



FEDERAL REPUBLIC OF NIGERIA

**SUSTAINABLE ENERGY FOR ALL
INVESTMENT PROSPECTUS (SEforAll-IP)**

ADOPTED BY
INTER-MINISTERIAL COMMITTEE ON
RENEWABLE ENERGY AND ENERGY
EFFICIENCY (ICREEE)

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Contact:

Engr. Faruk Yusuf Yabo:
Ag. Director, Renewable Energy and Rural Power Access/
SEforAll Focal Point Person
Federal Ministry of Power, Works & Housing, Abuja, Nigeria
Email: fyabo@yahoo.com
Telephone: +2348038521476



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ACRONYMS AND ABBREVIATIONS

AA	Action Agenda
AFD	Agence Française de Développement (France)
AFDB	African Development Bank
Bbl	Barrel of oil
BCM	Billion Cubic Metres
BLEN	Biogas, LPG, Electricity, Natural Gas
Btoe	Billion tons of oil equivalent
CA	Contracting Authority
CAC	Corporate Affairs Commission
CAMA	Companies and Allied Matters Act
CCA	Conformity, Convenience, Adequacy
CNG	Compressed natural gas
CPIA	Country Policy and Institutional Assessment
DEVCO	Directorate General for Development and Cooperation – EuropeAid
Disco	Distribution Company
DSM	Demand Side Management
ECN	Energy Commission of Nigeria
ECOWAS	Economic Community of West African States
ECREEE	ECOWAS Centre for Renewable Energy and Energy Efficiency
EE	Energy Efficiency
EPC	Engineering Procurement Construction (also called turnkey contract)
EPSRA	Electric Power Sector Reform Act
EU	European Union
EUD	European Union Delegation
EUR / €	Euro
FEC	Federal Executive Council
FGN	Federal Government of Nigeria
FiT	Feed in Tariff
FEMMP	Foreign Exchange Monitoring and Miscellaneous Provision
FMARD	Federal Ministry of Agriculture and Rural Development
FME	Federal Ministry of Environment
FMF	Federal Ministry of Finance
FMPR	Federal Ministry of Petroleum Resources
FMPWH	Federal Ministry of Power, Works and Housing
FMST	Federal Ministry of Science and Technology
FMWR	Federal Ministry of Water Resources
GEEREF	Global Energy Efficiency and Renewable Energy Fund
Genco	Generation company
GFT	Global Facilitation Team
GIS	Geographical Information System
GIZ	Gesellschaft für Internationale Zusammenarbeit
GW / GWh	Giga Watts / Giga Watt hours
ha	Hectare
HPFO	High Pour Fuel Oil
HPP	Hydro Power Plant
HV	High Voltage
IBRD	International Bank for Reconstruction and Development
ICF	International Climate Fund
ICREEE	Inter-Ministerial Committee on Renewable Energy and Energy Efficiency
ICSID	International Centre for Settlement of Investment Disputes

IEC	International Electro-technical Commission
IFC	International Finance Corporation
IFI	International Financial Institution
IP	Investment Prospectus
IPP	Independent Power Producer
JICA	Japan International Cooperation Agency
KE	Key Expert
kW / kWh	Kilowatt / Kilowatt hour
LRMC	Long Run Marginal Cost
LV	Low Voltage
Mbbl	Million barrel of oil
MBtu	Million Btu
MDG	Millennium Development Goal
MHI	Manitoba Hydro International
MOU	Memorandum of Understanding
MV	Medium Voltage
MW / MW	Mega Watts / Mega Watt hours
MYTO	Multi Year Tariff Order
NBET	Nigerian Bulk Electricity Trading Plc
NEPA	National Electric Power Authority
NERC	Nigerian Electricity Regulatory Commission
NESI	Nigerian Electricity Supply Industry
NGC	Nigerian Gas Corporation
NGO	Non-Government Organization
NIP	National Indicative Programme
NIPC	Nigerian Investment Promotion Commission
NIPP	National Integrated Power Project
NKE	Non-key Expert
NPC	Nigerian Planning Commission
NPSG	Nigerian Power Sector Guide (2013)
ODA	Official Development Assistance
PHCN	Power Holding Company of Nigeria
PPA	Purchase Power Agreement
PPP	Public Private Partnership
PV	Photovoltaic
RE	Renewable Energy
REA	Rural Electrification Agency
REF	Rural Electrification Fund
REP	Rural Electrification Programme
RISE	Readiness for Investment in Sustainable Energy
RrE	Rural Electrification
SEforAll	Sustainable Energy for All
SHP	Small Hydro Power
SHS	Solar Home System
SME	Small Medium sized Enterprise
S&P	Standard and Poor Evaluation Agency
SREB	State Rural Electrification Board
SUNRE	Sustainable Use of Natural Resources and Energy Finance
TAF	Technical Assistance Facility
TCN	Transmission Company of Nigeria
TOR	Terms of Reference
USD / \$	United States Dollars
WAPP	West African Power Pool
WB	World Bank

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1 INTRODUCTION AND READER'S GUIDE

The development of this Federal Republic of Nigeria Sustainable Development for All (SEforAll) Investment Prospectus (IP) was supported by the Ecowas Center for Renewable Energy and Energy Efficiency (ECREEE), the European Union's (EU) Technical Assistance Facility (TAF) and the African Development Bank (AfDB). The Federal Government of Nigeria thanks these donors and the teams that provided the inputs for this IP.

1.1 SUSTAINABLE ENERGY FOR ALL (SEFORALL)

The Nigeria IP is the last product of the country's SEforAll process. Launched by then-United Nations Secretary General Ban Ki Moon in 2010, SEforAll aims, by 2030, to achieve universal access to modern energy services, to double the rate of improvement in energy efficiency, and to double the share of renewable energy in the global energy mix. Individual counties were to define national goals within the framework of these global goals.

Nigeria's path to the IP began with a Rapid Assessment exercise in June 2012, and continued with the development of national renewable energy (NREAP) and energy efficiency (NEEAP) action plans. These were followed, in 2014, by the development of the Action Agenda (SEforAll AA) setting Nigeria's SEforAll vision and objectives (see Table 5) and defining priority actions to achieve them. The Investment Prospectus is intended to identify investment opportunities in projects constituting the priority actions (see Section 2.5.1.1.2) that will advance Nigeria's SEforAll objectives.

Nevertheless, the IP is not an investment document per se. It is meant to be a conversation starter between project developers (be she from the private or public sector) and potentially interested investors. The second version provided a snapshot of the SEforAll marketplace in the second half of 2017, with a focus on near-term investment opportunities. It is, however, meant to be a living document, and the Government of Nigeria has identified as a priority program to enhance the enabling environment for the projects the establishment of Secretariat to track existing projects, identify new projects, and bring both to the attention of potential investors. This, the 3rd version of the IP, includes projects identified by the GoN in 2018, identified by an asterisk (*) after the Project number which precedes the project description in Section 3.1.

1.1.1 Organization of the Investment Prospectus

The IP is laid out in three parts, Part 1 is this introduction and reader's guide. Part 2 provides an overview of the country, its economy, and enabling environment for clean energy investment, called the Investment Thesis. It is meant to provide complementary information to the [Nigerian Power Sector Investment Opportunities and Guidelines](#) for the potential investor. As with that document, hyperlinks are provided to what are deemed the most important legal and policy documents and studies for a potential investor in the Nigeria clean energy sector.

Part 3 presents, in the form of individual fiches, profiles for projects developed by the private and public sectors. To identify projects, developers were contacted through the entities known to be working to develop SEforAll-consistent projects: the German NGO GIZ, USAID's Power Africa program, UNIDO's hydro training center, the Federal Ministry of Power's (FMoP) Renewable Hydro Department, as well as selected state governments indicated by FMoP. Invitations to an August 2017 Financing Workshop in Lagos sent to the Manufacturers' Association of Nigeria (MAN), Nigerian Economic Summit Group (NESG), Renewable Energy Association of Nigeria (REAN), Lagos Chamber of Commerce, and the Nigeria Association of Chambers of Commerce, Industry, Mines, and Agriculture (NACCIMA) requested that invitees provide project information in the project fiche format which was attached. The Federal Government of Nigeria thanks these organizations for their collaboration.

1.1.1.1 Private Sector Fiches

The project developers represented here, are then self-selected and the information in the individual project fiches (Section 3.) is presented, as it was submitted by the developers. Only those projects lacking sufficient project information for an investor to determine whether he might be interested, or which lacked developer contact information were not included.

No attempt was made to edit the information provided, since the style and mode of expression used by the developer can provide important additional information to a would-be investor about her capabilities.

The private sector fiches are organized into four categories, or pipelines: on-grid, off-grid, bioenergy, and energy efficiency. Twenty-two of the twenty-six projects for which there are fiches are off-grid projects, primarily photovoltaic mini-grids. This is, in part because many bilateral donors have both developed pilot projects and

supported the Nigerian Government in the development of an approach and regulatory framework calibrated to attract private investment. This includes a very light regulatory regime for projects of less than 1 MW - no licensing is required, only notification of the government by the developer. As importantly, it is understood that tariffs must be cost-reflective and almost certainly higher than those charged to grid-connected customers. As a result, there has been a significant amount of entrepreneurial activity in the off-grid space, including third-party private investment. This trend should be accelerated by the tool to calculate cost-reflective tariffs (as well as the mini-grid regulations) provided for developers on the website of the National Energy Regulatory Commission (NERC).¹

1.1.1.2 Public Sector Fiches

There are two sets of public sector fiches. The first contain set contains projects which are owned by federal or state governments. By and large, these projects have had some project development work done. The largest group of projects are located at seventeen existing irrigation/flood control dams and have had feasibility studies performed and engineering design completed for hydroelectric power connected to the grid. The sites are jointly controlled by the Federal Ministry of Water Resources and the Federal Ministry of Power. The plan is to solicit bids from private sector groups to build and operate these grid-connected facilities as concessions.

The second set of public sector fiches are for projects to improve the enabling environment for private sector investment in SEforAll-consistent clean energy projects, beginning, as noted above, with support for an SEforAll Secretariat. The target audience for these fiches are multilateral and bilateral development and philanthropic organizations

¹ <http://nerc.gov.ng/index.php/home/operators/mini-grid>

SECTION 2: THE INVESTMENT THESIS

2 THE INVESTMENT THESIS

2.1 COUNTRY OVERVIEW

2.1.1 Country and Economic Overview

2.1.1.1 Geographic and Demographic Background and Impact on the Energy Sector

The Federal Republic of Nigeria is located in the West Africa region and has a land area of 923,773 km². The country comprises 36 States and the Federal Capital Territory (FCT), Abuja. The states constitute the second tier of Government and are further sub-divided into 774 local Governments areas.

Nigeria's Population is the seventh largest in the World with over 190 million people and still growing at an average of 2.5% per annum. According to United Nations projections, Nigeria's population will reach nearly 230 million within the next 20 years. The largest country in Africa, Nigeria accounts for nearly half the total population of West Africa and more than 15% of the total population of the entire African Continent. Nigeria represents over 65% of the effective West African market and remains the most competitive destination for the establishment of medium and large manufacturing industries.

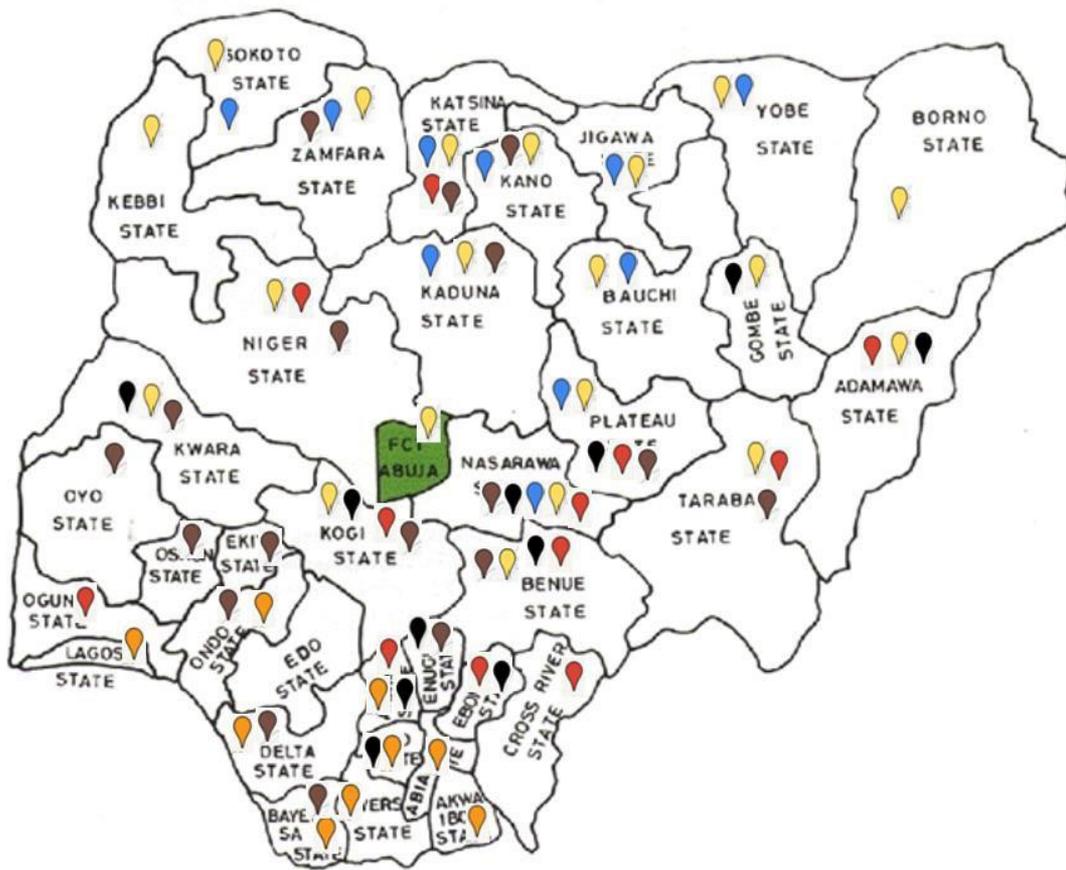
Table 1: Country geographic and demographic background

Indicator / Criteria	Value – Assessment - Statement
Area (km ²)	923,777 km ²
Population (million)	190*
Population growth (%)	2.4%
Share of rural population (%)	51%
<i>Sources: World Bank / ECOWREX</i>	

*estimates from various sources

Nigeria is well endowed with resources in both renewable and non-renewable energy which constitute part of the potential solutions to address existing energy challenges in particular, power shortages. These sources support the drive by the Federal Government to increase the installed capacity of the country significantly by the year 2030 and beyond. The following map² shows the energy resources available across the country.

² [The Nigerian Power Sector Investment Opportunities and Guidelines – Federal Ministry of Power, Works & Housing, June 2016](#)



Legend



2.1.1.2 National Economic Background

In 2017, the Nigerian economy officially returned to its two-decades-long trajectory of growth from after 4 quarters of recession, with growth for the year predicted to reach 2.2%,³ led by a recovery in oil production from a contraction partly linked to attacks on oil pipelines by the Niger Delta Avengers (NDA) militant group in the Niger Delta. Oil production had been reduced from 2.11 mbb per day in the first quarter of 2016 to 1.69 mbb per day, but as of September, 2017 had recovered to 2.095 mbb per day.⁴

In September 2016, the percentage of the population of Nigeria living below the poverty line was 64% or 80+ million people⁵. Poverty has remained high in rural areas, remote communities and among female –headed households and these cut across the six geo-political zones, with prevalence ranging from approximately 46.9 percent in the South West to 74.3 percent in North West and North East.

Primary traditional agriculture remains the dominant economic activity, accounting for about 40.0% of GDP and more than 60% of total employment. Other key contributors to GDP are the wholesale and retail trade (19.90%) and crude oil and natural gas (13.80%). These three sectors account for about 74.0% of total GDP. The manufacturing sector

³ R. Asogwa, et al., African Economic Outlook

⁴ United States Energy Information Agency

⁵ UN Development Assistance Framework IV (UNDAF IV) for the South East geo-political zone in Awka, September 5, 2016

accounts for only 4.0%. Nigeria has the following credit rating by international rating agencies in 2016: S&P B; Moody's B1; Fitch B+.

Table 2: National economic background

Indicator / Criteria	Value – Assessment - Statement
GDP (current USD)	521.8 Billion
GDP per capita (USD)	2,864
GDP growth (%)	-1.8
Human development index (index:rank/188)	152
Share of population under poverty line (%)	64%
<i>Sources: World Bank 2016; and TAF Report 2015</i>	

2.1.1.3 Investment – Regulatory and Enabling Instruments

Since the return to democracy, in May 1999, Nigeria has embarked on an economic reform program geared towards more openness and liberalization. Consequently, Nigeria has become a top destination of Foreign Direct Investment (FDI) in Africa, across various sectors of the economy. Nigeria has an open environment for foreign and national investors. To promote a viable investment environment, Nigeria offers a well-balanced and competitive package of fiscal incentives aimed at providing a competitive fiscal regime on foreign trade compared to other African countries.

Table 3: Investment – Regulatory and Enabling Instruments

Indicator / Criteria	Value – Assessment - Statement
Governance (Mo Ibrahim index) (index/rank)	46.5/100-36/54
World Bank doing business index (rank)	145/190
<i>Sources: World Bank: http://www.doingbusiness.org/rankings?region=sub-saharan-africa</i>	

In the last few years, double taxation agreements have become effective between Nigeria and many countries. These agreements are aimed at achieving relief from double taxation

The private sector became the main engine for development while the Federal Government has undertaken bold economic reforms that include:

- Establishing the One Stop Investment Centre (OSIC), an investment facilitation mechanism that brought all relevant governmental agencies in one location to streamline the provision of services to investors;
- Investors are guaranteed an unconditional transferability of funds;
- Investors are guaranteed the free importation and convertibility of foreign currency;

As a result of the above, Nigeria was among the very first countries in the world to ratify the International Centre for Settlement of Investment Disputes (ICSID) convention and was the first African country to adopt the Model Arbitration Law and Conciliation Rules elaborated by the United Nations Commission on International Trade. Both Standard and Poor Evaluation Agency (S&P) and Fitch have given Nigeria a long- term sovereign credit rating of “BB-“, while Moody’s has assigned the country a rating of Ba3. S&P cited the Government’s involvement in the electricity sector among the reasons for the rating.

Investment incentives particularly targeted for the energy sector, include:

- A 3-5-year tax waiver granted to companies that manufacture transformers, meters, control panels, switchgears, cables and other electrical-related equipment, which are considered pioneer products/industries;
- Power plants using natural gas pay corporate income tax at a reduced rate of 30%⁶.
- The primary legislation governing investment and investment incentives in Nigeria is the Nigerian Investment Promotion Commission Act (NIPC) No. 16 of 1995. It establishes the legal foundation for a very liberal and open investment framework. It is a cross-sectoral legislation that aims to encourage inflow of foreign investments in all sectors of the economy and allows foreigners to invest and participate in the operation of any Nigerian enterprise without any restriction. The Act also allows 100% foreign ownership of firms and repatriation of profits/dividends

⁶ [Power Africa \(2015\) Investment Brief for the Electricity Sector in Nigeria](#)

to home country in any convertible currency. However, in the oil and gas sector, investment is limited to joint ventures or production-sharing agreements⁷. Other important legislation:

- Foreign Exchange (Monitoring and Miscellaneous Provisions) Act (FEMMP), 1995: FEMMP is complementary to the NIPC Act, as it eased restrictions in foreign exchange dealings and creates an autonomous Foreign Exchange Market and enables funds transfer without prior approval. It also opened up the Nigerian capital market to foreign portfolio investment: any foreign exchange purchased from the Market may be repatriated from Nigeria without hindrance, thus foreigners are allowed to invest in, acquire, dispose of, create or transfer any interest in securities and other money market instrument in foreign or local currency.
- Companies and Allied Matters Act (CAMA) 1990: requires prospective investors in Nigeria to register with the Corporate Affairs Commission (CAC) as one of various types of companies: public or private liability company, etc.
- Nigeria Export Processing Zone Act Provides details of regulatory and supervisory requirements necessary to promote efficient and profitable operations in Nigeria's Free Trade Zone.

A summary of some incentives available for investors in Nigeria are presented in the NIPC website: <http://www.nipc.gov.ng/index.php>

2.1.2 Investing in the Energy Sector in Nigeria

To increase per capita electricity consumption and expand electricity access, the Federal Government of Nigeria is encouraging investment in generation capacity, distribution systems and in developing all forms of energy sources. See the [Nigerian Power Sector Investment Opportunities and Guidelines](#), Federal Ministry of Power, Works & Housing.

2.2 ENERGY SECTOR

2.2.1 Characterisation of the Energy Sector

Nigeria's energy consumption is based on biomass (85.3%), followed petroleum products (10.2%), by natural gas (2.7%) and electricity (1.9%).⁸ Over 50 million metric tons of fuel wood is consumed annually, predominantly in rural areas where alternative fuels for cooking are limited or absent.

The Organisation of Petroleum Exporting Countries (OPEC) currently rates Nigeria as Africa's largest oil producer with about 37B bbls of proven oil reserves and 187 TCF of proven natural gas reserves. With an average production between 1.8 and 2.4M bbls of oil per day, Nigeria was the world's seventh largest OPEC crude oil producer between 2009 and 2013.

The energy sector in Nigeria is characterised by over exploitation of forest resources (wood fuel represents more than 81% of total energy consumed). The deficit of refining capacity in Nigeria brings high dependence on imported oil products while the potential of renewable energy sources is not sufficiently developed.

Nigeria is among the leading exporters of crude oil in the world, but it imports about 85% of its refined petroleum products due to low capacity utilisation of its oil refineries (around 65%). The price of diesel was deregulated in 2009, which significantly increased the cost of private electricity generation. Nigeria also exported more than 8% of globally traded liquefied natural gas (LNG), making it the world's fourth largest LNG exporter in 2012. In 2014 total Nigerian primary energy supply was 134.71 Million tons of oil equivalent (Mtoe), excluding electricity trade.

Table 4: Energy sector background

Indicator / Criteria	Value – Assessment – Statement (2015)
Primary energy supply (Mtoe)	139.37 (Mtoe)
Primary biomass energy (Mtoe)	111.57 (Mtoe)
Primary renewable energy including hydro (Mtoe)	0.49 (Mtoe)
Primary fossil energy (Mtoe)	27.31 (Mtoe)
Final energy consumption total (Mtoe)	120.53 (Mtoe)

⁷ [NIPC](#)

⁸ [www.iea.org/statistics/topics/Electricity/ Electricity Statistics](http://www.iea.org/statistics/topics/Electricity/Electricity%20Statistics)

Final electricity demand (TWh)	25.09 (TWh)
Sources: http://www.iea.org/statistics/statisticssearch/report/?year=2015&country=Nigeria&product=Balances	

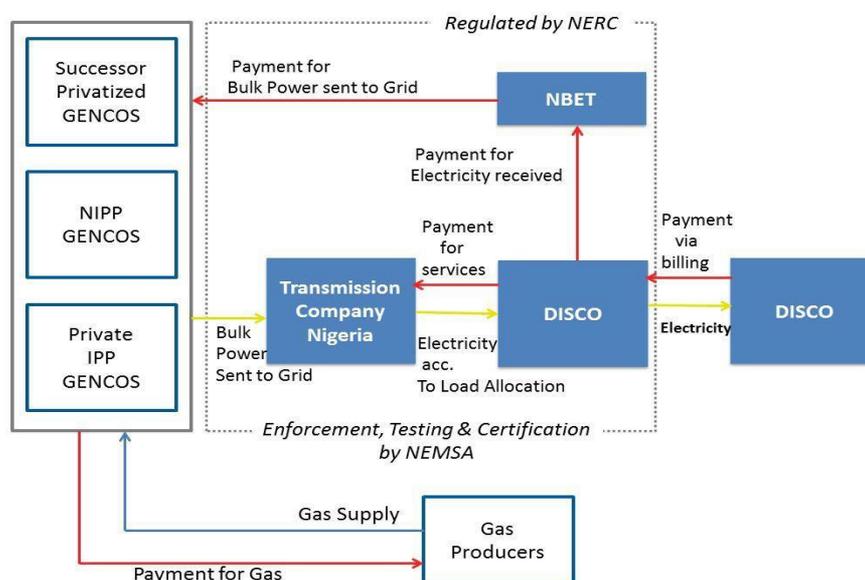
2.2.2 Policy, Institutional and Regulatory Framework

The Federal Ministry of Power, Works and Housing (FMPWH) is responsible for ensuring a robust power sector that fully supports the socio-economic needs of the Nation. The main role of the Ministry is initiation, formulation, coordination and implementation of broad policies and programmes on the development of electricity generation from all sources of energy.

There is a large gap between electricity demand and supply. Current power demand is estimated at 17,520 MW including latent and suppressed demand, against 7,500MW peak generation.⁹ In order to attract the private investment needed to bridge this gap, the power sector has adopted many reforms. The enactment of the [Electric Power Sector Reform Act 2005 \(EPSR\)](#) laid a solid foundation for the Federal Government power sector reform and privatization programme.

The reform led to the unbundling of the National Electric Power Authority (NEPA), which became Power Holding Company of Nigeria (PHCN) consisting of 18 new successor companies including 6 generation companies, 1 transmission company and 11 distribution companies.

The EPSR Act of 2005 established the National Electricity Regulatory Commission (NERC), Nigerian Bulk Electricity Trading (NBET) the Rural Electrification Agency (REA) and other agencies as key institutional players to achieve the core objectives of the reform programme.



