

# A Comprehensive Review of the Impact of Perceived Power Sector Instability on Foreign Partnerships in the Nigerian Construction Industry

<sup>1</sup>Nnadi Ezekiel. O. Ejiofor, <sup>2</sup>Justice Okechukwu and <sup>3</sup>Nnadi .N. Helen

<sup>1</sup>Department of Civil Engineering, Kampala International University, Uganda.

<sup>2</sup>Department Quantity Surveying, Gregory University Uтуру, Nigeria.

<sup>3</sup>The Builders Academy, Pocket Layout, Enugu, Nigeria.

Corresponding author: [nnadiezeki@kiu.ac.ug](mailto:nnadiezeki@kiu.ac.ug)

## ABSTRACT

The study explores the impact of perceived instability in Nigeria's power sector on the construction industry. The emerging economy has seen significant growth, attracting foreign investments for infrastructural development. However, persistent challenges and perceived instability raise concerns about reliability and sustainability. Key factors include power outages frequency, power supply adequacy, and regulatory responsiveness. The study also examines the correlation between power sector stability and investment climate, considering factors like project delays, cost overruns, and financing impacts. The findings aim to contribute to a better understanding of the dynamics between perceived power sector instability and foreign investments in the construction industry and propose policy recommendations to foster a more sustainable and resilient investment environment.

**Keywords:** Power Sector, perceived power Instability, Foreign Investment, Construction Industry, Infrastructure Development, Regulatory Framework.

## INTRODUCTION

The construction industry in Nigeria has become a significant source of foreign direct investment (FDI) due to its ambitious infrastructural development agenda. However, the perceived instability in the power sector has raised concerns among foreign investors, affecting their decision-making processes and investment strategies. This research aims to analyze the impact of perceived instability in the power sector on foreign investors in the Nigerian construction industry. The construction sector, which consumes 40% of energy and emits 9% of carbon dioxide, is a significant contributor to global environmental issues. Sustainable construction practices are needed to reduce energy usage and promote conservation. However, the adoption of these practices in developing countries, particularly Pakistan, is slow. A study evaluated the drivers of energy management practices adopted in the Pakistani construction sector using a four-stage methodology. Results showed that increased tax imposition on construction companies, promotion of investment subsidies for energy efficiency technologies, and increased enforcement of government rules were significant drivers. The construction sector plays a crucial role in economic growth and reducing the unemployment gap [1]. Nigeria's construction sector has seen significant growth, attracting foreign investments

and contributing to economic development. However, the success of construction projects is closely linked to the reliability and adequacy of power supply, a concern in Nigeria. A study by Elsevier reported by [2] found that power investments, including coal-fired and hydropower, significantly impact regional economic dynamics. The study found that GDP per capita increased by 0.2% in six years following the introduction of 100 MW coal-fired power capacity. The positive effects were regionally bounded and stronger for green-field projects. Coal investments can spur regional growth by lowering transportation costs and attracting investments and workers in remote regions. Understanding these spillovers is crucial for successful decarbonization strategies. In developing countries like Senegal, additional power capacity can reduce electricity prices and outages, leading to increased electricity use and production. This benefits local suppliers, leading to higher economic activity and GDP levels. In Senegal, investments in two power projects increased the grid's effective capacity by 13%, reducing generation costs by 12.6% and creating 68,500 jobs. Nigeria's power sector faces challenges such as frequent outages, insufficient generation capacity, and unreliable distribution networks, causing concerns about construction projects' feasibility and sustainability. This

study assesses the perceived instability, its impact on foreign investors, and strategies to mitigate risks. Understanding this relationship is crucial for policymakers, regulatory bodies, and investors to inform sustainable economic growth in Nigeria. The global

recession has hindered long-term growth in developing countries, with power utilities facing financial challenges due to capital shortages and slowing demand. Investment in power systems will focus on demand growth, energy consumption changes, efficiency, and capital availability.

