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Badiru Abdulahi (2024) Introduction to Economics, Longman, London, UK.

Edited Book

McDowell, L. & Sharp, J. P. (Eds.) (1999). *A feminist glossary of human geography*. New York, NY: Oxford University Press.

Book Chapter

Abaje, I. B., Ati, O. F. & Iguisi, E. O. (2012). Changing Climatic Scenarios and Strategies for Drought Adaptation and Mitigation in the Sudano-Sahelian Ecological Zone of Nigeria. In Iliya, M. A., & Dankani, I. M. (Eds). *Climate Change and Sustainable Development in Nigeria* (pp 99– 121). Ibadan: Crown F. Publishers.

Journal Articles

Dimas, G. & Akuva, I. I. (2020). Leadership styles of Nelson Mandela as a pattern for African leaders. *Covenant University International Journal of Politics and International Affairs*, 8(1), 49-64.



Journal Article Accessed Online

Bayer, J. (2010). Customer segmentation in the telecommunications industry. *Journal of Database Marketing & Customer Strategy Management*, 17, 247 – 256. doi: 10.1057/dbm.2010.21

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Institute of Chartered Accountants in Australia. (2004). *AASB standards for 2005: equivalents to IFRSs as at August 2004*. Sydney, Australia: Pearson Education.

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INFRASTRUCTURE CONNECTIVITY AND REGIONAL DEVELOPMENT IN NIGERIA: A FINANCING PERSPECTIVE

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Abstract

As Africa's largest economy and most populous nation, Nigeria's capacity to build and sustain critical infrastructure is not merely an aspiration but a necessity for sustainable development. This paper examines the nexus between infrastructure connectivity and regional development from a financing perspective, using Nigeria as a case study. Employing a conceptual-descriptive methodology, secondary data from the World Bank, IMF, Debt Management Office, and National Bureau of Statistics were analyzed thematically to highlight financing trends, infrastructure gaps, and regional disparities. The findings reveal that Nigeria faces a massive infrastructure deficit estimated at about US\$3 trillion by 2050, with annual investment needs of US\$150 billion compared to actual spending of less than 2.5% of GDP. While public financing remains the foundation, it is inadequate given fiscal constraints, high debt servicing, and oil revenue volatility. Alternative models such as Public-Private Partnerships (PPPs), Sukuk bonds, and blended finance show promise but are hampered by weak institutions, regulatory inconsistencies, and macroeconomic volatility. The paper concludes that Nigeria requires a multi-pronged financing strategy that combines innovative instruments, strong governance, and institutional reforms to close its infrastructure gap, reduce regional disparities, and unlock balanced growth. Policy recommendations include scaling up blended finance, strengthening PPP frameworks, expanding domestic capital markets, and ring-fencing funds for infrastructure maintenance.

Keywords: Nigeria, infrastructure connectivity, financing, regional development

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Introduction

Infrastructure, the foundational backbone of any thriving economy, plays an indispensable role in driving economic growth, fostering social cohesion, and enhancing the overall quality of life (Calderón & Servén, 2008). From sprawling road networks and efficient railway systems to reliable energy grids and ubiquitous digital connectivity, the presence and quality of infrastructure directly influence productivity, trade, investment, and access to essential

services. For regional development, infrastructure connectivity proves particularly crucial. It facilitates the seamless movement of goods, services, capital, and people, linking isolated areas to economic hubs, reducing transportation costs, and expanding market access (Li & Zhou, 2019). This interconnectedness is vital for realizing balanced growth across diverse regions within a nation, preventing undue development concentration, and addressing persistent regional disparities.

Nigeria, as Africa's largest economy and most populous nation, presents a compelling and critical case study for examining the nexus between infrastructure and development. Despite immense economic potential and rich natural resources, Nigeria grapples with a persistent and pervasive infrastructure deficit, widely recognized as a significant constraint to achieving sustained economic diversification and inclusive regional development. The country's infrastructure stock currently stands at an estimated 30-35% of its Gross Domestic Product (GDP), falling far short of the World Bank's benchmark of 70% for emerging economies (Agusto & Co. Ltd., 2024; Premium Times, 2025). Bridging this formidable gap requires a staggering investment of approximately US\$3 trillion by 2050, or an average of US\$150 billion annually from both public and private sources (Veriv Africa, 2024; Agusto & Co. Ltd., 2021). This contrasts sharply with Nigeria's current total infrastructure investment, estimated to be below 2.5% of GDP over recent years (International Monetary Fund [IMF], 2024a; World Bank, 2023a), highlighting a critical funding chasm and the urgent need for innovative financing.

The conventional reliance on direct public financing, primarily from volatile oil revenues, has proven demonstrably insufficient to meet Nigeria's escalating infrastructure demands. This necessitates a comprehensive exploration of alternative, innovative, and sustainable financing mechanisms. This paper delves into the intricate relationship between infrastructure connectivity and regional development, specifically through the lens of Nigeria's financing experiences. It aims to understand how various financing approaches can be strategically deployed to bridge Nigeria's infrastructure gap, stimulate equitable regional growth, and ultimately contribute to its sustainable national development goals.

