting into. It is also expensive to get money for projects and not many people know about them. To fix these problems we need rules, more transparency and more people involved.

In conclusion, sustainable finance is very important for India's future. It helps the country grow its economy while taking care of the environment and people. If we can get people and companies involved and make some changes sustainable finance can really help India become a better place, for everyone. Sustainable finance can help India become a more sustainable country and that is what we need for our future.

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