Nigeria's Power Sector Reform: What Next After Privatization

By

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1. INTRODUCTION

MAP OF AFRICA

MAP OF NIGERIA

1. Introduction ….Contd.

Socio-Economic Indicators (2010)

Total Area	92.4 million hectares (Land 86%, Water 14%)
Forest and Woodlands	11.6%
Polity	Democracy (Presidential System)
Population	158.80 million (2010)
Economic Indicators	
• GDP growth rate	7.9% (2010)
• Inflation rate	11.8% (2010)
• Interest rate	15.74%, Prime (2010)
• Exchange rate	1$ = N160 (2013)
• Major contributor to foreign Exchange earnings	Oil (approx. 87.57% in 2010)
Social Indicators (2009)	
• GDP/Capita	$1,235.92 (2010)
• Energy Intensity	0.1 kgoe/$
• Energy Consumption/Capita	100 kgoe
• Electricity Consumption/Capita	135 kWh
• Urbanization	40%
• Electricity Access	55.2%
• Population Growth rate	3.2%
• Adult Literacy rate	64%
• Life Expectancy	54 years
• Incidence of Poverty	54%

1. Introduction ….Contd.

Nigeria's Energy Supply and The Economy

S/N	ITEMS	2003	2004	2005	2006	2007	2008	2009
1.	Electricity generation (billion kWh)	22.03	23.9	24.22 (503)* (10,695)**	23.8	23.3	21.27 (562)* (18,603)**	20.8
2,	Energy Consumption per Capita (kgoe/Capita)	151.3	125.5	132.6 (680)* (1,780)**	87.1	81.4	80.8 (670)* (1,830)**	83.1
3.	Electricity Consumption/capita (kWh/Capita)	174.6	176.4	181.4 (563)* (2596)**	167.6	161.2	142.9 (571)* (2782)**	135.2
4.	GDP/Capita (US$/Capita)	620.7	658.0	826.3 (2314)* (8,492)**	1030.3	1223.5	1286.3 (2540)* (9550)**	1,106.8
5.	Energy Intensity (kgoe/ US$)	0.244	0,191	0.161 (0.294)* (0.210)**	0.085	0.067	0.063 (0.264)* (0.192)**	0.075
6.	GDP Growth Rate (%)	9.6	6.6	6.5	6.0	6.5	6.0	6.7

Sources: CBN (2005-2010), NCC, Osogbo (2009),
****Africa Average - IEA (2007, 2010)***
*****World Average - IEA (2007, 2010)***