The paper is structured into five distinct sections. Section 2 establishes a robust conceptual and theoretical framework, meticulously defining key terms and exploring the economic logic linking infrastructure to development, with explicit references to Nigeria's context. Section 3 analyzes the imperative and formidable challenges associated with financing infrastructure in Nigeria, integrating the most recent economic data and policy impacts. Section 4 provides a comprehensive analysis of various financing mechanisms, scrutinizing their efficacy and limitations based on recent empirical evidence and specific case examples from Nigeria, including up-to-date project statuses. Finally, Section 5 proposes actionable policy implications and recommendations for optimizing infrastructure financing strategies to foster inclusive regional development across Nigeria's diverse geopolitical landscape, considering recent policy reforms, climate resilience, and the human element of infrastructure.

Conceptual and Theoretical Frameworks in the Nigerian Context

This section lays the analytical foundation, meticulously defining core concepts and exploring the established economic theories that elucidate the profound impact of infrastructure and connectivity on regional development, directly contextualized to Nigeria's realities.

Defining Infrastructure and Connectivity in Nigeria

Infrastructure refers to the foundational physical and organizational structures and facilities essential for the functioning of a society and its economy (Organisation for Economic Co-operation and Development [OECD], 2007). These long-lived, capital-intensive assets, such as Nigeria's network of federal and state roads, power generation plants, and fiber optic cables, exhibit significant positive externalities, often possessing characteristics of public goods or quasi-public goods due to their non-rivalrous and non-excludable nature in consumption.

Infrastructure in Nigeria can be broadly categorized:

Understanding Regional Development in Nigeria

Regional development in Nigeria is understood as the deliberate process by which its geopolitical zones, states, and local government areas improve their economic, social, and environmental well-being, aiming to reduce inherent spatial disparities and foster balanced growth across its diverse territory. The overarching goal of regional development policies in Nigeria is to achieve balanced growth, mitigating the pressures of urban congestion (especially in Lagos, which currently faces an annual urban population growth rate of approximately 3.5–3.7%; Macrotrends, 2023), curbing uncontrolled rural-urban migration, and addressing socio-economic tensions that arise from widening regional inequalities, such as those between the relatively more industrialized South-West and the largely agrarian North-West. Infrastructure connectivity plays a pivotal role in enabling this balanced and inclusive development by integrating previously marginalized regions into the national economic fabric.

Theoretical Underpinnings: The Economic Logic for Nigeria

Economic theory provides robust explanations for infrastructure's profound impact on Nigeria's development, guiding policy decisions and financing strategies:

Institutional Economics (North, Williamson): This perspective is perhaps one of the most critical for understanding Nigeria's infrastructure challenges and prospects. The effectiveness of infrastructure investments, regardless of financing mechanism, is profoundly dependent on the quality of underlying institutions (formal rules, laws, regulations, contracts) and governance structures (North, 1990; Williamson, 1985).

Investor Confidence: Strong, predictable institutions (e.g., clear land ownership laws, efficient contract enforcement, transparent regulatory frameworks) are crucial. In Nigeria, challenges with corruption (as consistently highlighted by Transparency International, 2023), bureaucratic hurdles, and the rule of law can significantly increase perceived risks for private investors, raising their cost of capital or deterring them entirely. This directly impacts the bankability of projects.

Efficiency and Accountability: Weak institutions and pervasive corruption have been consistently linked to significant cost overruns, delays, and outright project failures in Nigeria (Independent Corrupt Practices and Other Related Offences Commission [ICPC], 2023; Kenny, 2007). For example, a 2023 report by the ICPC highlighted issues with the execution or misappropriation of funds in various constituency projects. This not only depletes scarce resources but also erodes investor confidence and public trust, making it harder to attract future financing.

Regulatory Predictability: For long-term projects like those in the power sector, regulatory stability is paramount. Inconsistent tariff policies or the failure to enforce contractual

obligations (e.g., non-payment by DisCos to Generation Companies, GenCos) create massive financial uncertainty, hindering investment (NERC, 2024b; Bloomfield Consulting, 2025). The recent Electricity Act 2023, devolving some regulatory powers to states, while potentially positive, also underscores the need for consistency and strong state-level institutional capacity to prevent further regulatory fragmentation.

In summary, for Nigeria, this theoretical underpinning reveal that infrastructure is more than just physical assets; it is a critical enabler of productivity, a shaper of spatial economic geography, a facilitator of human capabilities, and its effectiveness is intrinsically linked to the quality of governance and institutions. These insights provide a robust justification for the strategic importance of infrastructure and inform the discussion on its optimal financing pathways in Nigeria.

Methodology

This study adopts a conceptual-descriptive approach, anchored on secondary data analysis. Data were obtained from reputable international and national sources including the World Bank, IMF, Debt Management Office (DMO), National Bureau of Statistics (NBS), Infrastructure Concession Regulatory Commission (ICRC), and relevant scholarly publications. The analysis applied a thematic content approach to synthesize insights on infrastructure connectivity, financing mechanisms, and regional development outcomes in Nigeria. By focusing on documented trends, policy reports, and empirical statistics, the methodology provides a robust narrative on the interplay between infrastructure financing and regional development, without relying on primary surveys. The Institutional Economics framework serves as the guiding lens, enabling the evaluation of how governance and institutional quality shape financing outcomes.

