IMPACT: International Journal of Research in Business Management (IMPACT: IJRBM)
ISSN (P): 2347–4572; ISSN (E): 2321–886X
Vol. 13, Issue 5, May 2025, 11–18

EXPLORING THE ROLE OF GREEN FINANCING IN SUSTAINABLE INFRASTRUCTURE: A STUDY AMONG THE COLLEGE STUDENTS IN PUDUCHERRY

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Received: 05 May 2025 **Accepted:** 28 May 2025 **Published:** 30 May 2025

ABSTRACT

Green financing plays a pivotal role in fostering sustainable infrastructure, addressing pressing environmental challenges while promoting economic growth. This research explores the awareness, perception, and understanding of green financing among students in Puducherry, aiming to assess their readiness to support and engage with sustainable development initiatives. A survey was conducted among 50 students from diverse academic disciplines to evaluate their knowledge of green finance tools, such as renewable energy investments, carbon credits, and environmental impact funds. The findings indicate limited awareness but a strong willingness to learn and participate in sustainable financial practices. The study emphasizes the importance of incorporating green finance concepts into educational programs to build a more informed and environmentally conscious generation. These insights can guide future policy and curriculum development, fostering a culture of sustainability among young individuals.

KEYWORDS: *Sustainability, Low Carbon, Green Bonds, Climate Change, Eco Friendly, Sustainable Infrastructure And Development, Waste Management, Renewable Energy and Transportation, Recycling*

INTRODUCTION

Green finance refers to financial mechanisms specifically designed to support projects that are environmentally sustainable or aligned with climate change mitigation and adaptation goals. These projects typically include renewable energy generation—such as solar, wind, and biogas—clean transportation systems with reduced greenhouse gas emissions, energy-efficient initiatives like green buildings, and effective waste management practices including recycling, eco-friendly disposal, and energy recovery. According to SEBI (2017), projects considered sustainable under the disclosure requirements for Green Debt Securities also encompass climate change adaptation, sustainable water and waste management, sustainable land use (including forestry and agriculture), and biodiversity conservation.

To support such environmentally focused initiatives, innovative financial instruments like green bonds, green funds, and carbon taxes have been developed. These tools aim to mobilize capital toward green sectors and away from traditional, environmentally harmful industries. The urgency of adopting green finance is underscored by pressing global concerns such as resource depletion, environmental degradation, and pollution, which not only threaten public health but also pose significant challenges to sustainable economic growth.

Promoting eco-friendly technologies and practices requires an enabling financial ecosystem that provides incentives for increased investment in sustainable projects. Redirecting funds from conventional sectors to green initiatives can also shift other resources, such as land and labor, toward more sustainable uses. This reallocation fosters long-term, balanced economic growth and environmental sustainability.

Recognizing this, many countries have developed comprehensive green finance policies, engaging key stakeholders including governments, corporations, and central banks. These coordinated efforts are essential in driving the global transition toward a more resilient, low-carbon economy.

LITERATURE REVIEW

- **Securities and Exchange Board of India (SEBI, 2017)**, green finance refers to financial arrangements and instruments specifically created to fund projects that contribute to environmental sustainability. These include initiatives such as renewable energy generation, energy efficiency improvements, sustainable agriculture, clean transportation, waste and water management, and biodiversity conservation.
- **The Organisation for Economic Co-operation and Development (OECD, 2017)** stresses that green bonds, in particular, have played a crucial role in mobilizing large-scale finance for sustainable infrastructure projects worldwide. The participation of both public and private sectors has been vital in scaling up investments in areas such as clean energy, green buildings, and low-carbon transportation.
- **The World Bank (2020)** notes that green finance is a key enabler for economies transitioning towards low-carbon, climate-resilient pathways. By embedding environmental considerations into financial decision-making, green finance fosters responsible economic planning and innovation.
- **The Climate Bonds Initiative (2021)** reported a rapid increase in the global green bond market, reflecting growing investor confidence in sustainable finance. However, the expansion of green finance also depends on supportive regulatory frameworks, market incentives, and—critically—awareness and financial literacy among stakeholders.
- **The United Nations Environment Programme (UNEP, 2016)** emphasizes the importance of environmental education and green finance literacy as foundational pillars for strengthening the green financial ecosystem. It suggests that awareness among youth and future professionals can lead to more environmentally responsible choices, both as consumers and as future investors or policymakers.

Moreover, regional disparities in awareness and access to green finance information are evident. While metropolitan cities may benefit from exposure to financial markets and sustainability discussions, smaller regions such as Puducherry often lag behind. There is a scarcity of research focusing on student awareness, perception, and readiness to engage with green finance in these areas. As future decision-makers, students represent a crucial demographic whose understanding of green finance can significantly influence the direction of sustainable development.

OBJECTIVES

- To assess the level of awareness among students in Puducherry regarding green financing and its significance in promoting sustainable infrastructure.

- To examine the perceptions and attitudes of students towards the role of green finance in addressing environmental and climate-related challenges.