Structure of the Power Sector – Post Reform¹⁰

Nigeria has a series of sector development policies and strategies, which support the country's progress towards the SEFORALL objectives of universal energy access, doubling the share of RE and EE by 2030. These strategies and activities are summarised in the following:

- Policy Framework:
 - [National Water Policy, 2004](#)
 - [National Gas Policy, 2017](#)
 - National Electric Power Policy, 2001
 - [National Energy Policy 2001, 2003](#)
 - [National Renewable Energy and Energy Efficiency Policy, 2015](#)

⁹ [The Nigerian Power Sector Investment Opportunities and Guidelines - Federal Ministry of Power, Works & Housing, June 2016](#)

¹⁰ [Ibid.](#)

- [Nationally Determined Contribution \(NDC\) - 2015](#)
- [Rural Electrification Strategy and Implementation Plan \(RESIP\), 2016](#)
- [Regulation on Feed-in Tariff for Renewable Energy Sourced Electricity in Nigeria, 2015](#)
- [Petroleum Act 1969](#)
- [EPSR Act 2005](#)
- [National Policy on Public Private Partnership, 2008](#)
- [Infrastructure Concession and Regulatory Commission Act 2005](#)
- Rural Electrification Policy Paper, 2009
- Federal Government of Nigeria (FGN) strategies and plans
 - [SEforAll Vision 30-30-30](#)
 - [National Integrated Infrastructure Master Plan, 2014](#)
 - [Nigeria Biofuel Policy, 2007](#)
 - [National Gas Policy Master Plan, 2016](#)
 - [Power Sector Reform Road Map, 2010](#)
 - [The Nigerian Power Sector Investment Opportunities and Guidelines, 2016](#)
 - [Immediate and Long Term Strategies for the Water Sector \(2016-2030\), 2016](#)
 - [Potentials and Investment Opportunities in Hydropower Projects in Nigeria, 2016](#)
 - [Power Sector Recovery and Implementation Program, 2017](#)
 - [Economic Recovery & Growth Plan, 2017-2020](#)

2.3 ENERGY SECTOR TRAJECTORY

2.3.1 Electricity Sector

Originally, the Nigerian electricity sector had been characterised by a vertically integrated, state-owned utility structure, with National Electric Power Authority (NEPA), responsible for most of generation (aside from a few gas-powered independent power producers (IPP) that sold power to NEPA), transmission and distribution. The Nigerian power sector privatisation began in 2005. In the first stage of the reform process, which eventually led to privatisation in 2013, NEPA was restructured as the Power Holding Company of Nigeria (PHCN). During this process, NEPA was unbundled into generation and distribution companies and a transmission company. In 2013, the PHCN generation and distribution corporations were privatised into 6 Generation Companies (Gencos), Transmission Company of Nigeria (TCN, with the System Operator and Market Operator residing within TCN), the Nigerian Bulk Electricity Trading Plc (NBET) and 11 Electricity Distribution Companies (Discos).

Nigeria's 36 States can be classified into 3 broad categories: the Southern States, highly populated with higher economic wealth and growth, thanks to hydrocarbon resources, and with better access to electricity and other forms of modern energy, as most of the infrastructure of the region is quite viable; the central States, including and up to FCT, have medium levels of economic wealth and growth, but have less access to electricity and to other forms of modern energy; the States in the North are less economically developed, with the consequent public services shortages, including energy. Large cities in the North are struggling for better energy availability as the energy supply infrastructures are not sufficiently developed to bring electricity from the sources of supply (predominantly gas from the Southern States).

2.3.1.1 Large-scale Generation and Transmission

Nigeria's power system is characterized by huge gap between supply and demand; current power demand is estimated at 17,520 MW including latent and suppressed demand, against 7,500MW peak generation. As a result, about 90 million Nigerians have no access to electricity, according to the African Progress Report 2015. Of this non-electrified population, 17 million people live in urban areas and 73 million live in rural areas. This means majority of the non-electrified live in off-grid areas, where grid supply is uneconomical and may not be sustainable due to high cost of constructing transmission infrastructure.

Large-scale power generation plants are owned by either the National Integrated Power Project (NIPP) or by Independent Power Producers (IPPs), wholly owned by State Governments and/or private companies/ individuals. While some Independent Power Producers (IPPs) had previously existed in Nigeria, it was only during the privatisation process that the NERC expanded licensing to about 70 IPPs, in order to improve the power situation in the country.

The National Integrated Power Project (NIPP) is an integral part of Federal Government's efforts to combat the power shortages in the country. It was conceived in 2004 as a fast-track public sector-funded initiative to add new generation capacity to Nigeria's electricity supply system along with the electricity transmission and distribution and natural gas supply infrastructure required to deliver the additional capacity to consumers throughout the country. There are 10 NIPPs generating plants, with combined capacity of 4,371 MW, scheduled for completion (for ongoing projects) and privatisation by the FGN.

Many of the power stations in the South are old, some dating back to the 1960s. They have suffered from under-investment and significant lack of maintenance, and many have fallen into a state of disrepair. Others, like Afam 1-III, would benefit from being completely rebuilt, as by private companies such as Egbin Power which has received significant private sector investment.

The domestic gas infrastructure network is very poor and is primarily limited to the south of the country and unable to supply additional generation plants without reinforcement. Extending the gas network far to the north of the country is not realistic, in the short term. A South-to-North transmission line is, however, essential for the industrial development of the North, including planned power generation plants on the route of the gas network. The priority in the gas sector is to complete the construction of the missing pipelines and compression stations in the States of Cross Rivers, Enugu and Delta, while doubling the capacity of the existing west axis pipeline. (See map, below.¹¹)



The concentration of so many power stations in the south of the country has created major challenges for the transmission and distribution of the power generated. This concentration results in transmission losses and poor power quality as the power is transmitted to distant consumers. There is a need to expand generation outside the south. Specific opportunities have been identified.

Any increased generation capacity would depend on the gas supply and transmission line inadequacies being addressed and enabled to support increased energy flows. The sale of NIPPs is expected to attract further private sector investment in plant operations, as already witnessed in the initial six FGN power station divestments. Recently, Transmission

¹¹ https://theodora.com/pipelines/nigeria_oil_gas_and_products_pipelines_map.html

Company of Nigeria (TCN) has embarked on a major transmission expansion programme across the country, which is receiving several donor and DFI (WB, AfDB, AFD and IDB) support with over USD 1.7 billion.

2.3.1.2 Renewable Energy Use

The [National Renewable Energy & Energy Efficiency Policy \(NREEEP\)](#) was approved in May 2015; the [Rural Electrification Strategy and Plan \(RESIP\)](#) was approved in July, 2016. [Regulations](#) for rural off-grid systems and connected rural mini-grids were approved earlier this year, should further stimulate this emerging market. Regulations for captive generation remain to be defined.

The Government of Nigeria has established aggressive goals for renewable energy, aiming to expand grid-connected RE capacity from 1800 MW in 2015 to 13,800 MW in 2030, including 3900 MW of PV generation.¹² The strategy for achieving these goals relies heavily on the private sector to finance and implement RE generating capacity, both grid-connected and for rural areas, the latter through mini-grids (i.e., integrated generation and distribution systems) and solar home systems. To enable this participation, the Government has created legal and regulatory frameworks for both grid-connected and stand-alone RE electricity generation projects.

The rules make it possible for private, independent power projects (IPPs) to sell RE-generated energy to the Nigeria Bulk Electricity Trading Company (NBET) or to the private electricity distribution companies, and eventually, to wheel their electricity over the transmission system to sell directly to large customers. In 2016, to pilot the IPP approach, NBET signed fourteen Power Purchase Agreements (PPAs) with private developers for a total of 1,200 MW of PV-generating capacity. None of the projects has as yet come on line, owing principally to unresolved issues stemming from the liberalization and privatization of the electricity sector, discussed in section 2.1.1, above. The World Bank-supported Power Sector Recovery and Implementation Program was launched last year to resolve these problems.

A parallel collaboration between the GoN and UNIDO to offer concessions to private developers to build and operate seventeen generating facilities based on existing irrigation dams (see p. 91, below) attracted a large number of bids in the beginning of 2018, in response to a solicitation for the first six concessions.

The development of free-standing solar mini-grids for rural areas has had somewhat more success, as a number of bilateral donors have supported successful pilot projects, notable among them GIZ's Nigeria Energy Support Program (NESP), which has developed privately-owned and operated pilot mini-grids in collaboration with 5 Nigerian states, while at the same time providing support to the GoN to develop a policy framework and tools to foster substantial private sector involvement in the development of mini-grids. These notably include a tool, available on the Nigeria Energy Regulatory Commission (NERC) web site, to enable developers to calculate the cost-covering (a critical regulatory criterion) tariff needed for a proposed mini-grid.

2.3.1.3 Urban Distribution

The Discos became operational (as privately-run entities) in November, 2013. All Discos are still engaged in customer enumeration and metering audits, as data inherited from PHCN is unreliable. Currently, customer numbers are estimated. The Nigeria Electricity Regulatory Commission (NERC) has not accepted the estimates due to very small population sizes. In 2012, total system losses were about 30%. During the distribution privatisation process, NERC adopted the level of losses as one evaluation factor, and continues to emphasize loss reduction in its regulatory approach, encouraging Discos' initial steps in the rather arduous task of system loss reduction. One of the complicating factors is low metering coverage. The Credit Advance Payment for Metering Implementation (CAPMI) scheme is an excellent initiative to bridge the metering gap across Nigeria. For its success, it is crucial that Discos complete their metering audit and customer enumeration exercises. There are also no or very few check meters on the distribution side of the interfaces with transmission. In the previous, vertically integrated NEPA, such meters were not needed, the GoN is addressing this issue, in part with a planned program profiled in this IP. Retail tariffs reflect the costs of the entire value chain for the Nigerian Electricity Market. The cost components considered in constructing the domestic retail tariff through these steps in the value chain are:

¹² Nigeria SEFORALL Action Agenda

- Electricity supplied through Wholesale Contracts and PPAs for the supply of wholesale electricity injected into the transmission network
- Transmission Use of System (TUOS) charge to TCN for each MWh delivered to the distributor/retailer's bulk supply point(s).
- Electricity distribution through the local distribution network owned and operated by the Disco/retailer.
- Marketing, metering, billing and revenue collection (retailing).
- Institutional charges
- FGN tariff subsidy targeted at vulnerable tariff classes (R1 and R2).

2.3.1.4 Rural Electrification

It appears that Discos are unwilling to undertake grid rural electrification development partly due to network constraints, but also due to low residential tariffs, that make it commercially not viable. Eko Disco has a strong urban electrification drive with a target of increasing their customer base from about 580,000 currently to 1 million over the next 10 years (Ikeja Disco may be similar). Other Discos are bound to undertake urban electrification only in areas where the network strength is sufficient. Due to the challenges Discos are facing, as outlined above, they are not willing to undertake off-grid rural electrification projects.

The Rural Electrification Agency (REA) is the Federal Government of Nigeria agency with responsibility for providing electricity to rural communities in Nigeria. It is an agency under the Federal Ministry of Power, Works and Housing (FMPWH) with responsibility to provide access to reliable and affordable electricity supply for rural communities. The agency has capacity to mobilize capital for sustained public and private sector investment in rural electrification development in Nigeria for improved living conditions in the rural areas through enhanced agricultural, commercial, industrial and domestic activities. Their mandate is to promote rural electrification in the country.

They coordinate rural electrification programmes in the country and administer the Rural Electrification Fund (REF) which promotes, supports and provides rural electrification through Public and Private Sector Participation (PPP). Where RE options are viable, they also implement these systems. They have already deployed around 10,000 PV street lights in Nigeria. REA has encouraged and promoted the establishment of Rural Electricity Users Cooperative Society (REUCS) to enable rural communities to own, operate and maintain their networks.

2.3.2 Petroleum Products / LPG

Nigeria has the largest gas reserves in Africa. It is thought that abundant, low cost gas can and will deliver high inward investment, high quality jobs upstream, petrochemical and fertilizer industries, low cost (open cycle GT) electric generating capacity and exports of gas to its neighbours along the West African pipeline, as well as increasing sales of liquid natural gas (LNG) to the industrialized and industrializing countries of East Asia and Europe. Recent data from NNPC shows that, at present, there are roughly 244 active oil and gas fields in Nigeria, most of which are producing oil where gas is a by-product that is re-injected to maintain reservoir pressure, separated from the oil at the wellhead and piped to a gas treatment plant, or flared.

The development of a truly national gas transportation grid reaching a majority of cities outside the Delta will take some time, rural Nigeria, is most likely to take longer period. Furthermore, in the immediate post-oil-price-crash era, TCN's only practical option will be the rejuvenation of its system. Expansion of the grid and the large-scale effort needed to make the Discos functional is a high priority of the current administration. Current efforts by NNPC will allow privately-owned CNG/IPP developers to access secured gas supplies at affordable prices, this will enable large-scale CNG-powered embedded and captive generation to become a real option.

Embedded generation has the enormous advantage for the Discos of providing local voltage and frequency support, and in some cases, additional supply. Off-grid power will come from either CNG/PV hybrid or diesel systems, or less likely, one or more bio-fuels. The main constraint for CNG will be the availability of secure gas supply and its transmission and distribution costs, which are a function of distance to the nearest gas pipeline.

2.3.3 Biomass and Traditional Energy Usage

The conversion of biomass to energy has significant potential in Nigeria, given the large availability of biomass resources in the country. The large-scale development of agriculture for power generation will require that both government and industry continue to shift attention from their historic laser focus on cash oil revenues. Out of the 92.4 million ha of arable land in Nigeria, only 28.2 million ha are actually under cultivation. According to the FAO, of the 2 million ha estimated irrigable land, only about 220,000 ha or 7% are irrigated. Nigeria is particularly gifted with

biomass waste and residues that can be used to meet the energy needs of the population. The country is world leader in cassava production, the 3rd largest producer of groundnuts, 3rd largest producer of palm oil and palm kernel (Agbro &Ogie, 2012). Nigeria provides a significant part of the world production of cacao, coffee, rice, millet, sorghum, cashew nuts, coconuts, sesame, sugar cane, sweet corn, and soybean. These crops produce large amount of wastes and residues that are burned on the production fields or dumped on land or in rivers.

In addition, municipal waste, slaughterhouses, and aquatic plants produce substantial waste streams that could be converted into valuable energy feedstocks. For this to happen, there is a need to assess and map the resources, to define sustainable business models and investment profiles for utilizing them, and to inform local actors of the business opportunities. Specifically, the private and public sectors should have access to reliable information; the banking sector should be informed about the potential and risks involved with modern bioenergy and educated in the evaluation of sustainability of biomass projects; and policy makers should be made aware of the need to foster a modern and sustainable bioenergy sector. The utilization of these wastes would resolve many environmental issues around waste disposal issues. It would increase hygiene, reduce health risks, and avoid the depletion of soils. Finally, it would provide modern energy services to the population. The potential for electricity production from agricultural residues far exceeds the demand in all the ECOWAS countries except Cabo Verde, as outlined the ITLIS/UEMOA study (2008).

2.3.4 Energy Efficiency and Demand Side Management

While the Government is working to increase capacity on the supply side, huge potential exists to save energy on the end-user side of the meter through energy efficiency (EE) programs. Identified actions to promote the development of EE in Nigeria include:

- Policy and regulation addressing the use of energy to foster consciousness of the costs of inefficient energy use. Private and public institutions should be encouraged to make the efficient use of energy organizational policy. The government can make it mandatory for public institutions and large and small-scale private organizations to establish an energy management department or unit.
- Awareness creation to contribute to a wider and deeper understanding of energy efficiency and changed behaviours.
- Training of additional personnel and energy efficiency professionals to accelerate the development of energy efficiency.
- Limitations on importation of second-hand appliances that hinder the market penetration of efficient appliances.
- Research and record keeping on energy use to provide data and analysis to guide the development a more energy efficient economy
- Updated electricity metering system to encourage consumers to pay the correct amount for the energy they consume. The use of prepaid meters recently introduced by the Discos will help change the behaviour of consumers to use energy efficiently.
- Financing to allow poorer Nigerians to purchase LED lamps and other efficient appliances which are which make economic sense, but are not financially feasible for them.

2.3.5 Energy Efficiency in Electricity Generation

Most power plants operated by Gencos are Open Cycle Gas Turbines (OCGT). Typically, heated exhaust gases from these generators are discharged to the atmosphere, wasting significant heat energy. The overall utilisation of the energy in the gas by this cycle is rather low, typically 25 to 30%. This is particularly true of the larger gas turbines.

A modern Combined Cycle Gas Turbine (CCGT) can convert up to 45 to 60% of the energy content of the fuel (natural gas) into electricity. A CCGT is essentially an electrical power plant in which a gas turbine and a steam turbine are used in combination to achieve greater efficiency than would be possible independently. The gas turbine drives an electrical generator. The high temperature gas turbine exhaust is then used to produce steam in a heat exchanger (called a heat recovery steam generator) to supply a steam turbine whose output provides the means to generate more electricity.

2.4 SEFORALL INITIATIVE

2.4.1 General Framework SEforAll

2.4.2 ECOWAS Framework - ECREEE

ECREEE was established by Regulation C / REG. 23/11/08 of the 61st session of the Council of Ministers of ECOWAS with a public mandate to promote regional markets for renewable energy and energy efficiency. ECREEE is supported and enjoys the legitimacy of the Governments of Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone and Togo. (15 countries of ECOWAS).

The ECOWAS Energy Ministers appointed ECREEE to act as SEforAll focal point in ECOWAS to take charge of the development and implementation of the SEforAll Initiative. ECREEE has supported ECOWAS Member States in the development of their National SEforAll Action Agendas, including the National Renewable Energies Action Plan (NREAP) and the National Energy Efficiency Action Plan (NEEAP). These documents provide an energy strategy and trajectories, they are validated by each Government and supported by national policies. Ultimately, the SEforAll National Action Agenda translates national policies into a strategic path, enabling each country to meet SEforAll targets by 2030.

Following the development of the SEforAll Action Agenda, ECREEE, in collaboration with its partners, has developed a framework to assist ECOWAS Member States in the development of their respective SEforAll investment brochures. In the current phase of the SEforAll Initiative, ECREEE is supporting Member States to develop their investment prospectus (IP).

ECREEE has received support from the European Union (EU) SEforAll Technical Assistance Facility (TAF) to assist 8 ECOWAS Member States in the preparation of their investment prospectus: Nigeria, Sierra Leone, Liberia, Cape Verde, Senegal, Togo, Benin and Côte d'Ivoire.

The AfDB's SEforAll Africa Hub, in consultation with its partners, has developed guidelines to assist in the development of the action agenda and the investment prospectus, a guide to assess the quality of produced documents, guidelines for stakeholder consultations and a concept note on IP. The SEforAll Hub Quality Circle evaluates the contents of the IP. In the case of Nigeria, AfDB is providing direct support to the development of the IP.

2.4.2.1 SEforAll progress in Nigeria

Nigeria conducted a Rapid Assessment exercise in June, 2012 with the support of UNDP and formally expressed its support for the SEforAll initiative in August, 2012. The launching of the process of drawing up the Action Plans (NREAP and NEEAP) and the SEforAll Action Agenda (SEforAll AA) in the ECOWAS member states including Nigeria took place in Abidjan in March, 2014. Following which a High-Level Kick-Off of the process of developing Nigeria's SEforAll APs and AA was done on 14th August 2014 during the 1st National Council of Power (NACOP) meeting. The Kick-Off was presided by the Vice President, represented by the Honourable Minister of Power. The Inter-Ministerial Committee on Renewable Energy and Energy Efficiency (ICREEE) developed the Nigeria's SEforAll documents after series of stakeholders' consultations. The documents were later approved by the 2nd National Council on Power (NACOP) on 14th July 2016 in Kaduna. The SEforAll Investment Prospectus had its official Kick-Off in Abuja on March 1, 2017 and was approved by the 3rd National Council on Power, chaired by the Honourable Minister of Power, Works and Housing on 20th Sept. 2017 in Jos, Plateau State.

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2.5.1.1.1 Vision and Objectives

The Federal Government of Nigeria has defined targets according to the SEforAll objectives, i.e., electricity access rates, modern cooking fuels penetration, renewables penetration in electricity generation and energy efficiency rates, as described in table 5 below:

Table 5: SEforAll vision and objectives up to 2030

	2015	2020	2030
Target access rates to electricity (%)			
National	40	75	90
Urban	65	75	95
Rural	28	60	85
Target access rate to butane as modern cooking fuel (%)			
Universal access to clean cooking equipment (% of households)			
National	10	50	80
Urban	Tbc	tbc	tbc
Rural	Tbc	tbc	tbc
Target share of renewable in the generation capacity mix (%)			
Hydro	27	30	46
Non hydro renewable	0	22	25
Fossil fuel	73	48	29
Target energy efficiency rates over 2012 baseline (%)			
Electricity grid	38	20	10
Buildings	5	40	100
Industry	5	20	50
Households	20	40	100
Other targets			
PV power plants connected to the grid (in MW)	0	2,050	6,000

	2015	2020	2030
Hydro sites connected to the grid (in MW)	1,245	2,805	5,900
Biomass power plants connected to the grid (in MW)	0	300	1,100

Source : SEforAll AA Nigeria (2016) ; Electricity Vision 30 :30 :30

2.5.1.1.2 Priority Actions

Energy Access	<ul style="list-style-type: none"> • To increase electricity access from current levels to <ul style="list-style-type: none"> ○ An aggregate level of 40% (urban=65%, and rural=28%) in 2015, and to 75% (urban= 90%, and rural= 60%) by 2020 ○ By 2030, the portion of the population living without electricity will drop from 60% in 2015 to 10%. • To replace, by 2020, 50% of traditional firewood consumption for cooking by improved cook stove technology, and, by 2030, to replace 80% • Work with the private sector to roll out LPG at affordable cost for Nigerians by 2020 and subsequently up to 2030; by 2025 and 2030, nuclear energy is expected to contribute about 2.5% and 4% to the electricity mix. • Electricity generation will increase from the present grid supply of 5000 MW in 2015 to at least 32,000 MW by 2030
Energy Efficiency	<ul style="list-style-type: none"> • By the end of 2015, efficient lighting (at least 5 times more efficient than incandescent lamps) will be used by 20% of households, in 2020, by 40% of households and in 2030, by almost 100%; • For high-energy consuming sectors (transport, power and industrial sectors), efficient energy technologies and other demand-side management measures such as peak load management and will be progressively introduced, when possible; • Compared with the 2015 level, energy efficiency will increase by at least 20% by 2020 and by 50% by 2030; • By 2016, energy audits will be compulsory for all high-energy consuming sectors and public buildings.
Renewable Energy	<ul style="list-style-type: none"> • Nigeria's electricity vision 30:30:30 is to achieve a technology-driven renewable energy sector that harnesses the nation's resources to complement its fossil fuel consumption and to guarantees energy security; • By 2030, renewable energy is expected to have a 30% share in the electricity mix; • To achieve a 27% and 30% contribution of hydroelectricity (both large and small hydro) to the nation's electricity generation mix by 2020 and 2030 respectively; • To achieve a 2.5% contribution of wind energy to the nation's electricity generation mix by 2030; • To achieve a 20% and 19% contribution of solar energy (PV and Solar thermal) to the nation's electricity generation mix by 2020 and 2030 respectively.

SECTION 3: THE FICHES

LIST OF GOVERNMENT-OWNED PROJECTS AS OF July 5, 2017					
Project Name	Lead Agency	Objectives	Project Description	Tender estimate value (NGN '000)	Call for Expression of Interest (mm/yyyy)
Goronyo Dam Hydro	UNIDO/ Fed Govt	Rural Power for Productive Uses	This project is about incorporating small hydro power plant to Goronyo Dam with a potential to generate at least 29.5 million KWh in a year. The dam reservoir stores water from Rima River in Goronyo Local Government Area of Sokoto State in the North of Nigeria	Unknown	unknown
Ikare Gorge Dam (see project fiche, below)	UNIDO/ Fed Govt	Rural Power for Productive Uses	Ikare Gorge Dam was constructed by the Ogun – Osun River Basin Development Authority. The dam is located about 28km North East of Iseyin, in Iseyin Local Government area of Oyo State. The construction of the plant was abandoned in 1982. Two turbines and generators are still in crates at the site but are yet to be installed	Unknown	unknown
Oyan Dam Hydro	UNIDO/ Fed Govt	Rural Power for Productive Uses	The Oyan dam small hydro power plant takes water from the Oyan Dam reservoir. The dam is located in Oyan River, a tributary of Ogun River about 25 Kilometers North of Abeokuta in Odeda Local Government Area of Ogun State. The power plant is a non utilized electricity generation asset that was built in 1986 but has never been connected to the grid. It needs to be refurbished and put back to use.	Unknown	unknown
Mini Grid Solar Systems	Kaduna Govt	Rural Electrification	The deployment of Mini grid Solar Systems is an initiative from the Kaduna Power company given an approval in the Kaduna State 2017 Budget appropriation. The plan is to commence with 3 local government areas and target 100,000 households.	Unknown	unknown
Kaduna 215 MW Power Project	Kaduna Govt/ KAPSCO	Power for Kaduna State	The 215 MW Kaduna Power Plant will be reconfigured to be fuelled by Liquefied Petroleum Gas (LPG) instead of Low Pour Fuel Oil (LPFO) as earlier designed	Unknown	unknown
Waste –to-Power	Kaduna Govt/ KAPSCO	Power for Kaduna State	The Kaduna State Government has given approval for purchase of 30 units of Waste-to-Power Generators to be distributed across the 23 Local Government renewable energy source. They would generate a sum-total of 1.5MW of power	Unknown	unknown

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Energy Efficiency in Public Buildings	Kaduna State Plan	Govt Buildings in Kaduna State	<p>The Energy Efficiency in Public Buildings will be carried out in all public facilities in the State. This constitutes the administrative buildings, schools, hospitals, courts, water facilities and streetlights. The objective is to reduce energy consumption and ultimately deploy renewable energy technology for sustainable energy supply. The public facilities in the State consume about significantly large portion of the energy supplied by the grid. This cost the State about N1.5 billion annually. If this project is successful, the next phase is to easily replicate it across the State in both industrial/commercial and residential sectors</p>	Unknown	unknown
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LIST OF 17 HYDRO PROJECTS with existing dams from FMOF				
PROJECT/ LOCATION	PROJECT/ LOCATION	ESTIMATED CAPACITY (kW)	ENERGY YIELD (kWh/year)	TENDER STATUS**
Rafin Soja Dam	Taraba State	500	1,600,000	Unknown
Sulma Dam	Katsina State	70.22	251,579	Unknown
Balanga Dam	Gombe State	690	4,539,000	Unknown
Gimi Earth Dam	Kaduna State	1,672	12,096,132	Unknown
Ishapa Dam	Kwara State	67	44.6	Unknown
Onipanu Dam	Oyo State	45	29	Unknown
Mangu Dam	Plateau State	70	5,518,800	Unknown
Ogbese Dam	Ekiti State	1000	N/P	Unknown
Ogwashi Uku	Delta State	2000	9,198,000	Unknown
Adada Dam	Enugu State	109	954,840	Unknown
Ivo Dam	Enugu State	56	490,560	Unknown
Auna Kontagora	Niger State	2384	21,024,000	Unknown
River Nun	Bayelsa State	6000	175,250,000	Unknown
Otukpo Dam	Benue State	1900	4,940,000	Unknown
Asejire Dam	Oyo State	177	630,000	Unknown
Fikyu Dam	Adamawa State	304.5	1,025,576	Unknown
Ile-Ife Dam	Osun State	2000	60,000,000	

Notes: All 17 hydro projects are brown fields and FMOF is to release the bid documents, construction tenders through a consultant. The planned management structure is a concession agreement 25 - 30 years to a successful bidder

1. Feasibility Studies and Engineering design of the hydropower has been completed by the Ministry of Power through Consultants.
2. The dam facilities are owned by the Federal Ministry of Water Resources (FMWR) and the Hydropower jointly by FMWR Federal Ministry of Power.
3. FMWR has the water rights through her commission "Nigeria Integrated Water Management Commission" (NIWRMC).
4. The River Basin Development Authorities has the right to assume water available for hydro plant all year (through water budgeting been a Multipurpose dams)
5. All the Hydropower plants are to be connected to the nearest distribution network (embedded generation)