The Imperative and Persistent Challenges of Infrastructure Financing in Nigeria

Nigeria's economic development trajectory is significantly hampered by its substantial infrastructure deficit. While the imperative to invest is clear, the nation faces a unique confluence of challenges in mobilizing the colossal financial resources required.

The Sheer Magnitude of Nigeria's Infrastructure Gap

As highlighted, Nigeria's infrastructure deficit is estimated at a staggering 40% of its GDP, translating to a need for approximately US\$3 trillion in investment by 2050, or an average of US\$150 billion annually (Agusto & Co. Ltd., 2021; Veriv Africa, 2024). To put this into perspective, Nigeria's actual infrastructure investment as a percentage of GDP, currently averaging just 2.5% over the past five years (IMF, 2024a; World Bank, 2023a), lags significantly behind the 5-7% recommended for developing economies to achieve sustainable growth. This stark discrepancy underscores the urgent need for innovative financing, as the nation's public finances alone cannot bridge such a monumental gap. Nigeria's total annual federal budget (approximately NGN 28.78 trillion or US\$20 billion in 2024 at current parallel market rates), with only a fraction allocated to capital expenditure, cannot solely meet this demand.

Acute Challenges in Mobilizing Infrastructure Finance in Nigeria

Limited Fiscal Space and Revenue Dependency: Nigeria's persistent challenge lies in its low revenue-to-GDP ratio, projected to average around 13.3% in 2025-2026 for general government revenue (Fitch Ratings, 2025). While this shows a potential increase from the

previous 7-9% due to recent reforms (e.g., FX liberalization, subsidy removal), it remains structurally low. The economy still largely relies on volatile oil revenues (constituting a significant portion of government revenue and foreign exchange earnings). Fluctuations in global oil prices continue to impact Nigeria's ability to fund infrastructure from the federal budget.

High Public Debt and Debt Servicing Burden: Nigeria's public debt has risen significantly. The Debt Management Office (DMO) reported Nigeria's total public debt at N121.67 trillion (US\$91.46 billion) as of Q1 2024 (National Bureau of Statistics [NBS], 2024). More critically, the debt servicing to revenue ratio remains alarmingly high, with the federal government's interest/revenue ratio nearly 50% in 2025 (Fitch Ratings, 2025). Nigeria spent approximately US\$2.01 billion on external debt servicing between January and April 2025, a 50% increase compared to the same period in 2024, with debt servicing alone accounting for 77.1% of total international payments (Punch Newspapers, 2025b). This severely constrains the government's ability to borrow further for infrastructure without jeopardizing fiscal sustainability.

Volatile Macroeconomic Environment: Nigeria's economy is frequently subject to high inflation, though there are signs of easing due to policy reforms. Headline inflation eased to 22.97% year-on-year in May 2025, down from 33.95% in May 2024 (Nairametrics, 2025a), largely attributed to the rebasing of the Consumer Price Index and Naira stabilization. However, the initial shock of fuel subsidy removal and exchange rate liberalization significantly impacted project viability. Construction costs, particularly for materials and transportation, surged, necessitating higher capital outlays for projects initiated post-May 2023 (ResearchGate, 2025b). Persistent currency depreciation, despite FX liberalization efforts, and interest rate volatility still significantly increase the cost of capital for infrastructure projects, especially for foreign investors who face substantial foreign exchange risk when repatriating profits or servicing foreign currency-denominated debt. This currency mismatch (local currency revenues, foreign currency debt) remains a major deterrent for long-term foreign investment.

Investor Sentiment: While some investor sentiment reports in early 2025 indicated a more positive outlook for Nigeria, citing macroeconomic stability and an improved FX market (African Business, 2025; IMF, 2025a), this optimism often comes with a caveat. Investors are still keenly observing the consistency of policy implementation, the sustainability of the FX reforms, and the government's ability to address underlying structural issues like inflation and security. FDI into Nigeria in Q1 2024 actually saw a 35.2% drop from the previous quarter (African Business, 2025), suggesting that while sentiment may be improving, it has yet to translate into significant, sustained capital inflows for infrastructure as of mid-2025.

Weak Institutional Frameworks and Governance Deficits: This remains arguably the most critical impediment.

Corruption: Pervasive corruption in procurement processes, contract awards, and project implementation continues to lead to significant cost overruns, delays, and outright project abandonment. Reports by the ICPC and other watchdogs consistently highlight irregularities in public procurement and project execution (ICPC, 2023). This erodes public trust and deters reputable private investors, who seek transparent and predictable environments.

