IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Leveraging Green Banks For Financing Sustainable Infrastructure: A Catalyst For Achieving Sustainable Development Goals (Sdgs)

[1] Ms. Satyam Sangya, [2] Dr Ramesh Chandra Verma
[1] Research Scholar, [2]Professor,
[1] Department of Commerce,
[1]University of Lucknow, Lucknow, India

Abstract: Green banks have emerged as pivotal financial institutions dedicated to mobilizing capital for sustainable infrastructure projects, including green buildings, to accelerate the transition to a low-carbon, resilient economy. Through a comprehensive analysis of case studies, policy frameworks, and financial mechanisms, this study aims to examine the effectiveness of green banks in promoting investment in green buildings, fostering innovation, and driving sustainable economic growth. By assessing the alignment between green bank activities and SDG targets, as well as identifying trade-offs, barriers, and benefits of scaling up investment in sustainable infrastructure, this research will provide insights into strategies for maximizing the impact of green banks in advancing global sustainability objectives. The findings will inform policymakers, financial institutions, investors, and practitioners about the potential of green banks as catalysts for sustainable development and offer recommendations for strengthening their capacity to mobilize capital, drive innovation, and achieve meaningful impact in the transition to a green economy.

Keywords: Green Banks, Sustainable Infrastructure, SDGs, Environmental Sustainability.

Introduction:

While urbanization brings opportunities, prosperity, and well-being to many of its residents, it also seriously disturbs the equilibrium of the social, economic, and environmental spheres. For instance, according to UN statistics, 70% of global greenhouse gas emissions (GHG) originate from cities, the majority of which have inadequate planning, insufficient public transportation, and high energy consumption.

In the current scenario, we are facing global challenges like resource depletion, rapid urbanization, and climate change. Innovative financing strategies and revolutionary tactics that put environmental conservation, social inclusion, and economic resilience first are needed to address these issues. In this context, green banks have become essential hubs for capital mobilization and investment in sustainable infrastructure projects that support the Sustainable Development Goals (SDGs).

This paper examines the critical role that banks play in funding environmentally friendly infrastructure and furthering the global sustainability agenda. Green banks have the ability to quicken the shift to a low-carbon, resilient, and inclusive future by focusing on utilizing financial innovation, policy coherence, and stakeholder collaboration. Sustainable cities and communities (SDG 11), affordable and clean energy (SDG 7), and climate action (SDG 13) are just a few of the several SDGs that green banks can help achieve by financing renewable energy, energy efficiency, sustainable transportation, etc.

Key research questions:

1. What are the key financial instruments and mechanisms utilized by green banks to mobilize capital for green buildings?
2. What role do green bank activities play in attaining Sustainable Development Goals (SDGs)?
3. What are the social, environmental, and economic benefits of green bank investments in sustainable infrastructure development?
4. How do policy frameworks, regulatory incentives, and public-private partnerships influence the green banks in promoting sustainable infrastructure development?

Research Objectives:

1. To identify the key financial instruments and mechanisms utilized by green banks to mobilize capital for green buildings
2. To explore the role of green banks in attaining Sustainable Development Goals (SDGs).
3. To discuss the case study related to sustainable infrastructure in India and worldwide.
4. To identify the barriers and challenges faced by green banks while financing sustainable infrastructure projects

Review of Literature:

Hinge, Surampalli, and Goyal (2020) highlighted the environmental challenges associated with infrastructure development while discussing its significance for economic growth. The study placed a strong emphasis on the necessity of climate-resilient infrastructure, adaptation to climate change, and the function of mitigation measures like strategic environmental assessments. The study came to the conclusion that attaining long-term sustainability objectives, protecting the environment, and fostering economic resilience all depend on incorporating sustainability into infrastructure planning and development.

Mir and Bhat (2022) investigated how green banking can help achieve the Sustainable Development Goals (SDGs) of the UN and promote environmental sustainability. With an emphasis on MayBank Malaysia and the State Bank of India (SBI), it offers a global overview of green banking practices. The study glanced at how financial institutions can use carbon disclosure initiatives, green loans, paperless banking, and financing for renewable energy to reduce climate risks, support clean energy, and foster sustainable economic growth.