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PROJECT FICHES								
Project Name	Technology	Size	Application	Location	Cost	Status	Developer	Contact
ON-GRID								
Phoenix Edison Oyo	WtE/	8MW		Oyo	€54.7M	BP	Phoenix Edison	Nobel Ekajeh -
OFF-GRID								
Aces Akintomide	PV	100 kW	Mini-grid	Ikorodu	€120k	BP	Self	Aces Akinomide Farm
Ikot Edor & Ikot Udo	PV	80kWh	Mini-grid/SHS	Akwa Ibom	\$560.9k	Eng. D./PPA	Prince Albert Co.	pracomil@yahoo.co.uk
Gungura Comm. RE	PV	200kWh	Mini-grid	Bauchi	\$2.6M	Eng. D./PPA	Prince Albert Co.	pracomil@yahoo.co.uk
Jos Industrial RE Proj.	Biogas/Solar	2500kWh	Ind. Mini-grid	Jos	\$2.56M	Pre-F/Eng. D.	Prince Albert Co.	pracomil@yahoo.co.uk
2MW Off-grid Solar	PVs	2MW	Hosp. Mini-grid	Sokoto	\$2M	Pre-F/site	Greenado Int'l	Lawal@greenadold.com
Solar-hybrid Micro-G	PV/Dies./Grid	2.5MW/648k	Comm. Micro-g	Lagos	\$3.8M	Feas/site	Ecowatt Nigeria	owoeye@ecowatt.com.ng
Energy Access for All	PV/EE	NA	Productive Uses	Lagos	\$10.8k	BP/Eng. D.	Ecowatt Nigeria	owoeye@ecowatt.com.ng
Sunsmart	PV	50kW	PAYGO SHS	Oyo	\$150k	BP/Eng. D.	Sunsmart Electric	sunsmart.electric@gmail.com ;
Samtech Solar	PV	34kW	PAYGO SHS	Rivers State	\$250k	BP/Eng. D.	Samtech Svcs.	samtechict@yahoo.com ,
1 MW Solar Power	PV	1 MW	IPP	Ogun State	\$2M	BP	Treffen Nigeria	info@treffen.com.ng
Hybrid Solar/Gas IPP	PV/Gas	1MW	IPP	Abuja	€2.5M	Site	Trevari Group	iobande@trevarigroup.com
Diamond Estates	PV	2.5MW/648k	SHS	Eti-Osa	€3.8M	BP	Triveca Real Estate	NA
Rooftop Power	PV	3.5MW	SHS	Lagos	\$5M	Eng. D./PPA	d-ExcelChris RE	julietodo@gmail.com
Deep Cycle Batteries	Batteries	NA	RE Systems	Ogun State	\$550k	BP/Eng. D.	Lagetronix Nigeria	femi@lagetronix.com
Lekki County Homes	PV	5MW	SHS	Lagos	€4M	Pre-F	Megamound	NA
Rumbu Industries - 2	PV Hybrid	300kW	B2B	Kano	€375k	Tech D. /Bank	Enerwhere SE	emeline@enerwhere.com
Solar Powered Fueling	PV	60kW	Filling Stations	Abuja	€700k	BP	Powercell Ltd.	info@powercelllimited.com
Waret Green Bond	RE	NA	Rural Electrific.	National	\$250M	BP/Eng. D.	WARET	burade49@yahoo.co.uk
Hybrid Solar & EE	PV/EE/Integ.	20MW	Hybrid Retrofit	National	\$50M	BP/Eng. D.	Solarcentric Tech.	tunji.iromini@solarcentrictech.com
IMC Plantation	PV Self-use	540MWh	Rural Agribus.	Delta State	€600k	Pre-F	Solarmate Engng.	dotuntokun@solarmateng.com
SME Kiosk Solar	PV	NA	SME Electrific.	Lagos/Abuja	€114M	Feasibility	Africa CE Summit	a.gps.ltd@gmail.com
Smart Minigrid	PV	300kWp	Mini-grid	Ogun State	€1.28M/300kWp	Business Plan	VLT Solutions	info@vltenergysolutions.com

Nigeria's Investment Prospectus

PROJECT FICHES

Project Name	Technology	Size	Application	Location	Cost	Status	Developer	Contact
Usmanu Danfodivo University Teaching Hospital (UDUS)	PVs	2MW	Off-grid	Sokoto	\$2M	Pre-F	Greenado Internationa, Ltd	fiyabo@yahoo.com
Agboro Solar Hybrid	PV/Diesel	60kW	Off-grid	Ogun State	\$427.82k	Feas	Rubitec Nigeria, Ltd.	bolades@rubitecsolar.com
Green Village Expansion	PV	2.25MW	Off-grid	Several	\$12.00M	BP/Eng.D	GVE Projects, Ltd.	info@gve-group.com
Samtech	PV/diesel	100kW	Off-grid	Lagos	\$1.24M	Financing	Samtech Services, Ltd.	Samuebriggs77@gmail.com
Energy Management	Monitoring Sensors	N.A.	Banks	National	\$500,.00k	Pre-F	Morton78Limited	aoadabanjo@morton78.com
BIOENERGY								
Sensor-Enabled Climate	Cookstoves	1500 units	Finance	Abuja/Borno	€793.70k	BP	Nextleaf Analytics	tara@nexleaf.org
ENERGY EFFICIENCY								
Energy MAP for Hotels	EE measures	5MkWh/yr	Hotels	Abuja	€1.61M	BP	SchimaticBlueE	chima@schimaticblueenergy.com
Industrial Cold Storage	PV	7000 units	Commercial	National	€3.6k/t	BP	VLT Solutions Ltd.	Info@vltenergysolutions.com
PUBLIC SECTOR PROJECTS								
Concession Bakalori Dam	Embedded Gen.	3MW	Grid-connected	Zampara State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Concession Doma	Embedded Gen.	1MW	Grid-connected	Nasarawa State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Concession Ikere Gorge	Embedded Gen.	6MW	Grid-connected	Oyo State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Concession Jibiya Dam	Embedded Gen.	4MW	Grid-connected	Katsina State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Concession Omi Kampe	Embedded Gen.	4MW	Grid-connected	Kogi State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Concession Zobe Dam	Embedded Gen.	300kW	Grid-connected	Katsina State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Lake Chad Basin PV	PV	10MW	Grid-connected	Borno State	\$10.5M	Resource Studies		fiyabo@yahoo.com
PV at Kainji HPP	PV	30MW	Grid-connected	Niger State	\$53.99M	BP/ESI/Eng.D./PPA		fiyabo@yahoo.com
PV at AFAKA for Kaduna DisCo	PV	20MW	Grid-connected	Kaduna	\$37.68M	BP/ESI/Eng.D./PPA		fiyabo@yahoo.com
PV at Federal Secretariat Complex, Abuja	PV	850 kW	Grid-connected	DF	\$1.50M	BP/ESI/Eng.D/Feas		fiyabo@yahoo.com

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PROJECT FICHES

Project Name	Technology	Size	Application	Location	Cost	Status	Developer	Contact
Adada Dam	Embedded Gen.	109kW	Off-Grid	Enugu State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Asejire Dam	Embedded Gen.	177kW	Grid-connected	Oyo State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Auna Kontagora Dam	Embedded Gen.	2384 kW	Grid-connected	Niger State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Balanga Dam	Embedded Gen.	690kW	Off-grid	Gombe State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Fikyu Dam	Embedded Gen.	304.5kW	Off-grid	Taraba State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Gimi Earth Dam	Embedded Gen.	1672kW	Off-grid	Gombe State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Ile Ife Dam	Embedded Gen.	2000kW	Grid-Connected	Osun State		Studies/Eng.D./PPA		dapshimaabubakar@gmail.com
Ishapa Dam	Embedded Gen.	67kW	Off-grid	Kwara State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Ivo Dam	Embedded Gen.	56kW	Off-grid	Enugu State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Mangu Dam	Embedded Gen.	70kW	Off-grid	Plateau State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Ogbese Dam	Embedded Gen.	1000kW	Off-grid	Ikiti State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Ogwahi Uku Dam	Embedded Gen.	2000kW	Off-grid	Delta State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Onipanu Dam	Embedded Gen.	45kW	Off-grid	Oyo State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Otukpo Dam	Embedded Gen.	1900kW	Grid-Connected	Benue State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Rafin Soja Dam	Embedded Gen.	500kW	Grid-connected	Taraba State		Studies/Eng.D.		dapshimaabubakar@gmail.com
River Nun	Embedded Gen.	6MW	Grid-connected	Bayelsa State		Studies/Eng.D.		dapshimaabubakar@gmail.com
Sulma Dam	Embedded Gen.	70kW	Off-grid	Katsina State		Studies/Eng.D.		dapshimaabubakar@gmail.com
ENABLING ENVIRONMENT	Technical Advisory Services to the Ministry of Power for SEforAll Activities							
	Technical Advisory Services to the Ministry of Power for Central Data Management System							
	Technical Advisory Services to the Ministry of Power for Jigawa Energy City							

Nigeria's Investment Prospectus

PROJECT FICHES

Project Name	Technology	Size	Application	Location	Cost	Status	Developer	Contact
	Technical Advisory Services to the Ministry of Power for Green Line revolving re-finance facility							
	Technical Advisory Services to the Ministry of Power for Building Capacity at the Rural Electrification Fund							
	Technical Advisory Services to the Ministry of Power for development of de-centralized grid systems							

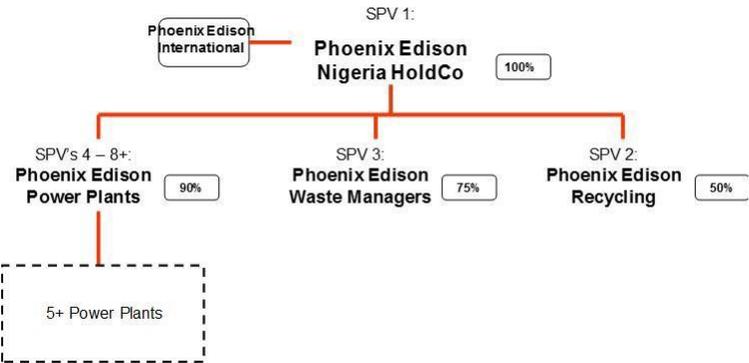
3 PIPELINE OF SEFORALL PROJECTS

3.1 PROJECT INVESTMENT OPPORTUNITIES IN THE PRIVATE SECTOR

3.1.1 On-Grid Projects

PROJECT 1:

GENERAL INFORMATION	
NAME OF THE PROJECT	Phoenix Edison Anambra
PROJECT OWNER/ DEVELOPER	Phoenix Edison Limited
CONTACT INFORMATION	Mr. Noble EKAJEH ; noble@shiraan.com / ekajeh@gmail.com ; +234.817.740.2448
TYPE OF ORGANIZATION	Phoenix Edison, a limited liability company, was incorporated in Nigeria with RC 1301906 in November 2015.
PROJECT LOCATION	Nnewi, Anambra State, NIGERIA
PROJECT DESCRIPTION	<p>Shiraan Limited (“Shiraan”) in conjunction with Quincy Advisory Limited (“Quincy”) and their technical partner China Tian Ying Inc. (CNTY), seek through Phoenix Edison to develop waste-to-energy solutions in Nigeria’s rapidly growing metropolitan cities beginning with key identified states such as Lagos, Anambra, and Oyo.</p> <p>Progress to date on Phoenix Edison Oyo includes:</p> <p>a) A Letter Of Intent received from the Oyo State Government preparatory to concluding a long-term MoU to build and run an 8 MW (200,000 metric tonnes per year) WTE plant including the collection of waste.</p> <p>b) An agreement has been finalized with a proven waste-to-energy technical partner, CNTY, to guide the development through feasibility to construction and post-turnkey operation; c) Identified preferred suppliers for local operational and engineering services. These firms are: Engro, the local affiliate of a Pakistani multi-national and operator of the Port-Harcourt IPP; NetcoDietsman, a local joint venture between Dutch firm Dietsmann and Netco, and; ASB Valiant, a proven indigenous service provider. The scope of services envisaged include technical services, Project Management, local EPC (Engineering, Procurement & Construction) and O&M (operations and maintenance);</p> <p>d) Active interest from three private equity firms, Vital Capital, Aldwych International and Synergy Capital, with a Letter of Interest received from one.</p> <p>In addition, the technical partner has agreed to provide a letter of intent to contribute 4% of the total project fee as equity in the project; Off-take discussions are underway in respect of finalizing a Power Purchase Agreement (PPA) with both large industrial customers for captive power supply (preferred approach) as well as with the network geographically responsible DisCo (distribution company) for embedded power supply from the Phoenix Edison plant directly into the area.</p>

	<p>The implementation structure has the Phoenix Nigeria holding company which provides seed investment into various affiliated SPVs involved in power production, waste collection, management and recycling.</p>  <pre> graph TD PEI[Phoenix Edison International] --- PE1[Phoenix Edison Nigeria HoldCo (SPV 1, 100%)] PE1 --- PE4[Phoenix Edison Power Plants (SPV's 4-8+, 90%)] PE1 --- PE3[Phoenix Edison Waste Managers (SPV 3, 75%)] PE1 --- PE2[Phoenix Edison Recycling (SPV 2, 50%)] PE4 -.- PP[5+ Power Plants] </pre> <p>Phoenix Edison Oyo is a joint venture between Phoenix Edison Limited (the HoldCo) - 85%, the Oyo State Government - 15%.</p>
<p>TECHNOLOGY TYPE</p>	<p>The technology we propose for this project is the classical incineration waste-to-energy (no pyrolysis nor gasification) for the simple reasons that to date this is still the best and most proven technology. Furthermore, the technology is flexible and well suited for a variety of waste streams including:</p> <ul style="list-style-type: none"> • Municipal solid waste • Commercial waste • Industrial waste • Petrochemical waste • Medical waste, and • Incinerator Ash <p>The technology to be deployed is a patented multi-grate incineration technology by our technical partners, which has consistently delivered 90% availability while meeting both the emission standards and power output expectations for the various references projects so far executed. Incineration technology, compared to the other newer waste-to-energy options, has existed for 40+ years and is therefore the dominant, most proven and established technology option amongst existing waste-to-energy plants world-wide from most equipment suppliers.</p>
<p>EXPECTED RESULTS/OUTCOMES</p>	<p>The project nominal installed capacity is 8.7MW (7.4MWNet). The estimated annual generation is 60,000MWh. The IRR is 17.98%. Expected annual turnover US\$16.</p>
<p>SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS</p>	<p>CNTY has in total 17 operational plants in China and now through the recent acquisition of Waterleau of Belgium's waste-to-energy division gained an additional 7 more installations worldwide including sites in Shanghai and Liayouan (China), Antwerp (Belgium) and Pitesti (Romania).</p>

PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	Business Plan: completed Pre-feasibility, feasibility, risk assessment + mitigation and EIA/SIA: not completed.
EXPECTED COMPLETION OF DEVELOPMENT PHASE	Q2 2017
EXPECTED FINANCIAL CLOSING BY	Q3 2017
EXPECTED START OF PROJECT	Q3 2017
EXPECTED DATE OF COMMISSIONING	Q1 2018
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	The investment requirement for Phoenix Edison Oyo plant is € 54.7 million of which Euro16.4 million is equity. The investment consists of € 50.1 million for the plant and € 4.6 million for the trucks and ancillary infrastructure for the waste collection / management business.
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	There is no debt foreseen for the project development phase. The foreseen debt/equity ratio for the project implementation is 70%:30%.
SECURED FUNDS FOR TOTAL COST OF THE PROJECT (Euro)	A total of \$970,000 has been expended on the venture in business development so far. No funds secured for implementation at this time.
FINANCING GAP (Euro)	A financing gap of US\$ 76 million (98% of funding) exists

	Total Sources of Funds			Total Uses of Funds		
	US\$'000	% of Total		US\$'000	% of Total	
	Total Debt	53 977	70.0%	Power Plant EPC Costs	54 355	70.5%
	Equity			Contingency	1 122	1.5%
	Phoenix Edison Nigeria HblCo	19 663	25.5%	Insurance	250	0.3%
	Anambra State Government	2 313	3.0%	Development Costs	1 000	1.3%
	Local Partner - Service Mates	1 157	1.5%	Development Fee	3 500	4.5%
	Total	<u>77 109</u>	<u>100.0%</u>	Waste Management Infrastructure	5 600	7.3%
				Construction Revenues	-344	-0.4%
				VAT & Other Taxes Payable	1 178	1.5%
				Other Project Costs	1 500	1.9%
				Up-front loan fees	1 080	1.4%
				Loan commitment fees	498	0.6%
				DSRA	3 350	4.3%
				Loan Interest During Construction	4 021	5.2%
				Total	<u>77 109</u>	<u>100.0%</u>
PROCUREMENT MODEL	The PPA's is expected to secured by direct negotiation.					

3.1.2 Off-Grid Projects

PROJECT 1.

GENERAL INFORMATION	
NAME OF THE PROJECT	ACES AKINTOMIDE HATCHERY OFF GRID POWER PROJECTS
PROJECT OWNER/ DEVELOPER	ACES AKINTOMIDE FARMS ENTERPRISES, NIGERIA
CONTACT INFORMATION	Ijede-Road,Ikorodu, Nigeria 08078749515
TYPE OF ORGANIZATION	AGRO PROCESSING LIMITED LIABILITY COMPANY
COUNTRY - PROJECT LOCATION	NIGERIA- IKORODU
PROJECT DESCRIPTION	<p>THIS PROJECT IS AIMED AT PROVIDING STABLE AND CHEAPER ELECTRICITY FOR ACES AKINTOMIDE HATCHERY.</p> <p>ACES AKINTOMIDE HATCHERY IS INTO THE SALES OF DAY OLD CHICKS AND REQUIRES 700KW DAILY POWER SUPPLY TO RUN HER OPERATIONS.STABLE SUPPLY OF ELECTRICITY IS KEY TO THE SMOOTH RUNNING AND SUCCESS OF THE BUSINESS.</p> <p>CURRENTLY THE HATCHERY IS POWERED BY 2 30KVA DIESEL GENRATORS. THE RECENT PRICE HIKE IN DIESEL HAS AFFECTED THE PROFITABILITY OF BUSINESS. POWER IS NEEDED 24 HOURS DAILY AS THE INCUBATORS AND HATCHERS MUST BE POWERED.</p> <p>ACES AKINTOMIDE SPENDS ABOUT AN AVERAGE OF N400,000 MONTHLY TO PROVIDE DIESEL FOR THE GENERATORS. THIS IS IMPACTING SERIOUSLY ON THE PROFITABILITY OF THE BUSINESS.</p>
TECHNOLOGY TYPE	SOLAR AND A LITHIUM BATEERY BASED ENERGY STORAGE SYSTEM
EXPECTED RESULTS/OUTCOMES	100KW INSTALLED PV CELLS WITH A CPACITY TO GENERATE 700KWH ON THE AVERAGE DAILY PAYBACK PERIOD OF 10YEARS
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	N/A
CONTRIBUTION TO SEFORALL GOAL(S)	700KW GENERATED DAILY
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	BUSINESS PLAN AND PRE-FEASIBILTY STUDY
EXPECTED COMPLETION OF DEVELOPMENT PHASE	2017
EXPECTED FINANCIAL CLOSING BY	2018
EXPECTED START OF PROJECT IMPLEMENTATION	2018
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	2018
FUNDING STRUCTURE AND FUNDING NEEDS	

TOTAL COST OF THE PROJECT (Euro)	120,000 CAPEX
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	30/70 30/70
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	NIL
FINANCING GAP (Euro)	100%
PROCUREMENT MODEL	PPA with Aces Akintomide Farms Enterprise.

PROJECT 2.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Ikot Edo & Ikot Udo, ONNA LGA, Community Solar Mini Grid Electrification Project
(2) TYPE OF PROJECT What technology is used; for what is it used?	Mini-Grid Solar System
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)	US\$560,900.00
(4) STATE(s) in which the project named in (1), above will be executed.	AKWA IBOM STATE
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above.	Provision of 80KWH of Solar MINI Grid system for 2,400 Residents of about 360 households.
(6) TARGET MARKET FOR THE PROJECT	Rural Communities and Local Businesses
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Provisional has been reached with the community leaders pending confirmation by our company.

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Partial Funding	X	Power Purchase Agreement/ Off-taker Agreement	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			12 months (1 Year)	

(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$160,000.00	5%	None	None
Financial Closing	US\$400,900.00	5%	None	None;

(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies		Site	
	Feasibility Study	X	Environmental/Water/Other Permits	X
	Environmental and Social Studies		Power Purchase Agreement Off-taker Agreement	X
	Business Plan	X	Partial Funding	X

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	X	Other (specify)	SOLAR MINI GRID
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)			
Photovoltaic	X	Other (specify)	Solar Mini-grid
PROJECT SIZE (in watts, kW, MW, or therms)		60 KWH	
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Advisory or Other Services	X	Off-Grid Mini/Micro Grid	X
Waste Heat		Refrigeration (Cold chain or AC)	X
Energy Efficiency Services	X	Solar PV Home Systems	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	By 50KWH Off-Grid Mini Grid Solar System. We will be using Hybrid Inverter chargers with 50KWH for ease of future expansion due to increase of end users and in case minor fault & ease of services & Maintenance.		
(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Improved Water Resource Management	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	X
Other (specify)	Reduction in Household energy expenditure reduction in unemployment, reduction in urban migration		

(15) PROJECT NARRATIVE
<p>DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.</p> <p>This project is completely by solar energy generation, transmission and distribution to the remote local villages end users of about 1,600 residents in 240 households. This project is designed to provide facilities like street lights through standard street light poles now in use in Nigeria to provide for future integration to the grid. The project will also be used for the borehole water pumping for the whole community. There is an understanding that the community will reticulate the water as appropriate after the system is completed.</p> <p>We are to use Hybrid Inverter chargers of 50KWH each for ease of isolation in the event of servicing or maintenance this will generate 220V AC current and will be transmitted through the community for easy access to residents and commercial businesses. As part of the result of our feasibility this project will directly stimulate local economy by up to 45% immediately on completion. It will encourage community developments and promote girl child education especially in Akwa Ibom State which is only Christians. It's the lack of electricity that causes the encroachment of insurgent elements into these communities therefore electricity will stop their activities. This project will eliminate the burning of firewood which in the south is adding to deforestation. It will remove enormous danger of using</p>

contaminated fuel which in recent years lead to loss of lives and property.
 We have done the physical site survey, pre-feasibility and have held two meetings with the community leaders with great successes. The communities in question are very eager for this to come on board but we could not offer them off-takers agreement because we are not yet sure of financial assistance or financial partners. We have also so far made engineering designs of the sites and the equipment since we are always in discussion with our manufacturers.

The types of Products we will be using are:

- 60KWH inverter Chargers with MPPT Controller Installed
- 340W Monocrystalline Solar Panels
- Lead Acid Deep Circle Gel Solar Battery
- 10 AWG UL Solar Panel Extension Cable with MC4 Connectors
- High Boss PV Combiners
- AC Emergency Disconnect Switches
- Automatic Transfer Switches

(16) PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	Prince Albert Company Ltd
Acronym	PRACOMIL
How long has the project owner been in business?	Since 16 th March, 2000
Name of Legal Representative	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Wuse 2, Abuja
State or Province	900003 Federal Capital Territory (FCT)
Country	Nigeria
Telephone	+234 803 314 4599
E-Mail	pracomil@yahoo.co.uk
Website	Under Construction
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	2008/2009 designed and Installed 30 Sites for Cross River State Primary Health Centres under MDG programme. Preparing now to install 200KWH Solar Mini grid for Federal Housing Authority in Nigeria.
Legal Status (mark one with X)	
Private Company	X Company Limited By Shares – Limited Liability
Years of Existence	March 25th 1985

(17) PROJECT POINT OF CONTACT	
Name	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Off Freetown Street, Wuse 2
City	Abuja
State/Province	Federal Capital Territory (900003 FCT)
Country	Nigeria
Telephone /WhatsApp/Wechat/Viber	+234 803 314 4599
E-mail	pracomil@yahoo.co.uk & pracomil@gmail.com
Project Role	Group President/CEO

PROJECT 3.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	Gungura Community Renewable Energy Project			
(2) TYPE OF PROJECT What technology is used; for what is it used?	Mini-Grid Solar System			
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)	US\$2,560,980.00			
(4) STATE(s) in which the project will be executed.	BAUCHI STATE			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above.	Provision of 200KWH of Solar MINI Grid system for 4,800 Residents of about 1,200 households.			
(6) TARGET MARKET FOR THE PROJECT	Rural Communities and Local Businesses			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Provisional has been reached with the community leaders pending confirmation by our company.			
(12) CONVERSION TECHNOLOGY ¹³ (Mark all that apply with X)				
Other (specify)	Solar Mini-grid			X
				X
PROJECT SIZE (in watts, kW, MW, or therms)	200KWH			X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE				12 months
(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$750,000.00	5%	None	None
Financial Closing	US\$1,810,980.00	5%	None	None;
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHTS	Feasibility Study	X	Environmental/Water/Other Permits	X
	Environmental and Social Studies		Power Purchase Agreement Off-taker Agreement	X
	Business Plan	X	Partial Funding	X
(11) RENEWABLE RESOURCE (Mark all that apply with X)				
Solar	X	Other (specify)	SOLAR MINI GRID	
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)				
Advisory or Other Services	X	Off-Grid Mini/Micro Grid	X	
Waste Heat		Refrigeration (Cold chain or AC)	X	
Energy Efficiency Services	X	Solar PV Home Systems	X	
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	By 200KWH Off-Grid Mini Grid Solar System. We will be using Hybrid Inverter chargers with 50KWH Each for ease of isolation of some end users in case minor fault & ease of			

¹³ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

	services & Maintenance.
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Improved Water Resource Management	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	X
Other (specify)	Reduction in Household energy expenditure reduction in unemployment, reduction in urban migration		

(15) PROJECT NARRATIVE

This project is completely by solar energy generation, transmission and distribution to the remote local villages end users of about 6,000 residents in 2,000 households. This project is designed to provide facilities like street lights through standard street light poles now in use in Nigeria; to provide for future integration to the grid. The project will also be used for the borehole water pumping for the whole community. There is an understanding that the community will reticulate the water as appropriate after the system is completed.

