

Green Energy Revolution:

Where Does Nigeria Really Stand?

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22/08/2020



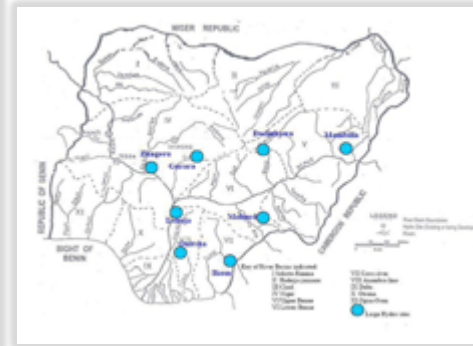
Agenda



- Introduction
- Why bother?
 - Necessity - Dwindling global demand in Oil and gas resources
 - Necessity - Compelling need to diversify our energy mix
 - Necessity – Personal health and environment
 - Necessity – To tackle accelerating Climate Change
 - The Market is ripe for Renewable Energy
- Where are we at the moment?
- Way forward!
- Conclusion
- Q&A




Introduction

- National Renewable Energy and Energy Efficiency Policy (NREEEP)
 - ❑ Launched 20/04/2015 by GEJ administration
 - ❑ To meet the Nigerian Vision 20:2020 target of 40,000MW
 - ❑ Ensure development of our energy resources through diversification
 - ❑ To foster international cooperation in trade and project devt. In the ECOWAS, Africa and world at large.
- Achieving the Sustainable Development goal
- Nigeria is endowed with abundance of renewable energy resources;
 - ❑ Up to 207,000GWh of PV generation potential
 - ❑ Moderate wind potentials (Average 2 – 8m/s depending on height)
 - ❑ Hydropower potential of up to 11,200MW
 - ❑ Abundance of biomass (Animal waste, Crop residue, fuel wood, etc)



Introduction... Ctd.

National Renewable Energy and Energy Efficiency policy (NREEEP) Target

	2015	2020	2030
 Wind	15MW	632MW	3211MW
 Solar	117MW	1343MW	6832MW
 Biomass	5MW	57MW	292MW



Necessity - Dwindling global demand in Oil and gas resources

BUSINESS NEWS JULY 26, 2020 / 7:09 AM / 20 DAYS AGO

End game for oil? OPEC prepares for an age of d of d Big Oil Wrote Down \$87 Billion In Even at \$10 a Barrel, Oil Traders Still

By A ENERGY AUGUST 9, 2019 / 9:00 AM / A YEAR AGO

by Demand for Nigerian oil "dire" as U.S.

ECONOMY & POLITICS

Nigeria only hit 56% of its target revenue in first five of months of 2020

CURRENCIES

Nigerian's should expect "a significant devaluation" to N550/\$1 – Goldman Sachs

Goldman Sachs believes Nigeria will devalue past N500 between 12-18 months.

Published 5 days ago on August 13, 2020
By Chike Olisah



XE Currency Charts: NGN to USD

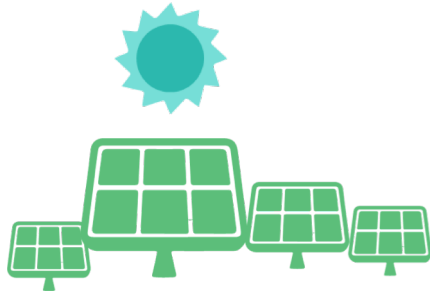


Necessity - Compelling need to diversify our energy mix

0MW



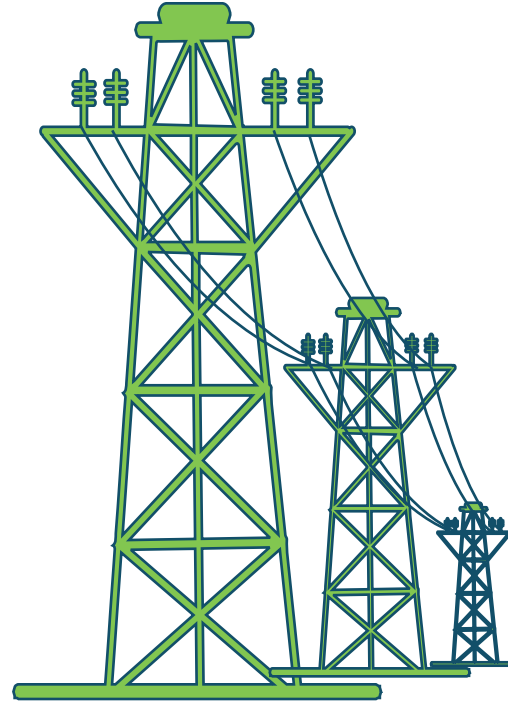
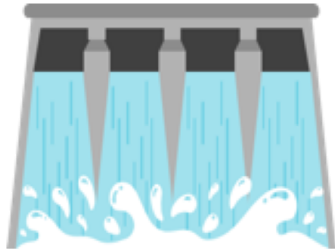
<40MW



