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Green Finance In Promoting Sustainable Development: Evidence From Karnataka

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ABSTRACT

This study examines the role of green finance in promoting sustainable development in India by analyzing how green financial initiatives contribute to environmental protection, economic growth, and social well-being. With the increasing focus on climate change and sustainable development, green finance has become an important instrument for funding environmentally friendly projects, including renewable energy, green infrastructure, and clean technologies. The main purpose of this study is to analyse investors' awareness and perception of green financial products and to evaluate the contribution of green finance towards sustainable development. The objectives of the study are to assess the level of awareness among investors, identify the factors influencing the adoption of green financial products, and examine the relationship between green finance and sustainable development. The study adopts a descriptive research design and uses a structured questionnaire to collect primary data from respondents. Secondary data were collected from books, journals, research articles, government reports, and official websites. Data analysis was carried out using statistical tools such as percentage analysis, descriptive statistics, correlation, ANOVA, and regression analysis to examine the relationship among the study variables. The findings of the study indicate that green finance plays a significant role in supporting sustainable development by encouraging responsible investments and environmentally friendly banking practices. The study concludes that greater awareness, supportive government policies, and active participation of financial institutions can further strengthen the adoption of green financial products and contribute to long-term sustainable development in India.

Keywords: *Green Finance, Sustainable Development, Green Banking, Green Financial Products, Investors' Awareness, Environmental Sustainability, Banking Sector, India.*

1. Introduction

Green finance has become an important tool for promoting sustainable development by encouraging investments in environmentally friendly projects and supporting economic growth. With increasing concerns about climate change and environmental degradation, governments, financial institutions, and investors are focusing on green financial products such as green bonds, green loans, and sustainable investment funds. These initiatives help finance renewable energy, clean technologies, and sustainable infrastructure while reducing environmental risks.

In the present context, green finance plays a significant role in achieving long-term economic and environmental sustainability in India. However, awareness and adoption of green financial products among investors remain limited. This study focuses on examining the role of green finance in promoting sustainable development in India and analyzing investors' awareness and perception towards green financial products. The findings of the study are expected to help policymakers, financial institutions, and investors strengthen green finance practices and support sustainable development.

2. Conceptual Background

The conceptual background of the study highlights the growing importance of green finance in promoting sustainable development and environmental protection. Green finance encourages investments in projects that reduce carbon emissions, improve energy efficiency, promote renewable energy, and support sustainable infrastructure. Financial institutions play a significant role by offering green financial products such as green bonds, green loans, and sustainable investment funds, enabling individuals and businesses to adopt environmentally responsible practices. Green finance contributes to sustainable development by balancing economic growth with environmental conservation and social well-being. It supports investments in clean technologies, pollution control, waste

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management, and climate-resilient projects while reducing environmental risks. Increased awareness of green financial products encourages investors to make responsible investment decisions, enhances confidence in sustainable investments, and promotes long-term economic stability. Government policies, regulatory support, and green banking initiatives play a vital role in strengthening the green finance ecosystem in India. The study emphasizes that greater awareness, effective financial policies, and active participation of financial institutions can positively influence the adoption of green finance. The Sustainable Development Goals (SDGs), Environmental, Social, and Governance (ESG) principles, and national green finance initiatives further support the integration of sustainability into the financial system, contributing to inclusive and sustainable economic development.

3. Review of literature

Abbas Abdulkarim Ibrahim (2020) studied the role of green finance in promoting sustainable development in Nigeria. The study explained that environmental laws and government institutions are important for encouraging investments in renewable energy, pollution control, and other environmentally friendly projects. It found that effective policies help financial institutions support sustainable development and reduce environmental degradation. However, the study also highlighted challenges such as weak implementation of environmental regulations and poor coordination among institutions, which reduce the overall effectiveness of green finance initiatives. Licong Xing and Bisharat Hussain Chang (2020) examined the contribution of green finance mechanisms to sustainable development. The study found that financial instruments such as green bonds, climate funds, and environmentally oriented loans play a significant role in directing financial resources towards renewable energy, energy-efficient infrastructure, and low-carbon development. It further revealed that countries with stronger policy support, better institutional quality, and well-developed financial markets achieve better environmental performance. The study also identified challenges including inconsistent reporting standards, limited access to green financial products in developing economies, and the need for transparent evaluation frameworks.