We are to use Hybrid Inverter chargers of 50KWH each for ease of isolation in the event of servicing or maintenance. It will generate 220V AC current and will be transmitted through the community for easy access to residents and commercial premises. As part of the result of our pre-feasibility, this project will directly stimulate local economy by up to 45% immediately on completion. It will encourage community development programmes and promote girl child education especially in Bauchi State which is majority Muslims. It's the lack of electricity that causes the encroachment of insurgent elements into these communities therefore electricity will stop their activities. This project will eliminate the burning of firewood which in the north is adding to desertification. It will remove enormous danger of using contaminated fuel which in recent years lead to loss of lives and property. In the first year and a half the end users will consume at constant rate and volume. In the second year there are indications that the end users will start to acquire additional household appliances and

We have done the physical site survey, pre-feasibility and have held two meetings with the community leaders with great successes. The communities in question are very eager for this to come on board but we could not offer them off-takers agreement because we are not yet sure of financial assistance or financial partners. We have also so far made engineering designs of the sites and the equipment since we are always in discussion with our manufacturers.

The types of Products we will be using are:

- 50KWH inverter Chargers with MPPT Controller Installed
- 340W Monocrystalline Solar Panels
- Lead Acid Deep Circle Gel Solar Battery
- 10 AWG UL Solar Panel Extension Cable with MC4 Connectors
- High Boss PV Combiners
- AC Emergency Disconnect Switches
- Automatic Transfer Switches

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Prince Albert Company Ltd
Acronym	PRACOMIL
For how long has the project owner been in business?	Since 16 th March, 2000
Name of Legal Representative	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Wuse 2, Abuja
State or Province	900003 Federal Capital Territory (FCT)
Country	Nigeria

Telephone	+234 803 314 4599
E-Mail	pracomil@yahoo.co.uk
Website	Under Construction
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	2008/2009 designed and Installed 30 Sites for Cross River State Primary Health Centres under MDG programme. Preparing now to install 200KWH Solar Mini grid for Federal Housing Authority in Nigeria.
Years of Existence	March 25 th 1985
(17) PROJECT POINT OF CONTACT	
Name	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Off Freetown Street, Wuse 2,
State/Province	Federal Capital Territory (900003 FCT)
Country	Nigeria
Telephone /WhatsApp/Wechat/Viber	+234 803 314 4599
E-mail	pracomil@yahoo.co.uk & pracomil@gmail.com
Project Role	Group President/CEO

PROJECT 4.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM					
(1) PROJECT NAME		Jos Industrial Layout, Renewable Energy Electrification Project.			
(2) TYPE OF PROJECT What technology is used; for what is it used?		Biogas Development, Power generation and distribution System			
(3) TOTAL COST OF THE PROJECT (2017 US\$/EUR)		US\$2,560,600.00			
(4) STATE(s) in which the project named will be executed.		JOS – PLATEAU STATE			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above.		Provision of 2,500KWH of Gas Power Generation system for industrial Park and Commercial Entities of about 800 Industrial and Commercial premises.			
(6) TARGET MARKET FOR THE PROJECT		Industrial and Commercial Premises			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)		Provisional agreement has been reached with the Industrial Owners Association pending confirmation by our company.			
(8) PROJECT STATUS					
PROJECT DOCUMENTATION (Mark all that apply with X)		Resource Studies	X	Site	X
		Pre-feasibility Study	X	Engineering Design	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE				15 months (1 Year 3 months)	
(9) FUNDING SOUGHT					
FUNDING NEED AND STRUCTURE		Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development		US\$350,000.00	7%	None	None
Financial Closing		US\$1,210,600.00	7%	None	None;
(10) PROJECT DEVELOPMENT – FUNDING NEEDS					
USE/PURPOSE FUNDS SOUGHTS		Feasibility Study	X	Environmental/Water/Other Permits	X
		Environmental and Social Studies		Power Purchase Agreement Off-taker Agreement	X
		Business Plan	X	Partial Funding	X
(11) RENEWABLE RESOURCE (Mark all that apply with X)					
Agricultural/Agro-Industrial or Forestry/Sawmill waste stream(s)		X	Solar		X 7WKH
Renewable Biomass		X	Other (specify)		
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)					
Anaerobic Digesters		X	Biogas Digester		X
PROJECT SIZE (in watts, kW, MW, or therms)		2.5MWH	Other (specify)		Biogas Power Plant

(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Advisory or Other Services	X	Bioenergy (biogas, producer gas or biofuel)	X
Biogas/Producer Gas Use	X	Energy Efficiency Services	X
		Solar PV Home Systems	X
Other (specify)	We will install 7KWH Solar System to operate backend tools like grinders and blender, mixer& pump water from borehole.		
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	We will be producing 600M ³ Biogas from our Digester. After we have produced the gas we will install a 2,500KWH gas turbine and generate the electricity which will be distributed to end users.		
(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Improved Water Resource Management	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	X
Other (specify)	Reactivate the industrial park which has been moribund for years now due to the cost of operation because of constant blackouts. Reduce energy expenditure, reduction in unemployment, assist the state on internally generated Revenue.		
(15) PROJECT NARRATIVE			
<p>This project is completely by Biogas using cattle dung agric produce from fruit and vegetable market as feedstock for gas generation and gas turbines for electricity generation transmission and distribution to the Industrial Park end users of about 800 industrial premises. This project is designed to provide facilities like street lights through standard street light poles now in use in Nigeria to provide for future integration to the grid. The project will also be used for the borehole water pumping for the whole industrial layout. There is an understanding that the industrial park association will reticulate the water as appropriate after the system is completed.</p> <p>We are to convert Biogas to electricity by using 2,500KWH gas turbine to generate electricity 415V 3 phase AC current and will be transmitted to all parts of the industrial park for ease of access to industries and commercial businesses. As part of the result of our pre-feasibility this project will breathe life to all moribund Industries and boost economy of the area by up to 36% immediately on completion. It will encourage community developments and promote self-employment. It will turn job seekers to employer of labour. It's the lack of electricity that causes the encroachment of insurgent elements into similar communities therefore electricity will stop their activities. This project will eliminate the closures of plants and retrenchment of staffs which added to youth restlessness.</p> <p>We have done the physical site survey, pre-feasibility and have held two meetings with the executive of industrial park with great successes. The businesses in question are very eager for this to come on board but we could not offer them off-takers agreement because we are not yet sure of financial assistance or financial partners. We have also so far made engineering designs of the sites and the equipment since we are always in discussion with our manufacturers. Our analysis indicates clearly that this project will be paid off conservatively in 12 years.</p>			

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

The types of Products we will be using are:	
<ul style="list-style-type: none"> > 600m³ Biogas Digester > Methane Purification pressurizing system > 2 x 600m³ Gas Storage Tanks > 2500KWH Gas Turbine Generator > 1000KWH Gas Turbine Generator > Community Wide reticulation network > 7KWH Solar Standalone System for backend operations > PAYG intelligent Lighting meter. > Billing Equipment > Gas will also be made available should it be required > Land Space of 6,000m². 	
(16) PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	Prince Albert Company Ltd
Acronym	PRACOMIL
For how long has the project owner been in business?	Since 16 th March, 2000
Name of Legal Representative	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Wuse 2, Abuja
State or Province	900003 Federal Capital Territory (FCT)
Country	Nigeria
Telephone	+234 803 314 4599
E-Mail	pracomil@yahoo.co.uk
Fax	N/A
Website	Under Construction
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	2008/2009 designed and Installed 30 Sites for Cross River State Primary Health Centres under MDG programme. Preparing now to install 200KWH Solar Mini grid for Federal Housing Authority in Nigeria.
Legal Status (mark one with X)	
Other (specify)	Company Limited By Shares – Limited Liability
Years of Existence	March 25th 1985
(17) PROJECT POINT OF CONTACT	
Name	Prince Michael Albert Umoren
Address	Plot 6 Louga Crescent, Off Freetown Street, Wuse 2,
City	Abuja
State/Province	Federal Capital Territory (900003 FCT)
Country	Nigeria
Telephone /WhatsApp/Wechat/Viber	+234 803 314 4599
E-mail	pracomil@yahoo.co.uk & pracomil@gmail.com
Project Role	Group President/CEO

PROJECT 5.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	2 MW Off-Grid Solar Power Project			
(2) TYPE OF PROJECT What technology is used; for what is it used?	Solar Photovoltaic (PV)			
(3) TOTAL COST OF THE PROJECT (2017 US\$/EUR)	US\$ 2,000,000 (US\$ 2 million)			
(4) STATE(s) in which the project named in (1), above will be executed.	Sokoto, Nigeria			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	The project is a 2 MW Off-Grid Solar Photovoltaic system for Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria			
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	The Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria and The Secretariat Sokoto State government are the major target market of the project.			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Power Purchase Agreement (PPA)			
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Pre-feasibility Study	x	Site	x
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE	15 months (By October, 2018)			
(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$ 500,000	10	30	60
Financial Closing	US\$1,500,000	10	70	20
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies	x	Site	
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	x	Environmental/Water/Other Permits	X
	Environmental and Social Studies	x	Power Purchase Agreement Off-taker Agreement	X
	Business Plan	x	Partial Funding	X

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro		Solar	X

(12) CONVERSION TECHNOLOGY ¹⁴ (Mark all that apply with X)			
Energy Efficiency/Savings – electrical	x	Photovoltaics	X
PROJECT SIZE(in watts, kW, MW, or therms)	2 MW		

(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Energy Efficiency Services	x	Off-Grid Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Mini Off-Grid energy solution targeted at Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria and Shehu Kangiwa state government secretariat		

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	x	Improved Water Resource Management	x
Energy Access	x	Local Development	x
Energy Security (National or Regional)	x	Poverty Alleviation	x
Gender Inclusion	x	Social Inclusion	x
Other (specify)	Improve Health Service delivery		

(15) PROJECT NARRATIVE	
<p>The project is a 2.0 MW Off-Grid ground mounted and rooftop Solar Photovoltaic system targeted at providing energy solution for the ever busy Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria and the neighbouring Shehu Kangiwa State Secretariat. There are also hundreds of small and medium scale businesses around the Hospital that could be targeted to benefit from the regular energy access to be provided by the project.</p> <p>Usmanu Danfodiyo University Teaching Hospital, Sokoto and the Shehu Kangiwa state Secretariat all in Sokoto State, Nigeria have been spending millions of Naira in settling the monthly energy bills from the National Grid and fuelling of “stand-by” Diesel Power Generators. The Usmanu Danfodiyo University Teaching Hospital, Sokoto in particular spends between N20 million – N25 million monthly for the unsustainable energy supply from both the Grid and Stand-by Power generators.</p> <p>It is very unfortunate that despite this huge expenditure on energy supply, the hospital sometimes have to resolve to using touch light and small power generators to attend to numerous patients admitted in the hospital including the surgical theatres. Also within the hospital, there are Estates of houses serving as accommodation for doctors and hostels for student-doctor and nurses since the hospital is a teaching hospital.</p> <p>Shehu Kangiwa Secretariat on the other hand, provides office accommodation for over 50 institutions including states ministries, departments and agencies.</p> <p>It is projected that the project will cost a total sum of two (2) million United States Dollars (USD 2,000,000.00). The project will be consisting of about 10,000 units of 250 Wp Solar Panels and 25 units of 100KW Inverters. It will have a battery bank commiserate with the 2.5 MW Storage capacity*.</p> <p>*More details will be provided after the comprehensive Feasibility studies and Business Plan</p>	

(16) PROJECT SPONSOR (Organization / Institution)

¹⁴Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

Name or Trade Name	Greenado International Limited		
Acronym	GIL		
For how long has the project owner been in business?	10 years		
Name of Legal Representative	Lawal Yakubu Gada		
Address	No. 12, Charity Lane, Kubwa, Abuja, Nigeria		
State or Province	Abuja, Federal Capital Territory (FCT)		
Country	Nigeria		
Telephone	+234-8035854295		
E-Mail	Lawal@greenadold.com		
Fax			
Website	www.greenadold.com		
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)			
Legal Status (mark one with X)			
Cooperative		Partnership	x
Corporation		Private Company	x
Foundation		Private/Public Partnership (PPP)	x
Financial Entity	x	Sole Proprietorship	
Non-governmental institution		University / Institute	
Other (specify)			
Years of Existence	3	UNDP and Bank of Industry Nigeria Access to Renewable Energy Project	

(17) PROJECT POINT OF CONTACT

Name	Lawal Yakubu Gada
Address	Greenado International Limited
City	Sokoto
State/Province	Sokoto
Country	Nigeria
Telephone	+234-8059958681
E-mail	Lawal@greenadold.com
Project Role	Project Manager/Promoter

PROJECT 6.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME		Solar-hybrid micro grid for productive use in Lagos		
(2) TYPE OF PROJECT What technology is used; for what is it used?		Solar-diesel-battery-utility micro grid to power 400 small businesses in Sura market, Lagos/Nigeria		
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)		US\$3.8 million		
(4) STATE(s) in which the project will be executed.		Lagos/Nigeria		
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.		The system we propose is a microgrid design of 2.5MW PV, 1MWh of battery storage, 648kW of diesel generator and local utility supply to power 400 small businesses. The financing will be (partly) used to establish the engineering design, procure the necessary material, install and commission the system as well as for design of a power-purchase-agreement.		
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.		The target group of beneficiaries is the local small businesses (about 400) in Sura market complex.		
(7) COMMERCIAL ARRANGEMENTS		Power purchase agreement (PPA) with Sura market management		
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Feasibility Study	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			8 months	
(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Eur)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$90,000	50	0	50
Financial Closing	US\$3.71	5	25	70
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
	Engineering Design	X	Power Purchase Agreement Off-taker Agreement	X
	Business Plan	X	Partial Funding	X
(11) RENEWABLE RESOURCE (Mark all that apply with X)				
Solar	X			
(12) CONVERSION TECHNOLOGY ¹⁵ (Mark all that apply with X)				
Energy Efficiency/Savings – electrical	X	Waste Heat Recovery		
Photovoltaics	X	PROJECT SIZE		2.5MW
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)				
Energy Efficiency Services	X	Grid-Connected Mini/Micro Grid		X

¹⁵ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Solar-diesel-battery-utility micro grid of 2.5MW PV, 1MWh of battery storage, 648kW of diesel generator and local utility supply. The project will implement energy audit and successively energy efficiency measures (e.g. LED retrofit) before final design so that the calculated PV-power might come down
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	
Other (specify)	Business improvement due to reduced electricity costs for small business owners		

(15) PROJECT NARRATIVE

Electricity access remains a global challenge as almost 1.19 billion people worldwide were without access to electricity in 2014 (REN21, 2017). In Nigeria 90-100 million people are without access to electricity, though reliability of electricity is as important as access to SMES. Around 60 million persons are employed in micro, small and medium-sized enterprises, which makes around 84% of total work force of the country (37 M+ SMEs, highest in Lagos 3.3M). Small and medium sized enterprises contribute to 48.7% of total GDP of Nigeria and constitutes 7.27% of overall exports (SMEDAN, 2013).

The cost of electricity outages in terms of lost annual sales for SMEs are cited as \$686.4 million in Nigeria (Naira Project, 2015). Hence, an uninterrupted power supply system will avoid these lost annual sales and turn them into value for SMEs. The two decade long stagnation in overall power generation capacity of around 5,000 MW in Nigeria (FGN, 2015) has still not been lifted even with privatization of electricity sector. The distributed electricity generation systems targeted on SMES based on green technologies has the potential to overcome this stagnation. Among other renewable resources, the large potentials (6.5 kWh/m²/day) of solar resources in Nigeria (ECN, 2011) is the most suitable renewable energy generation source for powering SMEs in Nigeria.

Ecowatt Nigeria Ltd. is dedicated to sustainable development of Nigeria; hence we ventured into the analysis of providing electricity for small businesses in the most environmentally friendly and at the same time economically feasible way. We have started a pilot project at Sura market in Lagos, where about 400 small businesses suffer from frequent outages, poor quality of power and high fuel costs for using their own generators. We have analyzed different alternatives for the power supply and came up with an optimum solution. This study was conducted in cooperation with the Technical University of Cologne, Germany. The main aspects of our proposal are as follows:

- The system we propose is a microgrid design of **2.5MW PV**, 1MWh of battery storage, 648kW of diesel generator and local utility supply
- The proposed system will lead to **40% saving on electricity costs** when compared to base case scenario for offices/shops at Sura market.
- The levelized cost of electricity (LCOE) electricity will decrease substantially: Current Situation: 17.2 USD/kWh – Proposed system: **8.9 USD/kWh**
- **78% annual reduction of CO₂** and other greenhouse gas emissions when compared to its base case scenario. Base case: 2.2 million kg/year. Proposed System: 0.48 million kg/year
- The proposed total investment would be **3.71 million USD** with a dynamic **payback time of 5.6 years** and **ROI of 17.5%**
- The **reliability and security of supply** is improved through diversification of supply alternatives by means of integrated PV, battery, diesel and utility grid supply.
- **High rate of self-consumption** due to coincidence of commercial load and PV generation on daylight hours. RF: 77%
- **Uninterrupted power supply** to business units at Sura Market, will reduce the opportunity cost caused by unavailability of electricity supply, the additional value created could help business units widen their business area.

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Ecowatt Nigeria Ltd.
Acronym	ENL
For how long has the project owner been in business?	Established Oct. 2016
Name of Legal Representative	Mr. Olakunle Owoeye
Address	8a Moradeun Alabi Crescent, Magodo GRA, Lagos
State or Province	Lagos
Country	Nigeria
Telephone	+234-(0)7033339056
E-Mail	owoeye@ecowatt.com.ng
Fax	
Website	www.ecowatt.com.ng

(17) PROJECT POINT OF CONTACT

Name	Mr. Olakunle Owoeye
Address	8a Moradeun Alabi Crescent, Magodo GRA
City	Lagos
State/Province	Lagos
Country	Nigeria
Telephone	+234-(0)7033339056
E-mail	owoeye@ecowatt.com.ng
Project Role	Owner

PROJECT 7.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	Energy Access for All			
(2) TYPE OF PROJECT What technology is used; for what is it used?	Solar technology; Mobile Phone Charging business, computer business center, barbers shop			
(3) TOTAL COST OF THE PROJECT (2017 US\$/EUR)	\$10,876			
(4) STATE(s) in which the project named in (1), above will be executed.	Lagos state, Ogun state			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	Providing sustainable energy for productive uses in areas with no or low energy access			
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	Areas with no or low energy access			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	PAYGO, lease to own, and outright purchase			
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	

	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE				
(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$)	Equity (%)	Debt (%)	Grant (%)
Project Development	250,000	20	30	50
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies		Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	X
	Business Plan	X	Partial Funding	X

¹ The intended audience of this form are investors, banks, donors and other financial institution. The document will be in the public domain and the document does not call for confidential information.

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro		Solar	X
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)			
Energy Efficiency/Savings – electrical	X	Waste Heat Recovery	
Mini-Hydro	X	PROJECT SIZE (in watts, kW, MW, or therms)	
Photovoltaics			
(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Poverty Alleviation	X
Energy Access	X	Local Development	X
(15) PROJECT NARRATIVE			
<p>Cities and rural communities in Nigeria provide a typical business niche that can be hindered or enhanced by access to electricity. In cities, ICT³ business centres for printing, copying, and scanning is a huge business prospect. Likewise, in cities and rural areas, phone charging is a huge business opportunity. In Lagos alone, about 300 phone charging points exist at markets and bus parks. Currently, all these businesses depend on standalone gasoline generators for electricity generation.</p> <p>Over reliance on gasoline generators and its attendant high cost of maintenance leads to the failure of many small scale enterprise (SSE) start-ups in Nigeria. It also leads to low return on investment for those with forbearance to survive among these enterprises. It also has negative impacts on the work environment in terms of noise and pollution, contributing to climate change due to CO₂-emissions. This is despite the fact that their quantum energy demand can be met by an alternative low cost source of energy – Solar PV as the most feasible.</p> <p>Promoting the productive use of energy (PUE) leads to long-term successes for energy programs, ensuring that individuals are able to afford using electricity and other forms of modern energy. It is not enough to simply provide lighting electricity and hope for local economic development. Thus our project provides and promotes productive use of energy that lessen the risk of default rate on willingness to pay back loans obtained by the beneficiaries, as they will pay back from income generated through the electricity services provided.</p> <p>The aim of this project is to promote productive use of energy in areas with low or no access to energy in the South West region of Nigeria through the design and construction of over 1000 innovative solar powered systems, customer education on PUE opportunities, business development service delivery for start-ups and established businesses, facilitate access to efficient and high-quality end-use equipment through sensitization workshop and awareness creation, media propagation, and improved access to long-term credit.</p> <p>Under the Energy Access for all Project, solar powered systems have been designed to provide a clean and reliable source of electricity for Micro, Small and Medium scale Enterprises. SolarTel; a solar powered mobile phone charging kiosk with an average capacity of 500Wh daily. This system charges a minimum of 30 mobile phones for 13 hours with 2 days back up time.</p> <p>Also under the Energy Access for All project is SolarBiz: a small solar powered business unit for small scale businesses such as print shops, barbing salons and ICT hubs, designed to suit the energy demand of each of the business units.</p> <p>The use of these systems will lead to a reduction in dependence on the national grid, provision of at least 2500 jobs directly and indirectly, decrease in the number of failures of Small Scale Enterprises, decrease in Greenhouse gas emissions and noise pollution.</p> <p>The project is in five phases: Feasibility studies and initial planning, System design and pilot construction, Sensitization workshop and awareness creation on productive use of energy, Commercial/mass production of the system, Monitoring and Evaluation. We are currently in the third phase of the project – Sensitization workshop and awareness creation.</p> <p>The next phase will begin with the initial production of 250 systems for interested users in Lagos and Ogun states. We hereby seek funding to carry out this phase of the project.</p>			

(16) PROJECT SPONSOR (Organization / Institution)			
Name or Trade Name	ECOWATT NIGERIA		
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)			
Legal Status (mark one with X)			
Corporation	<input type="checkbox"/>	Private Company	<input checked="" type="checkbox"/>
(17) PROJECT POINT OF CONTACT			
Name	Owoeye Olakunle		
Address	8a Moradeun Alabi Crescent		
City	Magodo GRA, Shangisha		
State/Province	Lagos State		
Country	Nigeria		
Telephone	+2347033339056		
E-mail	Owoeye_olakunle@yahoo.com		
Project Role	Project Manager		

PROJECT 8.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Sunsmart Electric Ltd
(2) TYPE OF PROJECT	SOLAR; TO GENERATE ELECTRICITY
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)	\$150, 000.00
(4) STATE(s) in which the project will be executed.	OYO STATE, NIGERIA
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above	'PAY AS YOU GO" SOLAR HOME SYSTEM/OFF-GRID ROOF TOP.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	BOTTOM OF THE PYRAMID – LOW TO MEDIUM INCOME EARNERS
(7) COMMERCIAL ARRANGEMENTS	MOBISOL/LUMETER AND PAGA.

(8) PROJECT STATUS				
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Business Plan	X

(9) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development	\$150, 000.00	20%	80%	IF AVAILABLE
Financial Closing				

(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHTS	Partial Funding	X	Power Purchase Agreement Off-taker Agreement	X

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro		Solar	X

(12) CONVERSION TECHNOLOGY ¹⁶ (Mark all that apply with X)			
Energy Efficiency/Savings – electrical	X	Photovoltaics	X
PROJECT SIZE (in, kW)	50kW		

(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Bioenergy (biogas, producer gas or biofuel)		Off-Grid Mini/Micro Grid	X

¹⁶ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Energy Efficiency Services	X	Solar PV Home Systems	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	ELECTRICITY WILL BE MADE AVAILABLE TO THE LOW TO MEDIUM INCOME EARNERS ON A PAY AS YOU GO (PAYG) BASIS THROUGH SOLAR HOME SYSTEM/OFF-GRID ROOF TOP SYSTEM. (MOBILE MONEY)		

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Improved Water Resource Management	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	X
Other (specify)	ECONOMIC IMPACT – EMPLOYMENT, STANDARD OF LIVING IMPROVEMENT AND SOCIAL DEVELOPMENT		

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

Sunsmart SHS solution provides 24 hours seven days a week uninterrupted electricity supply that will enable phones, tablet, laptops and computers to be charged without hindrance. Our solution powers computer desk tops, laptops, TV, Fan, printers and scanners. Our package range from 60 watts SHS to 5KW off-grid roof top system. Customised solution are also available upon request.

This project is intended to cater to the low income to medium income earners who cannot afford the high initial cost of solar system or who are simply looking to use the most economical power supply there is.

Our solution can be implemented faster with opportunity for expansion as the need of the customer increases. Our solution is clean, cheap and most effective means of ending poverty. Our product has the ability to scale. The product can be rolled out at the same speed of modern electronic devices long before grid infrastructure has even left the planning stage.

Sunsmart has partnered with Lumeter/Mobisol and PAGA to provide electricity on a pay as you go basis with the use of mobile money. The off grid energy technology include a GSM component (meter) embedded in the hardware of solar energy system, or a stand-alone AC meter, allowing bi-directional communication with central servers in real time (machine to machine). The system supports remote lock and unlock capabilities

The PAYG concept for SHS is nascent in Nigeria. Sunsmart is the pioneer company to introduce the use of mobile money for payment of Solar home system. Our customers make a small initial deposit of an amount not more than 25% of the cost and continue to pay the balance periodically (i.e. weekly or monthly). Light shut off when the amount paid by customer is exhausted, lights turns on when customer makes another periodic payment. The customer takes full ownership at the end of the payment period usually 2 years. Customer enjoys free electricity thereafter.

Our current target customers for PAYG are the un-electrified and under electrified households, traders, and shop owners to enable them extend their hours of operations into the dark hours of the day. Others are urban and city shop owners (small and medium) and artisans

Sunsmart Solar Home System is better than the gasoline powered generator, a.k.a. 'I better pass my neighbor' which is uneconomical and dangerous power supply source. The cost of the gasoline powered generator and the maintenance thereafter is highly exorbitant as prices of fuel is increasing. Our Solar system, is maintenance free and the initial deposit is lower than cost of acquiring a generator a.k.a. 'I better pass my neighbor'

The demand for the solar energy and other off-grid electricity power source continue to increase as a result of the erratic power system in Nigeria. The market is worth \$5.5 billion annually. Nigeria is a country with an estimated population of 180 million people, 65% of which are between the ages of 18 to 45 years. Only about 40% of the population has access to electricity supply. The national grid is limited in reach. There is limited extension of the grid

to most communities, and it would take decades to reach most areas in Nigeria. This leaves a majority of Nigerians without access to electricity. The ever increasing need has necessitated the Government to allow privately owned off-grid electricity system. Sunsmart is established to be part of the solution to end electricity problem in Nigeria.