Chan, Jin, and Kan (2022) examined the main drivers of sustainable infrastructure development, such as policy frameworks, financial incentives, technological innovation, and stakeholder engagement. The study, which was published in October 2022 in *Resources, Conservation, and Recycling*, underlined the value of cross-sector cooperation in accomplishing sustainability objectives and the significance of incorporating environmental factors into infrastructure planning. The study came to the conclusion that successful development of sustainable infrastructure requires a multipronged strategy that addresses economic, social, and environmental factors.

Rajesh S. (2022) offered a thorough examination of how Indian financial institutions have embraced environmentally friendly practices, recommended actions that Indian banks and financial institutions should take to reduce their carbon footprints, and emphasized opportunities like the rising demand for sustainable financial products, increased corporate social responsibility, and regulatory support.

Faniband, Marulkar, and Jadhav (2022) addressed policy and environmental issues while examining the contribution of sustainable infrastructure to India's economic growth. Infrastructure Debt Funds (IDFs), green bonds, and multilateral bank support were highlighted as examples of green financing models. The study identified major motivators, such as government programs and private sector involvement, as well as obstacles such as expensive capital expenditures, limited technology, and ineffective planning.

Meng, Ye, and Wang (2024) conducted a thorough literature review with a focus on green finance and financing methods for sustainable infrastructure. After reviewing 4,308 publications using the PRISMA methodology, 74 were chosen for bibliometric analysis. The study outlined the main infrastructure industries and funding sources, such as public, private, and green finance, and it emphasized the growing significance of green bonds. It proposed a conceptual framework for integrating green finance into sustainable infrastructure development.

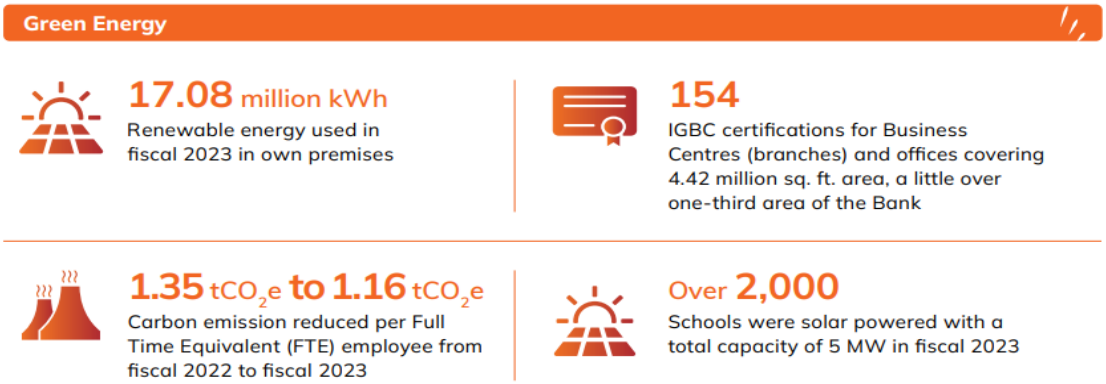
Research Methodology:

The present study is descriptive, as it tends to describe the concepts of sustainable infrastructure and green banks. The study is also exploratory, as it explores the role of green banks in sustainable infrastructure development. The study also discusses in detail the various case studies in India and around the world.

Data Collection:
Data has been collected from secondary sources for the study. It includes a detailed review of the literature of previously published research papers, websites, including those of the government of India, reports, books, magazines, etc.

What is sustainable infrastructure?
The term "sustainable infrastructure" describes devices and frameworks that are built on universally sustainable principles to fulfill the basic requirements of the population. Examples of these structures include telephone towers, bridges, roads, hydroelectric power plants, and other utilities. This indicates that all aspects of the infrastructure—financial, social, institutional, and economic—are environmentally friendly.
The planning, designing, building, and managing of infrastructure projects that satisfy the needs of the current generation without jeopardizing the ability of future generations to satisfy their own needs is known as sustainable infrastructure development. It entails incorporating social, cultural, and economic factors into the processes of developing infrastructure to foster sustainability, inclusivity, and resilience in a variety of contexts.

Source: IDB (Inter-American Development Bank)



Source: ICICI Bank

What are green banks?
Green banks are specific types of financial institutions that focus on providing funding for initiatives that support climate change mitigation, environmental sustainability, and the shift to a low-carbon economy. Usually, they function as government-sponsored organizations or public-private partnerships with the aim of raising money for environmentally friendly investments and offering specialized financial services and products to assist with sustainable development projects.