10,142MW



2,380MW



40%

No access to electricity

20,000,000

Households without Power

3,500 – 4,000MW

Current Generation rate

31%

Rural Access Rate

81.7%

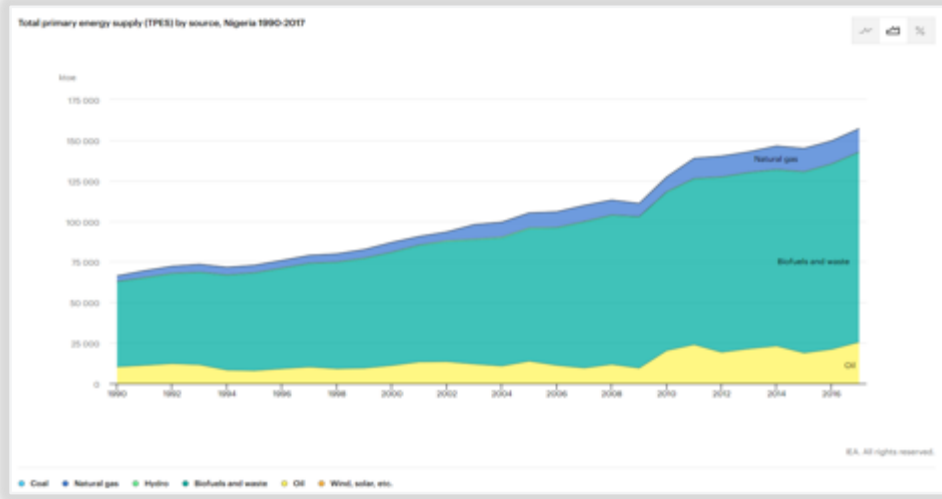
Urban Access Rate



Necessity - Compelling need to diversify our energy mix

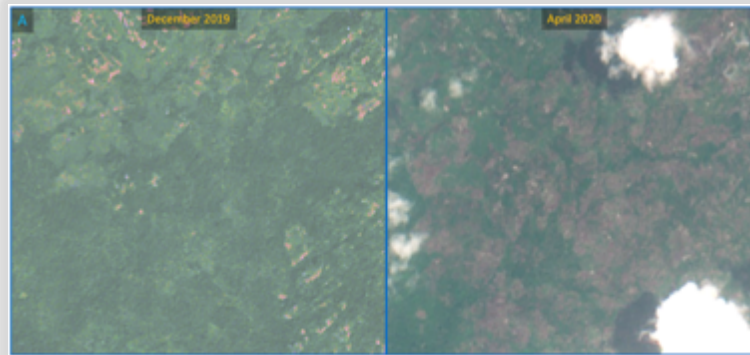
“The country that owns green, that dominates that industry, is going to have the most **energy security**, **national security**, **economic security**, **competitive companies**, **healthy population** and, most of all, **global respect**.”

– Thomas Friedman



Necessity - Compelling need to diversify our energy mix (Deforestation)

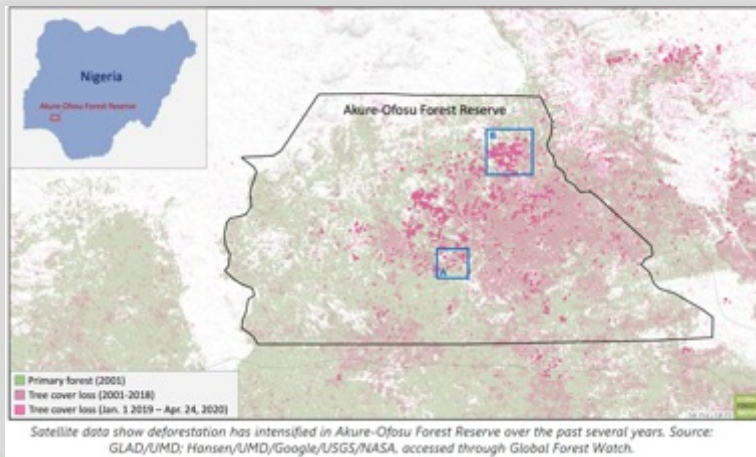
- Akure-Ofosu reserve lies 200km south of Ijare
- Between 2001 and 2018, 30% of forest cover lost
- Concerns about loss of many animal species, including endangered primates like Red-capped mangabeys.
- Growing demand of wood attributed to urban growth



Satellite imagery of an area in the southern part of the reserve (indicated by the "A" blue box on the map above) that has experienced recent forest loss. Source: Planet Labs; Sentinel 2/Landsat 8.

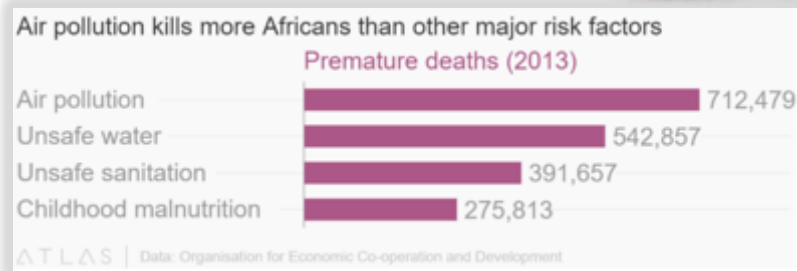


Another area of recent deforestation in Akure-Ofosu, this one in the north of the reserve. Source: Planet Labs; Sentinel 2/Landsat 8.



