ALL ON NIGERIA

OFF GRID ENERGY BUSINESS REPORT

Mini Quarterly Report (Fourth Quarter, 2023)

Content Summary

Overview of Nigeria Energy Space

Nigeria is the most populous country in Africa and the seventh most populous country globally, with a population of over 223 million, covering about 924,000 square kilometres in land mass.

Nigeria boasts the largest economy in sub-Saharan Africa, yet it grapples with constraints in its power sector that hinder the country's economic expansion.

The country has a generation capacity of almost 14000 MW. However, for the outgoing year 2023, Nigeria's national grid could only cope with 4957.89 MW.

10 years post-privatisation, the enactment of the Electricity Act 2023 and three grid collapses in the last quarter, Nigerians still struggle to have power for their homes and business activities.

Source: Statista: www.statista.com/statistics/1121246/population-in-africa-by-country/
www.punchng.com/fg-grows-national-grid-power-capacity-to-14000mw/
Nigeria Electricity Systems Operational Report (December): www.nsong.org/Library.aspx (OP31122023B)

Off-Grid Market Overview

The Nigeria Sustainable Energy for All, an initiative from the Federal Ministry of Power (FMP) in partnership with Nigerian Energy Support Programme (NESP), reports that there are currently 113 mini-grids in the country.

These mini grids are split per registered programme as follows:

- Nigeria Electrification Project (NEP): 67
- Rural Electrification Fund 1 (REF 1): 12
- Federal Ministry of Power (FMP): 3
- Rural Electrification Agency (REA): 11
- REA Capital Projects: 5
- Nigerian Energy Support Programme 1 (NESP I): 7
- United States African Development Foundation: 1
- Infrastructure Credit Guarantee Company Limited
- (InfraCredit Clean Energy Fund Project): 7

Source: Nigeria SE4ALL | Mini-Grids as at December 2023

Renewable Power Generation Sources

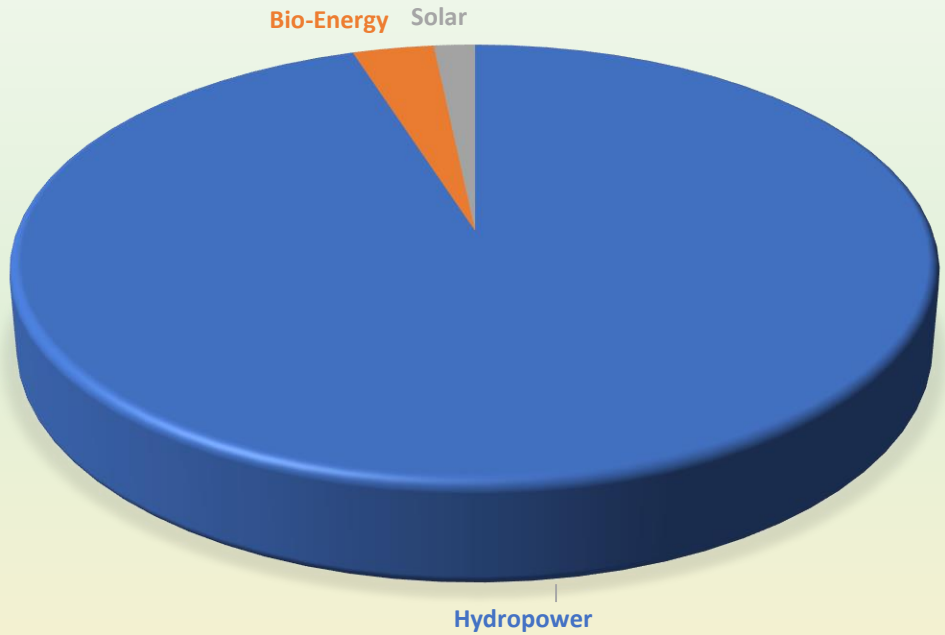
The renewable generation sub-sector in Nigeria has a grid generation installed capacity of about 2,206MW.

Nigeria plans to increase renewable electricity generation to more than 30% by 2030.

Renewable energy power generation sources in Nigeria are mainly hydropower, solar and bio-energy which consists of solid biofuels and renewable waste such as charcoal, wood residues and by-products, bagasse, animal waste, other vegetal materials and residue, and, the renewable fraction of industrial waste.

The hydropower has an installed capacity of 2,111 MW, bio-energy 73 MW and solar 37 MW.