The financing of sustainable infrastructure by green banks presents a transformative opportunity to create resilient, inclusive, and sustainable communities for the current and future generations, particularly at this pivotal point in the pursuit of global sustainability goals. We can unleash the transformative potential of sustainable infrastructure and hasten the process of accomplishing the SDGs by working together and utilizing the strength of green banks.

- **Green Banks in India:**
    1. **Financial Institutions:**
        a. India Infrastructure Finance Company Limited (IIFCL)
        b. Indian Renewable Energy Development Agency Limited (IREDA)
        c. Small Industries Development Bank of India (SIDBI)
        d. National Bank for Agriculture and Rural Development (NABARD)
        e. Power Finance Corporation (PFC) and Rural Electrification Corporation (REC)
        f. Indian Green Building Council (IGBC)
    2. **Commercial Banks:**
        a. Public sector banks [SBI, PNB, Bank of Baroda, etc.]
        b. Private sector banks (ICICI Bank, HDFC Bank, Axis Bank, etc.)
- **Green Banks Worldwide:**
    1. Connecticut Green Bank, United States (first green bank in the United States)
    2. New York Green Bank (NYGB), United States (state-sponsored)
    3. Green Investment Group (GIG), United Kingdom (government-owned)
    4. Clean Energy Finance Corporation (CEFC), Australia (government-owned)
    5. Green Climate Fund (GCF) (multilateral)
    6. Green Finance Organization (GFO), Japan (government-owned)

Green bank financing mechanisms for green building projects:

Here are some common green bank financing mechanisms for green building projects:

1. **Green Loans:** When compared to conventional financing options, green loans might have lower fees, longer repayment terms, and preferential interest rates. They are especially made to encourage homeowners and developers to spend money on environmentally friendly features like water-saving techniques, renewable energy sources, and energy-efficient architecture. Green banks or traditional financial institutions working with green building certification organizations can offer green loans.
2. **Green Bonds:** Green bonds are debt instruments that are issued by corporations, governments, or municipalities to fund environmentally friendly projects. The money raised from the sale of green bonds will go toward projects that fit certain environmental requirements, like installing renewable energy sources, enhancing energy efficiency, and developing green infrastructure.
3. **Green Mortgages:** Home loans intended especially for the purchase or building of ecologically friendly and energy-efficient homes are known as green mortgages. To encourage buyers to invest in green building features, these mortgages might provide lower interest rates, fewer down payment requirements, and other monetary incentives. Green banks, government initiatives, and housing finance organizations working together with green building certification organizations and agencies support green mortgages.
4. **Energy Performance Contracts (EPCs):** Energy service companies (ESCOs) and building owners enter into agreements known as energy performance contracts (EPCs) where an ESCO plans, carries out, and finances energy-saving measures in return for a portion of the energy cost savings realized over a predetermined time frame.
5. **Property Assessed Clean Energy (PACE) Financing:** PACE financing is typically provided by municipal governments or independent (third-party) lenders to enable property owners to finance energy efficiency, renewable energy, and water conservation upgrades, and it is repaid over time through property tax assessments. Green building initiatives, such as solar panel installations, energy-efficient retrofits, and the creation of green roofs, can be financed through PACE financing.

6. **Green Investment Funds:** A portfolio of ecologically friendly projects, including green building projects, is financed by green investment funds, which pool the capital of investors to invest in particular industries like sustainable real estate development, energy efficiency, or renewable energy. Through portfolio diversification and risk mitigation, green investment funds maximize impact and give investors exposure to green building projects.
7. **Green Leasing:** Green leasing is the practice of including sustainability clauses in rental agreements between building owners and tenants. Green leasing clauses can cover waste management procedures, renewable energy integration, water usage limitations, and energy performance standards. Green leasing can promote sustainable practices among tenants and encourage building owners to invest in green building features, resulting in shared environmental responsibility and mutual benefits.

