

Green Financing for Sustainable Development in Infrastructure Projects in Kenya

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ABSTRACT

Transitioning into a decarbonized economy requires an unprecedented level of new capital investment, particularly in the form of green finance. Market and regulatory trends indicate that there is an increased interest in green and sustainable finance among investors and policymakers. However, capital mobilization for green investments has been constrained by microeconomic obstacles including maturity mismatches between long-term green investments; the typically short-term time horizons of investors and disintegrated financial and environmental policy approaches. It's against this backdrop that the study intended to assess the green finance trends, green finance instruments and the challenges on green finance adoption. The study adopted desk review also known as Meta-analysis method to extract information concerning green finance trends, instruments and adoption challenges. The study established that to achieve sustainable development goals (SDGs), its necessary to open-up green projects and scale up the financing of investments that provide environmental benefits through innovative financial instruments and new policies such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies and community-based green funds. However, Financial institutions show more interest in fossil fuel projects than green projects because of the low returns and risks associated with green investment compared to brown investment. To reduce the risk of green investment and increase the rate of return to the investors, the creation of green credit guarantee schemes and tax return on revenue generated from the green energy spillover effect is necessary. In conclusion green finance market is well structured in developed economies unlike developing economies due to underdeveloped capital markets, regulatory gaps and unstandardized green taxonomy. Thus the study recommends the development of green finance database and incorporation of green agenda in public policy institutions' mandates and procurement; Standardization and information disclosure regarding Green investment risks, green taxonomy and commoditization of environmental factors into tradable assets; Raising awareness; Offering tax incentive on green projects; Developing Carbon Capital Markets; Stock Trading of Green finance products; Strengthen the social responsibilities of investors and Technology adoption.

Keywords: Green Financing, Green Financing Instruments, Sustainable Development, Infrastructure Projects

INTRODUCTION

Transitioning into a decarbonized economy requires an unprecedented level of new capital investment, particularly in green finance (PWC, 2013). Green finance is an investment that promotes environmentally-positive activities for sustainable development including green mortgages, green loans, green certificate of deposit, green credit cards, green banks, carbon market instruments, fiscal policy, and green bonds (OECD 2017). Market and regulatory trends indicate that there is an increased interest in green and sustainable finance among investors and policymakers (Asian Development Bank, 2017). To meet the ambitious goals of the 2030 Sustainable Development Goals (SDGs) and the Paris Agreement limiting global warming to below 2°C for low-carbon and climate-resilient economies, a significant shift and scaling up of green finance and investment through private sector engagement is necessary (IFC, 2013). Global investment requirements for addressing

climate change is estimated at \$31 trillion, with infrastructure alone requiring \$6 trillion annually up to 2030 (OECD 2017). The incorporation of Environmental, Social and Governance (ESG) factors into private investments transforms a risk management strategy into a driver of innovation and new possibilities that provides long-term value for the project (European Banking Federation, 2020). However, capital mobilization for green investments has been constrained by microeconomic obstacles including maturity mismatches between long-term green investments; the typically short-term time horizons of investors and disintegrated financial and environmental policy approaches.

The World Bank and the European Investment Bank introduced green bonds more than a decade ago that has facilitated investments running into trillions of dollars in climate-related projects, including renewable energy, energy efficiency, and ecosystem protection and restoration (Beschloss and Mashayekhi, 2019). The initial challenge was to create a new class of securities that would be credible, replicable, and attractive to institutional investors and environmental organizations. As an intervention, Climate Bond Initiatives (CBI), published its Climate Bonds Standard and Certification Scheme in 2010 while the International Capital Markets Association (ICMA) in 2014 expanded its scope to include a set of green loan principles. As a result, by 2019 more than 5,000 green bonds had been issued globally with a market value of more than \$590 billion, concentrated in six major markets including Australia, Canada, Europe, Japan, New Zealand and United States (Carney, 2019). In EU policy, the first deliverables include: creating a sustainable taxonomy (Regulation (EU) 2020/852); making disclosures relating to sustainable investments and sustainability risks clearer (Regulation (EU) 2019/2088); and establishing low-carbon benchmarks (Regulation (EU) 2019/2089), setting the requirements for 'EU Climate Transition Benchmarks' and 'EU Paris-aligned Benchmarks'. The European Central Bank (ECB) collaborates with other central banks and supervisors globally in the Network for Greening the Financial System (NGFS), macroeconomic models, forecasting methods and risk assessments. With regard to monetary policy and investment portfolios, the ECB has invested in green bonds, taking into account the need to avoid market distortions. In 2019, the UK developed a Green Finance Strategy¹² to align private sector financial flows with clean, environmentally sustainable and resilient growth for long term competitiveness. Combined, these measures will provide investors with a clear framework to support the government in delivering the low carbon finance needed for the net zero economy by 2050.

