

Nigeria

Introduction

This note was developed by GONGLA with the support of the World Bank Group Lighting Global Program, the Energy Sector Management Assistance Program (ESMAP), the Shell Foundation, the USAID Power Africa Nigeria Power Sector Program (PA-NPSP), the UK Foreign Commonwealth & Development Office (FCDO), Africa Clean Energy Technical Assistance Facility (ACE TAF) and Sustainable Energy for All (SEforAll). It is part of a series of briefing notes that provide a high-level overview of the status of countries' off-grid solar markets, as well as relevant policies and programs¹.

Key statistics²

Demographics

Total Population	200,963,599
Population Density per km ²	215
GDP per Capita	USD 2,229.9
GDP Growth	2.2%

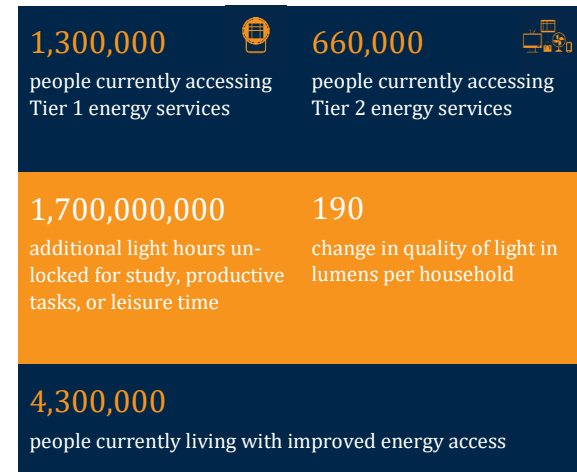
Energy Access Deficit

National Electrification Rate	55.4%
Urban Electrification Rate	83.9%
Rural Electrification Rate	25.6%
Number of people without access to electricity ³	89,629,765
% of quality-verified ⁴ (QV) vs non-QV products in the market ^{5&6} (H2, 2020)	QV: 74% Non-QV: 36%

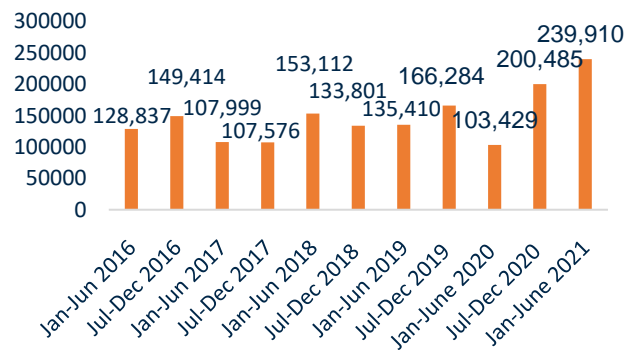
Electrification Planning

Electrification Targets ⁷	90% by 2030, Universal access by 2040
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Impact⁸



Sales⁹



Sales of Portable Lanterns, Multi-light Systems and Solar Home Systems

¹ The information and views expressed in this brief are GONGLA's alone and are based on our current understanding of the policy situation in this country. We welcome any updates, revisions or clarifications at info@gogla.org.

² <https://data.worldbank.org/> (Last updated in 2019)

³ <https://trackingsdg7.esmap.org/>

⁴ Quality-verified products are tested according to the IEC TS 62257-9-8. For more information please see [the Verasol quality assurance programme](#).

⁵ Share of quality-verified (QV) and non-QV products sold by GONGLA and Lighting Global affiliates.

⁶ Data on a specific region, country or product category is only included when it has satisfied the three-data point rule, meaning that at least three separate product manufacturers have reported data for any single data point. When we have fewer than three responses for a region, country or product category, no results are

shown to protect the proprietary interests of the companies who have supplied data in support of this industry report.

⁷ [Nigeria SEforALL Action Agenda, Sustainable Energy for All Action Agenda, 2016](#)

⁸ Impact numbers have been estimated on the basis of the [Standardized Impact Metrics for the Off-Grid Solar Energy Sector](#). The reported estimates differ from the previous edition of the country briefings due a change in the calculation approach. Note that while the numbers shown represent the aggregate impact of key players in the off-grid solar sector, these estimates do not present the full country impact of off-grid solar lighting products sold.