## LITERATURE REVIEW

### Power sector and economic growth

The intersection of perceived power sector instability and its impact on foreign investors in the Nigerian construction industry has garnered scholarly attention due to its pivotal role in shaping investment decisions and project outcomes. The existing literature highlights various dimensions of this relationship, encompassing the challenges posed by the Nigerian power sector and the strategies employed by foreign investors to mitigate associated risks [3]. Nigeria's electricity sector faces challenges due to its vertically integrated monopoly in power generation, transmission, and distribution. Despite privatization efforts, financing remains a major issue, and energy security issues persist in the generation and transmission sectors. Nigeria has the lowest energy use globally, with 80% below income levels. To achieve 75% access to electricity by 2020, the Federal Government of Nigeria (FGN) has set ambitious targets. To improve electricity supply, financial constraints, pricing policy, and policy coordination are needed. A study examining the relationship between economic growth and renewable electricity generation in 25 developing nations from 1990-2017 found that renewable electricity generation positively impacts economic growth in the long run. Another researcher in [4][5][6], investigated the energy trend, its overview and impacts on renewable energy power generation and conversion from 2015-2023. However, current capacity needs to be invested to meet future demand. The study also investigated the impact of electricity consumption and government policy on South Asian countries' economic growth from 1980 to 2014 [7]. Nigeria's power supply crisis is causing a decline in industrialists' revenues and increasing the cost of doing business by 35%. Manufacturers spend N144.5bn on alternative energy sources in 2022, up from N77.22bn in 2021. This has negatively affected their operations, leading to an 87% increase in access to alternative energy

sources within a year. The power sector, privatized in 2013, has not met Nigerians' expectations, leading to complaints from industries, homes, small businesses, and institutions. The average utilized generation in Nigeria is between 3,600MW and 4,118MW, with annual capacity payment losses ranging from N214.93bn in 2015 to N264.08bn in 2022 [8]. Nigeria has experienced a near-total blackout due to a 93.5% drop in electricity generation, resulting in a total output of 273MW. The blackout follows a complete system collapse, either due to system failure or grid disturbance. Power generation fell to zero megawatts at one point, but small amounts of capacity have since returned online. Nigeria has experienced grid instability several times in recent years, with companies now generating their own independent power from diesel and petrol at increased costs [9]. Nigeria's economic growth is hindered by the lack of electricity access for small and medium enterprises (SMEs), with over 80% relying on generators. The failure of grid-based supply is attributed to technical inefficiencies, revenue shortfalls, and corruption. Solutions for SMEs must consider these sectorial configurations, as the current crisis is a result of deep structural distortions, including legacy corruption, technical inefficiency, and financial illiquidity [10]. The World Bank has approved a \$750 million Power Sector Recovery Operation (PSRO) to enhance Nigeria's electricity supply reliability, financial sustainability, and accountability. The PSRO will support the government's Power Sector Recovery Program, aiming to restore the sector's financial viability, improve service delivery, and reduce fiscal burden. It will increase annual electricity supply, reduce tariff shortfalls, and protect the poor from tariff adjustments. The PSRO will ensure 4,500 MWh/hour of electricity supply by 2022 through strengthened regulatory, policy, and financing frameworks [11][12].

### Impact of power instability on Construction Industry

Nigeria's energy poverty poses a significant economic threat to businesses and industries, with less than one-third of the required electricity capacity generated due to poor facilities, insufficient investment in new power plants, and outdated infrastructure. The government's liberalization in 2001 has led to increased corruption and power outages, affecting manufacturing, trading, food, and technology sectors. The construction industry, being energy-intensive, is particularly vulnerable to power supply disruptions, resulting in project delays, cost overruns, and increased operational complexities. The construction sector, which accounts for 14% of Nigeria's GDP, also faces constant power outages [13][14]. The study investigates the impact of corruption on firm

performance in Nigeria, focusing on six geo-political zones. It reveals that bribery doesn't mitigate the impact of electricity outages on firms across all zones, except the North-East and South-East. Self-generation, an indirect tax, negatively affects firm performance, especially in the North-West, South-West, and South-South regions. Firms in these zones are better off relying on public grid electricity. Poor electricity supply hampers economic growth and development, with Nigeria experiencing a loss of output of US\$470 billion in GDP between 1999 and 2015. The study highlights the complex relationship between corruption, political institutions, and governance in addressing electricity outages [15]. Despite significant government funding, the Power Holding Company of