Necessity – Improvement of health and environment

- ❑ An estimated 240,000 barrels of crude spilled yearly
- ❑ Increase in infant mortality rate in Niger Delta
- ❑ Nigeria is worse sufferer of air pollution in Africa and 10th in world for air pollution.
- ❑ Deaths from inhaling generator fumes
- ❑ Air pollution causing children to cause smaller, stunted lungs.



Necessity – To tackle Climate Change

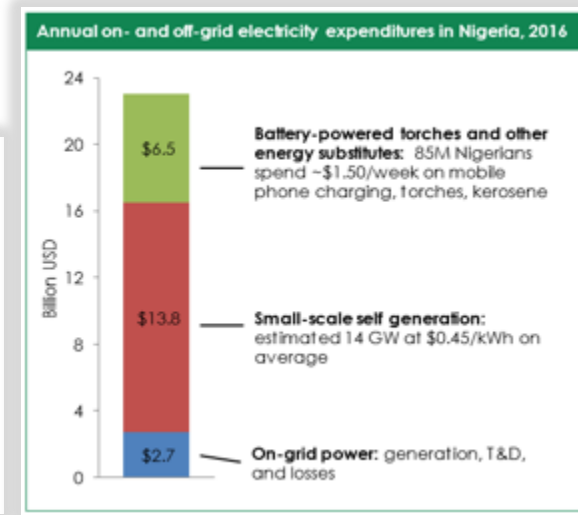
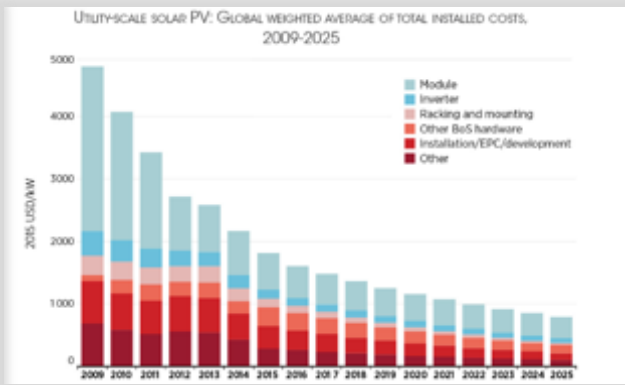
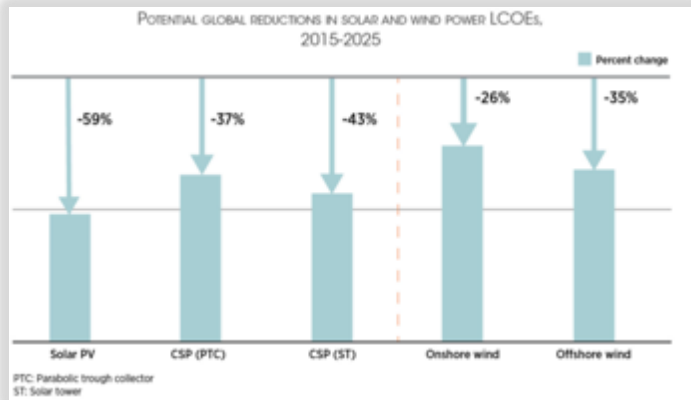
African nations are among those most vulnerable to climate change. A new survey suggests they are also the least prepared.

Afrobarometer surveyed more than 45,000 people in 34 countries.






The Market is ripe for Renewable Energy..... (Especially Solar)

- ❑ Strong off-grid electricity demand
- ❑ Increasing demand for consumer appliances and electrical equipment
- ❑ Decreasing trends in the cost of solar equipment
- ❑ Governments are willing to support the industry
- ❑ Engaged and adaptive private sector
- ❑ Replacement for \$14billion/yr spent on inefficient and expensive generation
- ❑ Large potential for scaling