⁹ All sales data included in this briefing is derived from the "Global Off-Grid Solar Market Report Database", result of a joint primary data collection effort carried out by GONGLA in partnership with IFC Lighting Global and the Efficiency for Access Coalition. The public version of the resulting report of the effort is available [here](#).

Current Status

Nigeria has a total population of over 200 million people, of which approximately 90 million lack access to electricity.¹⁰ To address the electrification gap, the Nigerian government aims to achieve 100% national electrification by 2040 through both grid and off-grid connections.¹¹

Sales of off-grid solar lighting products in Nigeria totalled approximately 240,000 units between January and June 2021. This represents a 20% increase compared to the second half of 2020. The growth in sales volume has been largely driven by small lanterns (0-1.5 Wp), multi-light systems (3-10 Wp) and entry-level solar home systems (11-20 Wp). While both cash and PAYGo sales are growing, PAYGo has played an increasingly important role in driving overall market growth. PAYGo sales volumes have more than doubled since 2019 and now exceed cash sales.¹²

In 2020, Nigeria was negatively affected by the COVID-19 pandemic and the drop in oil prices. Due to the pandemic, the Nigerian economy contracted by 4%. The drop in oil prices exacerbated the currency exchange risk, which posed a significant challenge to off-grid solar companies sourcing foreign investment to import products and carry out business operations.¹³

Policy, Regulation and Sector Planning

In a bid to reach 100% rural electrification, the 2016 Nigerian Rural Electrification Strategy and Implementation Plan (RESIP) includes both grid and off-grid approaches, with subsidies focused on expanding electricity access.¹⁴ RESIP envisages that private sector providers will be 'heavily involved' and calls for a particular focus on rural areas.

The Nigeria National Renewable Energy Action Plan is committed to advancing the development of the renewable energy sector in Nigeria. The action plan provides details on measures that would enable Nigeria to meet its 2030 renewable energy targets. It includes baseline data on renewable energy sources including Stand Alone Solar, and a total off-grid renewable energy target of 5,545MW by 2030. The plan also advocates for the development of professional and

technical courses on renewable energy, and increased investments for SAS projects.¹⁵

Promoting Quality & E-Waste Management

In 2021, the Standards Organisation of Nigeria (SON) launched 38 industrial standards for solar photovoltaic (PV) components. The standards were developed within the framework of the Nigerian Energy Support Program (NESP), a technical assistance program co-funded by the European Union (EU) and the German Government. NESP was implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) in collaboration with the Federal Ministry of Power in Nigeria.¹⁶

Nigeria has a national quality assurance framework which has adopted standards – in line with IEC standards – for both pico-PV and plug-and-play systems of up to 350 Wp. Nigeria also has a quality assurance framework for component-based solar home systems.¹⁷

To leverage adoption of the IEC standards, the Africa Clean Energy Technical Assistance Facility (ACE TAF) and the International Finance Corporation (IFC) supported SON to develop a fully-equipped quality test lab to support market surveillance and product testing activities. ACE TAF and IFC also supported SON in the development of a market surveillance and enforcement plan to guide standards enforcement.

In 2021, the Nigerian government updated the National Environmental (Electrical/Electronic Sector) Regulations of 2011. The principal aim of the regulations is to prevent and minimize pollution from all operations and associated activities of the electrical/electronic sector. The regulations require manufacturers, importers, distributors, or retailers of end-of-life electronic equipment to set up collection points and centers. The regulations further require the manufacturers and producers of electronic equipment to ensure environmentally sound management of e-waste from collection points/centers to accredited recyclers.¹⁸

In 2020, the Government of Nigeria (GoN) through the Federal Ministry of Environment (FMEnv) and the National Environmental Standards and Regulations Enforcement Agency (NESREA) adopted the E-Waste Guide for Stand Alone Solar.¹⁹ The guide was developed by NESREA with the support of the Africa Clean

¹⁰ <https://trackingsdg7.esmap.org/>

¹¹ Nigeria SEforALL Action Agenda. Sustainable Energy for All Action Agenda, 2016

¹² Global Off-Grid Solar Market Report H1 2021, GGLA

¹³ Global Off-Grid Solar Market Report H2 2020

¹⁴ Rural Electrification Strategy and Implementation Plan, Federal Republic of Nigeria, 2016

¹⁵ National Renewable Energy Action Plan

¹⁶ Visit the [Standards Organization of Nigeria](#) for more information.