(16) PROJECT SPONSOR (Organization / Institution)			
Name or Trade Name	Sunsmart Electric LTD		
Acronym	SEL		
For how long has the project owner been in business?	2 YEARS		
Name of Legal Representative	TIMOTHY ALALADE		
Address	50 Ashi-Bodija Road (Josbeed Mall) STE 5&13, Ibadan		
State or Province	Oyo State,		
Country	Nigeria.		
Telephone	+2348167213857		
E-Mail	SUNSMART.ELECTRIC@GMAIL.COM ; INFO@SUNSMARTELECTRIC.COM		
Website	WWW.SUNSMARTELECTRIC.COM		
EXPERIENCE IN EXECUTING SIMILAR PROJECTS	6 YEARS		
Legal Status (mark one with X)			
Corporation	<input checked="" type="checkbox"/>	Private Company	<input checked="" type="checkbox"/>
Years of Existence	2		
(17) PROJECT POINT OF CONTACT			
Name	TIMOTHY ALALADE		
Address	50 Ashi-Bodija Road (Josbeed Mall) STE 5&13,		
City	Ibadan		
State/Province	Oyo State,		
Country	Nigeria		
Telephone	+2348167213857; +2349072868289; +19546255191.		
E-mail	SUNSMART.ELECTRIC@GMAIL.COM ; INFO@SUNSMARTELECTRIC.COM		
Project Role	Founder/ CEO		

PROJECT 9.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM					
(1) PROJECT NAME	Samtech Solar Project				
(2) TYPE OF PROJECT What technology is used; for what is it used?	34kW of PV Solar based Off-Grid electricity system.				
(3) TOTAL COST OF THE PROJECT (2017 US\$/EUR)	US\$ 250,000				
(4) STATE(s) in which the will be executed.	Rivers State, Nigeria				
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	The system will supply electricity to around 1600 clients (residential and commercial) in the community through a 3km 230VAC, 50Hz mini-grid electricity distribution network.				
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	The Target Market is an agricultural Community where electricity is non-existent.				
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Samtech has partnership with Solar Solutions Africa and Gintech Energy Corporation Taiwan.				
(8) PROJECT STATUS					
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X	
	Pre-feasibility Study	X	Engineering Design	X	
	Feasibility Study	X	Environmental/Water/Other Permits		
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement		
	Business Plan	X	Partial Funding	X	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			9 MONTHS		
(9) FUNDING SOUGHT					
FUNDING NEED AND STRUCTURE		Total (US\$ or Euro)	Equity (%)	Debt (%)	Grant (%)
Project Development		\$200,000	30		70
Financial Closing		\$50,000	10	90	
(10) PROJECT DEVELOPMENT – FUNDING NEEDS					
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies		Site	X	
	Pre-feasibility Study		Engineering Design	X	
	Feasibility Study		Environmental/Water/Other Permits	X	
	Environmental and Social Studies		Power Purchase Agreement Off-taker Agreement	X X	
	Business Plan		Partial Funding	X	

¹ The intended audience of this form are investors, banks, donors and other financial institution. The document will be in the public domain and the document does not call for confidential information.

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro		Solar	X
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)			
Mini-Hydro	X	PROJECT SIZE (in watts, kW)	34KW
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Bioenergy (biogas, producer gas or biofuel)		Off-Grid Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	We intend to use solar energy to generate power, get them distributed and fed into various homes and businesses using smart meters so that rural dwellers pay only for energy they use. This makes it possible for isolated areas off the grid to have access to clean electricity		
(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
(15) PROJECT NARRATIVE			
<p>Problem: Rural dwellers are often neglected in planning for electricity access due to the high cost of grid extension and the obvious lack of business case it will make to do such due to their low income status. These people spend lot of trying to have various energy forms e.g. firewood, kerosene lamps, candle lights, incomplete combustion generators and in most cases, they migrate to urban areas for greener pasture.</p> <p>Solution: The solution proposes to build an independent solar or hybrid power station (mini grid) at the affected areas and distribute the generated power to the various homes and businesses. Everyone will be metered so that the dwellers only get to pay for the energy they use. This will address the challenge of providing them clean energy. It will also address challenges of grid extension which has made it not reasonable to extend grid power to them while it provides power at an affordable cost as well as provide clean energy with no harm to the environment. Access to clean and affordable energy will greatly reduce rural to urban migration and help spring up local sustainable businesses.</p> <p>Generally in Nigeria, power is erratic and even those in the urban areas resort to use of generators. The rich and some middle class who can afford renewable solar energy adopt it. Those in the rural areas simply cannot afford it. This is where this solution makes a difference. Bearing in mind the high initial cost of installing solar solution, the idea is to own the capital equipment then have generated power distributed and metered to the various homes and businesses using smart metering and monitoring process. The dwellers only pay for the energy they use hence making it accessible as well as affordable for everyone no matter the income class.</p> <p>There are over 30 million people in the country without access to electricity. In a village of 1000 people, 550 eventually migrate due to lack of good health care services, education, economic growth and sustainable development in these areas. We have had tremendous success with standalone home off grid as well as hybrid solutions. We believe this can be taken to the next step of making it affordable for all. After careful analysis of selected area, our target is to touch 1000 people with every solar mini grid project executed on a quarterly basis. Hence in a year time 4000 lives will be touched. This figure will largely increase over the years. The potential impact is that many businesses will spring up in the localized area hence reducing rural to urban migration.</p> <p>The plan is to generate income through (1) the sale of electricity using smart meters, voucher cards or mobile money payment options for residents. (2) Get big power off takers e.g., telecom mast in the area, Government public institutions to buy energy from the plant. (3) Train some locals and employ them as revenue collectors, technical support staff, system monitoring staff (4) We will engage the government of the locality for Security.</p>			

16) PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	Samtech Services Limited
For how long has the project owner been in business?	7 Years
Name of Legal Representative	Samtech Services Ltd
Address	10 Khana Street, Dline Port Harcourt.
State or Province	Rivers State
Country	Nigeria (234)
Telephone	07036894115
E-Mail	samtechict@yahoo.com , briggs@samtechict.com
Website	www.samtechict.com
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	We Have over 5 years experience in installing off grid and hybrid systems for residential and commercial clients in various locations in Nigeria
Legal Status (mark one with X)	
Cooperative	<input type="checkbox"/> Partnership
Corporation	<input checked="" type="checkbox"/> Private Company
Foundation	<input type="checkbox"/> Private/Public Partnership (PPP)
Financial Entity	<input type="checkbox"/> Sole Proprietorship
Non-governmental institution	<input type="checkbox"/> University / Institute
Other (specify)	
Years of Existence	7

(17) PROJECT POINT OF CONTACT	
Name	Samuel Okorite
Address	1 Emmanuel Eke Street, Woji
City	Port Harcourt
State/Province	Rivers State
Country	Nigeria
Telephone	07036894115
E-mail	Samuel.briggs@yahoo.com
Project Role	Project Manager

PROJECT 10.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME		1MW Solar Power generation in Magboro, Ogun State		
(2) TYPE OF PROJECT What technology is used;		Solar Panels, Lithium Phosphate (LiFePO4) batteries		
(3) TOTAL COST OF THE PROJECT (2017 US\$/EUR)		US\$2,000,000		
(4) STATE in which the project will be executed.		Ogun		
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15) , below.		to provide the residents' of Magboro solar power with the opportunity to buy panels outright or subscribe to their output, and the power be delivered to them over Treffen Nigeria Limited distribution lines		
(6) TARGET MARKET FOR THE PROJECT		Magboro Community, along Lagos-Ibadan Expressway, Ogun State		
(7) COMMERCIAL ARRANGEMENTS		PPA.		
(8) PROJECT STATUS				
PROJECT DOCUMENTATION	Resource Studies	<input checked="" type="checkbox"/>	Business Plan	<input checked="" type="checkbox"/>
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			12 months	
(09) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Eur)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$700,000	30%	0%	70%
Financial Close	US\$1,300,000	20%	30%	50%
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
USE/PURPOSE FUNDS SOUGHT	Pre-feasibility Study	<input checked="" type="checkbox"/>	Engineering Design	<input checked="" type="checkbox"/>
	Feasibility Study	<input checked="" type="checkbox"/>	Environmental/Water/Other Permits	<input checked="" type="checkbox"/>
	Partial Funding	<input checked="" type="checkbox"/>	Environmental and Social Studies	<input checked="" type="checkbox"/>
(11) RENEWABLE RESOURCE (Mark all that apply with X)				
Solar	<input checked="" type="checkbox"/>			
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)				
PROJECT SIZE (MW)	1MW	Photovoltaics	<input checked="" type="checkbox"/>	
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)				
Energy Efficiency Services	Solar PV Home Systems		<input checked="" type="checkbox"/>	
Equipment and Services Vendor	<input checked="" type="checkbox"/>	Solar Therm		

Investment and Financial Services or Funds	Other (specify)
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Magboro community is a peri-urban community with zero access to the grid. This solution will meet the energy needs of 600 households within the community

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Local Development	X
Energy Access	X	Poverty Alleviation	X
Energy Security (National or Regional)	X	Social Inclusion	X

(15) PROJECT NARRATIVE

The gap in meeting demand for power supply by PHCN is really an outrageously big one that have brought about a serious dependent of the Nigeria populist on even more higher cost of generating power like Generator as there couple no power supply for days, months and sometimes months. Narrowed down to Magboro; the community also starves power and majority of the residents' are low income earners and can't afford the total cost of installing a solar energy system for their home or business.

The need for a round the clock power supply cannot be over emphasized. As this will bring about massive opportunity for all.

PV technology requires substantial up-front capital expenditures. Declining prices for PV panels over the past years have mitigated this problem to some extent but the basic problem remains: Virtually the whole energy costs for the lifespan of a PV system must be prepaid at the time of an investment which reaps the benefits only over the next 20-25 years.

These high upfront costs are and will remain one of the main challenges which need to be overcome to achieve a faster and greater deployment of PV technology, particularly in emerging and developing regions where large-scale subsidy programs are usually absent.

The rational of The Solar Upright Distribution Concept is based on the insight that the driving forces in the energy sector are not the technologies but the business models. Innovative business models and financing mechanisms are therefore needed to achieve a greater deployment of PV technology in emerging regions.

A number of interesting and successful business models, such as leasing, PPA systems, and solar mortgage, have recently been developed in industrialized countries mainly related to gridconnected PV systems. While these business models may be replicated in grid-connected areas of developing regions, different models are needed in off-grid areas. Treffen intends to develop new business models on its own as well has systematically collected information about successful business models, evaluate the experiences made with these models, and to disseminate information on new and innovative business models as economically sustainable alternatives for PV deployment in Magboro, Ogun State.

This proposal suggests an innovation whereby 5kva is sold to a set of households and then redistribute the excess power to another set in Magboro. The former group buys at 20% of the total initial cost of the 5kva solar system, the remaining 80% is spread through the next 5 or 10 years after which they'll no longer be required to do pay-as-you-go. But others who didn't buy the equipment will keep subscribing to power as they use it.

Therefor the proposed 1MW that will installed, each households that have paid to own the device will be harnessed for excesses and as such will contribute 2kW each from their 5kW to second set of households

The later set will keep paying for power, the former set will pay for power till they finish paying their 80% balance. The cost the two groups will pay per kilowatt hour is to be between 45 to 60 naira.

(16) PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	Treffen Nigeria Limited
Acronym	Treffen
For how long has the project owner been in business?	5 years
Name of Legal Representative	Elukpo Agiwon
Address	71, Abidjan Street, Wuse Zone 2, Abuja
State or Province	FCT
Country	Nigeria
Telephone	08057200744
(17) PROJECT POINT OF CONTACT	
Name	Tosin Amire
Address	27, ORIMOLADE CLOSE, OFF ADENIYI JONES, IKEJA
City	LAGOS
State/Province	LAGOS
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	2 years. Currently managing a distribution system similar to this across 7 states of the federation.
Legal Status (mark one with X)	
Corporations	Private Company <input checked="" type="checkbox"/>
Years of Existence	2 year
Country	NIGERIA
Telephone	07018030099
E-mail	info@treffen.com.ng
Project Role	Senior Project Manager

PROJECT 11.

GENERAL INFORMATION	
NAME OF THE PROJECT	<i>Bullion Properties Hybrid Solar-Gas Distributed IPP</i>
PROJECT OWNER/ DEVELOPER	<i>Trevari Group Limited is an emergent Nigerian business enterprise with major presence across diverse sector including independent Power Generation and Distribution; and Real Estate Development.</i>
CONTACT INFORMATION	Trevari Group Ltd 51,Anthony Enahoro street, Utako, Abuja, Nigeria Contact Person: Mr Innocent Obande Phone: +2347081583007 Email:
TYPE OF ORGANIZATION	<i>Trevari Group is a registered private limited company with head office in Abuja, FCT, Nigeria.</i>
COUNTRY - PROJECT LOCATION	<i>The Bullion independent Hybrid IPP is located in Karsana North District, Kubwa, Abuja, Nigeria</i>
PROJECT DESCRIPTION	<i>The proposed Bullion Estate is an affordable housing project with a total number of 418 unit that features a high-end yet affordable living experience in Nigerian State Capital, Abuja. The residential mix-development will include a distributed 1MW roof-top solar power generation plant across the entire roof-top area of the complex. The housing project main selling point is its true first clean and reliable power supply for the entire residential complex; the complex will feature other facilities including a centralized water system, road network, 24 hours security, recreational facilities, shopping malls, religious centres and schools. The Standalone truly off-grid independent power plant will generate 1MW of uninterrupted power supply for the resident of the complex and the project once completed will be a model project for other residential development in Nigeria. The independent power plant will be developed and owned by the developer with independent pre-payment electric meters for the residents of the complex. The resident will enjoy an uninterrupted power supply experience and a predictive electricity cost (at a fixed electricity tariff). The developer is</i>

<p>TECHNOLOGY TYPE</p>	<p><i>The proposed power technology for the project is a 1MW Hybrid generation + Energy Storage system utilizing Solar PV and Gas generators to satisfy daytime and nighttime electricity needs. The Solar PV will utilize the roof-top area as distributed generation approach of the entire roof-top area of the complex and store the energy generated in a centralized 1MW utility-scale energy storage unit, incorporating energy efficiencies technologies, LED lightings across the residential complex and street lighting to minimize energy loses to the residential complex.</i></p> <p><i>The power plant will also incorporate a Gas/LPG generator for back-up power generation; integrated with the 1MW energy storage unit. The hybrid power system will use Solar as its main power generating source, integrating utility-scale energy storage system from where electricity is metered to all the residents and gas/lpg generator for back-up power generation.</i></p> <p><u>Benefits of Our Hybrid Power Solution:</u></p> <ul style="list-style-type: none"> - <i>Maximize Renewable Energy sources (Solar PV) into the power solution design</i> - <i>Completely off-grid power systems with future grid connectivity</i> - <i>Energy efficiencies maximized and energy loses minimized into the design</i> - <i>Electricity is distributed individually regardless of residents based load (Residents are not limited to a required kwh energy consumption)</i> - <i>System is fully integrated between Solar + Gas Generator + Storage System</i> - <i>System can be easily scaled-up for future energy load increase.</i> - <i>Pay-as-you-use functionality for the residents.</i>
<p>EXPECTED RESULTS/OUTCOMES</p>	<p><i>The power project is designed for a 1MW AC electricity generation capacity for the residential complex with 1MW Storage and 1MW capacity Gas/LPG generator.</i></p> <p><i>The developer is currently considering a few financing options which includes distributing the capital cost into the selling price of the residential units or to cover a minimum of the equity requirement into the residential sales price and take on international debt for the capital balance of the project.</i></p> <p><i>The developer expects a payback period of between 5-7 years for the project</i></p>
<p>SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS</p>	<p><i>Trevari Group Ltd is working with international technology partners, power developers with extensive experience in developing solar projects, utility-scale battery systems and electricity controls and operations.</i></p> <p><i>Trevari Group Ltd has significant equity interest in a few independent power project across Nigeria and the Bullion Estate would be a first in Nigeria featuring this unique solar-gas power integration in Nigeria.</i></p>

CONTRIBUTION TO SE4ALL GOAL(S)	<p><i>The project would generate 1MW peak of a renewable and distributed solar generation capacity and has a direct potential employment impact of about 50 solar installer that would be trained with the solar installation skills-set in market.</i></p> <p><i>The 418 residential units would also have a direct impact of affordable and reliable electricity supply. The project will also be a model project to introduce distributed roof-top solar project in this scale in the country, which we hope would be duplicated across the country.</i></p>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	<i>Project site acquired, engineering pre-feasibility ongoing</i>
EXPECTED COMPLETION OF DEVELOPMENT PHASE	<i>March 2017</i>
EXPECTED FINANCIAL CLOSING BY	<i>June 2017</i>
EXPECTED START OF PROJECT IMPLEMENTATION	<i>December 2017</i>
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	<i>December 2017</i>
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	<i>~ 2.5 Million Euro</i>
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	<i>30 % Equity – 70% Debt</i>
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	<i>30% Equity (Distributed across sales prices of residential units)</i>
FINANCING GAP (Euro)	<i>70% Debt (International Debt with 10+ year tenure)</i>
PROCUREMENT MODEL	<i>Pre-selected Private tender from top tier technology providers; with operational presence in Nigeria or Africa.</i>

PROJECT 12.

GENERAL INFORMATION	
NAME OF THE PROJECT	<i>DIAMOND ESTATE OFF GRID POWER</i>
PROJECT OWNER/ DEVELOPER	<i>TRIVECA REAL ESTATES LIMITED</i>
CONTACT INFORMATION	<i>22 ADELEKE ADEDOYIN STREET, OFF KOFO-ABAYOMI STREET,</i>
TYPE OF ORGANIZATION	<i>LIMITED LIABILITY COMPANY, DULY REGISTERED UNDER THE COMPANY AND ALLIED ACTS OF THE FEDERAL GOVERNMENT OF NIGERIA</i>
COUNTRY - PROJECT LOCATION	<i>NIGERIA- LAFIAJI TOWN,ETI-OSA</i>
PROJECT DESCRIPTION	<i>THIS PROJECT IS AIMED AT PROVIDING ELECTRICITY FOR A REAL ESTATE DEVELOPING OF 250 RESIDENTIAL HOUSING UNITS SITTING ON 16003 SQUARE METERS OF LAND(32% OF THE TOTAL LAND SPACE). THIS PROJECT IS DESIGNED TO GENERATE ELECTRCITY STRICTLY BY AN OFF GRID SYSTEM. FROM THE DESIGNS OF THE HOUSE THE ROOFTOP IS DESIGNED TO FIT PERFECTLY FOR SOLAR ROOFING SHEETS, WHICH IS TO POWER EACH HOUSE. THERE IS ALSO A STORAGE FOR EACH UNIT. FROM RESEARCH RUNNING A FULLY SERVICE ESTATE ON GAS (CNG) GENERATORS OR DIESEL MAKES IT TOO EXPENSIVE FOR RESIDENTIAL CONSUMERS. USING SOLAR SYSTEMS WILL GUARANTEE STABLE POWER SUPPLY AS WELL AS CHEAPER ELECTRICITY RATE FOR RESIDENCE.</i>
TECHNOLOGY TYPE	<i>SOLAR AND A LITHIUM BATEERY BASED ENERGY STORAGE SYSTEM</i>
EXPECTED RESULTS/OUTCOMES	<i>2.5MW INSTALLED PV CELLS WITH A CPACITY TO GENERATE 20MWH OF ELECTRICITY ON THE AVERAGE DAILY</i> <i>PAYBACK PERIOD OF 9 YEARS</i>
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<i>N/A</i>
CONTRIBUTION TO SEFORALL GOAL(S)	<i>20MWH GENERATED DAILY</i>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	<i>BUSINESS PLAN AND PRE-FEASIBILTY STUDY</i>
EXPECTED COMPLETION OF DEVELOPMENT PHASE	<i>2019</i>
EXPECTED FINANCIAL CLOSING BY	<i>2019</i>
EXPECTED START OF PROJECT IMPLEMENTATION	<i>2020</i>

EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	<i>2021</i>
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	<i>3,800,000 CAPEX</i>
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	<i>30/70 30/70</i>
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	<i>20% SECURED</i>
FINANCING GAP (Euro)	<i>80%</i>
PROCUREMENT MODEL	<i>PPA WITH RESIDENCE</i>

PROJECT 13.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME		Roof top Power distribution for 1000 Urban Homes		
(2) TYPE OF PROJECT What technology is used		Solar Panels, Lithium Phosphate (LiFePO4) batteries		
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)		US\$5,000,000		
(4) STATE in which the project will be executed.		Lagos, Abuja, Kano, Rivers		
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above.		A model where home owners can have uninterrupted power supply without having to deposit the usually huge commitment funds as it currently applies.		
(6) TARGET MARKET FOR THE PROJECT		Salary employees in Urban cities		
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)		Individual homeowner (end-users) pay over time. An agreement is drawn with investors on profit sharing.		
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Feasibility Study	X
	Business Plan	X	Engineering Design	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			60-180 DAYS	
(09) FUNDING SOUGHT				
FUNDING NEED AND STRUCTURE	Total (US\$ or Eur)	Equity (%)	Debt (%)	Grant (%)
Project Development	US\$1,000,000	50%	0%	50%
Financial Close	US\$4,000,000	25%	50%	25%
(10) PROJECT DEVELOPMENT – FUNDING NEEDS				
	Partial Funding	X	Engineering Design	X
(11) RENEWABLE RESOURCE (Mark all that apply with X)				
Solar	X			
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)				
Photovoltaics	X	PROJECT SIZE (in MW, or therms)	3.5MW	
(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)				
Equipment and Services Vendor	X	Solar PV Home Systems	X	
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Energy solution to meet the needs of an average Nigerian home family.			

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion		Social Inclusion	X

(15) PROJECT NARRATIVE

ROOF TOP CONVENIENT POWER DISTRIBUTION FOR 1000 URBAN HOMES

There are 60 million generators in Nigeria out of which 12 million of them are used on a daily basis. It is also a fact that Nigerians spend 8 million US Dollars on fuelling their generators annually.

The project is therefore aimed at replacing the average 2-10kVa generators used in most homes and offices. The USP we are offering are these:

1. Lithium Phosphate batteries, which has a life expectancy of 10-12 years,
2. A Rent-to-Own scheme that can allow end-users to take own it at their own pace
3. A “Serviced” option where we take ownership of the system throughout its lifespan and end-users pay a monthly service charge to use it.

Phase 1 of the project is to roll out into 1000 homes in Lagos, Abuja, Port Harcourt and Kano within the next 12 months. Over the next 5 years, we have a vision to distribute 150,000 rooftop home solar solutions within the “serviced” option in Nigeria.

Technology:

A battery Management System, Inverter and Lithium phosphate batteries themselves will all be enclad in an aesthetically-designed and sleek box to be hung on the walls in clients’ homes. Users will have access to a Mobile app where they can monitor the grid supply (if they have access to grid power), performance of our system, view their energy-inefficient gadgets, pay their monthly bills and/or service charges. Assembly of the systems will be done in Nigeria at the beginning while we work towards 100% manufacturing in Nigeria.

Opportunities:

This project has a 70% ROI and a 13 month payback period. 500 SMEs will be empowered and trained over the next 5 years to install and maintain the systems, thereby creating another economic value chain. An average Nigerian Spend 12 cents a day on telecommunications and spends 60 cents a day on power. There are 5 multi-million dollar telecoms companies in Nigeria and no one seem ready to tap into the immense opportunity available in this space.

This is a 12 Billion US dollar market and d-Excelchris is ready to take the lead in this.

(16) PROJECT SPONSOR (Organization / Institution)		
Name or Trade Name	d-ExcelChris Renewable Energy Limited	
Acronym	dExRE	
For how long has the project owner been in business?	5 years	
Name of Legal Representative	Juliet Odo	
Address	143, Sabondale, Jabi, Abuja	
State or Province	FCT	
Country	Nigeria	
Telephone	08036010595	
E-Mail	julietodo@gmail.com	
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	2 years. Currently managing a distribution system similar to this across 7 states of the federation.	
Legal Status (mark one with X)		
Corporations	Private Company	X
Years of Existence	1 year	
(17) PROJECT POINT OF CONTACT		
Name	Tope Dada	
Address	PLOT 25 BLOCK 19 PROVIDENCE STREET, LEKKI PHASE 1,	
City	LAGOS	
State/Province	LAGOS	
Country	NIGERIA	
Telephone	07019281017	
E-mail	tdada@d-excelchris.com	
Project Role	Founder/CEO	

PROJECT 14.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM					
(1) PROJECT NAME		DEEP CYCLE BATTERY PRODUCTION			
(2) TYPE OF PROJECT What technology is used; for what is it used?		PRODUCTION OF DEEP CYCLE STORAGE BATTERIES FOR RENEWABLE ENERGY PROJECTS			
(3) TOTAL COST OF THE PROJECT (2017 US\$/€)		\$550,000			
(4) STATE in which the project will be executed.		OGUN			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above.		Local production of long lasting deep cycle lead acid batteries to provide storage for both on-grid, off-grid, and wind renewable energy projects.			
(6) TARGET MARKET FOR THE PROJECT		Home, commercial and grid based renewable energy projects.			
(7) COMMERCIAL ARRANGEMENTS		Direct sales			
(8) PROJECT STATUS					
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site		
	Pre-feasibility Study	X	Engineering Design	X	
	Business Plan	X	Partial Funding	X	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE					
(09) FUNDING SOUGHT					
FUNDING NEED AND STRUCTURE		Total (US\$ or Eur)	Equity (%)	Debt (%)	Grant (%)
Project Development		\$550,000	15		85
(10) PROJECT DEVELOPMENT – FUNDING NEEDS					
		Partial Funding	X	Engineering Design	X
(11) RENEWABLE RESOURCE (Mark all that apply with X)					
Solar		X			
(12) CONVERSION TECHNOLOGY ² (Mark all that apply with X)					
Photovoltaics		X	PROJECT SIZE		

(13) WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Off-Grid Mini/Micro Grid	X	Mini/Micro Grid	X
Equipment and Services Vendor	X	Solar PV Home Systems	X

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Energy Access	X	Local Development	X
Energy Security (National or Regional)		Poverty Alleviation	X

Introduction

The project seeks to address the issue of cost and reliability of Off-Grid and grid connected energy project by local production of affordable and reliable deep cycle storage batteries with life expectancy of minimum of ten years. One of the key problem of the slow adoption and take-off of solar power systems in Nigeria, is the high cost and recurrent nature of storage batteries. The life expectancy of most available deep cycle batteries in the country averages two years. The economic burden of having to replace batteries every two years has made many early adopters to abandon micro grid solar systems.

Objectives

The project is aimed at local production of high quality long lasting deep cycle storage batteries for the emerging energy market in Nigeria and West Africa. Local production of storage batteries will reduce the cost of renewable energy systems implementation and make it more affordable, helping Nigeria to reduce the supply gap from the grid. It will also have a parallel plant to recycle existing lead acid batteries in an environmental friendly way ensuring proper and economic disposal of dead batteries and recycle the parts for input to new battery production, saving the country the much-needed foreign exchange. As capacity grows export to West African and other African countries are projected. The same plant will also be used for the production of automotive batteries to meet the local requirements which is totally import dependent.