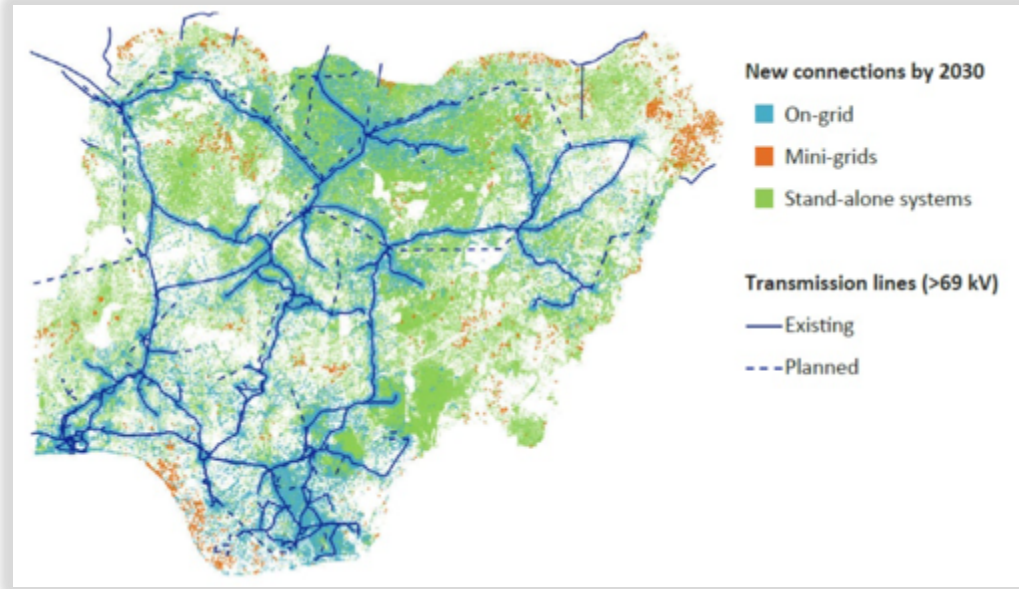
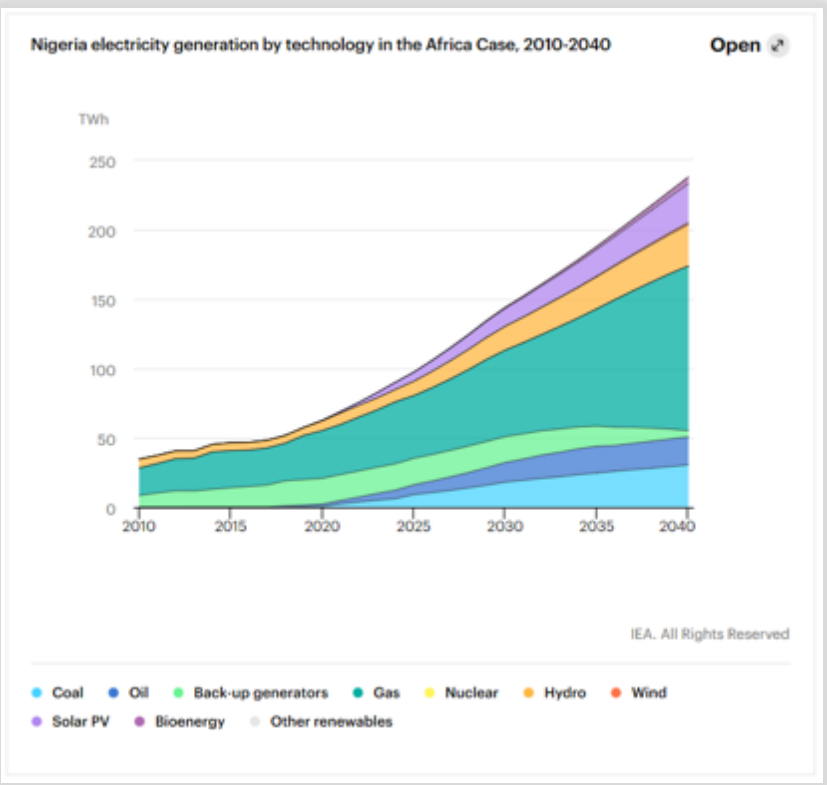
Where are we at the moment – Renewable Energy Generation

National Renewable Energy and Energy Efficiency policy (NREEP) Target

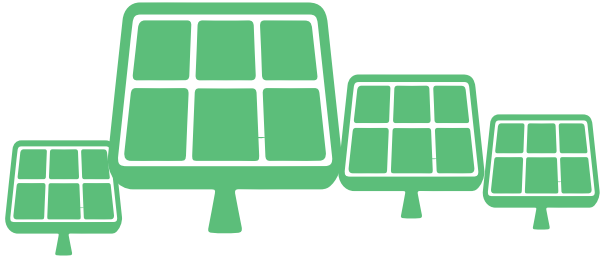
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Where are we at the moment

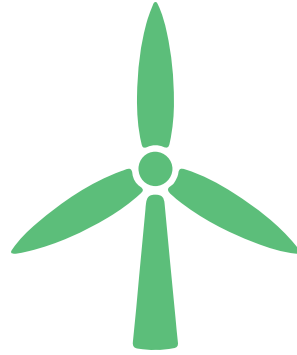


Achievements so far!



01 Solar Power

- Only 28MW of grid-connected solar power as at end of 2019
- In 2016, PPAs signed with 14 IPPs worth US2.5B.
- As at 2019, PCOAs yet to be signed by 12 of 14 IPPs
- NSIA kicked off tender for 10MW grid-connected solar plant in Kumbotso, Kano



02 Wind Power

- Very little progress made so far
- 10MW windfarm in Katsina almost complete
- 37 WTGs to be installed
- Project commenced in 2010, with 24months completion target.