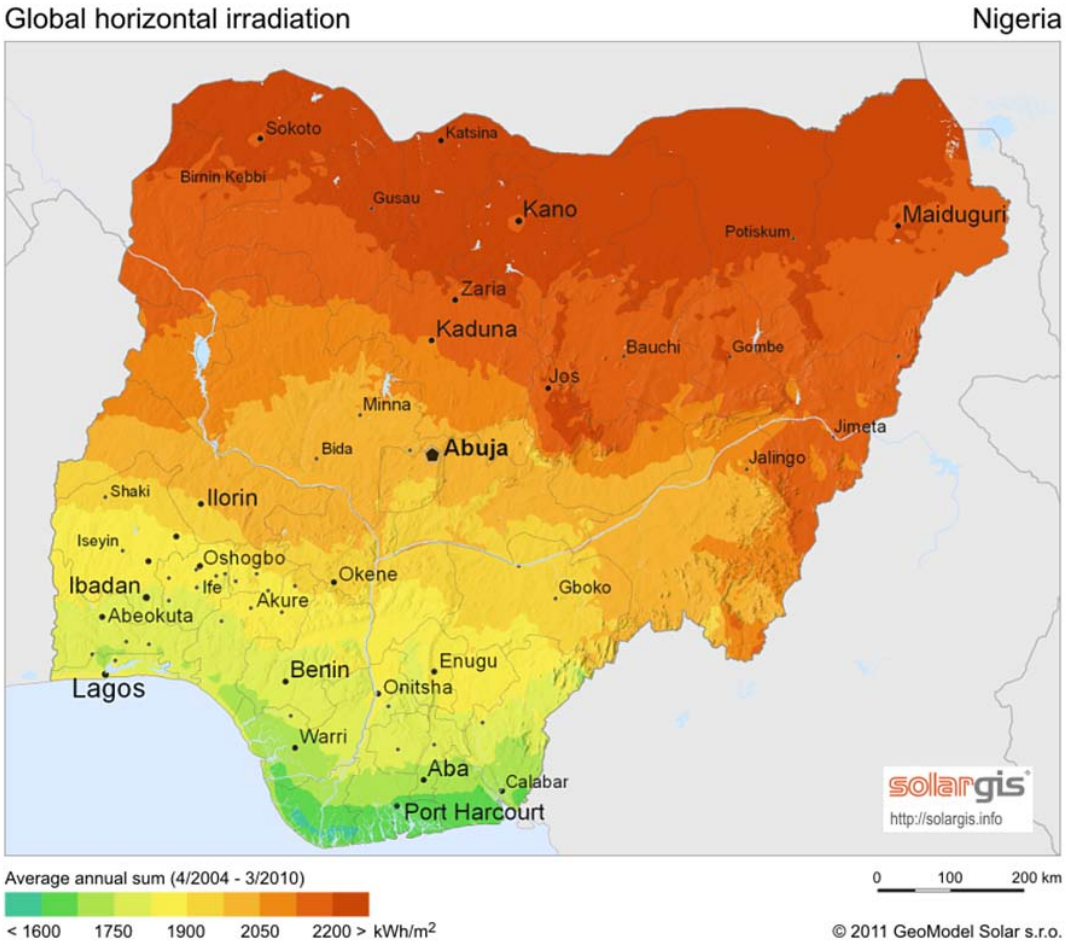
1. Introduction….Contd.

- Nigeria, like any other country, is aware that no meaningful national economic development and improved standard of living of its citizens would occur without adequate supply of modern energy, particularly electricity and fuels.
- To this effect, the government of the Federal Republic of Nigeria is making effort to transform the hitherto public-sector-dominated energy sector, which could not deliver satisfactory service, to that driven by the private sector with government providing enabling environment.
- Therefore the electricity sector has been reformed since 2005 through the Electric Power Sector Reform (EPSR) Act of 2005 . The Act deregulated and liberalized the electricity industry as well as created an independent regulator.