Role of green banks in attaining Sustainable Development Goals (SDGs):
Here's a list of SDGs that are particularly in synergy with the green bank objectives:

S. No	SDG	Synergy between SDGs and Green Bank Activities
1	**SDG 3:** Good Health and Well-Being	Green bank activities like financing clean energy projects and sustainable transportation systems help reduce air pollution, mitigate climate-related health risks, and promote a healthy environment for all
2	**SDG 6:** Clean Water and Sanitation	Green banks invest in water management, sanitation, and wastewater treatment projects to improve access to clean water and sanitation
3	**SDG 7:** Affordable and Clean Energy	Green banks finance renewable energy projects and help in generating affordable and clean energy
4	**SDG 8:** Decent Work and Economic Growth	Green banks create employment opportunities, stimulate economic growth, and promote sustainable development to achieve decent work and inclusive economic growth
5	**SDG 9:** Industry, Innovation, and Infrastructure	Green banks invest in sustainable infrastructure and promote innovation, infrastructure resilience, and foster inclusive and sustainable industrialization
6	**SDG 11:** Sustainable Cities and Communities	Green banks finance sustainable urban development projects like green buildings and public transportation systems
7	**SDG 12:** Responsible Consumption and Production	Green banks encourage responsible consumption and production patterns by supporting sustainable infrastructure projects, promoting resource efficiency, and reducing environmental impacts throughout the lifecycle of goods and services.
8	**SDG 13:** Climate Action	Green banks finance climate-resilient infrastructure projects, renewable energy initiatives, and climate mitigation measures to combat climate change
9	**SDG 15:** Life on Land	Green banks help in protecting terrestrial ecosystems, preserving biodiversity, and promoting sustainable land use practices by investing in sustainable practices
10	**SDG 17:** Partnerships for the Goals	Green banks collaborate with governments, financial institutions, civil society organizations, and other

		stakeholders to mobilize resources, build capacity, and foster partnerships for sustainable development

Source: United Nations

Case studies illustrating successful green bank investments in green infrastructure:

- **In India:**
  1. **The Indian Green Building Council (IGBC) and HDFC Green Building Finance Scheme:** The Indian Green Building Council (IGBC), a division of the Confederation of Indian Industry (CII), has the responsibility of promoting green building practices throughout India. HDFC Bank introduced the HDFC Green Building Finance Scheme in collaboration with IGBC. The scheme provides customized financing options, reduced processing fees, and preferential interest rates to the IGBC-certified developers who are working on green building projects. Residential, commercial, industrial, and institutional buildings satisfying the requirements of the IGBC's Green Building Rating System can only qualify for the incentives related to energy efficiency, renewable energy integration, and sustainable construction practices.
  2. **Tamil Nadu Infrastructure Fund Management Corporation (TNIFMC), the Shelter Fund, and the Green Climate Fund:** TNIFMC worked with a group of developers in Chennai and formed the Tamil Nadu Shelter Fund (TNSF), a social 'impact' private equity fund specializing in affordable housing projects to help economically weaker sections and to support projects reducing greenhouse gas emissions. Approximately 6,000 units are under development, and 4.95 million sq. ft. of buildings are under green certification in Tamil Nadu. The Tamil Nadu Green Climate Fund (TNGCF) (a SEBI-registered social impact fund) aims to transform Tamil Nadu into a net-zero and climate-resilient state, and currently it has worked to reduce the GHG-CO2 eq of 6 mn/annum by developing 3 GW of renewable energy and has recycled 0.3 mn/annum of waste.
  3. **State Bank of India (SBI) Financing Green Projects through Green Bonds:** In early 2024, the State Bank of India (SBI) raised USD 250 million through the issuance of green bonds to fund sustainable projects. The proceeds were also referred to as 'The Green Notes' and will be allocated to eligible green projects according to the bank's ESG Financing Framework. In a push to make India carbon neutral, SBI is also targeting to deploy a minimum of 7.5% of its domestic loans in the green energy sector by 2030.
  4. **Punjab National Bank (PNB) Financing Energy-Efficient Office Buildings:** Indian Renewable Energy Development Agency Ltd. (IREDA) and Punjab National Bank (PNB) have signed a Memorandum of Understanding (MoU) for co-lending and loan syndication of various renewable energy projects, including solar, wind, small hydro, biomass, etc. The aim is to support the growth of green energy in alignment with India's ambitious target of achieving 500 GW of non-fossil fuel capacity by 2030. The IREDA-PNB alliance will facilitate funding for small developers as well as large solar parks and wind farm projects, leveraging competitive pricing and efficient credit appraisal mechanisms.