In USA, the number of green banks increased from one to 20 between 2011 and 2020 with a cumulative investment of \$7 billion in renewable energy alone. In 2016, the G20 launched a Green Finance Study Group (GFSG) that focused on five principal areas: greening the banking system; greening the bond markets; greening institutional investment; risk analysis; and measuring progress. The African Development Bank is boosting the promotion of resilient, green and sustainable growth with the launch of the African Green Bank Initiative, a model for deploying green financing across the continent. The African Green Bank initiative is endowed with a trust fund of \$1.5 billion, has been conceived as part of measures to facilitate access to global finance from the current 3% to 10% annually by 2030.

In Kenya, sources of green finance are mainly from external loans and grants from international institutions accounting for 60% while the national government disburses 40% from own revenue to green related projects. Analysis of national budget data show that for the fiscal year 2017/18 and 2019/20 the government disbursed KES 414.23 billion and KES 427.24 billion to climate change sectors respectively. Even though, the extent of private sector contributions to green finance is unknown, it is conservatively estimated at an average of KES 100 billion per year, with an estimated Ksh 30 billion sourced domestically and Ksh 70 billion from international organizations. However, measuring the impact that sustainable investments have on their environmental targets remains challenging with financial institutions showing more interest in brown projects than green projects due to risk-return uncertainties associated with the new technology (Sachs, Woo, Yoshino and Taghizadeh-Hesary, 2019). With a lagging policy action on climate change, there is a risk of investor reluctance in investing in green projects. It's against this backdrop that the study intended to assess the green finance trends, instruments and adoption challenges.

LITERATURE REVIEW

Globally, Ozili (2022) observed that despite the green finance's potentiality for climate change mitigation, challenges abound including insufficient awareness on green finance, taxonomy challenge, green finance

policy gaps, and lack of profitable incentives to investors and financial institutions. At the international level, countries have signed the Paris Agreement to limit global warming to below 2 or 1.5 degree Celsius while the members of the United Nations Climate Change Conference of the Parties (COP26) have commitment to reduce greenhouse gas emissions. This demands mobilization of huge financial resources with Green finance acting as an innovative alternative. Green finance facilitates the distribution of funds to sustainable trade and investment activities, low-risk financing, and the development of green investment and financing instruments.

In Europe, European commission report (2017) shows that Public funding alone is not sufficient, and that private capital should be mobilized to fund sustainable projects. The common green financing strategies adopted in Europe include Green bonds, green loans and green equity investment. However, customers' awareness of sustainable finance products is still low in nations like Austria while Russia, green finance development challenges include the absence of a champion public sector agency to coordinate relevant stakeholders; underdeveloped regulatory framework for green finance instruments; and information asymmetry on risk-return opportunities.

In America, NGFS (2019) observed that South America has well developed green bond market that has helped boost cross-regional trade, for example, the region issued US\$ 8.4 billion in bonds in local and international markets between 2014 and 2017. However, on average, green bonds represented only 1.6% of the total Latin American and Caribbean bond issuance in international markets in the period. In Canada, the government should embed climate-related risk into the monitoring, regulation and supervision of Canada's financial system; expand Canada's green fixed income market; and set a global standard for transition-oriented financing.

