**GREEN FINANCING FOR SUSTAINABLE DEVELOPMENT IN INFRASTRUCTURE PROJECTS IN KENYA**

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**Abstract**

Transitioning to a decarbonized economy requires unprecedented capital investments, particularly through green finance. Both market and regulatory trends indicate a growing interest in green and sustainable finance among investors and policymakers. However, capital mobilization for green investments is hindered by microeconomic challenges, including mismatches between the long-term nature of green investments and the short-term horizons of investors and fragmented financial and environmental policies. This study aims to assess the trends, instruments, and challenges surrounding green finance adoption. A desk review (meta-analysis) method was used to gather insights on green finance trends, instruments, and adoption barriers. The study found that achieving the Sustainable Development Goals (SDGs) requires scaling up green projects and financing investments that offer environmental benefits through innovative financial instruments and policies, such as green bonds, green banks, carbon market instruments, fiscal policies, green central banking, financial technologies, and community-based green funds.

**Keywords:** Green, finance, infrastructure, development

**Introduction**

The appearance of green bonds from the World Bank and EIB over a decade back paved the way for trillions of dollars for climate-specific investments in energy, construction efficiency, and restoration of ecosystems (Beschloss & Mashayekhi, 2019). First, the difficulty was in offering a sufficiently credible and explicatory security class attractive to institutions and environmental groups. Subsequently, in 2010, to address this, the Climate Bond Initiative (CBI) developed the Climate Bonds Standard and Certification scheme as an operational direction In 2014, the International Capital Markets Association (ICMA) broadened the focus to green loan principles. The green bond issuance had reached more than 5,000 with a total worth of more than 590 billion US$ by 2019; and the six major markets where green bonds are issued most frequently are Australia, Canada, Europe, Japan, New Zealand and the United States (Carney, 2019).

In Kenya, green finance is mainly sourced through external borrowings and grants, which stands at 60%, while the national government sources it from 40% of domestic resource mobilization for green projects. From the national budget for the fiscal year; 2017/2018 and 2019/2020 the climate change sectors received KES 414.23 billion and KES 427.24 billion respectively. As for the participation of the private sector, its contribution is as yet unknown, but the overall amount of investment in green finance is believed to be KES 100 billion annually, including KES 30 billion of domestic funds and KES 70 billion of funds from international institutions. However, there are still conceptual and methodological issues that make it difficult to quantify the sustainability externalities of sustainable investments, particularly with mainstream financial institutions showing more appetite for “brown” investments because of high-risk, low returns “green” investments (Sachs et al., 2019). The slowness in policy implementation hinders climate change and also threatens investor appetite for green projects. The purpose of this specific research is to evaluate the current state of green finance, elements of green finance instruments, and various issues relative to green finance implementation.

**Literature Review**

Lately, the Network for Greening the Financial System NGFS identified that South America has a good trend in green bond markets that enhanced cross-regional investment. For instance, the region floated US$ 8.4 billion of green bonds in both domestic and international markets in 2014- 2017. However, this type of bond was only 1.6% total bond market in the Latin American and Caribbean Region during the same period. In Canada, the government should consider the main aspects of climate change when it comes to the monitoring and regulation of the financial system, develop the market of green fixed-income products, and set guidelines for transition-oriented financing globally.

African Centre for Green Finance (ACGF, 2018) sighted the World and the IEA (2018) on how South Africa possesses the National Strategy on Green Finance, a distinctly green market on the Johannesburg Stock Exchange. Also, Nigeria is the first African country that has come out as the fourth country in the entire world to issue a sovereign green bond in 2017. Among them, the largest is the “Green Climate Fund” which began operations in 2015 and operates in Sub-Saharan Africa followed by the “Least Developed Countries Fund” and the “Clean Technology Fund” which is managed by The World Bank. Kenya has also issued green bond guidelines as developing partners coordinated by the Capital Markets Authority and the Nairobi Securities Exchange. UNEP's (2014) policy measures for mobilizing capital for the green economy in Africa are; The provision of green and inclusive credit policy and incentives, the provision of green bonds, promotion of green securities and stocks in the African stock markets.

**Methodology**

This study used a meta-analysis, also referred to as a desk review to identify information concerning trends and financial instruments in green finance and the difficulties arising from the implementation of green finance. The review comprised empirical research, journals, and model analyses pertinent to the aforementioned themes. In that regard, the study unfolded a vision of the current state of green finance, its tools, and the challenges that prevent the expansion of this phenomenon.