5. **ICICI Bank Funding Green Residential Projects:** ICICI Bank has provided loans amounting to $6.7 billion to sectors like renewable energy, green hydrogen, electric mobility, sustainable buildings, and water security in line with government initiatives in the fiscal year 2023. The bank also subscribed to India's inaugural issue of sovereign green bonds during fiscal 2023 and constructed green workplaces that adhered to the rigorous standards set by the Indian Green Building Council (IGBC). A total of 28 new sites covering 2.87 million square feet received IGBC certification in fiscal 2023. According to the bank, a total of 17.08 million kWh of renewable energy (9% of its total energy consumption) was utilized in fiscal 2023.
6. **Axis Bank Financing Green Office Complex:** In Bengaluru, India, an eco-friendly office building was built thanks to funding provided by Axis Bank. Green building standards were adhered to in the renovation of an existing commercial property to create a contemporary, energy-efficient office building. Axis Bank provided term loans and construction financing to support the development of the green office complex, which achieved certification under the Leadership in Energy and Environmental Design (LEED) rating system.

- **In Worldwide:**
  1. **Citibank Green Building Finance Program in India:** Citi introduced a sustainable time deposit solution in India. The money deposited in this product will be used for the projects listed under the Citi Social Finance Framework, such as improving access to affordable basic infrastructure, affordable housing, economic inclusion, education, food security, and healthcare for underprivileged and low-income communities. After Singapore and Hong Kong, India is the third market in the Asia-Pacific region to introduce this product for customers, broadening Citi's program to now include clients in the United States, Europe, and the Middle East.
  2. **Standard Chartered Bank Sustainable Real Estate Finance Initiative:** The GAW Capital-led consortium, a top private equity firm in Asia Pacific, has partnered with United Overseas Bank Limited (UOB), Australia and New Zealand Banking Group Limited (ANZ), and Standard Chartered Bank (Hong Kong) Limited to get an offer of a HK$14.4 billion sustainability-linked loan (SLL) facility to refinance its retail portfolio under People's Place, which consists of 16 shopping properties in Hong Kong. Air, water, nourishment, light, fitness, comfort, and mind are the seven core areas of the built environment that are measured, certified, and monitored by WELL (performance-based certification of buildings). These sustainability targets are tied to the three-year SLL and include cutting down on electricity consumption, managing recyclable waste, implementing green leasing practices, and achieving WELL certification. With this program, GAW Capital is showing its dedication to sustainability and the banking industry's support for helping customers reach their targets for a low-carbon economy.
  3. **HSBC Sustainable Property Finance Program:** The Climate Policy Initiative (CPI), HSBC (Hongkong and Shanghai Banking Corporation Limited), the International Finance Corporation (IFC), the OECD, and the Global Infrastructure Facility came up with the idea for FAST-Infra as part of President Macron's One Planet Lab. It is a true team effort. The OECD estimates that in order to stop catastrophic climate change, we will need to invest a substantial sum of money—up to USD 6.9 trillion annually—in the development of new, sustainable infrastructure, especially in developing nations. Institutional investors are eager to make investments, but they lack the means to confirm that the infrastructure or assets are truly sustainable. Here FAST-Infra (Finance to Accelerate the Sustainable Transition-Infrastructure) comes to the rescue (introduced at COP26 in Glasgow), a globally applicable labeling system that indicates an asset's sustainability, and investors can feel secure about their money. According to 50% of investors and issuers in the HSBC 2021 Sustainable Financing

and Investing Survey, if a labeling system were put in place, they would feel a lot more comfortable making investments in sustainable infrastructure.

4. **Deutsche Bank Green Building Financing Program:** Deutsche Bank and the European Investment Bank (EIB) had announced the launch of a new collaboration aimed at supporting sustainable transformations at medium-sized companies by providing €400 million for areas like renewable energy, energy efficiency, and other projects meeting the sustainability criteria of the EU Taxonomy. The program aims to reduce barriers to accessing finance due to supply chain bottlenecks, inflation, rising interest rates, and insecure energy supply. Deutsche Bank announced a series of sustainable finance goals, including a target to enable a total of €500 billion in sustainable financing and investments between 2020 and 2025.
5. **Barclays Green Building Finance Initiative:** A new framework for sustainable residential development was created in partnership with CBRE Environmental Consulting Group to facilitate the financing, monitoring, gathering of data, and distribution of green residential development loans. This will help qualified clients make sustainable decisions and integrate seamlessly with Barclays' current green-term loan offering. The framework outlines minimum requirements, guides how to go greener, and uses a social impact score to acknowledge the beneficial effects developers can have on the communities in which they operate. It also awards a rating of "good," "innovative," or "emerald" to the eligible schemes.