In Asia, ADB (2017) observed that Japan, China, and South Korea have witnessed significant increase in green bond issuance. Equally, there is a self-assessment framework to enable the measurement of "greenness baseline" of individual authorized institutions; a comprehensive database platform dedicated to providing investors with information about sustainable investment options in Hong Kong's securities market while in mainland China, there exists Shanghai-Singapore financial co-operation and virtual events on China green bond market. However, constraints on Green investment in Asia includes adverse regulatory and legal environment; lack of awareness of environmental risks; and lack of ESG disclosure requirements.

In Africa, IEA (2018) observed that South Africa has a formal national strategy for green finance with a dedicated green segment in the Johannesburg Stock Exchange while Nigeria became the first country in Africa and only the fourth in the world to issue a sovereign green bond in 2017. The 'green climate fund' was the biggest cumulative multilateral climate fund active in Sub Saharan Africa in 2019, followed by the Least Developed Countries Fund and the World Bank administered Clean Technology Fund. Kenya has launched green bonds guidelines in a joint collaboration between the capital market authority and the Nairobi Securities Exchange. According to UNEP (2014), policy options that can help mobilize capital towards a green economy in African include: the provision of green and inclusive credit guidelines and incentives, the issuance in green bonds, and the inclusion of green securities and green stocks in African stock exchange.

METHODOLOGY

The study adopted desk review also known as Meta-analysis method to extract information concerning green finance trends, financial instruments and adoption challenges. This was achieved through analysis of empirical studies and model analysis of journal articles themed as aforementioned.

FINDINGS AND DISCUSSION

To achieve sustainable development goals (SDGs), its necessary to open-up green projects and scale up the financing of investments that provide environmental benefits, through new financial instruments and policies such as green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies and community-based green funds. The global financial system has been a key enabler of accelerated economic development over the past but is struggling to adapt to the need to rapidly transform into a greener and less resource-intensive mode of development. Green banks offers better credit conditions for

clean energy projects, aggregates small projects to achieve a commercially attractive scale, creates innovative financial products, and market expansion through dissemination of information about the benefits of clean energy. However, Financial institutions show more interest in brown projects than green projects due to risk-return uncertainties associated with green investment. Central banks through their regulatory oversight can support the development of green finance models and enforce adequate pricing of environmental and carbon risk by financial institutions.

To reduce the risk of green investment and increase the rate of return to green investors, the creation of green credit guarantee schemes and tax return on revenue generated from the green energy spillover effect is necessary. Europe has innovative schemes of adapting to green finance including proactive governmental policy such as the European CO2 Emissions Trading Scheme, environmental taxonomy of economic activities, information disclosure on sustainable investments and sustainability risks, and establishing low-carbon benchmarks; German feed-in-tariffs for renewable energy; and Dutch Green Funds. Further, the European Investment Bank (EIB) plays a key role in financing renewable energy projects and energy efficiency improvement projects while government agencies tend to focus on providing an enabling policy environment for green projects. In contrast, the US' refusal to ratify the Kyoto Protocol and Canada's wavering on meeting its Kyoto targets, likely slowed North America's momentum in tackling climate change.

Systems for allocating and trading emission rights are a critical foundation, creating price signals that transmit information about scarcity and the value of environmental assets. The existing green products include green bonds and green equity funds. Green bonds have become the investment vehicle of choice for the private and public sectors to finance projects with environmental benefits; in particular, low carbon transport, clean power and energy efficient buildings. A green equity fund is a structured investment vehicle that selects investments based on a commitment to a green investment strategy by enabling different investors to pool their capital. Green securitization which involves the bundling of green loans into securities can unlock additional capital to finance the transition to a decarbonized and climate-resilient economy. Securitization can take the form of collateralized loan obligation or asset-backed securities transactions enabling the aggregation of multiple small-scale loans and helps to attract a different investor base; gives banks and other primary lenders an opportunity to refinance existing loan portfolios and recycle capital to create fresh portfolios of green loans. Green leasing can be used to finance the acquisition of planted equipment; however, it is still only at a nascent stage when considering the potential for funding green assets including Green property leases, Green car leasing, Energy efficiency and Green mortgages. Public/private partnerships have been used extensively to support infrastructure projects and represent a viable financing tool for climate finance, particularly given the necessity of involving both the public and private sectors on climate mitigation. Climate insurance represents a very important but much underutilized approach in helping to structure climate-related financial solutions and which can be included in a wider financing approach to help make it bankable including sovereign risk insurance and technology insurance products. Transition and sustainability bonds are used by projects in carbon-intensive sectors such as oil and gas or heavy industry, where green bonds may not be accessible due to the specific criteria. Finally, Islamic finance offers a broad range of instruments that can be used for climate mitigation.