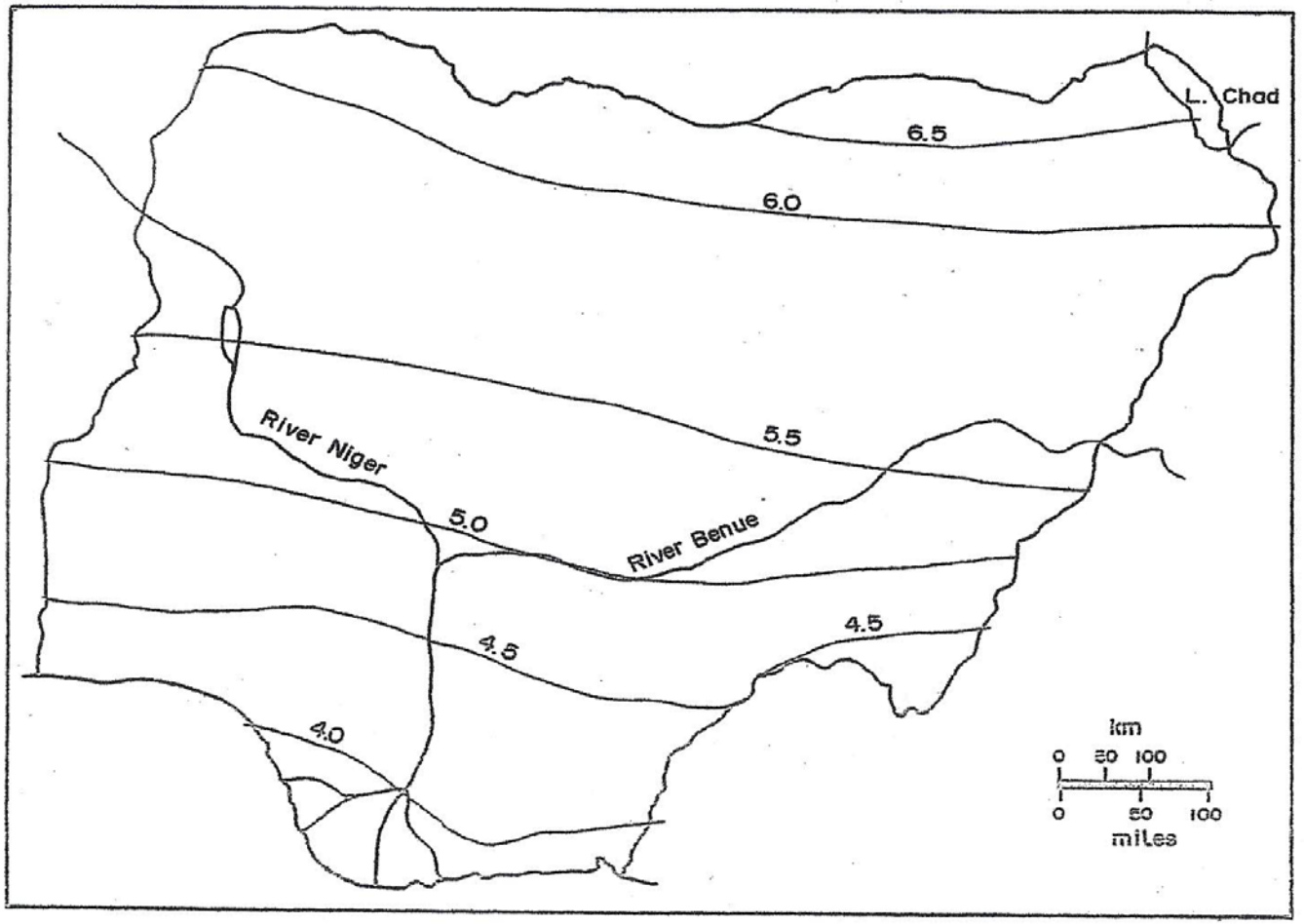
1. Introduction…..Contd.

- The Oil & Gas sector is also being reformed through a Petroleum Industry Bill (PIB), presently undergoing legislative processes.
- Though Nigeria is one of the world's major oil & natural gas producer, the country is also endowed with solar and other renewable energy sources suitable for sustainable energy supply. The country is particularly blessed with solar intensities of between 4kWh/$m^{2/}$ per day and 6.5kWh/m^2 per day, depending upon the location. The average is about 1.6 times that in Germany and comparable to that in Spain; the two leading European countries in solar energy development.
- The Government's policy on utilization of solar energy in Nigeria was formally articulated in the National Energy Policy of 2003. Solar energy may be converted directed into electricity through photovoltaic process or directly to heat, then to mechanical and electrical energies through appropriate thermodynamic cycles.