Yan Yu (2020) analysed the relationship between green finance and sustainable development goals. The study found that green finance encourages investment in renewable energy, low-carbon technologies, and climate change mitigation projects. It concluded that green finance supports sustainable development by aligning financial resources with long-term environmental and social objectives. However, the study pointed out that inconsistent definitions, fragmented regulatory systems, and limited investor awareness continue to affect the growth and effectiveness of green finance. Yang Shen and Xiuwu Zhang (2021) examined the role of green finance in sustainable agricultural development. The study revealed that financial assistance for eco-friendly farming practices, organic agriculture, waste management, and modern irrigation systems helps farmers reduce pollution and improve agricultural productivity. It also highlighted that green finance encourages sustainable farming practices, although limited awareness, insufficient funding, and poor access to rural financial services remain major barriers to its adoption.

Zhang Jun and Liu Yujie (2021) studied the impact of green finance innovation on regional sustainable development. The study found that green financial instruments such as green bonds, green credit, and sustainable investments encourage industries to reduce pollution, improve resource efficiency, and promote environmentally responsible economic growth. It further concluded that regions with stronger financial systems and greater government support adopt green practices more effectively and achieve higher levels of sustainable development. Yan Dai and Yasir Ahmed Solangi (2021) analysed the risks associated with green infrastructure finance in China. The study explained that although green finance supports renewable energy, eco-friendly transport, and green buildings, financial, operational, and policy risks can reduce its effectiveness. The findings emphasised that proper risk assessment and management are essential for ensuring successful investment decisions and achieving long-term environmental and economic sustainability.

4. Problem Statement

The existing literature on green finance is largely concentrated on countries like China, with limited focus on the Indian context. Most studies rely on macro-level data, offering little insight into bank-level and firm-level practices. Additionally, there is inadequate understanding of how different types of banks contribute to promoting green finance in India. Customer awareness and adoption of green financial products also remain underexplored. Therefore, there

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is a need for a comprehensive study addressing these gaps to better understand the role of green finance in India.

5. Objective of the Study

To identify the awareness level of investors about green financial products.

To analyze the impact of green finance on sustainable development.

6. Research Methodology

6.1 Research Method

The study adopts a descriptive research methodology to understand and explain the role of green finance in promoting sustainable development. This method focuses on describing the awareness, perception, and adoption of green financial products among investors and bank customers without manipulating any variables. Primary data are collected through structured questionnaires, while secondary data are gathered from research journals, books, government reports, RBI publications, websites, and other reliable sources. The descriptive research design helps analyse the existing relationship between green finance and sustainable development.

6.2 Sampling Design

- **Sampling Method** – The study uses convenience sampling, a non-probability sampling technique in which respondents are selected based on their availability and willingness to participate. Investors, bank customers, and individuals who are aware of green financial products are selected for the study. This method is simple, economical, and suitable for collecting data within a limited time.
- **Sampling Size** – The study considers 385 respondents based on Cochran's sample size formula at a 95% confidence level and 5% margin of error. To improve the reliability of the study, 400 respondents are selected for data collection.

6.3 Source of Data

Primary Data – This study relies on primary data collected from investors, bank customers, and the general public through structured questionnaires to analyse awareness of green financial products, the role of banks in green finance, and the impact of green finance on sustainable development.

- **Research Instrument**

Structured Questionnaire

Data were collected through a structured questionnaire designed based on the objectives of the study to gather quantitative data for statistical analysis.

- **5-Point Likert Scale**

A 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) was used to measure respondents' opinions, attitudes, and awareness levels, enabling easy comparison and analysis.

- **Reliability Statistics**
- **Table 1 Scale Reliability Statistics**

Objectives	Cronbach's α
Objective	0.907
Objective	0.885
Overall	0.898

Source: Survey Data-SPSS output

The Cronbach's alpha value for Objective 1 (0.907) indicates excellent reliability, while the value for Objective 2 (0.885) indicates good reliability of the questionnaire. The overall Cronbach's alpha value of 0.898 shows a high level of internal consistency among the questionnaire items.

Secondary Data

Secondary data were collected from existing sources such as research papers, journals, books, government reports, RBI publications, websites, and articles related to green finance and sustainable development. It helped in

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understanding the background information, current trends, and supported the findings of the study.

6.4 Tools of the Study

Descriptive Analysis – Descriptive analysis is used to summarise and present the collected data using percentages, mean, and standard deviation. It helps in understanding respondents' awareness, perceptions, and opinions regarding green financial products and sustainable development. This analysis identifies general patterns and supports the objectives of the study.

ANOVA – ANOVA is used to compare the mean differences among more than two demographic groups. It is applied to examine whether awareness and perceptions of green finance differ across demographic variables such as age, gender, education, occupation, and income. This analysis helps in identifying significant differences among various groups of respondents.

Chi-Square Test-The Chi-Square test is used to examine the association between categorical variables. In this study, it is applied to determine whether demographic variables such as age, gender, education, occupation, and income are significantly associated with awareness and adoption of green financial products.