Some microeconomic challenges to green finance include: divergence in present and projected competitiveness, pricing constraints in internalizing environmental externalities, limited awareness and capital, inadequate analytical capacity, green taxonomy challenge, maturity mismatch between short-term and long-term green investment, competing objectives of private and public finance providers on risk-return adjustments, regulatory gaps, market distortions and shortcomings such as subsidies on brown projects coupled with limited green finance products, and inadequate government support for transitioning to green economy. This requires that environmental costs and benefits are internalized into financial decision making, reducing the flow of financing to activities that exert negative influences on the environment and increasing the flow of financing to activities that play a positive role.

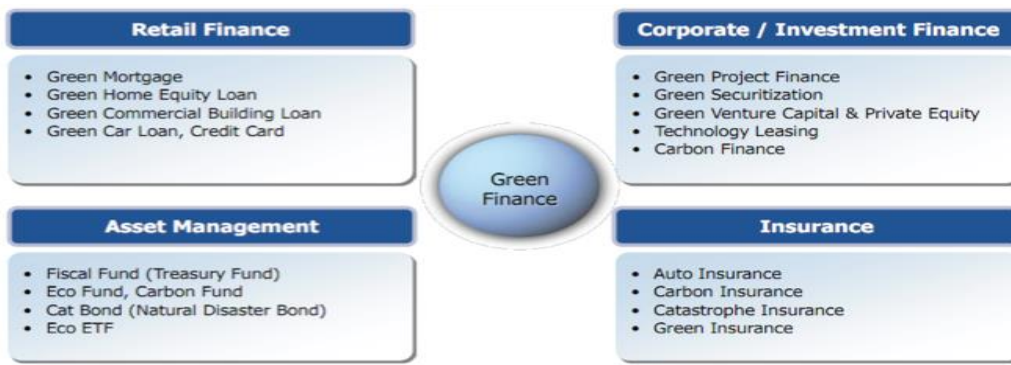


Figure 1: Green finance products

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 long-term financing of clean energy projects.
Partial Credit Guarantee	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 client to transfer risk to 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 designed to fund large-scale reforestation in Panama. Re-insurers underwrite a 25-yr bond, while investors and frequent users of 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 in order 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 AND RECOMMENDATIONS

In conclusion green finance market is well structured in developed economies unlike developing economies. To achieve sustainable development goals (SDGs), its necessary to open-up green projects and scale up the financing of investments that provide environmental benefits, through new financial instruments and focused policies of green bonds, green banks, carbon market instruments, fiscal policy, green central banking, financial technologies and community-based green funds. Existing microeconomic challenges to green finance include: limited awareness, pricing constraints on environmental externalities, green taxonomy challenge, regulatory gaps, and market distortions in terms of subsidies on brown projects.

The study thus suggest the following recommendations:

- i. Developing a green finance database and incorporating a green agenda in public policy institutions' mandates and public procurement including international financial institutions, central banks and development banks;
- ii. Standardization and Mandatory information disclosure regarding Green investment risks, green taxonomy and commoditization of environmental factors into tradable assets
- iii. Raising awareness about green finance and building capacity at all levels.
- iv. Offering tax incentive on green projects
- v. Developing Carbon Capital Markets where green factors can be indexed against financial risks. This can be achieved through liaison with credit rating agencies to introduce green stock indices and Green IPOs
- vi. Stock Trading of Green finance products such as green insurance, green bonds, green credit and green venture capital funds
- vii. Strengthening the social responsibilities of investors/lender liability
- viii. Technology adoption such as distributed ledger technologies or block-chains can increase transparency in green financing and investment.

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