Lack of Policy Consistency and Regulatory Predictability: Frequent changes in government policies, inconsistent application of regulations, and delays in obtaining approvals create significant uncertainty for investors. This is acutely felt in the power sector, where regulatory and contractual inconsistencies (e.g., non-payment by DisCos to GenCos, inadequate cost-reflective tariffs, and challenges with collection efficiency leading to Aggregate Technical, Commercial, and Collection (ATC&C) losses of nearly 40% in Q3 2024; NERC, 2024b) have plagued the sector post-privatization, hindering new investment and the financial viability of existing players. While the April 2024 tariff adjustment for Band A customers was a significant step, ensuring its sustainability and broader application remains crucial.

Capacity Constraints: Limited technical and financial capacity within public sector agencies at federal and state levels hinders proper project identification, appraisal, negotiation of complex PPPs, and effective contract management. This often results in poorly structured projects that fail to attract private capital or perform sub-optimally.

Shallow Domestic Capital Markets: While evolving, Nigeria's domestic capital market (bonds and equity) is still relatively shallow compared to the immense long-term financing needs of infrastructure. It struggles to provide the tenor and scale of funds required for large, multi-decade infrastructure projects. This limits the ability to mobilize significant domestic savings from pension funds and insurance companies for national infrastructure development, despite their growing asset base.

Project Execution and Maintenance Failures: Even when funds are secured, Nigeria often faces challenges with timely project execution, leading to significant delays and budget overruns. More critically, a pervasive culture of inadequate maintenance means that existing infrastructure rapidly deteriorates, undermining the long-term value of initial investments and incurring higher rehabilitation costs later (Institute of International & Advanced Research and Development [IIARD], 2024). This "build-then-neglect" cycle is a major drain on national resources, effectively meaning the existing infrastructure stock depreciates faster than new investments are made. For example, some newly constructed roads quickly develop potholes within a few years due to poor quality control during construction and subsequent lack of regular maintenance.

Addressing these deep-seated challenges requires a multi-pronged, systemic approach that not only diversifies financing sources but also fundamentally strengthens the enabling environment for infrastructure investment in Nigeria.

Financing Mechanisms for Infrastructure Connectivity and Regional Development in Nigeria: Opportunities and Limitations

To overcome Nigeria's immense infrastructure financing challenges, a diverse array of mechanisms is being explored and implemented. A strategic blend of these approaches, tailored to specific projects and Nigeria's unique context, is essential.

Public Financing: The Foundation, But Insufficient

Sources: Primarily from Federation Account Allocations (oil revenues, VAT, customs duties shared among federal, state, and local governments) and independent revenues of government agencies. The Nigerian government also raises funds through sovereign borrowing via domestic (e.g., FGN Bonds, Treasury Bills) and international capital markets (e.g., Eurobonds).

Strengths: Allows the Nigerian government to prioritize projects based on national and regional development plans (e.g., the National Development Plan 2021–2025; Federal Ministry of Budget and Economic Planning, 2024) and public welfare, even if they lack immediate commercial viability (e.g., critical rural roads connecting agricultural clusters in Funtua, Katsina, to markets). It can leverage sovereign creditworthiness for lower borrowing costs, though recent debt servicing ratios have increased this cost significantly.

Limitations: Critically constrained by Nigeria's structurally low revenue-to-GDP ratio (projected to be around 13.3% in 2025–2026; Fitch Ratings, 2025) and volatile oil prices. The debt servicing burden, which has seen external debt servicing costs rise by 50% in Jan-Apr 2025 compared to 2024, absorbing 77.1% of international payments (Punch Newspapers, 2025b), severely limits capital expenditure on infrastructure. Furthermore, public sector inefficiencies, lack of technical capacity, and the pervasive challenge of corruption (as highlighted by the ICPC on constituency projects; ICPC, 2023) lead to significant cost overruns, delays, and suboptimal project outcomes, ultimately undermining public trust and the impact of spending. The chronic underfunding of maintenance budgets for public infrastructure remains a major challenge.

Private Sector Participation (PSP): A Growing Necessity

Attracting private capital is no longer an option but a necessity for Nigeria to bridge its infrastructure gap, bringing efficiency, innovation, and additional financial resources.

Public-Private Partnerships (PPPs): These involve contractual arrangements where a private entity assumes significant financial, technical, and operational risks in providing public infrastructure and/or services (Grimsey & Lewis, 2004).

Nigeria's Experience: Nigeria has embraced PPPs through the Infrastructure Concession Regulatory Commission (ICRC), established in 2005. The ICRC has approved over 50 Outline Business Cases for PPP projects valued at over NGN 6.92 trillion (approx. US\$15.6 billion as of late 2022) across transport, energy, and social infrastructure sectors (Federal Ministry of Budget and Economic Planning, 2024).

Examples: Notable projects include the planned Lagos 4th Mainland Bridge, estimated at US\$2.5 billion, which aims to be a 40-year concession (Guardian Nigeria, 2022). Various airport concessions (e.g., Lagos, Abuja airports) and attempts at toll road concessions are also underway, though with mixed success and often lengthy negotiation periods due to complexities in risk allocation and legal frameworks. Efforts in 2024–2025 continue to focus on streamlining these processes.