¹⁷ Visit the [Standards Organization of Nigeria](#) for more information.

¹⁸ [National Environmental \(Electrical/ Electronic Sector\) Regulations of 2011.](#)

¹⁹ [E-Waste Guide for Stand-Alone Solar, Africa Clean Energy Technical Assistance Facility, 2021.](#)

Energy Technical Assistance Facility. The guide provides guidance to the government and private sector on managing stand alone solar (SAS) e-waste in line with Nigeria's national e-waste regulatory framework. The guide also acts as a standard e-waste reference document for the Nigerian SAS sector.

There is also a draft National E-Waste Management Policy in Nigeria. The policy facilitates appropriate e-waste management in Nigeria.

Taxation

The Nigerian Federal Ministry of Finance introduced VAT exemptions for some solar equipment and components through the Value Added Tax (Modification) Order 2021, which stated that the equipment used in the generation of solar and wind power are VAT exempt. However, some solar accessories and appliances, such as solar lights and some components of solar home systems, are subject to VAT at a rate of 7.5%.²⁰ An import duty of between 5% and 10% is applicable to solar products.²¹ However, a lack of consistency in the interpretation and implementation of import duties continues to be a challenge to the Nigerian off-grid solar industry.

Investments

Private companies and their investors have invested heavily in building off-grid solar businesses in Nigeria. Investments in stand alone solar (SAS) companies totalled approximately US\$227 million between 2015 and 2020.²² Nigeria has also benefited from several grant-making and concessional financing schemes that have helped to unlock private capital for the off-grid solar sector.²³

The Nigeria Electrification Programme, a subsidy and grant making program supported by the World Bank and the African Development Bank with over US\$500 million in funding, has enhanced the attractiveness of the Nigerian off-grid solar sector. The NEP also provides market-based incentives and technical assistance to stand alone solar system providers to install solar home systems in underserved Nigerian households and enterprises.²⁴

The Solar Power Naija initiative, an initiative that seeks to facilitate 5 million new solar connections in off-grid Nigerian communities, has a facility that provides concessional financing schemes to off-grid solar

companies. The initiative's Solar Connection Intervention Facility provides long-term low-interest credit facilities to manufacturers and assemblers of solar components and off-grid energy retailers.²⁵

Infrastructure debt investors such as the Chapel Hill Denham Nigeria Infrastructure Debt Fund and the United Capital Infrastructure Debt Fund have cumulatively provided financing worth millions of dollars to the off-grid energy sector.

However, given the huge size of the un-electrified population, there is still a significant need for access to finance and investments to boost electrification. Key financial barriers include lack of access to local currency loans for operating expenses and hard currency loans for capital costs, as well as high interest rates and rigid collateral requirements, particularly from local commercial banks. Finally, foreign exchange and inconsistency in local currency repayment is a major issue that stifles the ability to access finance in foreign currency.

Sector Support Programs

In 2020, the federal government of Nigeria, through the Rural Electrification Agency (REA) and with the support of USAID Power Africa Nigeria Power Sector Program (PA-NPSP), launched the Solar Power Naija initiative. The initiative seeks to stimulate local involvement in the off-grid solar value chain and facilitate the growth of the local manufacturing and assembly industry.²⁶ The Federal Government of Nigeria has committed 140 billion Naira to support the Solar Power Naija initiative.

The Nigeria Electrification Programme (NEP) is an initiative by the federal government of Nigeria that is private sector driven and seeks to provide electricity access through mini-grids, stand alone off-grid solutions and an RBF scheme. To support the implementation of the NEP, the federal government of Nigeria, through the Rural Electrification Agency, has successfully secured financing from both the World Bank (US\$350 million) and the African Development Bank (US\$200 million).²⁷ In 2020, a COVID-19 component was included in the NEP. The component is geared towards supporting the electrification of both COVID-19 isolation and treatment centers as well as primary healthcare centres using off-grid solar products.²⁸

²⁰ [Nigeria VAT Modification Order 2021, Federal Government of Nigeria.](#)

²¹ [Achieving Economies of Scale in the Nigerian Solar Value Chain: Opportunities and Benefits of Upstream Localization, Sustainable Energy for All and All On, 2021.](#)

