

State OGS Policy Brief Nigeria

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BACKGROUND

Out of a total population of 206 million, over 80 million Nigerians or 17.4 million households lack access to electricity predominantly in rural areas. These energy poor households are either in total darkness or depend on inefficient, harmful, and costly energy sources such as firewood, kerosene lamps, or candles for basic lighting provision. The connected population on the other hand are burdened by unreliable electricity supply characterised by frequent outages and heavy reliance on petrol and diesel generators for power. This also includes businesses and other socio-economic activities in the country.

The federal government aims to achieve 90% electrification by 2030 and 100% by 2040. However, to achieve this target, Nigeria will need to provide electricity to more than 1 million households per year and add roughly 25 GW to its power generation capacity. This will require the government both at the federal and state level to utilise a range of solutions beyond grid extension. In recent years, the government has developed several energy access policies, plans and initiatives that promote the use of off-grid solar (OGS) electrification as a means of bridging the energy access gap in the country.

Nigeria's electrification priorities through the National Renewable Energy and Energy Efficiency Policy (NREEEP, 2015) and its Rural Electrification Strategy and Implementation Plan (RESIP, 2016), amongst other energy access documents include expanding electrification in a clean, reliable, and sustainable way to rural communities not connected to the national grid through off-grid solar solutions such as solar mini-grids and stand-alone solar (SAS) systems. It also supports the roll out of off-grid solar solutions for urban centres with unreliable grid to electrify schools, hospitals, households, and commercial facilities. Federal government initiatives such as the World Bank and African Development Bank funded Nigeria Electrification Project (NEP); the Central Bank funded Solar Power Naija Programme; and the Rural Electrification Agency's (REA) Rural Electrification Fund (REF) all aim to leverage private sector investments in deploying solar mini-grids and stand-alone solar systems across the country.

Nigeria is one of the largest markets for off-grid solar electrification globally with an estimated investment opportunity of US\$ 9.2 billion per year. Over the years, the OGS sector has become the largest in West Africa and one of the top 3 in sub-Saharan Africa with thousands of households, businesses, health facilities, markets, and schools electrified through OGS solutions across the country.

State governments have a significant, though largely overlooked, role in the country's power sector. State governments are constitutionally empowered to provide electricity by establishing electric power stations, generating, and distributing electricity to rural areas not covered by the national grid (off-grid) within their states. Off-grid solar solutions provide a cost-effective, reliable, less complicated, clean, and sustainable means for State governments to provide electricity access to off-grid and under-served areas in their states beyond grid extension. It provides State governments with the independence and full responsibility in planning and delivering electricity access to citizens and businesses in line with its developmental goals.

Purpose of this Policy Brief

This Policy Brief has been developed to guide State governments in recognizing the opportunity presented by off-grid solar solutions in attaining their electrification and socio-economic development targets and integrating off-grid solar into their electricity mix. It provides guidance to State governments on improving the enabling environment to attract private sector investment for off-grid solar electrification in the State.







It is the intent that this Brief will guide the development of enabling policies for off-grid solar electrification in states including the role of the State government in the off-grid solar sector and the coordination and collaboration with the federal government through the Rural Electrification Agency (REA).



Definition of Off-Grid Solar (OGS)

Off-Grid Solar (OGS) refers to clean, renewable, decentralized, solar solutions utilised for electrification purposes in un-served (off-grid) or under-served areas especially last mile communities, ranging from a minimum of 10W to 1MW solutions.

Table 1: Off-grid Solar Solutions

OGS Category	OGS Type	Description
Stand-Alone Solar (SAS)	Solar Home Systems (SHS)	SAS products with peak power ratings between 10W and 350W, and direct current voltage of 35V or less. 
	Solar Energy Systems (SES)	SAS products with peak power ratings above 350W and below the capacity of mini grids (typically below 10kW). 
Solar Mini-Grids	Isolated Solar Mini-Grids ¹	Mini grids installed in unserved areas with no connections to existing grid distribution networks. 
	Interconnected Solar Mini-Grids ²	Mini grids installed in grid connected areas which utilise existing grid distribution infrastructure in delivering electricity to consumers. 
OGS Appliances and Equipment	Productive Use Equipment (PUE)	Solar powered appliances such as solar water pumps, cold rooms, dryers, power milling, grinding machines, refrigerators, and other appliances. 
	Social Use Solutions	Solar powered solutions such as water boreholes and streetlights used to provide basic social amenities. 