Strengths: Leverages private sector efficiency, accelerates project delivery, and reduces the immediate fiscal burden. It transfers construction and operational risks to the private sector and can introduce performance-based remuneration.

Limitations in Nigeria: PPPs are complex. Challenges include:

Lengthy and Opaque Procurement Processes: Often characterized by delays and lack of transparency, leading to higher transaction costs and deterring some reputable international players.

Inconsistent Legal and Regulatory Frameworks: While the ICRC Act exists, harmonization with other sectoral laws and state-level regulations is often lacking, creating uncertainty for investors, particularly for projects spanning multiple jurisdictions or sectors.

Weak Public Sector Capacity: Limited capacity within government agencies to adequately prepare, negotiate, and manage complex PPP contracts (e.g., financial modeling, legal expertise, post-award contract management).

Contingent Liabilities: Poorly structured PPPs can create significant hidden or explicit contingent liabilities for the government (e.g. minimum revenue guarantees), which can pose substantial fiscal risks if not properly managed and accounted for.

FX Volatility: Private investors, especially foreign ones, continue to face significant foreign exchange risk despite FX liberalization efforts, if project revenues are in Naira but debt or repatriation needs are in foreign currency, leading to demands for government guarantees or higher risk premiums.

Project Finance: A non-recourse or limited-recourse structure where debt is repaid solely from project cash flow (Gatti, 2013).

Nigeria's Experience: Commonly used in the power sector for Independent Power Projects (IPPs). The Azura-Edo IPP (459MW) is a prime example, successfully financed through a consortium of international lenders (IFC, Standard Chartered, Rand Merchant Bank) and benefiting from World Bank guarantees (Azura Power, 2023). Azura-Edo has been a relatively consistent contributor, often providing around 5-7% of Nigeria's total available grid power when fully operational, demonstrating the potential of well-structured project finance (Punch Newspapers, 2022).

Strengths: Allows for funding large, capital-intensive projects without recourse to sponsors' balance sheets, distributing risk among multiple parties.

Limitations in Nigeria: Highly dependent on robust power purchase agreements, gas supply reliability, and crucially, the liquidity and payment capability of the Nigerian Bulk Electricity Trading Plc (NBET) and the Distribution Companies (DisCos). The sector's persistent liquidity crisis, with accumulated debts of over NGN 1 trillion to GenCos (Bloomfield Consulting, 2025) stemming from low collection efficiency and non-cost reflective tariffs by DisCos (despite the April 2024 Band A tariff adjustment), makes new project finance deals challenging despite strong demand for power. Grid instability, with three total collapses and two partial collapses in Q4 2024 (NERC, 2024b), further complicates the operational environment.

Corporate Finance / Direct Private Investment: Private companies directly invest using their balance sheets, particularly where commercial returns are clear (e.g., telecommunications, private industrial parks).

Nigeria's Experience: The rapid expansion of mobile network operators like MTN and Globacom, investing heavily in towers, fiber optics, and data centers, exemplifies successful corporate finance in digital infrastructure. The rollout of 5G technology in 2024–2025 is a testament to significant private investment in telecommunications (The Estero, 2025). Private

industrial parks and real estate developments (e.g., Eko Atlantic City in Lagos, Dangote Refinery and Petrochemical Complex with its own infrastructure) also fall into this category.

Strengths: Direct and often faster deployment of capital for commercially viable projects.

Limitations: Limited to sectors with strong, predictable revenue streams and often shies away from projects with public good characteristics or high regulatory uncertainty (e.g., rural broadband where commercial viability is low).

Infrastructure Bonds/Capital Market Instruments: Governments, public utilities, or specialized infrastructure funds issue bonds to raise capital from domestic and international capital markets.

Nigeria's Experience:

FGN Sukuk Bonds: A pioneering initiative, Nigeria has successfully issued multiple Sukuk bonds (Sharia-compliant bonds) since 2017. Cumulatively, these have raised over NGN 1.09 trillion (approx. US\$730 million) and have been specifically tied to the construction and rehabilitation of over 4,100 km of roads and nine major bridges across the six geopolitical zones (Ecofin Agency, 2025; The Nation, 2025). This demonstrates the potential of mobilizing non-conventional capital for infrastructure and has significantly improved connectivity in areas like the Abuja-Kano highway and other strategic road corridors, including some sections in Katsina State.

FGN Green Bonds: Nigeria was the first African country to issue a Sovereign Green Bond in 2017, followed by a second tranche in 2019, to finance environmentally friendly projects, including those related to renewable energy and sustainable agriculture, thereby attracting socially responsible investors (Debt Management Office, 2023).

Strengths: Mobilizes large sums, diversifies funding sources, and taps into long-term savings. Reduces foreign exchange risk if denominated in Naira.

Limitations in Nigeria: Domestic capital market depth is still a challenge for the sheer scale needed. High interest rates due to inflation (though easing in 2025) and sovereign risk can make bond issuance expensive. The utilization of funds from Sukuk bonds has sometimes faced delays in project execution and ensuring equitable distribution and quality across geopolitical zones, mirroring broader infrastructure challenges.