2. Solar Energy Resource in Nigeria

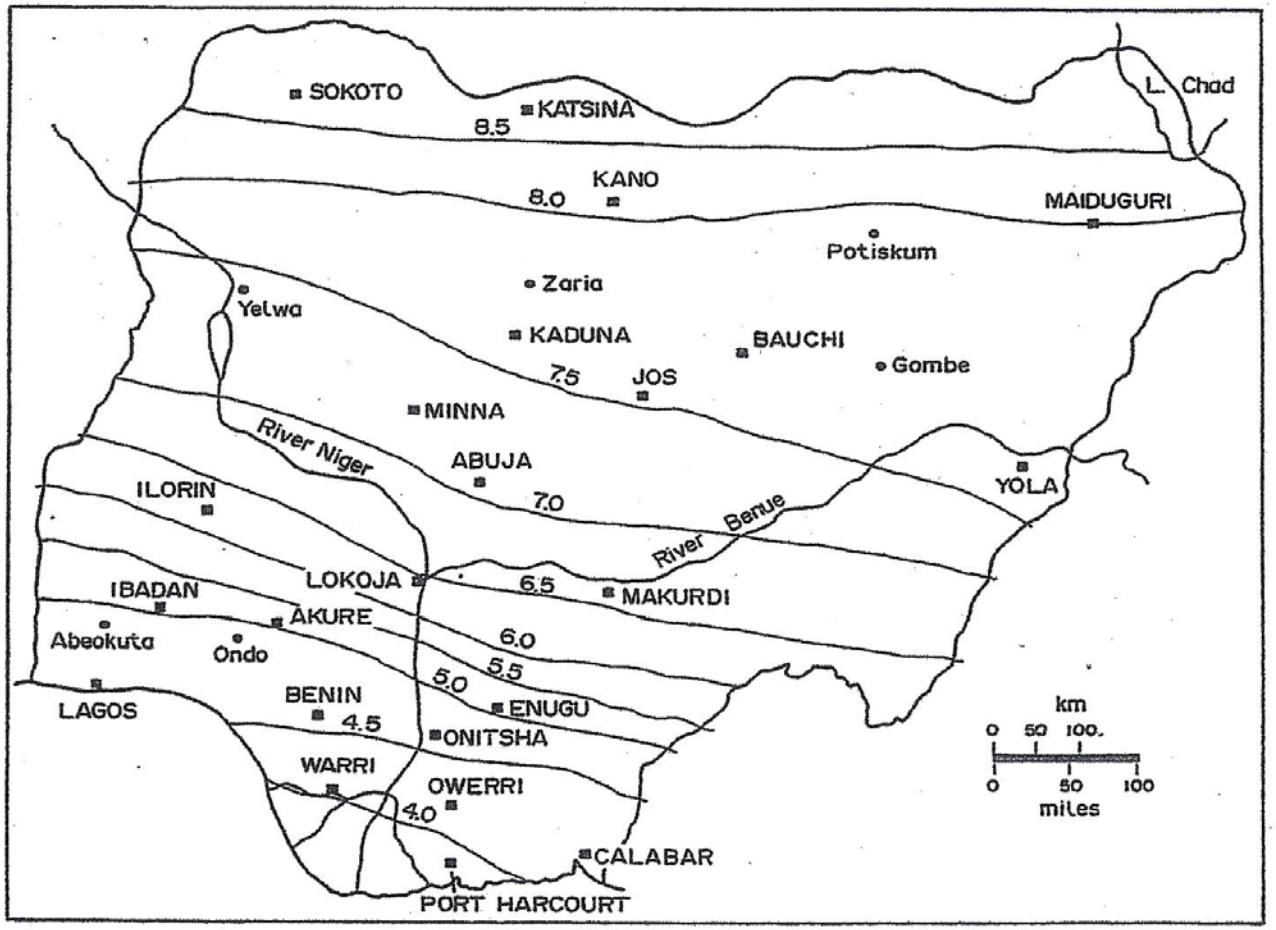


2. Solar Energy Resource ….. Cont'd



Solar Radiation Distribution in Nigeria (kWh/m^2/day)
Source: J. O. Ojosu (1990).

2. Solar Energy Resource …….Cont'd



Sunshine Durations in Nigeria (Hrs/day)
Source: J. O. Ojosu (1990).

2. Solar Energy Resource....Contd

Meteorological Information About Nigeria

S/N	Item	Coastal Town (Lagos)	Central Town (Abuja	Northern Town (Sokoto)
1	Annual mean rainfall (mm)	138.7	122.9	61.8
2	Annual Mean minimum temperature (^{o}c)	23.7	20.1	22.8
3	Annual mean maximum temperature (^{o}c)	31.4	30.2	36.1
4	Annual mean relative humidity @ 1500 GMT (^{o}c)	70.2	50.6	33.2
5	Annual mean relative humidity @ 09GMT (^{o}c)	82.8	61.0	43.6
6	Annual mean sunshine hours (hrs)	4.7	7.0	8.2

Source: FOS 1996 and NBS (2009)

3. National Policy, Programmes & Targets on Solar Energy

- Policy Statement of Government:
  - The nation shall aggressively pursue the integration of solar energy into the nation's energy supply mix, and
  - The nation shall keep abreast of worldwide developments in solar energy technology.
- Objectives of the Policy:
  - To develop the nation's capability in the utilisation of solar energy;
  - To use solar energy as a complementary energy resource in the rural & urban areas;
  - To develop market for solar energy technologies;
  - To develop solar energy conversion technologies locally.