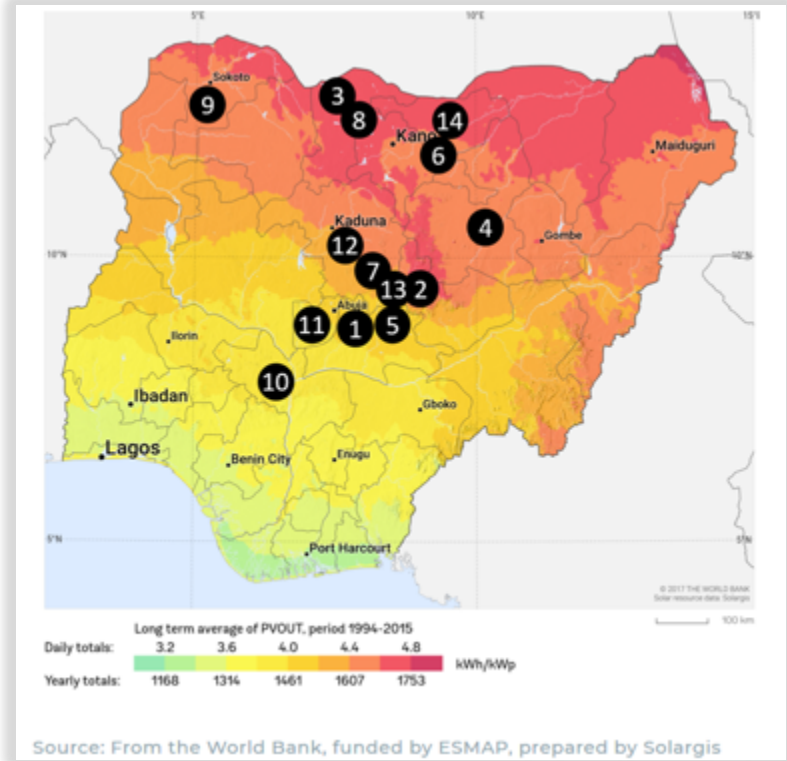
03 Biomass

- No significant progress made so far
- Ebonyi state working on a 5.5MW rice husk biomass gasifier power plant



Table 1: The 14 solar IPP companies and project overview

	Company	Capacity	State	PCOA Signed
1.	Afrinergia Power Limited	50 MW	Nasarawa	April 2017 (7.5c/kWh)
2.	CT Cosmos Limited	70 MW	Plateau	April 2017 (7.5c/kWh)
3.	Pan Africa Solar	75 MW	Katsina	Not Signed
4.	Nigeria Solar Capital Partners	100 MW	Bauchi	Not Signed
5.	Motir Desable Limited	100 MW	Nasarawa	Not Signed
6.	Nova Scotia Power Dev Ltd	80 MW	Jigawa	Not Signed
7.	Anjeed Innova Group	100 MW	Kaduna	Not Signed
8.	Nova Solar 5 Farm Limited	100 MW	Katsina	Not Signed
9.	KvK Power Limited	100 MW	Sokoto	Not Signed
10.	Middle Band Solar One Limited	100 MW	Kogi	Not Signed
11.	LR Aaron Power Limited	100 MW	Abuja	Not Signed
12.	En Africa	50 MW	Kaduna	Not Signed
13.	Quaint Abiba Power Limited	50 MW	Kaduna	Not Signed
14.	Oriental Renewable Solutions	50 MW	Jigawa	Not Signed



Off-Grid Solar Installations

- Energising Education programme (EEP) has led to solar plant installations in 9 universities, with 28 more universities + 7 teaching hospitals targeted
- Only the 1MW AE – FUNAI university in Ebonyi is fully functional
- 7.1MW Solar-hybrid plant inaugurated in Bayero University Kano
- Total of 32.6MW of installed capacity – Only 1 fully functioning as at December 2019
- Projects funded from oversubscribed 1st sovereign green bond
- \$75m grant launched by the FG for renewable projects over the next 5 years
- \$350m in funding from world bank and \$200m from AfDB secured
- Growing private sector participation in off-grid sector, with companies like Starsight boasting of 27MW installed generating capacity for solar-hybrid solutions.



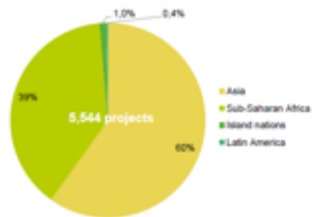
Drone photo of inaugurated EEP solar-hybrid power plant at Bayero University, Kano



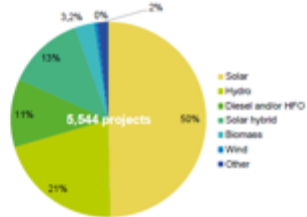
The solar panels at UNIZIK, where work is in progress

Mini-Grid Capacity Installed

Installed mini-grids by region



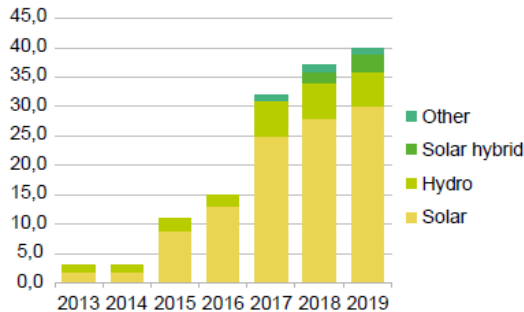
Installed mini-grids by technology



Source: BloombergNEF, GIZ, Carbon Trust, CLUB-ER, surveyed developers.