¹ Mini-grids are defined by the NERC Regulation for Mini-Grids (2016), Section 3, as “any electricity supply system with its own power generation capacity, supplying electricity to more than one customer and which can operate in isolation from or be connected to a distribution licensee’s network. Within this regulation, the term mini-grid is used for any isolated or interconnected mini-grid generating between 0kW and

² Also known as “under-grid” mini-grids

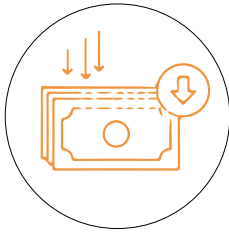
*Note – All images in this brief were obtained from random google search sources and are not owned by the author.



The Role of OGS in Energy Access

Electricity through off-grid solar provides numerous benefits to households, businesses, and other socio-economic activities. This also includes health and environmental benefits as cleaner and more sustainable means of electricity provision is being utilized. Some key benefits to States are described below.

Cost Efficiency and Speed of Deployment



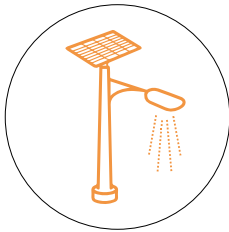
The further a community is from the grid, the more expensive the cost of grid extension, which is estimated at about \$2,500 for a single grid connection with such projects having an average duration of nine years and potential to reach about 57,000 persons³. On the other hand, Solar Home Systems (SHS) typically costs less than \$100 per connection and can be delivered within a few hours. Solar mini grids although more expensive than SHS due to their size and infrastructure requirements, are cheaper than grid extension projects as they typically cost about \$1,150 per connection and can be completed within an average of four (4) months⁴. Consequently, with grid extension becoming increasingly costly and not guaranteeing electricity availability, off-grid solar is proving to be a more cost-effective and reliable solution. In areas of high population density, mini grids are likely to be the viable solution, and SHS in sparsely populated areas.

Resilience for Public and Social Infrastructure



Off-grid solar improves resilience for public and social infrastructure given its cost efficiency, modular nature, speed of deployment, and reliability. The fact that off-grid solar solutions are decentralised and not dependent on the inefficiencies and non-reliability of the grid make them more suitable for public and social infrastructure in health, security, education, transport, and logistics, whilst also providing value for money.

Economic Growth, Social Inclusion, and Environmental Sustainability



Former UN Secretary General Ban Ki-moon describes energy as the golden thread that connects economic growth, social equity, and environmental sustainability.⁵ OGS solutions present a viable means of addressing issues of poverty, social equity, and inclusion through the socio-economic benefits it provides whilst delivering clean energy access. It also plays a key role in catalysing the growth of the State's socio-economic sectors – health, agriculture, education, commerce – through the provision of reliable electricity.

Job Creation



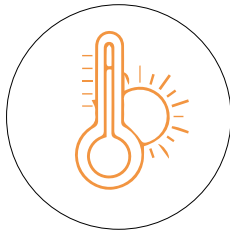
OGS creates significant job opportunities especially for the youth, increasing income and state revenue. According to the Powering Jobs Census 2019 Report, OGS accounted for about 4,000 jobs in Nigeria in 2017, expected to increase tenfold by 2023, and even more as the sector matures. This includes opportunities across the OGS market – distribution, installation, entrepreneurship, manufacturing, finance, advisory, and government. OGS improves the profitability of businesses creating additional employment opportunities as they scale. OGS will play a key role in the attainment of the State's job creation targets.

³ *Decentralized Renewables: The Fast Track to Universal Energy Access, May 2016*

⁴ *SEforAll (2020) State of the Global Mini-Grids Market Report. Link.*

⁵ *Providing Energy Access through Off Grid Solar- Guidance for governments by GOGLA*





Climate Goals

OGS is considered clean and free of greenhouse gas emissions that cause climate change. They are a cleaner alternative to fossil fuel-based energy sources such as petrol and diesel generators, kerosene lamps, and firewood use predominantly for energy provision and lighting. The use of OGS will support the State's transition towards cleaner energy sources, build resilience, and contribute towards meeting the State's climate change goals, and that of the federal government as well. This also includes the health and environmental benefits compared to the fossil-fuel sources as well.