²² [Nigeria stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.](#)

²³ [Nigeria stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.](#)

²⁴ <https://rea.gov.ng/nigeria-electrification-project-nep/#1553635318596-1e012816-0e88>

²⁵ <https://nep.rea.gov.ng/federal-governments-5million-solar-connections-program/>

²⁶ <https://rea.gov.ng/fg-launches-solar-power-naija-5-million-solar-connection-programme-off-grid-communities/>

²⁷ <https://nep.rea.gov.ng/about-nep/>

²⁸ <https://nep.rea.gov.ng/covid19-initiative/>

FCDO and the Shell Foundation are supporting the Nigeria Off-grid Market Acceleration Program (NOMAP). NOMAP works to identify unaddressed off-grid energy market barriers and implement initiatives to tackle them.²⁹

Nigeria is part of the 19 countries under the Regional Off-Grid Electrification Project (ROGEP) project. ROGEP is supported by the World Bank and aims to enhance electricity access in West Africa and the Sahel region through Stand Alone Solar systems.³⁰

Nigeria is also part of the Africa Clean Energy Technical Assistance Facility (ACE-TAF), an FCDO funded programme that aims to catalyze a market-based approach for private sector delivery of renewable energy electrification technologies, with a focus on high quality SAS systems.³¹

The USAID/Power Africa- Nigeria Power Sector Program (PA-NPSP) is a 5-year program to create 10,000 MW of new generation and 3 million new connections in Nigeria. The program works to support comprehensive power sector reform, strengthen the enabling environment, and increase private sector investment to improve Nigeria's access to affordable and reliable power.³²

Industry Association

The Renewable Energy Association of Nigeria (REAN) is an independent, non-profit industry association representing the interests of over 130 privately owned companies in Nigeria's renewable energy sector. REAN was formally launched in November 2016. REAN is focused primarily on promoting the growth and development of the renewable energy industry by engaging with the public and private sector to guide advocacy, policy formulation and investment in the industry.³³

Opportunities and Barriers

With a relatively large un-electrified population, Nigeria is an attractive market for off-grid solar companies. Strong development partner support provides many opportunities for off-grid sector development in Nigeria through targeted concessional finance and technical assistance.

However, there is a need for a centralized repository of relevant market intelligence. Access to a comprehensive energy database for the sector can help developers and companies make informed business decisions and eliminate some of the challenges faced by investors and businesses looking to enter the market.

It is important that access to foreign exchange and local currency working capital is made available to the sector. More also needs to be done to promote quality in the market and address the risk of market contamination by counterfeit and low-quality products, especially amongst pico solar lights. Reducing taxes and streamlining processes for the import of quality-verified solar products can significantly improve affordability, which remains a major barrier.

Further Information

- [Achieving Economies of Scale in the Nigerian Solar Value Chain: Opportunities and Benefits of Upstream Localization, Sustainable Energy for All and All On, 2021.](#)
- [E-Waste Guide for Stand-Alone Solar, Africa Clean Energy Technical Assistance Facility, 2021.](#)
- [Stand Alone Solar Market Update: Nigeria, Africa Clean Energy Technical Assistance Facility, 2021.](#)
- [Nigeria stand-alone solar: Investment map, Africa Clean Energy Technical Assistance Facility, 2021.](#)
- [Global Off-Grid Solar Market Report H1 2021, G O G L A](#)
- [Global Off-Grid Solar Market Report H2 2020, G O G L A](#)
- [Nigeria Fact Sheet, USAID Power Africa.](#)
- [Rural Electrification Strategy and Implementation Plan, Federal Republic of Nigeria, 2016](#)
- [Nigeria Electrification Project Appraisal Document, World Bank, 2018](#)
- [Lighting Africa Country Page - Nigeria](#)
- [Nigeria, SEforALL Africa Hub](#)
- [Regulatory Indicators for Sustainable Energy \(RISE\) - Nigeria](#)

²⁹ <https://offgridmap.ng/>

³⁰ Visit the [World Bank](#) for more information.

³¹ Visit [Africa Clean Energy website](#) for more information.

³² Visit [Power Africa](#) for more information.

³³ <http://rean.org.ng/>