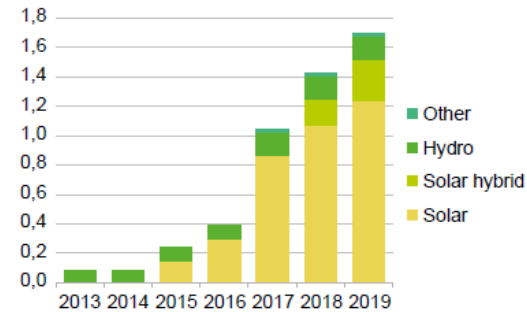
Nigeria's installed mini-grids, by project

Number of mini-grids installed



Nigeria's installed mini-grids, by capacity

Cumulative installed capacity (MWp)



Source: BloombergNEF, GIZ, Carbon Trust, surveyed developers. Note: Operating projects without a specified commissioning year are not included.



Progress in T&D....



\$2,000,000,000

Value of PPI Power Deal Signed

25,000 MW

Operational capacity target when Electricity network upgrade is completed.

3

Number of Phases of the Siemens project

3800

No. of P&D Transformers to be installed

N8,648,081,465

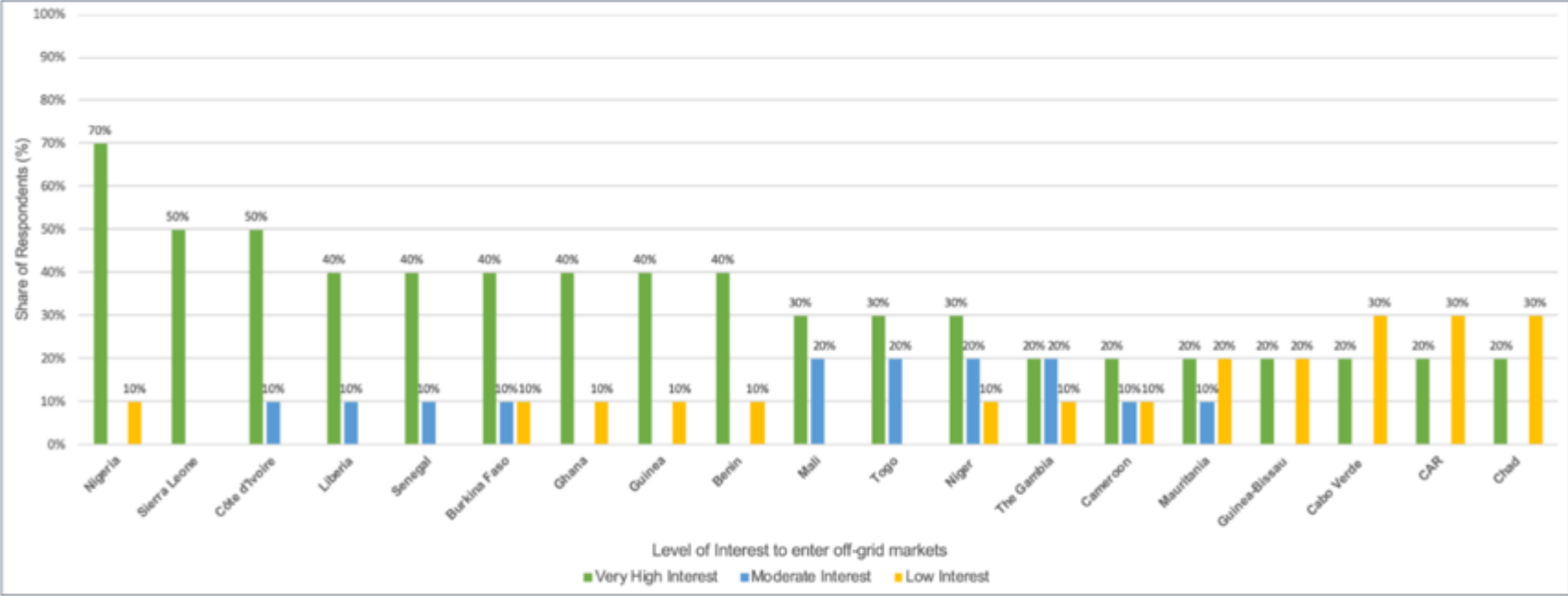
Amount approved in July to kick off project

3800

No. of P&D Transformers to be installed



Unprecedented level of interest



Source: Stakeholder interviews; GreenMax Capital Advisors analysis



Money Talk.....