Gender and Social Inclusion

Typically, women and vulnerable groups such as persons with disabilities (PWDs), youth, internally displaced persons (IDPs), rural poor, and other socially excluded groups who rank low in the socio-economic ladder are those usually most impacted by energy poverty. OGS solutions provide not just a means of energy access to these groups who are typically overlooked in energy provision thus improving their livelihoods, but also economic empowerment opportunities through productive uses of electricity from OGS. Several OGS providers and social enterprises incorporate business models that are tailored towards empowering these groups economically through OGS solutions whilst delivering reliable energy access.



An Enabling Environment for OGS

Increasing electricity access in States through OGS requires the creation of an enabling environment by governments to attract private sector investment for OGS delivery. The first step is the development of State Off-Grid Solar Policies that set out the vision and goals of the State for OGS electrification. These should align with the State's overall development plan and plans of the Federal government as well. Key components of the policy are described below.

Purpose, Objectives, and Targets

The Policy should clearly define the purpose, objectives, and targets of the State government for off-grid solar electrification. Considerations should include,

- Provision of electricity to unserved and underserved communities in the states.
- Alignment with the State Government's plan on electricity access and socio-economic development.
- How to increase private sector investment and participation in OGS delivery in the State.
- Coordination and collaboration with the Federal government through REA, and other key implementers.
- Ensuring social inclusion in OGS delivery especially for women, youth and vulnerable groups.

1 Legislative and Institutional Framework

The Policy should recognise and be guided by the relevant State legislative, policy, regulatory and institutional framework. This also includes coordination and alignment with relevant federal government policies and regulations. It should clearly define how stakeholders can navigate the policy and regulatory landscape in the State for OGS delivery and minimize as much as possible any regulatory bottlenecks.

2 Alignment With Socio-Economic Sectors

Electricity is an enabler for economic growth and social development. All socio-economic sectors in the State require electricity for growth. The policy should incorporate and align with the government's plans and policies in other key sectors such as agriculture, health, education, environment, local assembly & manufacturing, amongst others. It should also align with the government's social protection measures.

3 Ease of Doing Business

The policy should include measures to improve the ease of doing business for OGS in the State in order to attract private sector investment. This includes the provision of incentives such as tax exemptions and sharing of relevant data/information. This also includes effective coordination, non-duplication of taxes and regulatory functions by State government institutions, and reduction in government bureaucracy.

4 Planning and Implementation

The Policy should clearly define steps for policy implementation including but not limited to the focal government institution for policy ownership and implementation, financing, stakeholder coordination, roles and responsibilities of key stakeholders (government, donor, OGS Provider, civil society, academia, etc), tools for implementation, and other measures towards achieving the targets set out in the policy for OGS. This can be articulated through an Off-Grid Solar Action Plan to support policy implementation.

5 Consumer Protection

The policy should include provisions for consumer protection by providing guidance on measures such as e-waste management, quality standards, after-sale support, and other measures targeted at ensuring the consumer gets the best service in OGS delivery.





6 Capacity Building

The policy should include measures for the development of local skills and capacity in the OGS sector and clean energy broadly for job creation, development of the local OGS sector, and increasing the State's internally generated revenue as appropriate. This includes areas of research and innovation as well.

7 Gender Equity and Social Inclusion (GESI)

Those most impacted by lack of electricity access are women and vulnerable persons such as the youth, persons with disabilities (PWD), internally displaced persons (IDPs), and other socially excluded persons. The Policy should ensure that GESI considerations are incorporated in its provisions and measures for OGS delivery in the State. This includes measures such as the provision of subsidies to vulnerable persons unable to afford OGS solutions and targeting of areas with vulnerable groups for OGS delivery.



Conclusion

Off-grid solar already plays an important role in improving electricity access in Nigeria and provides an opportunity for State governments to provide clean, reliable, and sustainable electricity to its citizens and businesses. As a primarily private sector driven sector, it also provides an opportunity for the State to attract private sector investment in the State, create socio-economic opportunities, and improve the livelihoods of its citizens. The provision of an enabling environment backed with strong commitment from the State governments is critical for private sector investment and increased OGS access.

This brief provides a background and justification for the inclusion of OGS into the electrification mix of states, and guidance for State governments on improving the enabling environment for OGS electrification and private sector investment through the development and implementation of State Of-Grid Solar Policies and Action Plans.





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