The off-grid potential of wind power remains largely unexplored



Source: IRENA Renewable Energy Statistics 2023
www.statista.com/topics/11022/energy-sector-in-nigeria

Diesel Generators

Owing to the inconsistent provision of electricity from the national grid, Nigerians are compelled to expend around $14 billion annually on generating electric power using small petrol or diesel generators, which come at a high cost and emit harmful pollutants into the atmosphere.

Over 75 per cent of electricity consumed in Nigeria comes from diesel and petrol-powered generators, making it the most used source of non-grid power generation.

Further research also notes that 8,000 to 14,000MW of decentralized diesel generator capacity is currently installed in the country. Nigeria gets about 40,000 MW of electricity from generators powered by petrol and diesel.

Source: www.orientalnewsng.com/nigerians-spend-14-billion-on-generators-and-fuel-annually-afdb/
www.punchng.com/nigeria-relies-on-generators-for-75-electricity-report/
www.greenenergyinvestment.nipc.gov.ng/sites/default/files/documents/greenenergyinvestment_ee-commercial-and-industrial_systems.pdf
https://punchng.com/nigeria-gets-40000mw-power-from-generators-says-fg/
IRENA Renewable Energy Statistics 2023
www.statista.com/topics/11022/energy-sector-in-nigeria

Mini-Grids

The electrification efforts of the Rural Electrification Agency (REA) Nigeria Electrification Project (NEP) continue to expand by providing electricity to households, Micro, Small and Medium Enterprises (MSMEs), and educational and healthcare facilities in unserved and underserved rural communities through the deployment of mini-grids and solar home systems with private sector involvement.

The NEP recently concluded pre-bid conferences for:	Phase 3 of its energizing education program, which aims to provide sustainable power to 37 federal universities and 7 teaching hospitals;
	The deployment of solar hybrid mini-grids in unserved and underserved parts of Kwara, Enugu, Ekiti, Oyo, and Nasarawa states

Additional projects are anticipated to arise through this Federal Government initiative via the REA NEP.

Most mini-grid projects today are standalone mini-grids and situated in densely populated agrarian communities, typically with a population of around 2,500 distributed among 300–500 households.

At present, Nigeria has just two interconnected mini-grids in operation: the Mokoloki mini-grid located in Ogun State and the Toto mini-grid situated in Nasarawa State.

Source: Rural Electrification Agency, 2023. www.rea.gov.ng/nep-holds-pre-bid-conference-energizing-education-programme-eep-phase-iii/
Rocky Mountain Institute (RMI). www.rmi.org/insight/mokoloki/
www.rea.gov.ng/press-release-nigerias-first-interconnected-hybrid-solar-mini-grid-plant-commissioned-toto-community-nasarawa-state/

Current Off-Grid Projects In Nigeria

- With a 2023 initiative in Niger, Spunvertek Limited is setting the stage for enhanced rice cultivation by providing farmer groups with solar-powered water pumping systems.
- Auxano Solar has advanced the solar energy sector in Lagos by establishing a 100MW Auto Solar PV Manufacturing plant, targeting a significant boost in production.
- A 1,000 kWp solar micro-grid project by GVE Projects Limited in Abuja, initiated in 2023, is still on track to deliver reliable energy to over 2155 traders, demonstrating the impact of sustainable power solutions. This groundbreaking Wuse Market project in Abuja aims to reduce emissions and transform the market into Nigeria's first green, generator-free economic cluster.
- In Ondo, Protergia Limited's installation of two solar mini-grids is not just electrifying communities but also ensuring access to clean water, showcasing the versatility of renewable energy.
- REA and the Africa Mini-Grid Developers Association (AMDA) signed a Memorandum of Understanding (MOU) to promote and accelerate mini-grid development in Nigeria.
- Nigeria’s First Interconnected Hybrid Solar Mini-Grid Plant was commissioned in Toto Community, Nasarawa State.

Source: Diamond Development Initiatives (DDI) Catalogue of Off-Grid Energy Projects
https://ddinigeria.org/catalogue-of-off-grid-energy-projects/

Current Regulatory And Policy Framework

The 2023 Mini-Grid Regulations represent a pivotal shift towards creating a more streamlined and predictable regulatory framework for mini-grid development in Nigeria. For investors, adopting a portfolio approach and simplified tariff filing process offers increased flexibility and reduces administrative complexities.