**Findings and Discussion**

to meet the SDGs, increase the volume of investments in green projects, and finance the implementation of all-start projects providing ecological effects. This can be done through instruments like green bonds, green banks, carbon market instruments, fiscal green policies, green central banking, financial technologies, and community green funds. The world financial structure that would otherwise have fostered fast economic growth is however lagging in addressing the emergent need to transition to a green and less materialistic form of growth.

**Role of Green Banks**

The idea of green banks is found to enhance better credit conditions for clean energy initiatives. Such ones pool together rather small projects to reach a size that is commercially feasible to finance the development of new products and spread information about opportunities in clean power generation. But, as for the current situation, financial institutions remain more inclined toward the “brown” project (like the power plants that include fossil fuel investments) than green ones, mainly because of the risks involved in return and with Green projects. Central banks in their supervisory capacity can contribute significantly to the emergence of green finance initiatives and proactively ensure the correct valuation of environmental and carbon risks by financial organizations.

**Risk Reduction and Tax Incentives**

Those are considered to be, risk reduction and tax incentives.

Possible risks associated with green investments need to be reduced for investors to achieve higher returns, this is the need to put in place green credit guarantee schemes as well as introduce tax incentives on the revenues accruing from green energy projects. Some European countries have also developed new green finance policies including the European CO2 Emissions Trading Scheme, rules for an environmental taxonomy regarding economic sectors, and rules on disclosure of investments and sustainability-related risks. The private sector mainly involves the European Investment Bank (EIB) in terms of project financing of renewable energy and energy efficiency improvement projects; meanwhile, the government’s major role is to provide a favorable policy environment.

**Green Financing Products**

In this case, green financial products include green bonds and green equity funds. Green bonds have thus become the most popular financial tool not only for the private but also for the public sectors to enable environmentally friendly projects, especially in environment-friendly transport, renewable energy, and efficient buildings. Green equity funds allow different investors to collect their money into funds that can be used for investments that will support a green plan. It can also bring on more investors, and the primary lenders such as banks can directly refinance existing loan portfolios to provide brand-new capital for green loans.

These bonds include transition and sustainability bonds The credit crunch revealed that, Transition and sustainability bonds.

Transition and sustainability bonds are slowly growing popular for projects in sectors that may not fit green bonds such as oil and gas where the usage of green bonds is not feasible because of certain criteria. The latter makes these bonds useful for these industries to secure funds needed for their transitions to sustainable operations. Islamic also finance provides several instruments that can be used for climate change mitigation as well as a range of financing instruments for green projects.

**Microeconomic Challenges**

There are several microeconomic issues for green finance; present and forward competitiveness imbalance, challenges to pricing green externalities, low awareness and access to capital, weak analytical capability, and finally the problem of green taxonomy. These are the maturity profile of short and long-term green assets, conflict of interest between the financial providers in the private and public sector, regulatory concerns, and the market incoherencies which include subsidies to brown projects. Moreover, the insufficient number of green finance products and inexperienced government initiatives in switching to a green economy also contribute to these challenges.