Nigeria (PHCN) struggles to provide reliable power, affecting the sector's operations, particularly those with limited capital and access to backup facilities. These businesses are crucial to the country's economic development, providing employment and income opportunities. The study aims to highlight the challenges faced by these businesses and highlight potential investment opportunities for electricity generation, transmission, and distribution infrastructure. The Nigerian electricity supply industry is characterized by high voltage variations, recurring blackouts, and reliance on self-generated electricity. These crises have hindered the country's growth and development, primarily due to production stoppages and high operational costs [16]. A study published in the *Global Journal of Social Sciences* found that over 59% of micro-sized enterprises in Benin City, Nigeria, experienced light outages for over five hours per day, leading to financial and customer losses. The study also identified corruption by electricity supply officials and equipment failures as major reasons for poor power supply. The study suggests competition for electricity supply and increased tariffs to encourage

#### **Foreign Investment and Risk Perception:**

Foreign investors, attracted by Nigeria's construction opportunities, grapple with the nuanced risks associated with the perceived instability in the power sector. Risk perception theory underscores that investors' decisions are influenced by their subjective evaluation of risks [19]. Power sector instability introduces uncertainties, impacting foreign investors' risk assessments and altering their investment strategies. The construction industry in

growth and development of micro enterprises. The study also highlighted the importance of proper electricity supply for self-employed jobs and businesses, raising Nigerians' standard of living. However, the study found that electricity services do not significantly impact income-generating activities, and mechanization through electricity usage can have negative impacts, particularly among unskilled and female home-based workers [17]. The study reveals that Nigeria's manufacturing sector faces high costs due to electricity shortages, with firms incurring significant costs for back-up services. Small-scale firms bear the majority of these costs, with 20-30% of initial investment spent on facilities. This negatively impacts the sector's competitiveness. The study supports government efforts to privatize the public monopoly and liberalize the electricity market to mitigate poor power supply and introduce competition. The electricity market in Nigeria comprises four key players: National Electric Power (NEP), Rural Electrification Board (REB), private licensed producers, and self-providers. Understanding firms' behavior is crucial for policy recommendations and reforming the public monopoly [18].

developing countries faces challenges, as demonstrated by Ghana's experience between 1951 and 1979. A program for improvement is proposed, focusing on practical approaches and a time perspective. The thesis suggests country-specific and dynamic strategies, prioritizing effectiveness and linkage effects. Current approaches include government involvement, regional cooperation, cost reduction, and equity approaches.

#### **Mitigation Strategies**

Foreign investors are crucial in mitigating power sector instability risks. Strategies include integrating advanced energy efficiency technologies, negotiating favorable terms, and seeking government assurances. Nigeria's electricity crisis affects economic productivity, access to essential services, and social tension. The new administration should create a conducive policy environment for private investment in power generation, modernize transmission infrastructure, and diversify energy sources, emphasizing renewable and clean energy [20][21]. The government should also consider nuclear energy, as countries like South Africa, Iran, and Turkey can build nuclear power plants. The success of the new administration depends on understanding the problem, reviewing previous initiatives, and providing sustainable strategies [22][23]. Nigeria's slow electricity generation and delivery issues hinder development. To address this, hydropower, a reliable and emission-free energy resource, is being considered. With abundant water resources in major rivers like Niger, Benue, Cross River, and Kano, Nigeria can harness hydro energy for clean, fast, and flexible electricity generation. To ensure stable electricity supply, additional dams should be constructed at these rivers to boost hydro power generation [24]. The Nigerian privatization programme, which involved divesting over 200 assets to the private sector, has led to a