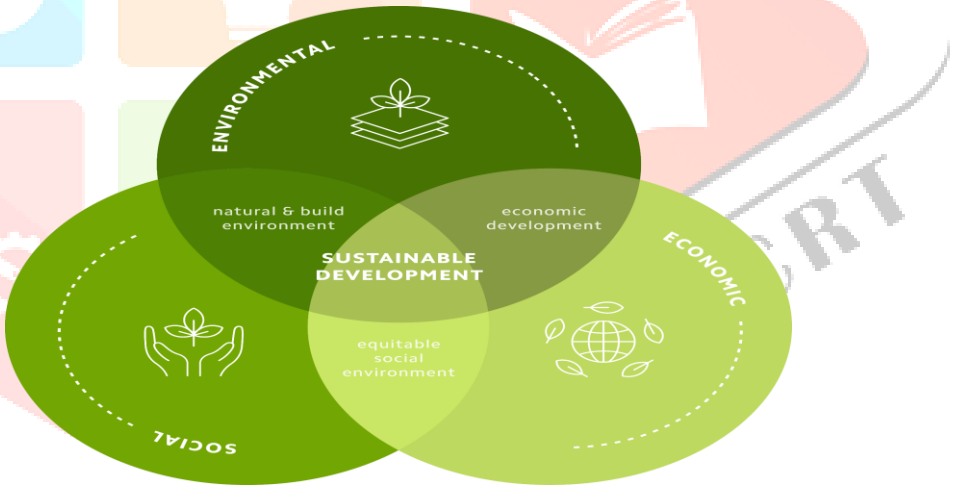
Social, environmental, and economic benefits of green bank investments in sustainable infrastructure development:

Investing in sustainable infrastructure development by green banks has numerous positive social, environmental, and economic effects. Here's a detailed explanation of these benefits:

- **Social Benefits:**
  1. **Improved public health:** Sustainable infrastructure projects help lowering air and water pollution, which results in improvements in public health outcomes, such as decreased rates of cardiovascular disease, respiratory illnesses, and other ailments.
  2. **Enhanced community resilience:** Communities are more resilient to natural disasters and extreme weather events when banks invest in climate-resilient infrastructure, such as stormwater management facilities, flood protection systems, and buildings that can withstand natural disasters. These initiatives support the protection of people's lives, homes, and means of subsistence, especially in marginalized and vulnerable communities.
  3. **Access to basic services:** Deprived areas get access to clean water, sanitary facilities, and other necessities with more investments in rural infrastructure, sanitation, and water management projects by green banks. This improves people's quality of life, advances social justice, and gives more power to marginalized groups such as women, children, and indigenous communities
  4. **Job creation and economic opportunity:** The development of sustainable infrastructure has the potential to create jobs in a number of industries, such as green technology, renewable energy, construction, and transportation. Investments made by green banks reduce poverty and promote socioeconomic development by generating green-collar jobs, boosting economic growth, and encouraging local entrepreneurship.
- **Environmental Benefits:**
  1. **Reduced carbon emissions:** Green bank investments assist in reducing the effects of climate change and facilitating the shift to a low-carbon economy by supporting clean, renewable energy alternatives that displace fossil fuel-based energy sources.
  2. **Biodiversity conservation:** Sustainable infrastructure initiatives like habitat restoration, creation of green spaces, and establishment of ecological corridors help in ecosystem restoration and biodiversity conservation, and these initiatives improve ecosystem services and aid in the protection of wildlife.

3. **Resource conservation:** Sustainable infrastructure projects support resource resilience and environmental sustainability by maximizing resource utilization, reducing waste production, reducing wastage of water, and advancing the ideas of the circular economy.
4. **Better air and water quality:** Green infrastructure projects mitigate pollution and improve the air and water quality for current and future generations by implementing clean energy production, environmentally friendly transportation, and pollution prevention strategies.

- **Economic Benefits:**
  1. **Cost savings and efficiency gains:** By consuming less energy, requiring less maintenance, and improving asset performance, sustainable infrastructure projects frequently result in long-term cost savings and operational efficiencies.
  2. **Enhanced property values:** Investing in eco-friendly infrastructure, sustainable urban development, and green buildings raises market demand and property values. In real estate markets, green-certified buildings increase asset attractiveness, draw in tenants, and command premium rents. As a result, they increase returns on investment and improve asset liquidity.
  3. **Resilient infrastructure:** Green bank investments in climate-resilient projects increase the resilience of infrastructure against the effects of climate change, natural disasters, and other shocks from the outside world.
  4. **Market opportunities and innovation:** Green bank investments stimulate the creation and uptake of sustainable practices, technologies, and business models, which in turn drive market innovation and opportunities. Green bank initiatives increase economic diversification and competitiveness by promoting entrepreneurship in green industries, stimulating private sector investment, and opening up new markets.