Blended Finance: Catalyzing Private Investment for Development

Blended finance strategically combines public/philanthropic funds with private capital to de-risk projects, particularly where purely private financing is not initially feasible due to high perceived risks or insufficient returns (OECD, 2018).

Mechanisms: In Nigeria, this often involves Development Finance Institutions (DFIs) providing concessional loans, guarantees (e.g., political risk guarantees from MIGA which cover currency inconvertibility, expropriation, war and civil disturbance, and breach of contract for investors in Nigeria), or equity participations alongside private investors. Technical assistance is also crucial.

Nigeria's Experience and Potential: The Nigerian government actively seeks blended finance solutions, recognizing its potential to mobilize resources beyond traditional budget allocations (Federal Ministry of Budget and Economic Planning, 2024).

Examples: The African Development Bank (AfDB), a key DFI, recently launched a \$263.8 million integrated infrastructure development project in Abia State, co-financed with the Islamic Development Bank (IsDB), the Federal Government, and Abia State, to modernize urban infrastructure and rehabilitate over 248 km of roads. AfDB's direct contribution is \$115 million, effectively blending multilateral, national, and state funds (Daba Finance, 2025; Punch Newspapers, 2025a). This showcases how DFI involvement can anchor larger deals, providing the necessary de-risking for private sector entry.

Many renewable energy projects in Nigeria, particularly off-grid solutions (solar mini-grids in rural communities), continue to rely heavily on blended finance, combining grants from international organizations (e.g., Power Africa, Rockefeller Foundation) with commercial debt and equity to overcome high upfront costs and perceived risks. In Katsina State, while specific detailed reports on rural solar mini-grids leveraging blended finance are still emerging, the state's significant solar potential makes it a prime candidate. However, challenges like inconsistent maintenance of installed systems, lack of proper documentation, and shoddy construction practices (Premium Times, 2025) underscore the need for stringent oversight and capacity building even for donor-funded projects to ensure sustainability.

Strengths: Bridges the gap between development aid and commercial finance, enabling crucial development projects (e.g., in fragile contexts, rural electrification, climate adaptation) that might not meet commercial viability criteria alone. It leverages limited public funds to catalyze significantly larger private investments.

Limitations in Nigeria: Complex to structure and negotiate, requiring strong coordination among diverse stakeholders (Nigerian government agencies, DFIs, local and international private investors). Careful design is needed to avoid distorting markets, displacing purely private investment (additionality), or creating excessive subsidies that can burden the treasury.

Innovative Financing Mechanisms for Nigeria

Beyond traditional and blended finance, Nigeria is exploring novel approaches to tap into broader funding sources:

Infrastructure Funds: Dedicated funds pooling capital from large institutional investors like Nigeria's growing pension funds and insurance companies.

Strengths: Nigeria's pension assets, which have grown to N23.33 trillion (approx. US\$15.6 billion) as of Q1 2025 (National Pension Commission [PenCom], 2025), represent a vast, untapped pool of long-term capital ideal for infrastructure. Creating viable, ring-fenced infrastructure funds can channel these domestic savings.

Limitations: Requires a pipeline of large-scale, commercially viable projects. Pension funds may be risk-averse, preferring operational assets over greenfield development in an unpredictable environment. Regulatory frameworks for pension fund investment in alternative assets need to be robust and clear, and there must be sufficient investment vehicles that meet their risk-return profiles.

Land Value Capture (LVC): Allows public authorities to recover a portion of the increase in land values resulting directly from public infrastructure investments.

Potential in Nigeria: High potential in rapidly urbanizing cities like Lagos and Abuja, where new roads, rail lines (e.g., Lagos Blue Line, Abuja Light Rail), or major public facilities significantly appreciate surrounding land values. Mechanisms include betterment levies, development charges, and joint development schemes. For instance, the Lagos Blue Line Metro has the potential to significantly enhance property values along its corridor, offering a tangible revenue stream if LVC mechanisms are implemented.

Limitations: Requires robust land registration systems, transparent valuation processes, strong legal frameworks (e.g., consistent application of the Land Use Act), and significant political will to implement due to potential resistance from landowners. The absence of comprehensive and digitally integrated land registries across many states is a major hurdle.

Asset Recycling: Governments selling existing, income-generating public assets to private operators and reinvesting proceeds into new infrastructure projects.

Potential in Nigeria: Could be applied to mature, operational assets like existing toll roads (e.g., Lekki-Epe Expressway, if fully privatized), viable airports, or power transmission assets (if well-structured).

Limitations: Politically contentious due to public concerns about privatization of essential services. Requires strong regulatory oversight to ensure fair pricing, quality of service, and accountability post-transfer. The experience with power sector privatization highlights the challenges of asset recycling without robust regulatory and payment assurance mechanisms, potentially leading to public discontent and calls for re-nationalization.

Tax Credit Schemes: Governments offer tax credits or fiscal incentives to private companies investing in specific infrastructure projects.