3. National Policy, Programmes & Targets on Solar Energy….contd

- **Programmes & Targets**

Renewable Electricity Supply Projection in MW (13% GDP Growth Rate)

S/N	Resource	Now	Short	Medium	Long
1	Hydro (LHP)	1938	4,000	9,000	11,250
2	Hydro (SHP)	60.18	100	760	3,500
3	Solar PV	15.0	300	4,000	30,005
4	Solar Thermal	-	300	2,136	18,127
5	Biomass	-	5	30	100
6	Wind	10.0	23	40	50
7	All Renewables	2025.18	4,628	15,966	63,032
8	All Energy Resources	8,700 (installed Gen Capacity)	47,490	88,698	315,158
9	% of Renewables	23%	10%	18%	20%
10	% RE Less LHP	0.4%	1.3%	8%	16%

Short – 2015
Medium – 2020
Long – 2030

3. National Policy, Programmes & Targets on Solar Energy….contd

- **Programmes & Targets…contd**

S/N	Activity/Item	Timeline/Quantity		
		Short Term	Medium Term	Long Term
1	Solar PV Home Systems (SHS) (MW)	5	10	15
2	Solar PV Water Pumping (MW)	50	1,000	5,000
3	Solar PV Community Services (MW)	45	500	3,000
4	Solar PV Refrigerators (MW)	20	500	2,000
5	Solar Street and Traffic Lighting (MW)	100	1,000	10,000
6	Solar PV Large Scale PV plants (1MW capacity)	80	990	9,990
7	Solar Thermal Electricity (1MW capacity)	300	2,136	18,127
	Total (MW)	600	6,136	48,132

Source: REMP (2012)

4. The SHESTCO Silicon Valley Project

- The new National Science, Technology & Innovation (STI) Policy approved by the Federal Executive Council of Nigeria has defined increased investment, support for and the establishment of functional Science & Technology parks as one of the strategies for achieving technology transfer and diffusion in Nigeria.

- The Sheda Science & Technology Complex (SHESTCO), situated 70km from the Nigerian Capital City, Abuja, is to be transformed into an advanced Science & Technology Research Park, referred to as ***SHESTCO Silicon Valley***.

- Special focus will be given to photovoltaic technologies for harnessing solar energy directly to electricity.

- Attention will also be given to complete value chain for solar technology in research and development, sales and distribution, technical service operations, module manufacture and assembly.

- Investors are invited to partake in the development of the Silicon Valley.

5. Incentives & Framework For Solar PV Business in Nigeria

NATURAL INCENTIVES:

- Market: 167 million, supporting additional 230 million in the sub region. Abundant solar radiation
- Trainable, resourceful and cost effective workforce with 60% as youths
- Strategic location – hub of the West and Central African Markets
- Relative absence of natural disasters / calamities; i.e. no earthquakes, hurricanes or major floods etc.
- Highest Return on Investment (RoI) in Africa:

  -35% - 45% generally, & 70% in some sectors

5. Incentives & Framework For Solar PV Business in Nigeria…contd

STATUTORY INCENTIVES:

- Pioneer Status – 3- 5 years Tax Holiday
- Repatriation of Profit (100%)
- Capital Allowances:

  -Research & Development - 140%

  -Investment in infrastructure 20% of costs

  -Minimum local raw materials utilization – 20% for 5 years
- Very low Value Added Tax (VAT) regime of 5%
- Feed-In-Tariff (FIT) – exists with effect from June 2012

EXPORT INCENTIVES

Export expansion Grant – up to 30% of Value.

5. Incentives & Framework For Solar PV Business in Nigeria…contd

- **Equipment and machinery in the power sector attract zero percent (0%) duty**.