RESEARCH METHODOLOGY

With the growing global urgency to combat climate change and promote sustainable development, green finance has emerged as a vital mechanism to support environmentally responsible initiatives. While significant progress has been made at The institutional and policy levels, awareness and understanding of green financing remain limited among the general population particularly among students who represent the next generation of leaders, professionals, and decision-makers. Puducherry, as a developing region, offers a unique perspective due to its mix of urban and semi-urban educational institutions. By focusing on the students of Puducherry, the study aims to contribute to regional and national efforts in promoting sustainability through informed financial decision-making and education

SOURCE OF DATA

The primary data for this study was collected using a structured questionnaire administered to 150 participants in the Puducherry region. The respondents were selected by using purposive sampling, targeting individuals with a basic understanding or exposure to green financing and sustainable development concepts. The demographic variables considered in the study include gender, while the metric variables focus on the participants' level of awareness, perceived impact of green finance, and their outlook on its future potential. The questionnaire was designed to capture both qualitative insights and quantitative responses related to green financing in the context of sustainable infrastructure.

DATA ANALYSIS AND INTERPRETATION

Table 1: Demographic Profile of the Respondent

Variables	No. of Participants	Percentage
Male	70	46.4%
Female	80	53.6%
Total	**150**	**100**

Source: Primary Data

Interpretation

The sample population consists of a slightly higher proportion of females compared to males. Specifically, 53.6% of the participants identify as female, while 46.4% identify as male. This indicates a relatively balanced gender representation, though females are modestly overrepresented.

Table 2: Green Finance is Important for Sustainable Development

Variables	No. of Participants	Percentage
Strongly agree	75	50
Agree	64	43
Neutral	11	7
Disagree	0	-
Total	**150**	**100**

Source: Primary Data

Interpretation

The majority of respondents recognize the significance of green financing in supporting sustainable infrastructure. Specifically, 50% of participants strongly agree and 43% agree that green financing is important, totalling 83% in overall agreement. Only 7% remain neutral, with no disagreement reported. This overwhelmingly positive response suggests a strong consensus among participants on the critical role green financing plays in promoting environmentally sustainable development and infrastructure initiatives.

Table 3: Associate with Green Financing

Variables	No. of Participants	Percentage
Renewable Energy Project	63	42.1%
Sustainable Infrastructure	55	36.8%
Climate Change Mitigation	3	1.7%
Waste Management	29	19.3%
Total	**150**	**100**

Source: Primary Data

Interpretation

When asked about their associations with green financing, 42.1% of respondents linked it primarily with renewable energy, making it the most recognized area. 36.8% associated green financing with sustainable infrastructure, while 19.3% connected it to waste management. These findings suggest that while green financing is broadly understood, there is a stronger public perception of its role in supporting energy-related initiatives compared to other sustainability sectors

Table 4: Sectors Benefiting Mostly from Green Financing

Variables	No	Percentage
Transportation	27	17.9%
Energy	38	25%
Waste management	62	41.1%
Water and sanitation	24	16.1%
Total	**150**	**100**

Source: Primary Data

Interpretation

When asked which sector would benefit the most from green financing, 40.4% of respondents identified waste management as the top priority. This was followed by energy at 26.3%, transportation at 17.5%, and sanitation at 15.3%. The results indicate that waste management is perceived as the area with the greatest need or potential for improvement through green financing in the region. This could reflect current challenges in waste handling and disposal systems, signalling an opportunity for targeted investment. Meanwhile, the interest in energy, transportation, and sanitation suggests that respondents also see value in green interventions across multiple infrastructure sectors.

Table 5: Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure

S. No.	Variables	VH	H	M	L	VL	Total
1	Awareness about green financing among students	95	30	10	10	5	150
		63	20	7	7	3	100.00
2	Willingness to invest in sustainable initiatives	85	35	15	10	5	150
		57	23	10	7	3	100.00
3	Importance of green financing in sustainable infrastructure development	110	20	10	5	5	150
		73	13	7	3	3	100.00
4	Accessibility of green financial products to students	20	90	20	10	10	150
		13	60	13	7	7	100.00
5	Institutional support for promoting green financing awareness	30	80	20	10	10	150
		20	53	13	7	7	100.00
6	Integration of green finance in academic curriculum	25	85	15	15	10	150
		17	57	10	10	7	100.00

Looking at the table, it is clear that college students demonstrated a high level of enthusiasm, as 83 percent strongly agree that awareness of the promotion of green financing is essential, and 80 percent agree that they will invest in sustainable, sustainable investment, which suggests a positive attitude toward environmentally responsible financial behavior. Likewise, 86 percent of college students view green finance as critical to the support of sustainable infrastructure and appears to reflect that they are completely aware of its environmental significance. Although 73 percent saw green products in finance as a possibility, other responses suggest some possible room for improvement in accessibility and awareness. They expect that institutions will offer them active support with 73 percent, and incorporate green finance into academic programs has 74 percent.