Source: Blue Bite

Trade-offs faced by Green Banks:

- **Economic Growth vs. Environmental Conservation:**
  While green bank investments stimulate economic activity and create jobs through sustainable infrastructure development, there may be concerns about potential environmental impacts, such as habitat destruction or ecosystem degradation, associated with infrastructure projects.
- **Affordability vs. Accessibility:**
  Green bank objectives aim to promote affordable and clean energy access for all (SDG 7), but there may be trade-offs between affordability and accessibility in certain contexts. For example, while renewable energy projects offer long-term cost savings and environmental benefits, the upfront costs of infrastructure development may pose affordability challenges for low-income communities or marginalized populations.
- **Social Equity vs. Economic Efficiency:**
  Green bank investments in sustainable infrastructure projects often prioritize social equity and inclusivity (SDGs 10 and 11), but there may be trade-offs between social equity objectives and economic efficiency considerations. For instance, while investments in public transportation

infrastructure improve mobility and accessibility for underserved communities, they may require subsidies or public financing mechanisms to ensure affordability and financial sustainability.

- **Climate Resilience vs. Economic Development:**
  Green bank objectives emphasize climate resilience and adaptation measures (SDG 13), but there may be trade-offs between climate resilience and short-term economic development priorities. For example, infrastructure projects designed to enhance climate resilience, such as flood protection systems or coastal defenses, may require significant upfront investments and long-term planning, which could compete with other economic development priorities.

Barriers and challenges faced by green banks:

1. **Lack of Awareness and Education:** The stakeholders, including borrowers, developers, and bank staff, don't know much about the benefits and requirements of green building projects, which leads to reluctance or skepticism towards green financing options.
2. **Limited capital availability:** This challenge can be overcome by leveraging public-private partnerships, collaborating with institutional investors, and using innovative financing mechanisms like sovereign wealth funds, green bonds, and investment funds to attract capital from diverse sources and scale up financing for renewable energy, energy efficiency, and sustainable infrastructure projects.
3. **Higher upfront costs:** Energy-efficient technologies, sustainable materials, and green design features require additional investments, which can deter developers and borrowers from pursuing green building projects. Banks may face challenges in assessing the financial viability and creditworthiness of green building projects with higher initial costs.
4. **Long payback periods and ROI uncertainty:** Many banks hesitate to finance green building projects with extended payback periods due to uncertainty about the return on investment (ROI) and financial viability. The green building projects may have a longer payback period compared to conventional development projects.
5. **Perception of Higher Risk:** Green building projects could be seen as a higher-risk venture due to factors such as technological complexity, market uncertainties, regulatory risks, a lack of historical performance data, and market precedents for green building projects. As a result, banks may impose stricter lending criteria or charge higher interest rates for green building financing, which will ultimately limit the access to capital for developers.
6. **Limited expertise and capacity:** Traditional banking institutions lack specialized knowledge and technical skills that are required for assessing the environmental impact, energy performance, and sustainability features of green building projects. The need to invest in training, capacity building, and partnerships with industry experts may arise.
7. **Regulatory and policy barriers:** Regulatory barriers, such as outdated building codes, permitting requirements, and zoning restrictions, can impede the adoption of green building practices and hinder banks' ability to finance such projects.

Recommendations:

To capitalize on opportunities for enhancing the role of green banks in financing sustainable infrastructure, policymakers, financial institutions, investors, and practitioners can consider the following recommendations:

- **Policymakers:**
  - Implementing supportive regulations, incentives, and fiscal measures to create an enabling policy environment for sustainable infrastructure development and climate resilience so as to attract private sector investment and reduce investment risks. For this purpose, IREDA works closely with government agencies, policymakers, and regulators.
  - Facilitate collaboration and coordination among government agencies, financial institutions, industry stakeholders, and civil society organizations to align strategies, pool resources, and scale up investments in green infrastructure.