Nigeria's RITC Scheme: The Road Infrastructure Development and Refurbishment Investment Tax Credit Scheme (RITC Scheme), launched in 2019, is a notable example. It allows participating companies (like Dangote Group, MTN, Access Bank) to receive tax credits equivalent to their investment in approved road infrastructure, offsetting future company income tax liabilities. The scheme has continued to be effective, contributing to the Federal Inland Revenue Service (FIRS) reporting N14.27 trillion in revenue in H1 2025, with diversified revenue collection and enhanced compliance (BRT-News, 2025). This indicates its continued role in leveraging private sector investment.

Strengths: Directly incentivizes private sector involvement using the tax system, leveraging corporate social responsibility and accelerating project delivery.

Limitations: Represents foregone tax revenue, requiring careful cost-benefit analysis to ensure the tax revenue foregone is less than the value of the infrastructure provided. Complex to administer and monitor, and ensuring equitable distribution of projects across Nigeria's diverse regions and benefiting small businesses remains a challenge.

The strategic choice and mix of these financing mechanisms for Nigeria depend on project type, its revenue potential, risk profile, existing legal and regulatory frameworks, and the broader economic and political context. A proactive, adaptable, and meticulously planned approach is critical.

Conclusion and Policy Recommendations

Conclusion;

This study has highlighted the centrality of infrastructure connectivity as a driver of balanced regional development in Nigeria. Despite being Africa's largest economy, Nigeria's infrastructure stock remains grossly inadequate, standing at less than 35% of GDP against the World Bank's 70% benchmark for emerging economies. Bridging this gap requires annual investments of about US\$150 billion, yet actual spending consistently falls below 2.5% of GDP. The heavy reliance on public financing; largely derived from volatile oil revenues—has proven insufficient, while the rising debt-servicing burden further limits fiscal space for capital investment.

Alternative financing mechanisms such as Public-Private Partnerships (PPPs), Sukuk bonds, project finance, and blended finance models have demonstrated promise. However, their effectiveness is undermined by institutional weaknesses, policy inconsistencies, shallow domestic capital markets, macroeconomic volatility, and governance deficits. The consequence has been a widening disparity between Nigeria's geopolitical zones, where core infrastructure like roads, railways, energy, and digital networks remain unevenly distributed, thereby constraining inclusive growth and reinforcing regional imbalances.

The evidence shows that infrastructure in Nigeria is more than a set of physical assets; it is a foundational enabler of productivity, trade, investment, and social cohesion. Without urgent reforms to financing strategies and institutional frameworks, Nigeria risks perpetuating a cycle of underinvestment, poor maintenance, and uneven regional development that undermines long-term national growth.

Policy Recommendations;

To close the infrastructure gap and unlock inclusive regional development, a multi-pronged financing strategy is required. The following policy recommendations are proposed:

Scale Up Blended Finance Models

Expand partnerships with Development Finance Institutions (DFIs) such as AfDB, IFC, and Islamic Development Bank to de-risk infrastructure projects through guarantees, concessional loans, and technical support.

Prioritize blended finance in high-impact sectors like renewable energy, transport corridors, and regional agro-processing zones where social returns are high but private investment appetite is limited.

Strengthen the PPP Framework

Streamline approval processes under the Infrastructure Concession Regulatory Commission (ICRC) to reduce bureaucratic delays.

Harmonize federal, state, and sectoral laws to create regulatory consistency and investor confidence.



Build technical capacity in government agencies to negotiate, manage, and monitor complex PPP contracts.

Deepen Domestic Capital Markets

Broaden the issuance of Sukuk, green bonds, and infrastructure bonds to mobilize long-term domestic savings from pension funds, insurance companies, and retail investors.

Develop credit enhancement facilities (e.g., partial guarantees, viability gap funding) to make infrastructure bonds more attractive to institutional investors.

Ring-Fence Infrastructure Maintenance Funds

Establish a statutory Infrastructure Maintenance Fund to prevent the recurring “build–neglect–rebuild” cycle.

Mandate that a fixed percentage of annual budget allocations, as well as a portion of Sukuk proceeds, be dedicated solely to maintenance and rehabilitation.

Enhance Governance and Institutional Quality

Introduce transparent project appraisal, procurement, and monitoring frameworks, leveraging digital platforms to track spending and project execution.

Strengthen anti-corruption enforcement in infrastructure delivery to reduce leakages and restore investor and public trust.

Promote Regional Equity in Infrastructure Investment

Adopt spatially balanced investment plans that deliberately channel funds into underserved regions, especially the North-East and North-West, to reduce development disparities.

Prioritize inter-regional transport corridors (roads, railways, inland waterways) to link isolated communities with economic hubs.

Foster Macroeconomic and Regulatory Stability

Ensure consistency in tariff regimes, foreign exchange policy, and regulatory enforcement, especially in the power and transport sectors.

Maintain a stable and predictable investment climate to encourage long-term private capital inflows.