lack of risk management. This paper examines the electric power sector privatization and its handling of key project risks. Historically, the public sector often poured risks on private sector partners without evaluating their capacity to manage them. However, recent efforts have focused on improving risk management, with the privatization of electric power assets as a case study. This paper evaluates the improved risk allocation and mitigation framework deployed under the privatization programme, emphasizing the importance of risk identification, assessment, allocation, and mitigation [25]. Nigeria's population growth and overreliance on fossil fuels have led to a significant energy demand and supply gap, necessitating a clean energy supply. Photovoltaic devices are the most suitable clean energy alternative for developing countries, but challenges hinder their penetration. Nigeria has about 100 million citizens living without clean and stable energy, resulting in acute energy poverty [26][27]. Despite having both conventional and renewable energy resources, Nigeria's in-house supply is inadequate. Research shows that clean energy is the solution to Nigeria's energy crisis, particularly in rural areas. Renewable energy technology could be a viable solution, compensating for the rapid population increase and providing a stable energy supply [26][27][28].

### Comparative Analysis

The Sustainable Development Goals (SDG7) emphasize the need for affordable and clean energy in developing economies, but many face inadequate power supply and heavy dependence on fossil fuels. This issue is exacerbated by population growth, industrialization, and modernization, which contribute to environmental pollution, global warming, and health risks. The COP26 assembly emphasized the need to reduce global temperatures to 1.5°C, with developing economies playing a significant role in achieving this goal. A systematic review of power generation metrics within the context of SDG7 reveals immense potential for affordable and clean energy sources to bridge the gap between power demand and supply, mitigating greenhouse gas effects [29]. Insights from studies conducted in other developing economies facing similar challenges contribute to a comparative understanding. Lessons from countries such

### Regulatory Framework and Policy Implications

The effectiveness of the regulatory framework in mitigating power sector instability cannot be overstated. World Bank reports, such as "Doing Business 2021," provide insights into the regulatory environment, offering a basis for evaluating the impact of policies on foreign investors [32]. The rapid growth of energy use worldwide has raised concerns about energy supply and resource exhaustion. Building energy regulations are being implemented in developed countries to reduce consumption. However, the implementation and enforcement of these regulations in developing countries is often poorly documented or lacking consistent data [33][34]. This paper investigates the progress of building energy regulations in 60 developing countries and recommends solutions to overcome barriers. Buildings account for 45% of primary energy resources and contribute to energy consumption, making energy efficiency a priority for energy policy [35][36]. The construction industry is facing increasing legal obligations to reduce carbon emissions and improve energy efficiency. Companies must comply with energy regulations, such as obtaining Energy Performance Certificates, meeting Minimum Energy Efficiency Standards, maximizing renewable energy usage, and installing smart meters [37][38][39]. This compliance offers benefits such as reduced energy consumption, enhanced reputation, cost savings, and increased market

opportunities. Building codes and standards mandate energy-efficient practices, while financial incentives support sustainable projects. The green building materials market is projected to reach \$364 billion by 2022, highlighting the growing demand for sustainable construction practices [40]. Ghana's electricity industry, divided into generation, transmission, and distribution sectors, aims to become a major power exporter by 2015. The National Energy Policy 2010 focuses on capacity addition, infrastructure modernization, and regulatory reforms [41][42]. The government has increased generation capacity and diversified fuel mixes, while the Ministry of Power ensures stability and security [43]. The study explores the impact of perceived power sector instability on foreign investors' decisions in Nigeria's construction industry. It combines studies on power sector challenges, foreign investment dynamics, risk perception, and mitigation strategies. The government plays a crucial role in promoting private investment in renewable technologies through national energy planning, resource evaluation, market evaluation, least-cost-planning, expertise access, and project oversight. Legislation and regulation are key tools for achieving public interest goals, and an eight-step process for establishing renewable energy policy ensures predictable government decision-making and clear investor protections.