Overview of PBG process



- 1 Qualification**
 - Developers submit a performance-based grant program application, including a corporate business plan, to show that they are eligible and qualified.
 - They must also prove they meet initial selection criteria.
- 2 Site-specific technical application**
 - Qualified applicants are then invited to submit site-specific applications.
 - Details of site, generation and distribution design, target number of connections per mini-grid.
- 3 Grant agreement signing**
 - Once site-specific application approved, developer enters into a grant agreement with NEP.
- 4 Mini-grid construction phase**
 - Once grant agreement signed, developer sources for construction financing.
 - Once in receipt of the capital, developer builds proposed mini-grid.
 - A mini-grid permit from NERC is required for this phase.
- 5 Verification and disbursement**
 - Grants will be dispersed upon verification that customers have been connected to the mini-grid and are receiving a satisfactory service.
 - Odyssey's online platform can be used for remote verification.

Source: BloombergNEF, REA.

BOX TABLE 1 African institutional investors, projections to 2020

Type of investor	2012 (\$ billion)	2020 (\$ billion)
Pension funds	300	1,100
Insurance companies	200	445
Sovereign wealth funds	170	300
Total	670	1,845

Source: Analysis based on Okpamen (2015).

Mini-grid developer landscape in Nigeria

Financier

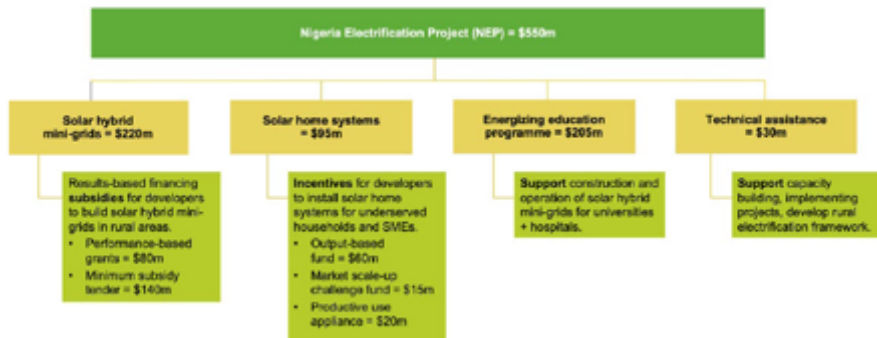


Developer



Source: BloombergNEF, company logos.

NEP Overview



Source: BloombergNEF, REA.

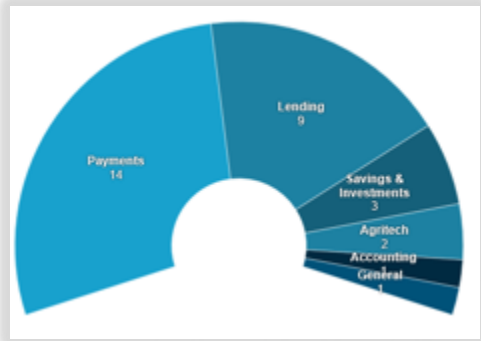
Business diversification and Multiplier Effect – Case Studies

Telecoms Industry in Nigeria:

- Prior to 2001 when the telecoms sector was deregulated;
 - ❑ Only 700,000 line
 - ❑ Limited access to Information technology due to NITEL inefficiencies
- Since deregulation and the first licences for GSM issued in 2001;
 - ❑ Over \$18billion invested
 - ❑ 162million active lines on GSM technology alone as at 2017
 - ❑ Telecoms industry accounts for 8.69% of GDP (N6.97 trillion)
- Looking into the future;
 - ❑ Projected increase in revenue due to advancement in data-hungry technology e.g. AI, IoT, etc.
 - ❑ Multiplier effect on job creation due to diversification
 - ❑ More revenue for government to invest in infrastructure and other social impact projects

Fintech Industry in Nigeria:

- Growth due to support from increased use of smartphones
- Over 87million transactions worth \$5billion completed in 2018
- Nigeria has largest mobile market in Africa – 162million subscribers in 2017
- 13% of phone subscribers own smartphones (21million)
- 11 deals worth \$113.99million in 2018 vs only \$700k in 2010
- Farmcrowdy secured \$2million in seed funding between 2017-2019
- Over 60 fintech companies in Nigeria
- More jobs, more revenue for FG..... Stronger local economy..... Life is good!!