Market Potential

The huge energy gap in Nigeria cannot be easily closed in the foreseeable with thermal based grid energy, aside from the huge capital cost, microgrid energy plants represent the most cost-effective solution in bridging the energy gap. Reliable and cost-effective battery is at the heart of renewable energy plant to store energy when either the sun or the wind will not be available to provide energy. Out of the 170 million Nigerians, it is known that over 95 million have no access to electricity, not counting businesses. The projected energy requirement of Nigeria is put at 160,000MW and current production stands at 4,000MW leaving a huge deficit and potential market for micro-grid solution, the deep cycle battery is worth over 500 billion Naira. With a registered vehicle population of 10.6 million and the need to change batteries every two years on the average, the automotive market also provide a potential market size of over 150 billion Naira. With no manufacturing plants in Nigeria to meet this growing market, the market viability of the project can safely be supported and made profitable.

Budget

The estimated budget for the commissioning of the plant to start production is \$550,000. Timeframe

The estimated time of completion of factory for production is 9 months.

Location

Near Sagamu, Ogun State, Nigeria.

(16) PROJECT SPONSOR (Organization / Institution)		
Name or Trade Name	Lagetronix Nigeria Limited	
For how long has the project owner been in business?	24 years	
Name of Legal Representative	Femi Adesanya	
Address	9 Olaiya Street, Alausa	
State or Province	Lagos	
Country	Nigeria	
Telephone	2348022907805	
E-Mail	femi@lagetronix.com	
Website	www.lagetronix.com ; www.fibersec.com	
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	20 years	
Legal Status (mark one with X)		
Corporations	Private Company	X
Years of Existence	24 years	
(17) PROJECT POINT OF CONTACT		
Name	Femi Adesanya	
Address	9 Olaiya Street, Alausa	
City	Ikeja	
State/Province	Lagos	
Country	Nigeria	
Telephone	2348022907805	
E-mail	femi@lagetronix.com	
Project Role	Sponsor	

PROJECT 15.

GENERAL INFORMATION	
NAME OF THE PROJECT	<i>LEKKI COUNTY HOMES Off-Grid Power</i>
PROJECT OWNER/ DEVELOPER	<i>Megamound -Nigeria</i>
CONTACT INFORMATION	<i>Please indicate email, telephone number and physical address</i>
TYPE OF ORGANIZATION	<i>Please indicate type of organization of owner/developer (including legal status)</i>
COUNTRY - PROJECT LOCATION	<i>Lagos, Nigeria-Lekky County Homes Estate</i>
PROJECT DESCRIPTION	<p><i>Lekky county homes is a Joint Venture between, Megamound, Mayfair Building Society Limited, and IFL Ventures Limited. The company is established for the purpose of developing a 66.8 hectares of land into a site and service scheme known as Lekky County Homes.</i></p> <p><i>The entire land, which was originally owned by Mayfair Building society Limited, was made the subject of development, which under the J.V.A is financed by Megamound and IFL Ventures Limited, with Megamound as the sole developer of the estate.</i></p> <p><i>Lekky County Homes Estate is strategically located at Ikota, Lekki almost opposite Oluwa Ni Sola (Eleganza Plaza) five minutes' drive from Chevron Headquarters, along the Lagos-Epe Express Way, Lagos State.</i></p> <p><i>The primary goal of the proposed site and service scheme is to provide a serene, secured and clean residential environment that will enhance healthy and safe living. WEMA Bank PLC, through its subsidiary WEMA Homes Limited is the financier of the project.</i></p> <p><i>The Estate is provided with infrastructure/facilities such as roads, drainages, perimeter fence, water supply, streetlights etc. In total, the Estate provides about 700 fully serviced residential plots. Each plot has a minimum area of 400sqm. In addition to the residential plots, there are plots of complimentary uses like nursery and primary schools, recreational parks, estate clubhouse, fast food centre, shopping mall, clinic/pharmacy and estate management/security office. Lekky County is already a built up estate currently power by Grid electricity and Diesel Generators. The increasing cost of running the generators as the diesel price continues to increase has necessitated the need for an alternative power solution cheaper than the Diesel Generator, which guarantees residence</i></p> <p><i>From pre-feasibility the car park of each house can generate up to 50% of the power needed by each unit.</i></p>
TECHNOLOGY TYPE	<i>Solar Energy</i>

EXPECTED RESULTS/OUTCOMES	<i>5MW Installed capacity of photovoltaic cell to generate an average of 45MW daily for the estate. Payback period of 12years</i>
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<i>Please indicate at least three projects as reference</i>
CONTRIBUTION TO SEFORALL GOAL(S)	<i>45MW Generation Daily</i>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	○ <i>Pre –feasibility studies</i>
EXPECTED COMPLETION OF DEVELOPMENT PHASE	<i>2017</i>
EXPECTED FINANCIAL CLOSING BY	<i>2018</i>
EXPECTED START OF PROJECT IMPLEMENTATION	<i>2019</i>
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	<i>2020</i>
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	<i>4,000,000</i>
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	<i>40/60 30/70</i>
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	<i>nil</i>
FINANCING GAP (Euro)	<i>100%</i>
PROCUREMENT MODEL	<i>PPA with residence</i>

PROJECT 16.

GENERAL INFORMATION	
NAME OF THE PROJECT	Rumbu Industries – Phase 2
PROJECT OWNER/ DEVELOPER	Enerwhere Sustainable Energy Nigeria Ltd
CONTACT INFORMATION	Emeline Platel – Country Director N. 2B, Post Office Road, Kano, Nigeria +234 808 456 8466 emeline@enerwhere.com
TYPE OF ORGANIZATION	Limited company registered in Nigeria, mother company based in Dubai
COUNTRY - PROJECT LOCATION	Kano
PROJECT DESCRIPTION	Addition of 300 kWp roof top solar after the successful implementation of the first set of 73.2 kWp. 8-year lease-to-own contract.
TECHNOLOGY TYPE	Solar PV, roof top – Hybrid with grid and back-up generators
EXPECTED RESULTS/OUTCOMES	450,000 kWh per year End user: 2-year payback time Investor: 4-year payback time with 20% IRR
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	Please refer to company profile
CONTRIBUTION TO SEFORALL GOAL(S)	Social and economic impact on the industry sector of the Northern states which are suffering lack of reliable power supply.
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	Please indicate studies already undertaken <ul style="list-style-type: none"> ○ Financial model ○ Technical design ○ Partial funding with commercial banks
EXPECTED COMPLETION OF DEVELOPMENT PHASE	February 2017
EXPECTED FINANCIAL CLOSING BY	April 2017
EXPECTED START OF PROJECT IMPLEMENTATION	June 2016
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	August 2016
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	CAPEX: € 375,000

FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	To be determined
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	Client willing to put 10-15% Commercial banks willing to give loan for up to 40%
FINANCING GAP (Euro)	50%, or € 187,500
PROCUREMENT MODEL	Direct B2B

PROJECT 17.

IP Code:

GENERAL INFORMATION	
NAME OF THE PROJECT	Solar Powered Fuelling Station
PROJECT OWNER/ DEVELOPER	Powercell Limited
CONTACT INFORMATION	info@powercelllimited.com , kola.odunlami@powercelllimited.com , +2348037177539 +2348113590741, 8a, Kudeti Street, Akora Villa, Adeniyi Jones, Ikeja, Lagos. Plot 121, Golden Spring Estate, Lokogoma Road, Abuja.
TYPE OF ORGANIZATION	Limited Liability Company
COUNTRY - PROJECT LOCATION	Abuja, Nigeria
PROJECT DESCRIPTION	To power NNPC filling stations with an off grid hybrid standalone solar solution that will ensure the filling stations are self-sufficient and environmental friendly in energy generation and consumption. The installation shall have a 25 years lifespan assuring complete uninterrupted power supply with the ability to store power for a minimum of two to three days of no sunshine.
TECHNOLOGY TYPE	Solar
EXPECTED RESULTS/OUTCOMES	Payback period is in 5years with 25% IRR
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	60kW residential standalone solar solution in Kano
CONTRIBUTION TO SEFORALL GOAL(S)	The project will generate 100kW solar power contributing to the saving of the emission of 125tons of CO2 per year
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	Please indicate studies already undertaken <ul style="list-style-type: none"> ○ Business plan ○ Pre-feasibility study
EXPECTED COMPLETION OF DEVELOPMENT PHASE	March 2017
EXPECTED FINANCIAL CLOSING BY	May 2017
EXPECTED START OF PROJECT IMPLEMENTATION	July 2017
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	January 2018
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	700,000 Euros

FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	70% debt 30% Equity
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	70,000 Euros 10%
FINANCING GAP (Euro)	630,000 Euros
PROCUREMENT MODEL	Electricity Service Company Model where the customer pays a fixed monthly for electricity consumed over the five year period

PROJECT 18.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT	
(1) PROJECT NAME	WARET Green Bond West Africa Renewable Energy Trust (WARET)
(2) TYPE OF PROJECT What technology is used, for what is it used?	The Green Bond is a financing vehicle for the deployment of Renewable Energy Mini Utilities
(3) TOTAL COST OF THE PROJECT	Total budget: US\$250m
(4) STATE in which the project will be executed	Open to all states in Nigeria
(5) SUMMARY DESCRIPTION	WARET is an international not-for-profit organization. It is currently under formation and will be registered in London. The objective of WARET is the financing of rural electrification in West Africa based on the technology of Renewable Energy Mini Utilities (REMU) via asset backed Green Bond Programs – starting with projects in Nigeria.
(6) TARGET MARKET	West African and international investors
(7) PRODUCT OFFERED	Shares of asset-backed Green Bond Special offer for anchor investor

(8) GREEN BOND STATUS				
PROJECT DOCUMENTATION & PROJECT PERFORMANCES	Resource Studies	X	Site	-
	Pre-feasibility Study	-	Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	-
	Environmental and Social Studies	X	Power Purchase Agreement /Off-taker Agreement/other	-
	Business Plan	X	Funding of Green Bond	-
EXPECTED TIME OF COMPLETION FROM FINANCIAL CLOSE (MATURITY)			15 years	

(9) FUNDING SOUGHT – TOTAL GREEN BOND VALUE				
TOTAL GREEN BOND FUNDING (US\$)		US\$ 250m		
SINGLE PROJECT SIZE		US\$ 250K to 5m		
USE/PURPOSE OF FUNDS	Resource Studies	X	Site	-
	Pre-feasibility Study	-	Engineering Design	X
	Feasibility Study	X	Environmental/Water/ Other Permits	-
	Environmental and Social Studies	X	Power Purchase Agreement /Off-taker Agreement/other	-
	Business Plan	X	Funding	X

(10) SINGLE PROJECT FUNDING – FINANCIAL CLOSING				
FINANCIAL STRUCTURE FOR SINGLE PROJECTS		Grant	Debt	Equity
	%	Still open	Up to 20%	60% to 80%
	Source(s)	International	Private/public	Green Bond

(11) POSSIBLE RENEWABLE RECOURCES			
Agricultural/Agro-Industrial or Forestry/Sawmill waste stream(s)	X	Waste Heat	X
Geothermal	X	Wind	X
Hydro	X	Solar	X
Renewable Biomass	X	Clean Waste-to-Energy	X

(12) POSSIBLE CONVERSION TECHNOLOGY			
Anaerobic Digester	X	Run-of-River Hydro	-
Biogas Digester	X	Solar Thermal	X
Boiler	-	Standard Hydro	-
Energy Efficiency/Savings - electrical	X	Waste Heat Recovery	-
Energy Efficiency/Savings - thermal	X	Wind Turbine	X
Gasification	X	Other	-
Mini-Hydro	X	MAXIMUM PROJECT SIZE	1 MW
Photovoltaics	X		

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WIL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (12) BE OFFERED TO THE ENERGY END-USER?			
Advisory or Other Services	-	Investment Fund	X
Biofuel	-	Off-Grid Mini/Micro Utility	X
Biogas/Producer Gas Use	-	Mini/Micro Hydro Utility	X
Combined Cycle	-	Refrigeration (Cold chain or AC)	-
Energy Efficiency Services	X	Solar PV Home Systems	X
Engineering Services	-	Solar Thermal	X
Equipment and Services Vendor	-	Waste Heat	-
Finance and Financial Services	X	Grid-Connected Mini/Micro Grid Utility	X

(14) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (12) SHALL BE OFFERED TO THE ENERGY END-USER?	
DESCRIPTION OF SOLUTION	Utility grade network, inclusive distribution system and software controlled smart metering, which provides full transparency of electricity consumption, tariff rate use over time, and includes demand-side management features.

(15) EXPECTED PROJECT CO-BENEFITS			
Emission Reduction	X	Improved Water Resource Managment.	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	-
Improved Efficiency in Agriculture	X	Wealth Creation in Off-Grid Communities	X

The lack of electricity is the greatest inhibition of economic development in West Africa. In order to overcome this inhibition, WARET (West Africa Renewable Energy Trust) was initiated to promote a Green Bond Program to finance large-scale rural electrification in Nigeria and other West African countries via a new developed Renewable Energy Mini Utility (REMU) technology. The terms of the Green Bond Program are:

- Face Value: US\$ 250m
- Maturity: 18 years
- Coupon: 3% annually,
- Redemption amount of face value: 108%, 112% for Anchor Investors

Green Bond projects shall be based on REMU technology, which guarantees a reliable 24/7 electricity supply of renewable energy via a utility scale smart energy distribution and control system. Within the REMU, electricity payment is possible via simple SMS using old-fashion mobile phones. The REMU concept is tailored for developing countries and enables new profitable business models, for example the rationalization of agriculture and other productive use of electric power.

REMU technology will be available for Green Bond projects. The energy distribution system of the REMU is based on a software-driven smart meter system. The software guarantees full operational and financial transparency for project developers, WARET, investors, international institutions (for example World Bank) and the government. In this way, projects can be monitored and managed with a high degree of confidence and immediately adapted to changing situations in order to secure positive financial outcomes of the Green Bond projects.

The software includes also a demand-side management system through the use of changing tariff rates, which can adapt automatically to changing situations. As an example, there may be cheaper tariff rates applied during the period when cheap electricity is available via solar, and during the night when the system relies on battery power, tariff rates go up to trigger a more careful use of electricity. Also priority customers can be treated differently in different categories and with different tariff rates within the system, such as schools, health stations, streetlights or companies.

Incorporated into the REMU software is also a donor system. It is for example possible for a person living and working in the city, to pay electricity for a spouse in a poor village via mobile phone. In this way, it is also feasible to donate electricity from any point in the world via mobile or over the Internet – for example from first world countries. Opposite to all existing European or US donor organizations, energy donors will in this way provide benefits to the receiver to 100%. In this way, schools, health stations, start-up companies or even entire villages can be sponsored directly from wealthy donors in Europe, the US or elsewhere without causing administration costs. This feature will stabilize the economic viability of Green Bond projects.

REMU-technology has been developed via Golden Grid Solutions, Inc. in close cooperation with the Ministry of power in Nigeria. WARET is a private sector initiative with a close cooperation with the Nigerian Federal Ministry of Power.

WARET is currently looking for anchor investors, which have the opportunity to play a decisive role in the Green Bond Program and also gain a lucrative strategic position in the development of this emerging market in one of Africa's most promising regions.

18) PROJECT SPONSOR/Organization		
(17) SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT		
(1) PROJECT NAME	WARET Green Bond West Africa Renewable Energy Trust (WARET)	
(2) TYPE OF PROJECT What technology is used, for what is it used?	The Green Bond is a financing vehicle for the deployment of Renewable Energy Mini Utilities	
(3) TOTAL COST OF THE PROJECT	Total budget: US\$250m	
(4) STATE in which the project will be executed	Open to all states in Nigeria	
(5) SUMMARY DESCRIPTION	WARET is an international not-for-profit organization. It is currently under formation and will be registered in London. The objective of WARET is the financing of rural electrification in West Africa based on the technology of Renewable Energy Mini Utilities (REMU) via asset backed Green Bond Programs – starting with projects in	
(6) TARGET MARKET	West African and international investors	
(7) PRODUCT OFFERED	Shares of asset-backed Green Bond Special offer for anchor investor	
Name or Trade Name	West Africa Renewable Energy Trust (under formation)	
Acronym	WARET	
For how long has the project owner been in business?	2 years	
Names of Legal Representatives	Adesina Augustine Buraimoh-Ademuyewo (President) Walter Kraus (Managing Director)	
Telephone	0047-916-74-900	
E-mail	burade49@yahoo.co.uk (Adesina Buraimoh-Ademuyewo) w-krau@online.no (Walter Kraus)	
Experience in executing similar projects		New established organization
Corporation	-	Private Company
Foundation	-	Private/Public Partnership
Financial Entity	-	Sole Proprietorship
Non-governmental institution	-	University / Institute
Other (see specification)	X	Financial entity under preparation and establishment
Years of Existence	2	
(19) PROJECT POINT OF CONTACT		
Name	Adesina Augustine Buraimoh-Ademuyewo	Walter Kraus
Address	25, Sylvia Crescent	Bussealle 1
City	Anthony Village	14163 Berlin
State/Province	Lagos State	-
Country	Nigeria	Germany
Telephone	Int.+234-802-312-8142	Int.+47-916-74-900
E-mail	burade49@yahoo.co.uk	w-krau@online.no
Project Role	President	Managing Director

PROJECT 19.

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
1	PROJECT NAME Hybrid Solar Power & Energy Efficiency Retrofits (H-SPEER)
2	TYPE OF PROJECT Captive Power Generation and Energy Efficiency Services
	What technology is used? Hybrid Energy - Solar PV & Diesel/Gas Generator
	For what is it used? Used for Power Generation.
3	TOTAL COST OF THE PROJECT (2017) \$50 million
4	STATE(s) in which the project named in (1), above All the states where credible client/off-taker is identified
5	SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below. H-SPEER: (1) Integration of 20MW of distributed Solar PV into existing Grid/Diesel Generator supply mix to reduce diesel consumption in a calculated manner. (2) Energy efficiency services to lower end user energy demand. Overall effect is diesel/cost savings and reduced CO2 emission.
6	TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below. Commercial and Industrial Sectors Primarily (Manufacturers, Financial Institutions, Health Sector, Hospitality and Agriculture)
7	COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.) Negotiation ongoing but PPAs most favored

8 PROJECT STATUS					
		Resource Studies	x	Site	x
	Project Documentation (Mark all that apply with X)	Pre-feasibility	x	Engineering Design	x
		Feasibility Study	x	Environmental/Water/Other	
		Environmental &	x	Power Purchase Agreement/Off-	reement
		Business Plan	x	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE					

9 FUNDING SOUGHT					
	FUNDING NEED AND	Total (USD or	Equity (%)	Debt (%)	Grant (%)
	Project Development	\$50,000,000.00	\$22,500,000.00	\$25,000,000.00	\$2,500,000.0
	Financial Close	Ongoing	Ongoing	Ongoing	Ongoing

10 PROJECT DEVELOPMENT - FUNDING NEEDS					
		Resource Studies		Site	x
	Use/purpose of funds sought	Pre-feasibility		Engineering Design	x
	Mark all that apply with X	Feasibility Study		Environmental/Water/Other	x
		Environmental & Soc		Power Purchase Agreement/Off-	x
		Business Plan	x	Partial Funding	x

11 RENEWABLE ENERGY SOURCE (Mark all that apply with X)				
	Agricultural/Agro-Industrial or Forestry/Sawmill		Waste Heat	
	Geothermal		Wind	
	Hydro		Solar	x
	Renewable Biomass		Other (specify)	

12 CONVERSION TECHNOLOGY 2 (Mark all that apply with X)				
	Anaerobic Digesters		Run-of-River Hydro	
	Biogas Digester		Solar Thermal	x
	Boiler		Standard Hydro	
	Energy Efficiency/Savings – electrical	x	Waste Heat Recovery	
	Energy Efficiency/Savings – thermal	x	Wind Turbine	
	Gasification		Other (specify)	
	Mini-Hydro		PROJECT SIZE (in watts, kW, MW, or therms)	20MW
	Photovoltaics	x		

13 WAY THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE			
Advisory or Other Services	x	Grid-Connected Mini/Micro Grid	
Bioenergy (biogas, producer gas or biofuel)		Off-Grid Mini/Micro Grid	x
Biogas/Producer Gas Use		Pico Hydro	
Waste Heat		Refrigeration (Cold chain or AC)	
Energy Efficiency Services	x	Solar PV Home Systems	x
Equipment and Services Vendor	x	Solar Thermal	x
Investment and Financial Services or Funds	x	Other (specify)	
DESCRIBE ACTUAL ENERGY SOLUTION OR			

14 EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	x	Improved Water Resource	t
Energy Access	x	Local Development	x
Energy Security (National or Regional)	x	Poverty Alleviation	x
Gender Inclusion	x	Social Inclusion	x
Other (specify)			

15 PROJECT NARRATIVE	
DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING	Attach a one-page overview of the project.
	You may include any project information you choose, and expand on answers to any of the previous questions.
	<p>SolarCentric Technologies Limited is a project development company with a bias for Solar Energy due to its abundance in Africa and ease of deployment as distributed energy. SolarCentric leverages emerging technologies in power generation, energy storage, automation and Information Technology to deliver highly efficient services. SolarCentric Technologies was incorporated less than a year ago with dedicated focus on Hybrid Power Systems. However, its journey started through the parent company NuCollabo Nigeria Limited that was incorporated over 10 years ago.</p> <p>Hybrid Solar Power & Energy Efficiency Retrofits (H-SPEER) is the flagship project that SolarCentric is projecting in this business plan. We have demonstrable capacity to deploy hybrid energy (Solar/Wind/Diesel/Gas) for commercial and industrial clients with resultant cost savings on fossil fuels in a market whereby self-generation using fossil fuel technology is predominant and perpetual in nature.</p> <p>The gap that we have identified is the difference in energy cost between the grid and self-generated. A unit kWh of energy from the grid ranges between N22.00 to N42.00 (i.e. \$0.08 to \$0.15) for the commercial and industrial sectors. Supply from the Grid versus Self-Generated for commercial and industrial sectors is estimated between 30%:70% and 0%<=15%:75% respectively during productive hours. Whereas a unit cost of energy from fossil fuel self-generated goes from N62/kWh to N110/kWh (\$0.20 to \$0.35)/kWh conservatively. In essence, a spread of between \$0.12/kWh (lower band) to \$0.25/kWh (higher band) is being explored in deploying diesel saving solutions by integrating renewable options to prospective clients. The reality in Nigeria is such that we will not be able to replace the fossil fuels by renewables 100% due to poor availability and unreliability of the grid.</p> <p>We have conducted market tests (practical and theoretical) of fuel saving hybrid energy with market readiness guaranteed as result. Recently SolarCentric was engaged by the Manufacturers Power Development Company (MPDC) on Independent Power Producer (IPP) initiative for some identified industrial clusters. There are over 3,500 registered members in Manufacturer Association of Nigeria (M.A.N). The Financial Services sector has already began the journey towards adoption of Corporate Energy Leasing and PPA by awarding contracts for Energy Assessment for some of their facilities.</p> <p>SolarCentric Technologies purposes to raise \$50 million dollars (Grant, Debt & Equity) over the next 5 years to deliver economic, social & environmental values in distributed energy services to the commercial and industrial sectors primarily.</p>

16 PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	SolarCentric Technologies Ltd
Acronym	SolarCentric
For how long has the project owner been in	Over 7 years
Name of Legal Representative	Delight Solicitors
Address	12 Olu Akerele Off Awolowo Road Ikeja Lagos
State or Province	Lagos
Country	Nigeria
Telephone	08059000866, 08168667408
E-Mail	tunji.iromini@solarcentrictech.com
Fax	
Website	www.solarcentrictech.com

EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	There is a combined over 15 years average of experience from our executive management in different fields including Engineering, Technology, Finance, and Asset Management. We have established partnership with leading OEM suppliers and experienced EPC contractors to guarantee success of H-SPEER. The executive management is highly experienced in corporate governance, risk management, project management green growth and sustainability.		
Legal Status (mark one with X)			
Cooperative		Partnership	
Corporations		Private Company	x
Foundation		Private/Public Partnership (PPP)	
Financial Entity		Sole Proprietorship	
Non-governmental institution		University / Institute	
Years of Existence	7 years		

17 PROJECT POINT OF CONTACT	
Name	Adetunji Iromini
Address	12 Olu Akerele Off Awolowo Road Ikeja Lagos.
City	Ikeja
Province/State	Lagos
Country	Nigeria
Telephone	08059000866, 08168667408
E-Mail	tunji.iromini@solarcentrictech.com
Project Role	Project Director

PROJECT 20.

:

GENERAL INFORMATION	
NAME OF THE PROJECT	IMC PLANTATION, NSUKWA RE PROJECT
PROJECT OWNER/ DEVELOPER	PROJECT DEVELOPER – SOLARMATE ENGINEERING LIMITED NATIONALITY - NIGERIA
CONTACT INFORMATION	EMAIL: dotuntokun@solarmateng.com TELEPHONE NO. : +234 803 4016045 ADDRESS: 67 ADISA BASHUA STREET, SURULERE, LAGOS, NIGERIA
TYPE OF ORGANIZATION	LIMITED LIABILITY COMPANY
COUNTRY - PROJECT LOCATION	PROJECT LOCATION – NSUKWA, DELTA STATE, NIGERIA Location: 6° 00' 57.65" N, 6° 24' 42.37" E
PROJECT DESCRIPTION	<p>PROJECT OBJECTIVE – To supply power to Rural Agribusinesses peak loads between 100kW and 1MW. Supply power to IMC plantation and staff quarters.</p> <p>CHARACTERISTICS: The plantation and the staff quarters are presently not connected to the national grid and power is presently supplied via diesel generator sets. The factory is located in a rural setting and logistics of getting diesel to site is one of the major challenges.</p> <p>OPERATION & MAINTENANCE DETAILS - The company will operate and maintain a policy based on the following criteria.</p> <ol style="list-style-type: none"> a. Operating the facility at minimal cost. b. Sustaining operations for achieving possible maximum life of the equipment. c. Maximising every potential for savings d. Maintaining best quality control and safety standards. e. Develop a preventive and predictive maintenance strategy. f. Ensure signages and warnings on all relevant equipment g. Reduce inverter offline time to near zero. h. Ensure optimum power production at all times. i. Use of PPE and other safety equipment all the time. <p>Operations: 4 No. staff will be resident for both operational and maintenance issues.</p> <p>Periodic maintenance to be carried out on all equipment; panels, inverters, batteries, generator, etc.</p> <p>REPLICATION POTENTIAL – We are presently compiling list of rural Agribusinesses in this category. We estimate that there should be at least 200 factories/plants in this category all over the country. We are presently talking with two other companies where we already carried out the power audit.</p>
TECHNOLOGY TYPE	PHOTOVOLTAIC-DIESEL GENERATOR HYBRID PACKAGE
EXPECTED RESULTS/OUTCOMES	ANNUAL LOAD CONSUMPTION IS ESTIMATED AT – 540MWh IRR – 15% EXPECTED TURNOVER PER ANNUM – \$78,000.00 PAYBACK PERIOD/BREAKEVEN POINT – 7.5 YEARS

SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<ol style="list-style-type: none"> 1. 135.84kWp PV; 1MWh battery bank for Training School, Lagos 2. 17.16kWp PV; 144kWh battery for Hospital, Amukoko, Lagos 3. 25.17kWp PV; 216kWh battery for Hospital, Itam, Uyo 4. 6.3kWp PV; 19.2kWh battery for Cassava & Maize Grinder, Kaiama, Kwara
CONTRIBUTION TO SEFORALL GOAL(S)	<p>PROJECT IMPACT: Project will generate 540MWh per annum of electricity for a factory. This project - RE for rural Agribusiness will increase productivity, prevent rural to urban migration, provide gainful and sustainable employment and also impact the environment. The number of people depending on this farm are over 500</p>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	BUSINESS PLAN – We are working on finalizing this. PRE-FEASIBILITY STUDY – already done FEASIBILITY STUDY – In progress. RISK ASSESSMENT & MITIGATION PLAN – Finalising report. EIA/SIA – Not done yet.
EXPECTED COMPLETION OF DEVELOPMENT PHASE	End January 2017
EXPECTED START OF PROJECT IMPLEMENTATION	August 2017
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	January 2018
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	Euro 600,000.00
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	Debt – 30% Equity – 70%
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	No funds secured yet.
FINANCING GAP (Euro)	Not available until secured funds is known
PROCUREMENT MODEL	Direct negotiation of PPA with off-taker.