The regulation clarifies permits for isolated and interconnected grids, broadening opportunities for mini-grid developers and ushering in new possibilities.

NERC Mini-grid Regulations 2023

Electricity Act 2023

One of the central aims of the Electricity Act 2023 is to establish a comprehensive and integrated policy framework that acknowledges all sources for electricity generation, transmission, and distribution, with a particular emphasis on integrating renewable energy into Nigeria's energy portfolio.

Source: Electricity Act, 2023: https://placng.org/i/wp-content/uploads/2023/06/Electricity-Act-2023.pdf
NERC Mini-grid Regulations 2023: https://nerc.gov.ng/wp-content/uploads/2024/01/MINIGRIDREGULATIONS.pdf

Investment Opportunities

- World Bank approved Distributed Access through Renewable Energy Scale-up (DARES) project. The DARES program coming on stream later in 2024 could help unlock matching capital - equity and debt - if administered efficiently.
- Local currency financing opportunities to cover working capital needs and local components' purchases.
- The off-grid Electrification Strategy, which is part of the Power Sector Recovery Programme (PSRP) created by REA.
- REA exploring synergies with mini-grid companies to further expand market across Nigeria.

Current Challenges

Currency devaluation and rising inflation. This implies that various cost elements continue to rise from both CAPEX and OPEX standpoints. Transferring these costs to end-users may also prove counterproductive as end users are also impacted by the aforementioned macroeconomic issues.

Talent gap - being a nascent sector, a dearth of talent means industry actors may need to do more to build and attract required talent to drive sector scale and growth. On the positive side, Nigeria's demography posits talent availability but not suitability.

Insecurity and vandalization of existing infrastructure.

Poor economy and low income or purchasing power of off-takers of electricity from the mini-grid.

The lack of targeted policies that create an enabling environment to invest in mini-grids across Nigeria.

Recommendations

Advocacy is needed for government policies that stabilise the currency and control inflation to create a more predictable business environment. Off-grid developers, with the government's support, need to negotiate long-term contracts with suppliers to lock in prices and mitigate the impact of inflation. Mini-grid developers need to explore local sourcing options to reduce dependence on imported components.

Training and capacity-building programs to develop the necessary skills within the workforce should be invested in. Mentorship programs should be established to transfer knowledge and expertise from experienced professionals to new entrants in the industry. The government and off-grid developers can collaborate with educational institutions to design specialised courses and certifications tailored to the needs of the off-grid energy sector. Off-grid firms should offer competitive salaries, benefits, and career advancement opportunities to attract and retain top talent.

Off-grid firms should work closely with local communities and authorities to enhance security measures around off-grid energy installations. They should invest in robust security systems, including surveillance cameras, perimeter fencing, and security personnel. Off-grid relevant stakeholders should regularly engage community outreach and awareness campaigns to promote the importance of safeguarding energy infrastructure.

Recommendations

Off-grid firms can offer tiered pricing structures or flexible payment plans to accommodate varying income levels. Partnerships with government agencies, NGOs, and development finance institutions to subsidize the cost of energy access for underserved communities should be explored.

Best practices and lessons learned from successful mini-grid projects to inform policy formulation and implementation should be shared and used as blueprints for upcoming off-grid projects. Off-grid companies can engage policymakers and advocate for the development and implementation of supportive policies at the national, state, and local levels to incentivize investment in mini-grids.

Conclusion

The off-grid energy sector in Nigeria faces formidable challenges, including currency devaluation, talent scarcity, insecurity, economic constraints, and policy gaps. However, within these challenges lie opportunities for innovation, collaboration, and sustainable growth. Proactive measures such as advocacy for government policies that stabilise the local currency and control inflation to create a more predictable business environment, investing in talent development, enhancing security measures, implementing innovative financing mechanisms, and advocating for supportive policies are crucial steps toward overcoming these obstacles.

By harnessing the collective expertise and commitment of stakeholders, the off-grid energy sector can navigate these challenges and unlock its transformative potential. Collaborative efforts to address macroeconomic uncertainties, enhance security, improve affordability, and advocate for conducive policies will be essential in realising the sector's growth and resilience. With a concerted focus on innovation, collaboration, and advocacy, the off-grid energy sector can play a pivotal role in expanding energy access, driving economic development, and advancing sustainable development goals in Nigeria.

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