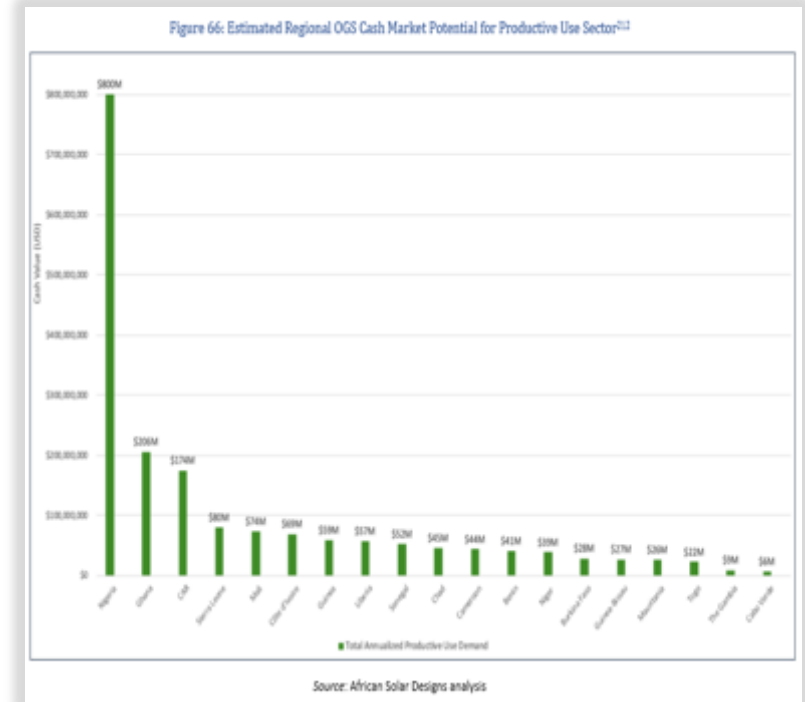
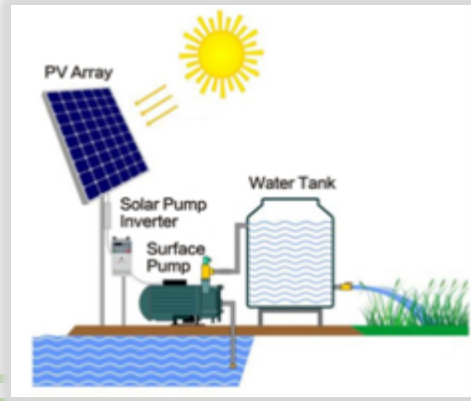


Business diversification and Multiplier Effect

Renewable Energy possibilities

Off-grid RE solutions

- ❑ Private sector led investments (B2B, B2C)
- ❑ Health sector – annualised off-grid solar cash market is \$11.6m
- ❑ Education - annualised off-grid solar cash market is \$17.6m
- ❑ Public lighting - annualised off-grid solar cash market is \$5.1m
- ❑ Water supply - annualised off-grid solar cash market is \$178.4m
- ❑ Off-grid alternatives could create \$10billion/yr market opportunity for mini-grid sector



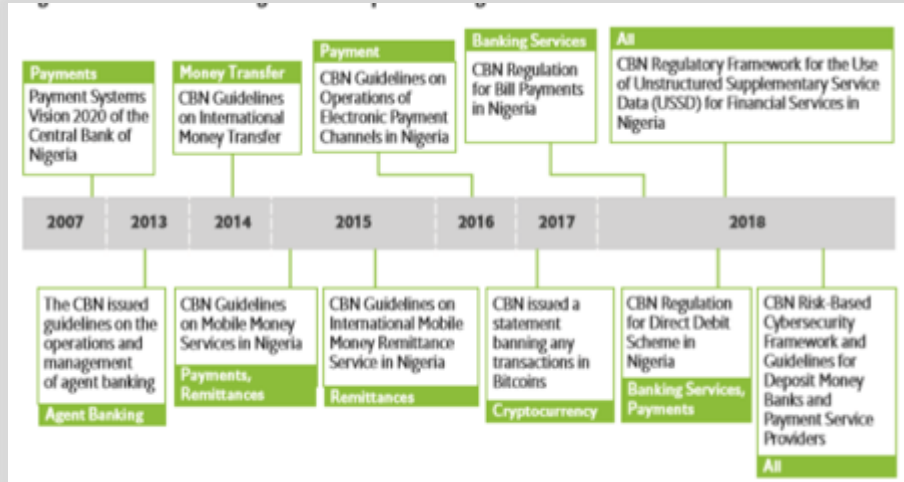
Effective Govt. Policies & Directives

- ❑ Policy creation has never been our problem
- ❑ Joined-up approach from multi-agencies required to ensure market stimulation
- ❑ Strong renewable energy lobby groups

ECREEE: OFF-GRID SOLAR MARKET ASSESSMENT AND PRIVATE SECTOR SUPPORT FACILITY DESIGN

Table 39: Importation Clearance Processes in West Africa and the Sahel

Country	Government agencies involved	Taxes applied on solar products	Approximate No. of days to import	International standards	National standard bodies/provisions
Ghana	1. Energy Commission 2. Ghana Revenue Authority 3. Ghana Ports and Harbors Authority 4. Ghana Standards Authority	Customs duty exemption on all products	45 business days - 5 days to order, - 30 days for freight time, - 5 days for customs clearance, - 5 days to get approval by local authorities	GOGLA Lighting Africa	Specific national standards quality provisions based on GOGLA and Lighting Africa
Nigeria	1. Ministry of Finance 2. Rural Electrification Agency (REA) 3. Nigeria Electricity Regulatory Commission (NERC) 4. Nigeria Custom Service 5. Standard Organization of Nigeria (SON) A total of 12 agencies can be involved in the customs clearance process.	Customs duty exemption is not total: - 10% tax on solar panels, - 20% tax on batteries and inverters.	Between 125 and 150 business days: - 75 to 90 days for freight time, - up to 60 days for customs clearance	GOGLA Lighting Africa	National standard provisions based on GOGLA, Lighting Africa, IEC and ISO.



Source: The Economist Intelligence Unit

Mindset Change



Conclusion