References

- Agusto & Co. Ltd. (2021). Nigeria Infrastructure Report 2021.
- Agusto & Co. Ltd. (2024). Nigeria Infrastructure Report 2024.
- African Business. (2025). Nigeria's Q1 2024 FDI drops as investor sentiment cautiously improves.
- Azura Power. (2023). Azura-Edo IPP: Our Story.
- Bloomfield Consulting. (2025). Nigerian Power Sector: A Review of Challenges and Opportunities.
- BRT-News. (2025). FIRS Revenue in H1 2025 Hits N14.27 Trillion, Driven by Diversified Collection.
- Calderón, C., & Servén, L. (2008). Infrastructure and economic development in sub-Saharan Africa. *Journal of African Economies*, 17(5), 13-87.
- Daba Finance. (2025). AfDB, IsDB, and Nigerian Government Co-Finance Abia State Integrated Infrastructure Project.
- Debt Management Office. (2023). Nigeria's Green Bond Issuance.
- Debt Management Office. (2024b). National Debt Management Framework 2023-2027.
- Ecofin Agency. (2025). Nigeria's Sukuk Bonds Fund Over 4,100 km of Roads.
- Federal Ministry of Budget and Economic Planning. (2024). National Development Plan 2021–2025.
- Fitch Ratings. (2025). Nigeria Sovereign Rating Report.
- Gatti, S. (2013). *Project finance in theory and practice: Designing, structuring, and financing private and public projects* (2nd ed.). Academic Press.
- Grimsey, D., & Lewis, M. K. (2004). *Public private partnerships: The worldwide revolution in infrastructure provision*. Edward Elgar Publishing.
- Guardian Nigeria. (2022, December 30). Lagos signs MoU for \$2.5bn 4th Mainland Bridge. *The Guardian*.
- Independent Corrupt Practices and Other Related Offences Commission (ICPC). (2023). *Report on Constituency Projects Tracking Initiative*.
- International Journal of Research and Innovation in Applied Science. (2025). *GIS Applications in Infrastructure Planning*.



International Monetary Fund (IMF). (2024a). Nigeria: Staff Report for the Article IV Consultation.

International Monetary Fund (IMF). (2025a). Nigeria: Selected Issues Paper.

Institute of International & Advanced Research and Development (IIARD). (2024). Challenges of Infrastructure Maintenance in Developing Countries.

Kenny, C. (2007). Construction Rents and Corruption in Public Infrastructure Projects. World Bank Policy Research Working Paper, (4275).

Li, Y., & Zhou, Y. (2019). Infrastructure connectivity and economic growth: Evidence from Belt and Road Initiative countries. *Journal of Infrastructure Systems*, 25(4), 04019028.

Macrotrends. (2023). Lagos, Nigeria Urbanization Rate 1950-2023.

Nairametrics. (2025a, June 17). Nigeria's Inflation Rate Eases to 22.97% in May 2025. Nairametrics.

Nairametrics. (2025b, March 12). Lagos State E-Procurement System Onboards 169 MDAs. Nairametrics.

National Bureau of Statistics (NBS). (2024). Nigerian Capital Importation Report Q1 2024.

National Pension Commission (PenCom). (2025, May 22). Pension Assets Under Management as at Q1 2025.

Nigerian Electricity Regulatory Commission (NERC). (2024b). State of the Industry Report Q4 2024.

North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.

Organisation for Economic Co-operation and Development (OECD). (2007). Glossary of Statistical Terms: Infrastructure.

Organisation for Economic Co-operation and Development (OECD). (2018). Blended Finance: A Primer for Developing Countries.

PJLSS. (2025). Political Risk Management in Decentralized Energy Markets: A Case Study of Nigeria's Electricity Act 2023.

Premium Times. (2025, April 29). World Bank says Nigeria's infrastructure deficit is 70% of GDP. Premium Times.

PubMed Central. (2024). Blockchain Technology in Public Procurement: A Review of Opportunities and Challenges in Developing Economies.



Punch Newspapers. (2022, October 16). Azura-Edo Provides 5-7% of Nigeria's Power. Punch Newspapers.

Punch Newspapers. (2025a, February 10). AfDB, IsDB, FG Launch \$263.8m Abia Infrastructure Project. Punch Newspapers.

Punch Newspapers. (2025b, May 15). Nigeria's External Debt Servicing Rises by 50% in Q1 2025. Punch Newspapers.

ResearchGate. (2024). Leveraging Blockchain for Transparency in Public Procurement in Nigeria.

ResearchGate. (2025b). Impact of Fuel Subsidy Removal and FX Liberalization on Construction Costs in Nigeria.

Sambus Geospatial. (2025). GIS for Infrastructure Planning and Monitoring.

The Estero. (2025). Nigeria's 5G Rollout: A Catalyst for Digital Transformation.

The Nation. (2025, March 14). Sukuk Bonds Fund Over N1 Trillion Road Projects. The Nation.

Transparency International. (2023). Corruption Perception Index 2023: Nigeria.

United Nations Development Programme (UNDP). (2025). Decentralizing Electricity Markets in Nigeria: A New Dawn.

Veriv Africa. (2024). Bridging Nigeria's Infrastructure Gap: The US\$3 Trillion Challenge.

Williamson, O. E. (1985). The economic institutions of capitalism. Free Press.

World Bank. (2023a). Nigeria Economic Update: Navigating the Reforms.