PROJECT 21.

GENERAL INFORMATION	
NAME OF THE PROJECT	Solarisation of Kiosks with Solar Generators Supply and Installation for Empowering Micro Small and Medium Enterprises (MSMEs) in Nigeria
PROJECT OWNER/ DEVELOPER	Africa Clean Energy Summit (ACES) Consortium
CONTACT INFORMATION	Block 3, Flat 1, Matadi Street, Wuse Zone 3, Abuja Tel.: +234803460880, +2348033164567 Email: a.gps.ltd@gmail.com
TYPE OF ORGANIZATION	A Consortium made up of the following organizations: 1. Africa Clean Energy Summit registered with the Federal Ministry of Trade and Investment with Registration Number – NG/TM/O/2016/88824 2. Africa Clean Energy Group Inc., registered with the Department of State, State of Florida, USA, with Corporation Number – N15000009851 3. Always Green Power and Systems Ltd registered with the Corporate Affairs Commission of the Federal Republic of Nigeria with Registration Number – RC1023818 4. The Environment Communications Ltd registered with the Corporate Affairs Commission of the Federal Republic of Nigeria with Registration Number – RC386654
COUNTRY - PROJECT LOCATION	Nigeria – Lagos State and the Federal Capital Territory, Abuja.
PROJECT DESCRIPTION	<p>Project Objectives:</p> <ol style="list-style-type: none"> To contribute towards ensuring universal access to modern energy services and increasing the resilience of livelihoods of people by empowering MSMEs with sustainable, reliable and affordable clean energy. To contribute towards doubling the share of renewable energy in the global energy mix. <p>Project Description:</p> <p>Many small businesses are either losing profits or totally shutting down due to the current unsustainable, unaffordable and unreliable power supply in Nigeria. The project seeks to empower MSMEs through the installation of solar PV systems. 1,080 Watts solar PV systems would be provided to 50,000 beneficiaries (in the first phase) through a convenient finance mechanism in which the funds (loans) provided by the Bank of Industry (BOI) and guaranteed by Sterling Bank. Beneficiaries would pay back on a monthly basis for a period of 36 months (3 years). 2,500 local technicians would be trained on installation and maintenance of the solar PV systems.</p> <p>The current intervention is targeted at barbers and salon owners in Lagos and Abuja. The Consortium has i). Signed a Memorandum of Agreement with the National Association of Barbers and Salons Employers of Nigeria (10,000,000 members & patronage). Plans are underway for potential scaling up to other states in the six geo-political zones of the country. Ii). Discussions are also at an advanced stage with the National Association of Boutique Owners and the Lagos State Council for Tradesmen and Artisans (a council of over 250 associations in Lagos State) for scale up of the project to other MSMEs. Iii). Installation of 5,000 Units of Efficient Solar Street lighting in North East Nigeria</p>
TECHNOLOGY TYPE	Solar photovoltaic systems.
EXPECTED RESULTS/OUTCOMES	The expected outcomes of the project are: 1. Over 240,527ⁱ metric tons of avoided CO ₂ emissions in 3 years 2. Increased clean energy generation to the tune of 114 GWh ⁱⁱ of solar electricity annually. 3. More than 200% increase in the turnover and profitability of MSMEs powered

	<p>by solar electricity through a reduction in energy costs and increased availability and reliability of power supply as a means of enhancing the resilience of livelihoods of the people</p> <p>4. Up to 50,000ⁱⁱⁱ new and existing MSMEs (with up to 50% of such businesses owned by women) powered by solar PV systems would be empowered to create wealth</p> <p>5. Up to 250,000^{iv} new jobs created from MSMEs to reduce poverty</p> <p>6. Up to 2,500 trained installers (comprising of up to 30% female) will be self employed with some of them setting up new MSMEs on solar PV installation and maintenance</p> <p>IRR for an average beneficiary is 12%</p> <p>Expected turnover for an average beneficiary is 200%</p> <p>Project payback period for each beneficiary is 12.8^v years</p> <p>Breakeven point for an average beneficiary is 9.4 years</p>
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<p>1. Green Champions in collaboration with U.S. Embassy Abuja</p> <p>2. COVENANT UNIVERSITY FOR SOLARIZATION OF MSMEs Kiosks in Nigeria</p> <p>3. EFFICIENT SOLAR STREET LIGHTINGS IN NORTH EAST NIGERIA</p> <p>4. Generation of Carbon Credit through Emission Reduction Potential for all projects listed</p>
CONTRIBUTION TO SEFORALL GOAL(S)	<p>The project will:</p> <p>1.. First phase shall give 50,000 MSMEs access to modern solar energy services through the installation of 50,000 units of 1.08 kW solar PV systems, provided through flexible repayment financial mechanism as its contribution towards ensuring universal access to modern energy services, to be followed by next 100,000 units to reach 5,000,00,000 in three years</p> <p>2. Add up to 54 MW^{vi} capacity of newly installed solar PV system as its contribution towards doubling the share of renewable energy in the global energy mix</p>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	<p>A feasibility survey has been conducted. A Memorandum of Agreement (MOA) for a nationwide Solar Generators Supply and Installation has been signed by the Consortium with the National Association of Barbers and Salons Employers of Nigeria. Based on the agreement, the Consortium has been mandated to represent the Association and facilitate the provision and installation of a minimum of Five Million (5,000,000) units of 1.08 kW solar PV systems while the Association will mobilize its members to subscribe to the solar power systems.</p>
EXPECTED COMPLETION OF DEVELOPMENT PHASE	December 2018
EXPECTED FINANCIAL CLOSING BY	December 2019
EXPECTED START OF PROJECT IMPLEMENTATION	January 2017
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	June 2017
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	€ 114,120,000.00 ^{vii}
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	<p>a) The Consortium (Equity) - € 72,911.55</p> <p>b) The Bank of Industry (BOI) loan - € 5,832,924.23</p> <p>c) Other: A) Grant - € 3,120,000</p>

	B) Loan - € 104,094,164.22
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	1. Bank of Industry (Loan) - € 5,832,924.23 (₦2 Billion) = 5.11% of Total Project Cost 2. Consortium (Equity) - € 72,911.55 (₦2 Million) = 0.06% of Total Project Cost
FINANCING GAP (Euro)	€ 108,214,164.22 = 94.82% of Total Project Cost
PROCUREMENT MODEL	Direct Negotiation

PROJECT 22

GENERAL INFORMATION	
NAME OF THE PROJECT	Smart mini-grid systems for Yewa communities of Ogun State, Nigeria Over 53 communities are identified for this project
PROJECT OWNER/ DEVELOPER	Project Owner: Communities and Local municipals Project Developer : VLT Energy Solutions (Nigeria)
CONTACT INFORMATION	Name: Ololade Olanlege Email: info@vltenergysolutions.com Tele : +234-802-8415871
TYPE OF ORGANIZATION	Developer: VLT Energy Public Liability Company in Nigeria
COUNTRY - PROJECT LOCATION	6 communities and villages in Ogun and Oyo States of Nigeria
PROJECT DESCRIPTION	Mini-grids offer transformative benefits to the lives of users, particularly in areas where there has previously been no access to reliable electricity. This includes people who are connected to an electricity grid, but who often only receive electricity for a few hours per day. There over 80million of Nigerians who fall into this category. VLT an experienced Solar PV EPC contractor plan to deploy Solar PV via a smart grid systems to provide energy for households in rural communities. The energy to be generated shall in the range of 200KWp-2MWp depending on the communities' size. The end user shall pay via a card loading systems (similar to pay as go mobile system)
TECHNOLOGY TYPE	Solar PV , with card metering for end-users
EXPECTED RESULTS/OUTCOMES	<ul style="list-style-type: none"> • For 300KWp mini-Grid, our expected power output Is 766MWHp /year • Tariff rate is €0.2/kwh • Annual turnover = €832,200 • IRR = 8 years
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	VLT has deployed over 120KWp Standalone solar systems with 2.5MWH battery back-up systems for corporate organizations.
CONTRIBUTION TO SEFORALL GOAL(S)	<ul style="list-style-type: none"> • a strong impact on literacy, numeracy, and levels of education • Electric lighting allows school-aged individuals to read and study after dark when the ordinary working day has finished. • It allows individuals, particularly women, to participate in higher income earning activities such as small-goods and handicraft production.

PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	Feasibility and Business Plan
EXPECTED COMPLETION OF DEVELOPMENT PHASE	Q2, 2017
EXPECTED FINANCIAL CLOSING BY	Q1, 2017
EXPECTED START OF PROJECT IMPLEMENTATION	August 15, 2017
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	Q3, 2017
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	€852,713 / 200KWp mini-grid €1,279,069 / 300KWp minigrid
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	85% / 15% (85 % from investors and 15 % to be sourced locally by VLT)
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	None for the now. But Potential lender for the 15% identified.
FINANCING GAP (Euro)	€767,441 for 200KWp mini-grid €1,279,070 for 300kwp mini-grid
PROCUREMENT MODEL	Direct PPA by the off-takers and customer payment via smart-card systems

PROJECT 23.*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	2 MW Off-Grid Solar Power Project
(2) TYPE OF PROJECT What technology is used; for what is it used?	Solar Photovoltaic (PV)
(3) TOTAL COST OF THE PROJECT (2017 US\$)	USD \$ 2,000,000 (USD 2 million)
(4) STATE(s) in which the project named in (1), above will be executed.	Sokoto, Nigeria
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	The project is a 2 MW Off-Grid Photovoltaic system for Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	The Usmanu Danfodiyo University Teaching Hospital Sokoto, Nigeria and the Secretariat Sokoto State Government are the major target market of the project
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Power Purchase Agreement (PPA)

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Pre-feasibility Study	X	Site	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			15 months (By October, 2018)	

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies	x	Engineering Design	x
	Feasibility Study	x	Environmental/Water/Other Permits	x
	Environmental and Social Studies	x	Power Purchase Agreement Off-taker Agreement	x
	Business Plan	x	Partial Funding	X

(10) FUNDING SOUGHT – FINANCIAL CLOSING				
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)		USD \$ 2,000,000 (USD 2 million)		
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Equity (%)	Debt (%)	Grant (%)
	Project Development	10	30	60
	Financial Closing	10	70	20

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	X		

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Energy Efficiency/Savings – electrical	X	Photovoltaics	X
PROJECT SIZE (in watts, kW, MW, or therms)			2M

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Energy Efficiency Services	X	Off-Grid Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		Mini Off-Grid energy solution targeted at Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria and Shehu Kangiwa State Government Secretariat	

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Improved Water Resource Management	x
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	x
Gender Inclusion	x	Social Inclusion	x
Other (specify)	Improved Health Services Delivery		

(15) PROJECT NARRATIVE	
DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.	
<p>The project is a 2.0 MW Off-Grid ground mounted and rooftop Solar Photovoltaic system targeted at providing energy solution for the ever busy Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria and the neighbouring Shehu Kangiwa State Secretariat. There are also hundreds of small and medium scale businesses around the Hospital that could be targeted to benefit from the regular energy access to be provided by the project.</p> <p>Usmanu Danfodiyo University Teaching Hospital, Sokoto and the Shehu Kangiwa state Secretariat all in Sokoto State, Nigeria have been spending millions of Naira in settling the monthly energy bills from the National Grid and fuelling of “stand-by” Diesel Power Generators. The Usmanu Danfodiyo University Teaching Hospital, Sokoto in particular spends between N20 million – N25 million monthly for the unsustainable energy supply from both the Grid and Stand-by Power generators.</p> <p>It is very unfortunate that despite this huge expenditure on energy supply, the hospital sometimes have to resolve to using touch light and small power generators to attend to numerous patients admitted in the hospital including the surgical theatres. Also within the hospital, there are Estates of houses serving as accommodation for doctors</p>	

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

and hostels for student-doctor and nurses since the hospital is a teaching hospital. Shehu Kangiwa Secretariat on the other hand, provides office accommodation for over 50 institutions including states ministries, departments and agencies. It is projected that the project will cost a total sum of two (2) million United States Dollars (USD 2,000,000.00). The project will be consisting of about 10,000 units of 250 Wp Solar Panels and 25 units of 100KW Inverters. It will have a battery bank commiserate with the 2.5 MW Storage capacity.

(16) PROJECT SPONSOR (Organization / Institution)			
Name or Trade Name	Greenado International Limited		
Acronym	GIL		
For how long has the project owner been in business?	10 years		
Name of Legal Representative	Lawal Yakubu Gada		
Address	No. 12, Charity Lane, Kubwa, Abuja, Nigeria		
State or Province	Federal Capital Territory, Abuja		
Country	Nigeria		
Telephone	+2348035854295		
E-Mail	lawal@greenadold.com		
Website	www.greenadold.com		
Legal Status (mark one with X)			
Partnership	x	Private Company	x
Financial Entity	x	Private/Public Partnership (PPP)	X
Years of Existence	3		

(17) PROJECT POINT OF CONTACT	
Name	ENGR. FARUK Y. YUSUF
Address	FEDERAL MINISTRY OF POWER, WORKS & HOUSING (POWER SECTOR), POWER HOUSE, PLOT 14, ZAMBEZI CRESCENT, MAITAMA, ABUJA
City	ABUJA (FCT)
State/Province	ABUJA
Country	NIGERIA
Telephone	+2348038521476
E-mail	fyabo@yahoo.com
Project Role	Ag. Director (Renewable and Rural Power Access Département)

PROJECT 24.*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	AGBORO SOLAR HYBRID PROJECT
(2) TYPE OF PROJECT What technology is used; for what is it used?	SOLAR SYSTEM AND DIESEL GENERATOR; RURAL ELECTRIFICATION
(3) TOTAL COST OF THE PROJECT (2017 US\$)	\$427,819.60
(4) STATE(s) in which the project named in (1), above will be executed.	OGUN STATE
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	A SOLAR HYBRID MINIGRID(SOLAR SYSTEM AND DIESEL GENERATOR)WILL BE INSTALLED IN AGBORO VILLAGE, IJEBU EAST, OGUN STATE
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	AGBORO VILLAGE, A RURAL COMMUNITY LOCATED IN IJEBU EAST, OGUN STATE
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	PPA

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	<input checked="" type="checkbox"/>	Site	<input checked="" type="checkbox"/>
	Pre-feasibility Study	<input checked="" type="checkbox"/>	Engineering Design	<input checked="" type="checkbox"/>
	Feasibility Study	<input checked="" type="checkbox"/>		

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies	<input checked="" type="checkbox"/>	Site	<input checked="" type="checkbox"/>
	Environmental and Social Studies	<input checked="" type="checkbox"/>	Power Purchase Agreement Off-taker Agreement	<input checked="" type="checkbox"/>
	Engineering Design	<input checked="" type="checkbox"/>	Partial Funding	<input checked="" type="checkbox"/>

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)		\$427,819.60	
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
		Amount US\$	NIL

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	<input checked="" type="checkbox"/>	Other (specify)	Diesel Generator

Photovoltaics		PROJECT SIZE (in watts, kW, MW, or therms)	60kW
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Off-Grid Mini/Micro Grid	<input checked="" type="checkbox"/>		
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		The energy solution is Solar Hybrid. It will be offered as a Minigrid to an Off-grid community. The system will provide 24/7 electricity to the	

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

	end users using a prepaid metering system.
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	<input checked="" type="checkbox"/>	Improved Water Resource Management	<input type="checkbox"/>
Energy Access	<input checked="" type="checkbox"/>	Local Development	<input checked="" type="checkbox"/>
Energy Security (National or Regional)	<input checked="" type="checkbox"/>	Poverty Alleviation	<input checked="" type="checkbox"/>
Gender Inclusion	<input checked="" type="checkbox"/>	Social Inclusion	<input checked="" type="checkbox"/>
Other (specify)	Food security and Agricultural development		

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

PROJECT DESCRIPTION: Agboro is a remote village in Nigeria with a population slightly over 1000 and a distance of 16km from the national grid. Majority of its inhabitants are farmers cultivating cocoa and owning SMEs. They depend primarily on rainfall for farm land irrigation. But after the rainy season, farmers use petrol generators to pump from wells to irrigate their farm land. Other electricity demanding commercial activities include hotels, welders, millers, barbers, hair dressers, cloth weavers and restaurants. Our study indicates a potential for a Solar Hybrid Minigrid in the village. Our model indicates that the Minigrid will offset the cost of diesel/petrol spent on powering generators.

Rubitec Nigeria Limited will implement a public and private partnership model. A split asset model will also be implemented in which the fixed assets (distribution grid, meters and power house) will be owned by the beneficiary of the community but operated by Rubitec, while Rubitec own the generating assets (Solar modules, PV inverters, Battery Inverters, batteries, generators and other power generating components). This model creates a balance between public and private sector involvement, when it comes to project development. The generating asset will be a 60kwp off-grid containerized remote power unit technology, which will consist of with power generation technology, storage facilities, VSAT satellite technology and smart meters. It will be procured, installed and maintained professionally by Rubitec. The decentralised and autonomous smart power system will generate about 135kWh/day. The remote power unit will be installed professionally for future integration of another remote power unit to meet future energy demands. A resilient three phase distribution grid network will be installed to ensure reliable and steady electricity is delivered to end users throughout the project lifetime. The grid will be of a low voltage overhead lines made of copper or aluminum. The poles will be made of concrete. We plan to deploy prepaid meters. A prepaid meter will be installed at each household and businesses. We will utilise an integrated accounting function for payment and a software tool for data synchronisation and management.

(17) PROJECT POINT OF CONTACT

Name	Mr. Bolade Soremekun (Managing Director, Rubitec Nigeria Limited)
Address	5, Talabi Street, Off Adeniyi Jones Avenue.
City	Ikeja.
State/Province	Lagos
Country	Nigeria
Telephone	+2348034499670, +2347087054296
E-mail	bolades@rubitecsolar.com , info@rubitecsolar.com
Project Role	Project Developer and Operator

PROJECT 25.*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	Green Village Expansion Project Phase 2			
(2) TYPE OF PROJECT What technology is used; for what is it used?	PV Solar Mini-Grid			
(3) TOTAL COST OF THE PROJECT (2017 US\$)	US\$12,000,000.00			
(4) STATE(s) in which the project named in (1), above will be executed.	Niger, Gombe, Plateau, Rivers, Anambra, Bayelsa			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	GVE is proposing to deploy 50 units of small-scaled PV Solar based Clean Energy Mini-Grid systems to provide electricity to over 180,000 people who might otherwise never have access to electricity across eight states of Nigeria. The project has a cumulative capacity of 2.3MW with each site having a 50kW peak capacity and will effectively serve about 400 Households and 75 Commercial clients respectively.			
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	GVE's revenue model aims at employing a grass-roots strategy that makes the business commercially viable, returning profits, and at the same time focused on empowering the off-grid community people.			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	This model is based on users subscribing to our electricity distribution service through direct connections from our mini-grid while paying an initial access fee and subsequent electricity tariffs through prepayment metering infrastructure on a Pay-As-You-Go (PAYG) basis.			
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	
	Business Plan	x	Partial Funding	x
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE		April 2019 (<i>US\$6.6million raised already, now seeking US\$5.4million to close the round</i>)		
(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)		US\$400,000.00		
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Engineering Design	x	Environmental/Water/Other Permits	x
	Power Purchase Agreement Off-taker Agreement	x	Partial Funding	x
(10) FUNDING SOUGHT – FINANCIAL CLOSING				
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)		US\$5million		
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Grant	
	Amount US\$	US\$3million	US\$2million	

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT

	Source (s)	Concessional	
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(11) RENEWABLE RESOURCE (Mark all that apply with X)

Solar	x		
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(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Photovoltaics	x	PROJECT SIZE (in watts, kW, MW, or therms)	2.25MW
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Off-Grid Mini/Micro Grid	x	Grid-Connected Mini/Micro Grid	x
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion	X	Social Inclusion	X
Other (specify)	Energy Efficiency, improved healthcare access.		

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

GVE Projects Limited was incorporated in October 2012 with a mission to provide socio-economic developments to rural communities and communities who are cut out from modern civilization through the provision of reliable solar energy solutions and allied solutions. The objective of the project is to exploit solar energy for the provision of electricity to identified viable rural/ peri-urban communities in Nigeria that are not connected to the national grid. Presently, the renewable energy industry is in its introductory stage in Nigeria and GVE intends to compete by providing reliable energy supply at affordable rates to its target consumers. The proposed project is in-line with the first phase of GVE's six phased expansion project aimed impacting over 1million people. GVE pioneered Clean Energy Mini-Grid technology for Energy Access in West Africa and has raised US\$11.8million (mix of grant, equity, and debt) which has been used to successfully complete twelve (12) PV solar mini-grid pilot projects (2013 - 2018) in 6 states [with 5 more currently under construction] using a commercially sustainable PAYG business model. These are currently serving 5,200 homes in these communities. GVE's energy access business plan was rated one of the top-5 most promising Clean Energy & Climate Investment opportunity by UNIDO/ PFAN, USAID, AfDB, ECREEE, EBID, BOAD etc. The projects is 100% conceived, owned and promoted by GVE with support and collaboration of the organizations below.

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	GVE Projects Limited
Acronym	GVE

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

For how long has the project owner been in business?	5 years		
Name of Legal Representative	Ifeanyi B. Orajaka		
Address	Plot 34 Boskel Road, Port Harcourt		
State or Province	Rivers		
Country	Nigeria		
Telephone	+2348064075280		
E-Mail	info@gve-group.com		
Website	www.gve-group.com		
EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	GVE has 5-years operational experience in Mini-grid systems design, development, construction and operation. GVE has a total of 12 operational mini-grid sites with cumulative capacity of 0.5MWp serving 5,200 households.		
Legal Status (mark one with X)			
Private Company	X	Years of Existence	5-years

(17) PROJECT POINT OF CONTACT	
Name	Ifeanyi B. Orajaka
Address	Plot 34 Boskel Road,
City	Port Harcourt
State/Province	Rivers
Country	Nigeria
Telephone	+2348064075280
E-mail	info@gve-group.com
Project Role	MD/CEO

PROJECT 26.*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	100kw medium off-grid project. Araromi Lagos State.
(2) TYPE OF PROJECT What technology is used; for what is it used?	Mini-grid with 100kw Solar, 140kwh battery and 23kw diesel component.
(3) TOTAL COST OF THE PROJECT (2017 US\$)	1,350,000
(4) STATE(s) in which the project named in (1), above will be executed.	Lagos State
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	Medium income community that is a center of commerce. A 100 kW mini-grid will be used to process agricultural products (Oil-Palm, beans, cassava, yams) and power commerce, welding, and other artisans
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	500 households, 20km away from nearest electrified town
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	Exclusivity agreement with community leaders and business operators.

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Business Plan	X
	Environmental and Social Studies	X	Partial Funding	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE				18 Months.

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	950000	NIL
	Source(s)	Loan, grant	

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	X		

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Photovoltaics	X	PROJECT SIZE (in watts, kW, MW, or therms)	100kw

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Off-Grid Mini/Micro Grid	X		

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Mini-grid with 100kw Solar, 140kwh battery and 23kw diesel component for Medium income community that is a center of commerce; 100 kW off mini-grid will be used to process agricultural products , power commerce, welding, and other artisans
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Improved Water Resource Management	X
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Social Inclusion	X	Other (specify)	Solves insecurity

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Samtech Services limited
Acronym	SAMTECH
For how long has the project owner been in business?	10 Years
Name of Legal Representative	Samuel Okorite Briggs
Address	2 nd Floor, The Garnet building, Lekki-Epe Expressway.
State or Province	Lagos State
Country	Nigeria
Telephone	07036894115
E-Mail	Samtechict@yahoo.com , samuel.okorite@samtechict.com.ng
Website	www.samtechict.com.ng

EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	8 Years. Samtech has over the years installed over 500kw of combined home/business solar systems.		
Legal Status (mark one with X)			
Private Company	X		
Years of Existence	6		

(17) PROJECT POINT OF CONTACT

Name	Samuel Okorite
Address	Flat 2b Kayode Oduba Street, Thomas Estate
City	Ajah, Lekki
State/Province	Lagos
Country	Nigeria
Telephone	07036784115
E-mail	Samuebriggs77@gmail.com
Project Role	Project Manager

Samtech off-grid Solar Project Summary

The Project will be implemented in Araromi Ibeju Lekki Lagos State. The Araromi community in the LGA of Eti-osa have a total population of approximately 4,800 inhabitants (578 Households) a big market servicing many people in the vicinity and comprehensive productive power usage potential.

Number of customers	Araromi Ibeju Lekki Lagos State.
Number of indirect beneficiaries	5500
Number of direct beneficiaries	3543
Number of Household customers	578
Number of Commercial customers	184
Number of Community customers	36

Mini-grid with 100kw Solar, 140kwh battery and 25kw diesel component for Medium income community that is a center of commerce; 100 kW off mini-grid will be used to process agricultural products , power commerce, welding, and other artisans.