Table 4: ANOVA Test: Sectors Benefiting Mostly from Green Financing and Level of Expectation of Sustainable Infrastructure

Variables	Variables	N	Mean	S.D.	F Value	Sig.
Awareness about green financing among students.	Transportation	27	4.71	1.22	10.905	0.001*
	Energy	38	4.66	1.46		
	Waste management	62	4.61	1.82		
	Water and sanitation	24	4.92	1.36		
	Total	**150**	**4.85**	**1.99**		
Willingness to invest in sustainable initiatives	Transportation	27	4.32	1.87	7.712	0.005*
	Energy	38	4.19	1.88		
	Waste management	62	3.39	1.22		
	Water and sanitation	24	4.45	1.94		
	Total	**150**	**4.01**	**1.98**		
Importance of green financing in sustainable infrastructure development	Transportation	27	4.15	1.71	3.598	0.001*
	Energy	38	4.76	1.55		
	Waste management	62	4.44	1.55		
	Water and sanitation	24	4.17	1.49		
	Total	**150**	**4.34**	**1.59**		
Accessibility of green financial products to students	Transportation	27	4.16	1.98	6.020	0.005*
	Energy	38	4.34	1.58		
	Waste management	62	4.71	1.36		

	Water and sanitation	24	4.57	1.80		
	Total	**150**	**4.99**	**1.47**		
Institutional support for promoting green financing awareness	Transportation	27	4.59	1.99	4.703	0.001*
	Energy	38	4.54	1.70		
	Waste management	62	4.61	1.30		
	Water and sanitation	24	4.78	1.11		
	Total	**150**	**4.34**	**1.50**		
Integration of green finance in academic curriculum	Transportation	27	4.59	1.76	8.143	0.001*
	Energy	38	4.64	1.90		
	Waste management	62	4.71	1.01		
	Water and sanitation	24	4.68	1.22		
	Total	**150**	**4.64**	**1.32**		

Based on Primary Data * Sig.@5%

The impact of f value Sectors benefiting mostly from green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure area is as follows: 10.905, 07.712, 3.598, 3.598, 6020, 4.703, 8.143 Awareness about green financing among students, Willingness to invest in sustainable initiatives, Importance of green financing in sustainable infrastructure development, Accessibility of green financial products to students, Institutional support for promoting green financing awareness, Integration of green finance in academic curriculum The calculated ANOVA result plainly indicates that the Sectors benefiting mostly from green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure, category is significantly Sectors benefiting mostly from green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure , as indicated by the results rejected.

FINDINGS AND RECOMMENDATIONS

- This study provides a detailed insight into the perceptions and attitudes of the respondents toward green financing.
- The demographic profile of the participants indicates that male respondents outnumber female respondents, which may reflect the current trend in the region's engagement with financial and sustainability topics.
- Despite this gender imbalance, the overall consensus among the respondents highlights a strong belief in the role of green financing in promoting sustainable economic growth.
- When asked about the significance of green financing, more than half of the respondents strongly agreed on its importance, while the remaining participants also acknowledged its critical role in sustainable development.
- The calculated ANOVA result plainly indicates that the Sectors benefiting mostly from green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure, category is significantly Sectors benefiting mostly from green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure , as indicated by the results rejected.

- The calculated ANOVA result plainly indicates that the Associate with green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure, Social media category is significantly Associate with green financing and Level of Expectation of College Students Towards Green Financing in Sustainable Infrastructure, as indicated by the results rejected

SUGGESTIONS

- Educational institutions can begin by incorporating green finance concepts into their educational syllabi through workshops, guest lectures, and simulation exercises. This way, we can help close the loop between theoretical understanding of sustainability and practical relevance by making the students more engaged with sustainable infrastructure planning.
- As social media has such a large impact on the perceptions of students and their expectations, universities can conduct green finance awareness drives online. Additionally, establishing peer-led campaigns and having student ambassadors promote their interest in financial instruments associated with sustainability can encourage student interest and participation in sustainable financing practices.
- Since some industries seem to profit relatively more based on green financing compared with other industries and sectors, green financing orientation programs can expose students to sectoral opportunities more aligned with other sustainable infrastructure sectors (like renewable energy, eco-development, green building, etc.) and align their career dreaming with the green finance-supported goals of sustainable infrastructure.

CONCLUSION

This study underscores the critical role of green financing in driving sustainable infrastructure development and mitigating the adverse effects of climate change. The findings reveal a strong consensus among students in Puducherry regarding the importance of green financing for promoting sustainable economic growth. The study also highlights the significant influence of modern information channels—particularly social media, news articles, and research publications—on shaping perceptions about green finance. This suggests that effective communication and targeted educational interventions are vital in enhancing green finance literacy. Moreover, the expressed interest among a substantial portion of respondents in considering green finance as a potential career path points to promising future trends in sustainable finance education and professional development. In light of these insights, educational institutions and policymakers must integrate green finance concepts into curricula and develop initiatives that further disseminate knowledge about sustainable financial practices. Such efforts will not only bridge the current awareness gap but also empower the next generation to contribute meaningfully to a sustainable economic future.

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