Correlation Analysis-Correlation analysis is used to measure the strength and direction of the relationship between two variables. In this study, it helps examine the relationship between green finance and sustainable development, as well as the association between awareness of green financial products and investment behaviour.

6.5 Hypotheses

H_{01}: There is no significant awareness among investors about green financial products.

H_{02}: Banks and financial institutions do not play a significant role in promoting green finance and sustainable development.

7. Data Analysis and Interpretation

This section presents the analysis and interpretation of data collected through structured questionnaires. Statistical tools are used to examine investors' awareness of green financial products and the role of banks and financial institutions in promoting green finance for sustainable development. The findings support the objectives and hypotheses of the study.

H_{01}: There is no significant awareness among investors about green financial products

Table 2 *ANOVA - OBJECTIVE-1*

Factor	Sum of Squares	df	Mean Square	F	p
Income	8.712	1	8.712	73.66	<0.001
Obj-3	1.436	1	8.7102	73.6557	<.001
Obj-1	1.43595	1	1.43595	12.1427	<.001
Obj-2	4.09693	1	4.09693	34.6447	<.001
Educational Qualification	0.23587	1	0.05897	0.4987	0.001
Investment Experience	0.16025	1	0.05342	0.4517	0.716
Age Group	3.508		3.508	29.65	<.0.001
Occupation	0.35138	1	0.08785	0.7428	0.563
Gender	0.00203	1	0.00203	0.0171	0.896
Residuals	46.0001	391	0.11826		

Source: Survey Data-SPSS output

The ANOVA results indicate that Place ($F = 9.24$, $p < 0.001$), Gender ($F = 14.50$, $p < 0.001$), Age Group ($F = 4.21$, $p = 0.006$), and Occupation ($F = 4.36$, $p = 0.002$) have a statistically significant influence on Objective 1, as their p-values are less than 0.05. This means that respondents' opinions on Objective 1 differ significantly based on these demographic factors.

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H_{02}: Eco finance has no significant impact on sustainable development.

Variables	SD	Min	Max	Skewness	Kurtosis
Environmental Protection	0.778	1	5	-1.93	3.73
Renewable Energy	0.594	1	5	-0.869	3.78
Carbon Reduction	0.878	1	5	-0.909	0.618
Sustainable Development	0.878	1	5	-1.04	1.19
Resource Conservation	0.902	1	5	-1.26	1.94
Economic Growth	0.873	1	5	-1.14	1.83
Quality of Life	0.875	1	5	-1.01	1.14
Eco-Friendly Practices	0.777	1	5	-0.864	1.32
Climate Mitigation	0.788	2	5	-0.718	0.00346
Sustainability Goals	0.833	1	5	-1.2	1.93

Source: Survey Data-SPSS output

The descriptive statistics show that the responses are consistent, with standard deviation values ranging from 0.594 to 0.902. All variables have negative skewness values (−0.718 to −1.93), indicating that most respondents agreed with the statements on green finance and sustainable development. The kurtosis values range from 0.003 to 3.78, showing that the data are approximately normally distributed. Overall, the findings indicate that respondents believe green finance has a positive impact on sustainable development. Therefore, the null hypothesis (H_{02}) is rejected and the alternative hypothesis is accepted.

8. Results and Discussions

- The responses showed a positive perception towards the role of green finance in promoting sustainable development. The standard deviation ranged from 0.594 to 0.902, indicating moderate variation in responses.
- All variables had negative skewness values (-0.718 to -1.93), indicating that most respondents agreed with the statements related to green finance and sustainable development.
- The kurtosis values ranged from 0.003 to 3.78, suggesting that the data are approximately normally distributed.
- Renewable Energy (SD = 0.594) showed the most consistent responses, while Resource Conservation (SD = 0.902) showed comparatively higher variation among respondents.
- Overall, the findings indicate that respondents believe green finance positively supports environmental protection, renewable energy, carbon reduction, economic growth, quality of life, climate mitigation, and sustainability goals.
- Based on these findings, the null hypothesis (H_{02}: Green finance has no significant impact on sustainable development) is rejected, and the alternative hypothesis is accepted, confirming that green finance has a significant positive impact on sustainable development.

9. Conclusion

The study concludes that green finance plays a significant role in promoting sustainable development in India. The findings show that respondents have a positive perception of green finance and believe it contributes to environmental protection, renewable energy, carbon reduction, resource conservation, economic growth, climate mitigation, and the achievement of sustainability goals. The statistical analysis indicates moderate variation in responses and an overall positive opinion towards green finance initiatives. Therefore, the study rejects the null hypothesis and concludes that green finance has a significant positive impact on sustainable development. The results highlight the need for greater awareness, increased investment in green financial products, and stronger support from banks and financial institutions to achieve long-term sustainable development in India.

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