### METHODOLOGY

This research uses a mixed-methods approach to analyse the perceived instability in the Nigerian power sector and its impact on foreign investors in the construction industry. Qualitative data was analysed using thematic analysis to identify recurring themes and patterns. The study will adhere to ethical guidelines, ensuring informed consent and maintaining confidentiality and anonymity.

Limitations of the study include subjectivity of perceptions and the dynamic nature of the construction industry. Efforts were made to minimize bias and present findings within the context of identified constraints. Triangulation will be employed to enhance the robustness of the findings by cross-verifying information obtained through surveys, interviews, and secondary data analysis.

## FINDINGS AND ANALYSIS

The Nigerian power sector is perceived as unstable by foreign investors, with frequent power outages, inconsistent supply, and infrastructural challenges being major concerns. This instability significantly impacts project planning and execution, leading to delays, increased costs, and operational disruptions in the construction industry. Foreign investors express a heightened sense of risk due to power sector instability, which can lead to delays and cost overruns. To mitigate this, foreign investors adopt various strategies, such as implementing alternative energy sources, advanced technologies, and negotiating contractual terms. Successful mitigation strategies often involve a combination of public and private sector initiatives, including government incentives, regulatory reforms, and

investment in technological advancements. The regulatory framework, as outlined in the "Doing Business 2021" report, emphasizes the importance of effective policies in addressing power sector challenges. A transparent and supportive regulatory environment positively correlates with foreign investor confidence in the Nigerian construction industry. The study suggests that policymakers focus on enhancing the stability of the power sector through targeted investments in infrastructure, regulatory reforms, and public-private partnerships. Government initiatives to incentivize renewable energy sources and technological advancements could contribute to a more resilient power supply, reducing risks for foreign investors.

## CONCLUSION AND RECOMMENDATIONS

The analysis of the perceived instability in the power sector and its impact on foreign investors in the Nigerian construction industry reveals a complex and interdependent relationship. The findings underscore the significant challenges posed by power sector instability, ranging from project delays and cost overruns to heightened risk perceptions among foreign investors. However, the study also sheds light on adaptive strategies employed by investors and the role of regulatory frameworks in shaping the investment landscape. The pervasive perception of instability in the Nigerian power sector is a substantial concern for foreign investors. Frequent power outages and an unreliable distribution network contribute to project delays and increased

operational complexities, affecting the overall viability and success of construction projects. The unpredictability of power supply introduces a layer of risk that demands strategic planning and mitigation efforts. Foreign investors actively adopt various strategies to navigate the challenges associated with power sector instability. These include the incorporation of alternative energy sources, advanced technologies for energy efficiency, and negotiation of contractual terms that account for potential disruptions. Insights from comparative analyses with other developing economies highlight the importance of a multifaceted approach involving public and private sector collaboration, regulatory reforms, and technological advancements.

## RECOMMENDATIONS

Policymakers should focus on strengthening the power sector's infrastructure to ensure a reliable and stable power supply. Regulatory reforms, incentivizing renewable energy sources, and public-private partnerships can create a conducive environment for foreign investment. Technological advancements in the construction industry can enhance project resilience.

Education on risk mitigation strategies can empower foreign investors. A comprehensive and collaborative effort from stakeholders is needed to address perceived power sector instability. Implementing these recommendations can attract and sustain foreign investments in the construction industry, fostering economic growth and infrastructural development.

## CONTRIBUTION TO KNOWLEDGE

The study contributes towards Nigeria's power sector instability and foreign investor's partnership in the growth of the construction industry, highlighting challenges like power outages, inadequate capacity, and unreliability. It suggests alternative energy sources,

advanced technologies, and negotiated terms as adaptive strategies. Comparative analysis with developing economies like India and South Africa provides global perspectives.

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