**Figure 1:** Green finance products

**Source** (Jin Noh Hee (2010): Financial Strategy to Accelerate Innovation for Green Growth.



**Table 2: Corporate & Investment Product & Service Summary Chart**

|  |  |
| --- | --- |
| Product | Key Product Designs and Results/Potential |
| Project Finance | Specialized service divisions are dedicated to the long-term financing of clean energy projects. |
| Partial Credit Guarantee | The financial institution provides a bond issued by a municipality to finance environmental projects. |
| Securitization | A risk-sharing arrangement for environmental projects. Financial institution represents a guarantor at the mezzanine level of risk, allowing clients to transfer risk to the bank. |
| Eco-Securitization scheme will test the feasibility of financing “natural infrastructure” by linking sustainable management of resources with the funding capacity and requirements of asset-backed securitization. |
| Green Mortgage-Backed Securities (Proposed). Designed to package mortgages on buildings that meet specific energy-use and environmental benchmarks. Products would be rated higher and worth more as a result of the operational benefits associated with “green” buildings. |
| Bonds | Forest Bond was designed to fund large-scale reforestation in Panama. Re-insurers underwrite a 25-year bond, while investors and frequent users of the Panama Canal will purchase the bond. |
| Cat Bonds provide ancillary capital for risks from natural catastrophes. Can pay higher than average yield, while diversifying investors’ portfolios and improving industry reserves. |
| Technology Leasing | Provides environmentally-friendly technologies at preferential rates |
| Private Equity | Private equity investments in wind, solar, and biofuels through Alternative Investments’ Sustainable Development Investment Program |
| Private equity focused on forest conservation and preserving biodiversity. Provides 100% financing, with a discounted rate on the loan, to a non-profit organization to acquire biologically sensitive land and implement sustainable forestry practices and management. |
| Indices | Series of environmental private investor eco-market products includes a biofuels commodity basket, total returns solar energy index, clean renewable energy index, and total returns water index (e.g., enables interested parties to invest in water as a commodity). |
| Carbon Finance & Emissions Trading | Banks provide equity, loans, and/or upfront or upon-delivery payments to acquire carbon credits from CDM and JI projects. Most acquire carbon credits to serve their corporate clients’ compliance needs, supply a tradable product to the banks’ trading desks, or develop lending products backed by emission allowances and carbon Credits. |
| Allowance trading products can include, but are not limited to: discreet placement of physical orders; fixed-or-floating swaps and indexed sales or purchases; options; allowances repurchase structures; market-making for spot and forward trades; and price hedging based on cross-commodities. |

**Conclusions**

Therefore, it can be emphasized that the green finance market is more developed and has a clearer hierarchy in the developed countries of the advanced economy than it does in the emerging economy countries. To achieve PFSDs, green projects should be expanded by most climate investments; however, financing should be increased to support projects with positive environmental value-add. This can be achieved by the better harnessing of financial structures and special purpose instruments and policies for example green bonds, green banks, carbon market instruments, fiscal, green central banking, financial smart technologies, and even community-based green funds. However, some microeconomic factors persistently hamper green finance developments: green finance knowledge gap, environmental externalities pricing issues, green taxonomy problems, regulatory deficiencies, and market imperfections including subsidies to brown projects.

**Recommendation**

Based on the findings, the following recommendations are proposed to address the challenges and promote the development of green finance:

1. Develop a Green Finance Database. Develop a clear green finance database and mainstream green agenda into policy institutions hence enhancing reforms of the international financial institutions, including central and development banks. This database should identify green investments, and financial products, and also measure environmental impacts with a view of making recommendations for policy formation as well as investment directions.
2. Standardization and Mandatory Disclosure. Adopt clear and comparable policy usage and obligatory annual and quarterly documentation of green investment risks, green taxonomy, and other environmental coordinates. This should involve the conversion of environmental resources into standard bearer securities for improved investability and comparability.
3. Raising Awareness and Capacity Building. Step up communications on green finance among government officials, the private sector, and the public, as well as build relevant capacities. This will not only assist in getting a better understanding of the gains of the implementation of green investments but also increase the number of players in the green economy circle.
4. Tax Incentives for Green Projects. Never fail to offer tax credit schemes for green projects to help reduce the cost of funding sustainable environmental projects. These incentives can help call upon corporate and individual entities’ capital to structure it towards green funding as opposed to their conventional, damaging methods of funding.
5. Develop Carbon Capital Markets. Create hedge funds where green factors can be benchmarked against other financial risks such as carbon capital markets. This can be done with credit rating agencies making new demands for green stock indices and Green IPOs, hence opening up new sources of funding for sustainable business.
6. Stock Trading of Green Finance Products. Encourage the sales of green finance goods including green insurance, green bonds, green credit, and green venture capital funds. These instruments can help increase the inflows of institutional and individual investors to green finance increasing a variety of financial instruments promoting sustainable projects.
7. Strengthen Social Responsibility and Investor Liability. Enhance the stewardship obligations by increasing the liabilities of investors with respect to the exercise of stewardship responsibilities in compliance with environmental concerns. This includes strengthening investor/lender requirements necessary for failure to adhere to environmental protocols and promotion of ethical investment.
8. Adopt Technology for Transparency. Adopt and integrate new technologies in green financing and investment by giving more support to the DLT or blockchain. These technologies can offer traces for the transactions so that the green finance can be easily audited to ensure that the fund is going to the right places it is supposed to go, instead of being greenwashed.

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