- **Financial Institutions:**
  - Integrate environmental, social, and governance (ESG) criteria into investment decision-making processes, risk assessments, and portfolio management practices.
  - Develop innovative financial products, such as green bonds, green loans, climate funds, and impact investment funds, tailored to the needs of sustainable infrastructure projects and investors. For this purpose, NYGB provides project financing, loan guarantees, flexible financing terms like long tenures, and competitive interest rates.
- **Investors:**
  - Incorporate sustainability criteria into investment strategies, asset allocation decisions, and due diligence processes to align portfolios with environmental, social, and governance (ESG) principles.
  - Engage with green banks and financial institutions to explore investment opportunities, understand risk-return profiles, and co-develop financing solutions for sustainable infrastructure projects that generate positive environmental and social impacts.
- **Practitioners:**
  - Develop projects more easily by carrying out feasibility studies, creating business plans, and obtaining technical support and advisory services to make projects more bankable and draw in funding from green banks and other investors.
  - Encourage genuine interaction with indigenous peoples, local communities, and other stakeholders impacted by sustainable infrastructure projects to address issues of social and environmental impacts and to guarantee inclusivity, openness, and social acceptance.
- **Green Banks:**
  - Encourage public-private partnerships (PPPs) to help government organizations, banks, project developers, and other stakeholders work together to share resources, expertise, and risks.
  - Utilize blockchain, artificial intelligence (AI), advanced analytics, and other digital tools to streamline decision-making, lower transaction costs, and improve project financing accountability and transparency.
  - Incorporate social impact metrics, gender considerations, and community engagement strategies into investment criteria to ensure that sustainable infrastructure projects benefit vulnerable and marginalized populations, promote inclusive growth, and foster social cohesion and resilience.

Conclusion:

Green banks play a pivotal role in advancing the transition to a more sustainable and equitable future for all by financing and supporting more and more sustainable infrastructure.

While there are potential synergies between green bank objectives and SDG priorities, trade-offs may arise due to competing interests and priorities across economic, social, and environmental dimensions. Balancing these trade-offs and addressing the challenges requires careful consideration of stakeholder perspectives, comprehensive impact assessments, and integrated approaches to sustainable development planning and implementation. By overcoming the barriers, banks can unlock the potential of green financing to drive sustainable development and contribute to a greener, more resilient built environment.

References:

1. Hinge, Gilbert & Surampalli, Rao & Goyal, Manish. (2020). Sustainable Infrastructure. 10.1002/9781119434016.ch14.
2. Mir, A.A. and Bhat, A.A. (2022), "Green banking and sustainability – a review," Arab Gulf Journal of Scientific Research, Vol. 40 No. 3, pp. 247-263. https://doi.org/10.1108/AGJSR-04-2022-0017
3. Chan, M., Jin, H., & Kan, D. v. (2022, October). Assessment of driving factors for sustainable infrastructure development. Resources, Conservation and Recycling, 185, 106490. https://doi.org/10.1016/j.resconrec.2022.106490

4. S, R. (2022, April). Green banking practices in India: Opportunities and challenges. Asian Journal of Management and Commerce, 3(1), 161-165. https://doi.org/10.22271/27084515.2022.v3.i1c.253
5. Faniband, Muhammadriyaj & Marulkar, Kedar & Jadhav, Pravin. (2022). Sustainable Infrastructure Development in India: Drivers and Barriers. 10.1007/978-981-16-8837-9_10.
6. Meng, J., Ye, Z., & Wang, Y. (2024, December). Financing and investing in sustainable infrastructure: A review and research agenda. Sustainable Futures, 8(2024), 100312. https://doi.org/10.1016/j.sftr.2024.100312
7. https://www.citigroup.com/global/news/press-release/2023/-citi-launches-sustainable-deposits-solution-for-institutional-clients-in-india
8. https://www.gawcapital.com/news/pressrelease/uob-anz-and-standard-chartered-hong-kong-join-forces-to-provide-a-hk14-4-billion-sustainability-linked-loan-to-gaw-capital-led-consortium-for-refinancing-of-its-retail-portfolio-of-16-shopping-prope/
9. https://www.business.hsbc.com/en-gb/insights/sustainability/fast-infra
10. https://www.esgtoday.com/deutsche-bank-eib-launch-e400-million-sustainable-finance-initiative-targeting-mid-size-companies/
11. https://home.barclays/news/press-releases/2022/09/barclays-aims-to-boost-sustainable-residential-development-with-/