This implies that the import of PV modules and balance of system components attract zero percent import duties as indicated:

• PV:	Modules	0%
	Module sub-assemblies and spares	0%
	Solar batteries	0%
	Inverters	0%
	Charge controllers	0%
	Solar water pumps	0%
	Solar refrigerators	0%

5. Incentives & Framework For Solar PV Business in Nigeria…contd

(A)Framework For Solar PV Business:

For establishing a new business in Nigeria the following processes are required:

i. Incorporation with Corporate Affairs Commission (CAC).
ii. Registration of business with foreign equity with the Nigerian Investment Promotion Commission (NIPC).
iii. Registration with Federal Inland Revenue Service (FIRS)
iv. Obtaining Operating License.
v. Acquiring Operating Premises.

(B) Obtaining Operating Licenses /Permits:

-Investments in Power generation and distribution, a license with Nigerian Energy Regulatory Commission (NERC) as the regulatory agency, is required.

-Information Communication Technology (ICT) : a License with either Nigerian Information Technology Development Agency (NITDA) or Nigerian Communication Commission (NCC) is required.

6. Solar PV Applications in Nigeria

In Nigeria today, solar PV is being used for:

- Water pumping;
- Streets lighting
- Village Electrification;
- Rural clinic and schools power supply;
- Vaccine refrigeration;
- Traffic Lighting and lighting of road signs;
- Energizing security and surveillance equipment;

6. Solar PVApplications…..Contd.

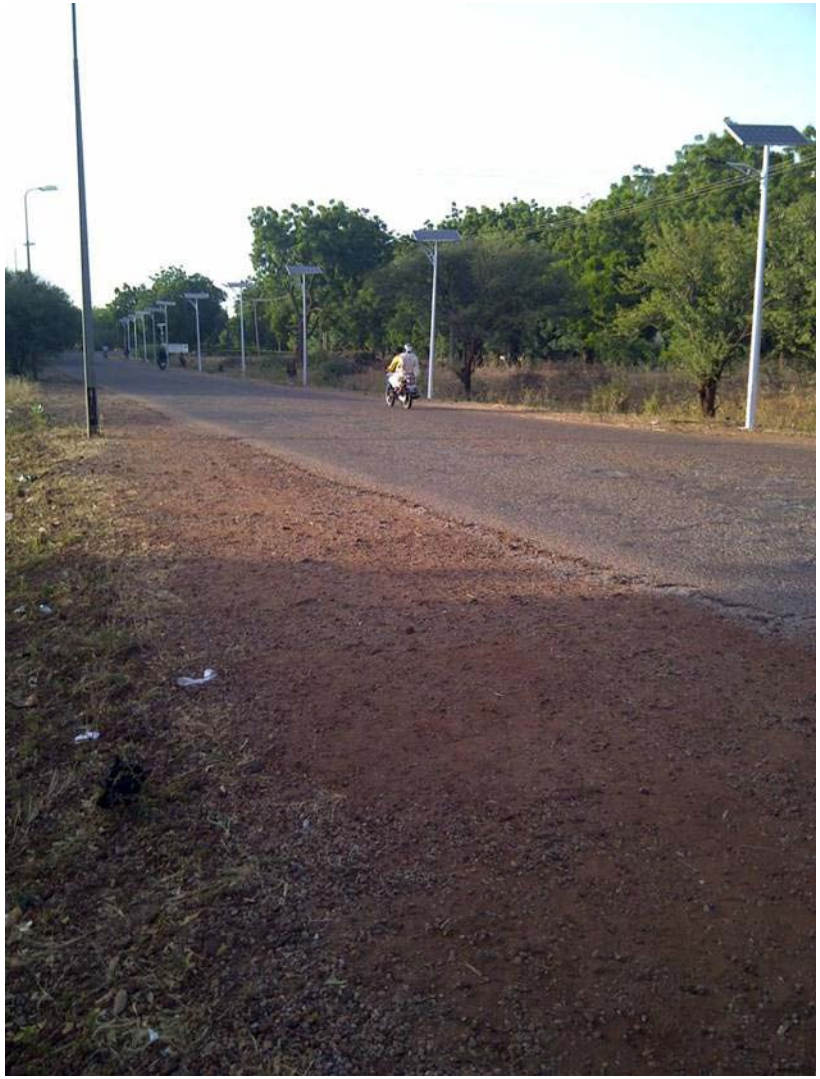
- Powering of telecommunication equipment, television and radio booster stations;
- Storage battery and GSM handset re-charging;
- Cathodic protection of Oil pipelines;
- Village TV viewing centres;
- Warning lights, navigation buoys; Landing lights and aircraft navigation systems; Electric fences, safety devices and emergency lightings.

6. Solar PVApplications…..Contd.

Solar PV Water Pumping System

Solar Powered Water Pumping System For Danjawa Village, Sokoto State, Nigeria

6. Solar PVApplications…..Contd.

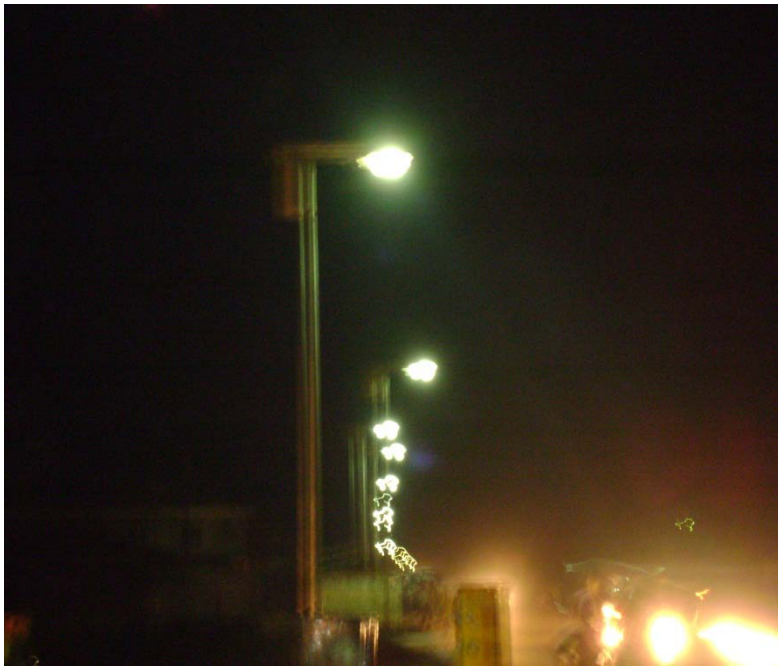


Solar Street Lights in UDUS, Sokoto State, Nigeria

6. Solar PVApplications…..Contd.

Solar PV Street Lighting

Day



Night

Stand Alone Solar Streetlights in Ibusa Town, Okpanam Osimili North, Delta State, Nigeria

6. Solar PVApplications…..Contd.

Solar Photovoltaic Mini Grid

3kW Mini Grid In Igu Community, Bwari, FCT, Nigeria

6. Solar PVApplications…..Contd.

Solar PV Mini-grid

Battery Bank, Charge Controllers and Inverters in Control Room

10kW Solar Photovoltaic Mini-grid in Danjawa Village, Sokoto State, Nigeria

6. Solar PVApplications…..Contd.

Solar Street Lighting in Uyo, Akwa Ibom State, Nigeria

6. Solar PVApplications…..Contd.

Solar PV for Telecommunication
20km Kaduna-Abuja Road, Nigeria

Solar PV at Ilaje, Ondo State, Nigeria

Conclusion

- Nigeria is endowed with an average intensity of 5.25kWh/m^2 per day of solar energy over an average period of 6 hours daily. The government of Nigeria has a policy of diversifying the energy supply mix of the country to include solar energy, and in particular, electricity from solar PV.

- The government also intends to do so through the establishment of a Science, Technology & Innovation Park, referred to as SHESTCO Silicon Valley, with special focus on complete value chain for solar technology research and development, modules manufacturing & assembly, sales and distribution as well as technical service operations, to be driven by the private sector.

- Incentives have been provided for investors, while Nigeria serves as a large market and also as a hub within the West African sub-region.

- For these reasons, the Government of Nigeria invites investors to take advantage of the abundant investment opportunities that abound in solar PV manufacture, sales, distribution and other technical services.

Thank You

AND GOD BLESS!