Power Station Design	Araromi Ibeju Lekki Lagos State.
Solar Panel [kWp]	180
Solar Inverter [kWp]	180
Solar module mounting structure + Solar cables, connectors and string Cluster boxes [kWp]	180
Deep cycle battery bank with racking system [kWh]	912
Battery inverter [kW]	140
Diesel Genset incl. tank 25kVA	1

Required Financing (Project implementation phase):

1. \$950000- Loan and grants

PROJECT 27.*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	ENERGY MANAGEMENT AND INTELLIGENCE SOLUTION
(2) TYPE OF PROJECT What technology is used; for what is it used?	INTERNET OF THINGS(IOT) ENABLED TECHNOLOGY. ENERGY MONITORING WITH SMART REMOTE SENSOR
(3) TOTAL COST OF THE PROJECT (2017 US\$)	500,000
(4) STATE(s) in which the project named in (1), above will be executed.	STATES WHERE THE BANK HAS BRANCHES
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	COMPLETE VISIBILITY ON ENERGY USAGE. GIVING BANKS ENERGY INTELLIGENCE NEEDED TO REDUCE WASTED POWER AND IMPROVE OPERATIONAL EFFICIENCY
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	BANKS AND BUSINESSES
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	CONTRACT OR AGREEMENT

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Pre-feasibility Study	X
	Partial Funding	X		
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			6 MONTHS	

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)				
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Feasibility Study	X	Site	X
	Environmental and Social Studies	X	Engineering Design	X
	Business Plan	X	Partial Funding	X

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	500,000	NIL
	Source(s)	INVESTMENT	5%

(11) RENEWABLE RESOURCE (Mark all that apply with X)

Smart Sensors	X		
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(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Energy Efficiency/Savings – electrical	x	Energy Efficiency/Savings – thermal	x
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Advisory or Other Services	x	Energy Efficiency Services	x
Engineering Services	x	Equipment and Services Vendor	x
Other (specify)	INTERNET OF THINGS (IOT) ENABLED TECHNOLOGY		
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	REAL TIME ENERGY MONITORING, PIN-POINT REAL TIME ENERGY SAVINGS.		

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Energy Security (National or Regional)	X
Energy Access	X		

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

SEE ATTACHED

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	MORTON78 LIMITED
Acronym	M78
For how long has the project owner been in business?	4 YEARS
Name of Legal Representative	ADETOLA ADEBANJO
Address	91 OGUDU ROAD. OGUDU
State or Province	LAGOS
Country	NIGERIA
Telephone	+2348054163640
E-Mail	info@morton78.com
Website	www.morton78.com

EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	One year. Energy Insight for our client
Legal Status (mark one with X)	

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

Private Company	X	
Years of Existence	5 years	

(17) PROJECT POINT OF CONTACT	
Name	ADETOLA ADEBANJO
Address	91 OGUDU ROAD. OGUDU
City	LAGOS
State/Province	LAGOS
Country	NIGERIA
Telephone	+234 8054163640
E-mail	aoadebanjo@morton78.com
Project Role	Managing Director

ENERGY MANAGEMENT AND INTELLIGENCE SOLUTION PROJECT

In competitive business environments there is a growing need to identify sources of inefficiency that may not be visible with common approaches. The banking industry is no exception.

As banks are facing pressure from all sides- Intense competition, increased risks and threats to established markets from digital disruption and globalization. At a time when operational efficiency and cost-reduction has never mattered more, turning energy from a commodity cost to a value-adding resource could be just what you need to gain a competitive advantage.

By giving you complete visibility of your energy usage, our energy solution lets you see how your business uses energy right down to individual equipment or device level; giving you the energy intelligence you need to reduce wasted power and improve your operational efficiency.

How Smart Energy Intelligence would give you the Edge

- What if all your energy consuming assets could talk?
- What if they could tell you how much energy they are using in real time?
- How efficiently they are operating?
- Tell you when something goes wrong?

With our Energy Insight Solution, your machines can do just that; Improving facility and system level performance and providing you significant savings

OUR INNOVATIVE APPROACH



**IoT Enabled
Wireless Sensors**



**Analytics, Machine Learning
Algorithms, Data Visualization**



**Expert Consulting
Actionable Insights**

HOW THE SOLUTION WORKS



**Sensor Clamped around
Wire In monitored circuit**

**Bridge Receives signal from sensor
to server in cloud, Wi-Fi,
Ethernet, Cellular**

**Web App/Mobile
real time alerts and reports
generated from sensor data**

3.1.3 Bioenergy Projects

PROJECT 1

GENERAL INFORMATION	
NAME OF THE PROJECT	Sensor-Enable Climate Financing (SCF): Nigeria Implementation
PROJECT OWNER/DEVELOPER	Nexleaf Analytics in partnership with RUWES (Rural Women Energy Security) of Nigeria
CONTACT INFORMATION	<p>Contact: Tara Ramanathan Email: tara@nexleaf.org Phone: +1 (213) 915-6729 Mailing address: Nexleaf Analytics 2356 Pelham Ave Los Angeles, CA 90064</p>
TYPE OF ORGANIZATION	US 501c3
COUNTRY - PROJECT LOCATION	Abuja/Borno State, Nigeria
PROJECT DESCRIPTION	<p>Project Overview Based on an approach by Project Surya*, Sensor-Enabled Climate Financing (SCF) brings together cutting-edge climate science, rugged wireless sensors, and market-based mechanisms to engage rural women, make clean cooking affordable, and scale up energy access for poorest 3 billion.</p> <p>*Project Surya, an international collaboration between the University of California at San Diego, Nexleaf Analytics (Los Angeles), and The Energy Resources Institute (Delhi), launched this method in 2014.</p> <p>Program Work Nexleaf plans to conduct laboratory testing on clean cook stoves available in Nigeria to determine the best stove option(s) in terms of emissions and usability. Implementers will recruit 1,500 women to purchase improved cook stoves (ICS). The women receive loans to cover the cost of the stove and are able to repay the loan after about a year of climate credit earnings.</p> <p>Nexleaf's StoveTrace real-time stove monitoring platform will collect cooking data to indicate exactly how much women are adopting improved cook stoves</p>

	<p>Payments are made to each woman's cell phone via a mobile payment app, and she is able to cash out and receive her money each month. Climate payments beyond the cost of the stove loan are hers to keep.</p> <p>Implementers will also recruit 15 energy entrepreneurs (EE) to provide after-sales service and stove maintenance, since stove breakage is often a contributing factor to disuse of ICS. EE's will receive training on how to fix stoves and how to motivate low users, as well as on how to review the StoveTrace real-time data dashboard in order to determine which households in their cohorts require support visits.</p>
TECHNOLOGYTYPE	<ul style="list-style-type: none"> - Greenway and/or African Clean Energy stove - StoveTrace sensor
EXPECTED RESULTS/OUTCOMES	<p>1,500 cookstoves</p> <p>Women buy the stoves with a loan but receive stove usage-based climate payments with which they can repay the loan. Climate payments earned</p>
CO-PRODUCTS NEEDED	100% Biomass/Fuelwood
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<p>1) Climate Credit Pilot Project – Oct 2014 to March 2016 – 4,038 households. The results were published by Nature Climate Change based on a study led by Nexleaf Analytics in partnership with TERI (India) and University of California, San Diego</p> <p>Sensor-Enabled Climate Financing – March 2016 to Present – 44 Households (Pilot) in 2 states in India (Odisha & Chennai). Households have improved biomass stoves connected with StoveTrace, Nexleaf's stove use measurement device. They receive usage-based payments directly to their mobile phone through Vodafone mPesa. There will soon be 1,000 homes like this by March 2017.</p> <p>2) 3) eVIN India Temperature Loggers – June 2016 – December 2016 – Nexleaf Analytics provided 15,000 ColdTrace real-time remote temperature monitoring devices to UNDP and the Government of India to monitor vaccine refrigerators in all clinics across three states, including installation and training</p>
CONTRIBUTION TO SEFORALL GOAL(S)	<ul style="list-style-type: none"> - 5,000 families receive improved cookstoves (ICS) - SCF model uses data and energy entrepreneurs to maintain ICS so that women continue using the cleaner stove option, thus reducing emissions
PROJECT STATUS	

<p>PROJECT APPRAISAL INDICATORS</p>	<p>Business plan Feasibility study – <i>Nature Climate Change</i> Publication on Project Surya (original SCF model) One project deliverable is a social impact study. Outputs include: Outputs</p> <ul style="list-style-type: none"> - 80% adoption of cleaner cookstoves (with disuse of traditional stoves). - 7,602 to 12,246 tons of CO₂ equivalent mitigated depending on stove model (sensor-documented). - Cleaner energy for 1,500 homes, impacting 1,500 women plus approximately 4,500 additional household members. - Improved health for 1,500 women plus 4,500+ household members and village neighbours. - Financial inclusion for 1,500 women. - € 172,719 in climate financing direct to women, which includes cost of stove plus more for each woman's climate stewardship. - An indoor air quality and usability report comparing makes/models. - A roadmap for using SCF in Nigeria to scale cleaner, user-friendly stoves.
<p>EXPECTED COMPLETION OF DEVELOPMENT PHASE</p>	<p>March 2017 for current implementation.</p>
<p>EXPECTED FINANCIAL CLOSING BY</p>	<p>No closing. This is an ongoing project and all proceeds will go towards new implementations or continued climate credit payments to households. Nexleaf aims to scale to 5,000 more homes in 2018. The ultimate goal is to be continuously in 500,000 households in Nigeria, 1,000,000 globally.</p>
<p>EXPECTED START OF PROJECT IMPLEMENTATION</p>	<p>March 2017</p>
<p>EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION</p>	<p>November 2018 Program lasts 2 years in order to allow women to pay off stoves at 80% adoption and also earn additional money for climate stewardship.</p>

FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	€ 739,668.17
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	No debt will be taken on in implementation of this project. Personnel € 241,430, 33% Travel € 3,835, 1% Equipment € 177,406, 24% Climate Credits € 215,798, 29% (Budget allows for 100% adoption rate) Partner Implementation Cost (incl. entrepreneur salary) € 101,198, 14%
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	€ 281,166.55
FINANCING GAP (Euro)	Current implementation: YR1: € 140,688.32 YR2: € 317,813.30 Total: € 458,501.62
PROCUREMENT MODEL	Climate credits are funded by philanthropic foundations and individuals. StoveTrace RTM devices are manufactured and provided by Nexleaf. Cookstoves are procured from manufacturers.

3.1.4 Energy Efficiency Projects

PROJECT 1.

GENERAL INFORMATION	
NAME OF THE PROJECT	The Implementation of Energy Management Action Plan (Energy MAP) for Hotels
PROJECT OWNER/ DEVELOPER	Consortium; SchimaticBlue Energy Limited, and Energy Harnessing Limited; Nigeria
CONTACT INFORMATION	chima@schimaticblueenergy.com +234 905 326 2514 Jima Plaza, Plot 1267 Ahmadu Bello Way, Area 11, Garki, Abuja
TYPE OF ORGANIZATION	Limited Liability Companies register under the Nigerian Corporate and allied Matters Act 1990
COUNTRY - PROJECT LOCATION	Abuja - Nigeria
PROJECT DESCRIPTION	Energy Management Action Plan (Energy MAP) is a step by step guide to implementing a best practise action plan for commercial building (hotels) in Nigeria. The objective is to cut energy consumption by 30%. The main characteristics include baseline energy analysis, energy audit, project development, implementation, capacity building and monitoring. These characteristics are further broken down into 20 steps approach that will lead to the desired objectives/outcome through the implementation of developed action plans. The project, designed for fifteen (15) hotels of about 2,500 guest rooms altogether will save about 5,142,857,000Wh of electricity. And can be replicated in all sizes of commercial buildings in Nigeria using the achieved objectives as references for easy market development and penetration.
TECHNOLOGY TYPE	<ol style="list-style-type: none"> (1) Internet based energy system monitor; (2) Air-Con Master Control Device; (3) Heat Pump-Solar Hybrid System; (4) Strategic Lighting architecture using LED Technology (5) Turbo generating systems/cogeneration (6) Automatic load transfer switch on synchronised generators (7) Capacity building (Train of Trainers)
EXPECTED RESULTS/OUTCOMES	<ul style="list-style-type: none"> - Efficiency increase ratio [%]; 30% - Baseline consumption [Wh]; 17,142,856,000Wh per year - Expected consumption after project implementation [Wh]; 12,000,000,000Wh per year - Energy saved [Wh]; 5,142,857,000Wh per year <p>IRR;28% Expected Turn Over; €847,059 (Annual) Payback period; 22 Months Net Present Value; €510,928 (At 10% discount rate)</p>
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<p>Engr. Ayodele Esan PhD</p> <ol style="list-style-type: none"> (1) Technical Director / Chief Executive Officer (CEO), UNIDO Regional Centre for Small Hydro Power In Africa, Abuja Nigeria - 01/09/2005 to 31/12/2013. (2) NEPA Former National Electricity Power Authority Consumer Audit Project, Ilorin Undertaking, Kwara state; Sept 1986 – June 1987 (3) Internal and External Electricity Services; Facilitation of Capacity Building for Energy Efficiency Promotion in

	Industry, Institutional/Commercial Buildings, Transport Sector; 1993 - 2002 Chima Muoneke (1) Independent Study and Analysis of Energy consumption in the Nigerian Hotel industry using selected hotels Abuja as a case study; 2016 (2) Development of Energy performance indicators and programmes for the hotel industry in Nigeria; 2015 – 2016 (3) Trained over 800 school students on domestic Energy efficiency practices; 2015
CONTRIBUTION TO SEFORALL GOAL(S)	30% energy efficiency gain in 2500 hotel guest rooms at 15 different locations within the Federal Capital Territory, Abuja, Nigeria. Reducing the energy use intensity of these large commercial buildings will Improving electricity access and reliability while mitigating the emission of CO ₂ by over 3,750 metric tonnes (at emission factor of 7.03×10^{-4} metric tonnes of CO ₂ /Kwh)
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	<ul style="list-style-type: none"> ○ Business plan – (Yes) ○ Pre feasibility study – (Yes) ○ Feasibility study – (Yes) ○ Risk assessment + mitigation plan – (on-going) ○ EIA/SIA – (on-going)
EXPECTED COMPLETION OF DEVELOPMENT PHASE	June, 2017
EXPECTED FINANCIAL CLOSING BY	December, 2020
EXPECTED START OF PROJECT IMPLEMENTATION	July, 2017
EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	December, 2017
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	€1,608,750 (one million, six hundred and eight thousand, seven hundred and fifty Euro) (At 1EUR = 340 NGN exchange rate).
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	100% equity (€99,670) - assumed 100% debt (€1 515 074)
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	€99,670 representing 100% €0,000 representing 0%
FINANCING GAP (Euro)	€1,515,074 representing 94%

PROJECT 2.

GENERAL INFORMATION	
NAME OF THE PROJECT	<i>Industrial Cold Storage</i>
PROJECT OWNER/ DEVELOPER	<i>VLT Energy Solutions Limited (www.vltenergysolutions.com)</i>
CONTACT INFORMATION	<i>VLT Energy Solution Info@vltenergysolutions.com Suite H123, Ikota Shopping Complex, Victoria Garden City, Lekki , Lagos State +234-802-841-5871 / +4794876033</i>
TYPE OF ORGANIZATION	<i>VLT Energy Solutions is a limited liability company registered in Nigeria</i>
COUNTRY - PROJECT LOCATION	<i>Nigeria,</i>
PROJECT DESCRIPTION	<i>Cold storage is very necessary for hotels, farmers, businesses which trade on perishable goods. Our findings showed that there is huge waste associated with lack of cold storage or improper cold storage. Sometimes business who need cold storage used diesel generator 24/7 to provide power for their storage The project is aimed to stop avoidable wastage by providing clean energy to help storage and provide a cheaper alternative to those who ran generator. A total of 7000 units of Solar cold room storage can be sold in 3 years. The industrial cold room will be sold on lease to own basis with a commercial bank as credit guarantor to the offtake.</i>
TECHNOLOGY TYPE	<i>Solar Powered Industrial Cold-rooms</i>
EXPECTED RESULTS/OUTCOMES	<ul style="list-style-type: none"> - <i>The solution will help to reduce perishable food wastage and generate more income to business who thrive on perishable products, especially hotels and restaurants.</i> - <i>This can be patronized by cooperatives in the farming area r market</i> - <i>10,000 units can be sold in 3 years for lease to own options.</i>
SPONSOR'S EXPERIENCE IN SIMILAR PROJECTS	<i>VLT has installed over 120KWp solar PV projects and 2.5MWH back-up across all geopolitical zones Nigeria</i>
CONTRIBUTION TO SEFORALL GOAL(S)	<ul style="list-style-type: none"> • <i>Business that require storage have access to cheaper option than running diesel generator on 24/7 option</i> • <i>Revenue increase for more traders because of increased shelf-life of product.</i>
PROJECT STATUS	
PROJECT APPRAISAL INDICATORS	<ul style="list-style-type: none"> ○ <i>Business plan</i> ○ <i>SIA</i>
EXPECTED COMPLETION OF DEVELOPMENT PHASE	<i>Q2, 2017</i>
EXPECTED FINANCIAL CLOSING BY	<i>Q1, 2017</i>
EXPECTED START OF PROJECT IMPLEMENTATION	<i>Q2, 2017</i>

EXPECTED DATE OF COMMISSIONING/DEPLOYMENT OF SOLUTION	<i>Q2, 2017</i>
FUNDING STRUCTURE AND FUNDING NEEDS	
TOTAL COST OF THE PROJECT (Euro)	<i>€3,800 / tonnage storage capacity. €38,000 for 10 tons storage capacity</i>
FINANCIAL STRUCTURE FOR THE TOTAL COST OF THE PROJECT	<i>85% /15% debit equity ratio The leasee will make 10-15% deposit and will own after balance payment. However, Instalments payment will be done via a chip-controlled payment gateway which shall deactivate the cold room if the off-taker fail to pay after a debit recovery time window.</i>
SECURED FUNDS FOR THE TOTAL COST OF THE PROJECT (Euro)	<i>None for the moment.</i>
FINANCING GAP (Euro)	<i>Not Applicable</i>
PROGRAMME ORIGIN	<i>VLT industrial Solar cold storage.</i>

3.2 PROJECT INVESTMENT OPPORTUNITIES IN THE PUBLIC SECTOR

DRAFT PROJECT INFORMATION FOR BAKOLORI DAM, ZAMFARA STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	Concession of Bakolori Small Hydropower Plant			
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation			
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-			
(4) STATE(s) in which the project named in (1), above will be executed.	Zamfara State			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.			
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)			
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE	December 2017			
(10) FUNDING SOUGHT – FINANCIAL CLOSING				
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)				
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity	
	Amount US\$	N/A	N/A	
	Source(s)	N/A	N/A	
(11) RENEWABLE RESOURCE (Mark all that apply with X)				
Hydro	X	Solar		
(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)				
Mini-Hydro	X	PROJECT SIZE (in watts,	3,000kW	

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Photovoltaics		kW, MW, or therms)	
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Finance and Financial Services		Grid-Connected Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		Small hydropower plant to generate 3,000kW grid connected.	

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Other (specify)			

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.

(17) PROJECT POINT OF CONTACT

Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR DOMA DAM, NASARAWA STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM				
(1) PROJECT NAME	Concession of Doma Small Hydropower Plant			
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation			
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-			
(4) STATE(s) in which the project named in (1), above will be executed.	Nasarawa State			
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.			
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant			
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)			
(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			December 2017	

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	N/A	N/A
	Source(s)	N/A	N/A

(11) RENEWABLE RESOURCE (Mark all that apply with X)

Hydro	X	Solar	
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(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Mini-Hydro	X	PROJECT SIZE (in watts, kW, MW, or therms)	1,000kW
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¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction		Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X

(15) PROJECT NARRATIVE
<p>DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.</p> <p>The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.</p>

(17) PROJECT POINT OF CONTACT	
Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR IKERE GORGE DAM, OYO STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Concession of Ikere Gorge Small Hydropower Plant
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-
(4) STATE(s) in which the project named in (1), above will be executed.	Oyo State
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			December 2017	

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	N/A	N/A
	Source(s)	N/A	N/A

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro	X	Solar	

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Mini-Hydro	X	PROJECT SIZE (in watts, kW, MW, or therms)	6,000kW

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Finance and Financial Services		Grid-Connected Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		Small hydropower plant to generate 6,000kW grid connected.	

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction		Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion		Social Inclusion	
Other (specify)			

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.

(17) PROJECT POINT OF CONTACT

Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR JIBIYA DAM, KATSINA STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Concession of Jibiyah Dam Small Hydropower Plant
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-
(4) STATE(s) in which the project named in (1), above will be executed.	Katsina State
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			December 2017	

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	N/A	N/A
	Source(s)	N/A	N/A

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro	X	Solar	

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Mini-Hydro	X	PROJECT SIZE (in watts, kW, MW, or therms)	4,000kW
Photovoltaics			

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Finance and Financial Services		Grid-Connected Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		Small hydropower plant to generate 4,000kW grid connected.	

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.

(17) PROJECT POINT OF CONTACT

Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR OMI KAMPE DAM, KOGI STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Concession of Omi Kampe Dam Small Hydropower Plant
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-
(4) STATE(s) in which the project named in (1), above will be executed.	Kogi State
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			December 2017	

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	N/A	N/A
	Source(s)	N/A	N/A

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro	X	Solar	
Renewable Biomass		Other (specify)	

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Mini-Hydro	X	PROJECT SIZE (in watts,	4,000kW

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Photovoltaics		kW, MW, or therms)	
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Finance and Financial Services		Grid-Connected Mini/Micro Grid	X
Other (specify)			
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	Small hydropower plant to generate 4,000kW grid connected.		

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction		Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.

(17) PROJECT POINT OF CONTACT

Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR ZOBE DAM, KATSINA STATE

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	Concession of Zobe Dam Small Hydropower Plant
(2) TYPE OF PROJECT What technology is used; for what is it used?	Embedded Generation
(3) TOTAL COST OF THE PROJECT (2017 US\$)	-
(4) STATE(s) in which the project named in (1), above will be executed.	Katsina State
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	PPP project for the development of small hydropower potential toward improving renewable energy and energy mix in the nation's power generation.
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	River Basin Development Authority (RBDA), water treatment plants, irrigation schemes and neighbouring communities to the small hydropower plant
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, Concession Agreement, water use license and PPA, Generation License (>1MW capacity)

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study		Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			December 2017	

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	N/A	N/A
	Source(s)	N/A	N/A

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Hydro	X	Solar	

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Mini-Hydro	X	PROJECT SIZE (in watts, kW, MW, or therms)	300kW

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Finance and Financial Services		Grid-Connected Mini/Micro Grid	X
DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION		Small hydropower plant to generate 300kW grid connected.	

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction		Improved Water Resource Management	
Energy Access	X	Local Development	X
Energy Security (National or Regional)	X	Poverty Alleviation	X
Gender Inclusion		Social Inclusion	
Other (specify)			

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The project was initiated by the Federal Ministry of Power, Works and Housing (Power) in collaboration with Federal Ministry of Water Resources, which is aimed to be procured under Public Private Partnership (PPP) arrangement (Concession). The project will provide reliable, efficient and affordable electricity to customers within the dam area, RBDA, Water treatment plants and irrigation schemes.

(17) PROJECT POINT OF CONTACT

Name	Engr. A. D. Abubakar (Asst. Director – Hydro)
Address	Federal Ministry of Power, Works and Housing (Power Sector)
City	Abuja (FCT)
State/Province	Abuja
Country	Nigeria
Telephone	
E-mail	dapshimaabubakar@gmail.com
Project Role	Project Officer

PROJECT INFORMATION FOR 10MW LAKE CHAD BASIN SOLAR PV POWER PLANT*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	10MW LAKE CHAD BASIN SOLAR PV POWER PLANT
(2) TYPE OF PROJECT What technology is used; for what is it used?	SOLAR PV
(3) TOTAL COST OF THE PROJECT (2017 US\$)	USD \$ 10,500,000
(4) STATE(s) in which the project named in (1), above will be executed.	BORNO
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	10 MW, SOLAR PV PLANT FOR POWER IRRIGATION PUMP OF THE CHAD BASIN DEVELOPMENT AUTHORITY
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	TO PROVIDE UNINTERRUPTED POWER 24 HOURS FOR THE LAKE CHAD BASIN DEVELOPMENT AGENCY
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, CONCESSION AGREEMENT AND POWER PURCHASE AGREEMENT

(8) PROJECT STATUS

PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X
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(9) FUNDING SOUGHT – PROJECT DEVELOPMENT

PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)	USD \$ 10,500,000			
USE/PURPOSE FUNDS SOUGHTS (Mark all that apply with an X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Environmental/Water/Other Permits	
	Environmental and Social Studies	X	Power Purchase Agreement Off-taker Agreement	X
	Business Plan	X	Partial Funding	X

(10) FUNDING SOUGHT – FINANCIAL CLOSING

PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)	USD \$ 10,500,000
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(11) RENEWABLE RESOURCE (Mark all that apply with X)

Solar	X	
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(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)

Photovoltaics	X	PROJECT SIZE (in watts, kW, MW, or therms)	10,000KW
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	SOLAR PV POWER PLANT TO GENERATE 10,000KW
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¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)			
Emission Reduction	X	Local Development	X
Energy Access	X	Energy Security (National or Regional)	X

(16) PROJECT SPONSOR (Organization / Institution)	
Name or Trade Name	Federal Ministry of Power, Work and Housing (Power Sector)
Acronym	FMPWH (Power)
For how long has the project owner been in business?	Federal Government Ministry
Name of Legal Representative	Louis O. N. Edozien
Address	Plot 14, Zambezi Crescent, Maitama, Abuja
State or Province	FCT, Abuja
Country	Nigeria
Telephone	+2348034001498
E-Mail	louis.edozien@power.gov.ng info@pwh.gov.ng
Website	www.pwh.gov.ng

Legal Status (mark one with X)	
Other (specify)	FEDERAL GOVERNMENT

(17) PROJECT POINT OF CONTACT	
Name	ENGR. FARUK Y. YUSUF
Address	FEDERAL MINISTRY OF POWER, WORKS & HOUSING (POWER SECTOR), POWER HOUSE, PLOT 14, ZAMBEZI CRESCENT, MAITAMA, ABUJA
City	ABUJA (FCT)
State/Province	ABUJA
Country	NIGERIA
Telephone	+2348038521476
E-mail	fyabo@yahoo.com
Project Role	Ag. Director (Renewable and Rural Power Access Department)

PROJECT INFORMATION FOR 30MW SOLAR PV POWER PLANT ADJACENT TO KAINJI POWER PLANT*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	30MW PV Power Plant adjacent to Kainji Hydro Power Plant
(2) TYPE OF PROJECT What technology is used; for what is it used?	Solar PV
(3) TOTAL COST OF THE PROJECT (2017 US\$)	\$53,995,000.00
(4) STATE(s) in which the project named in (1), above will be executed.	Kainji HPP Niger State (9.87656N, 4.64362E, 9.87061N, 4.64369E, 9.8707N, 4.65044E, 9.87665N, 4.65044E)
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	30MW PV Power Plant adjacent to Kainji Hydro Power Plant
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	Nigeria
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	PPA model

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	<input checked="" type="checkbox"/>	Site	<input checked="" type="checkbox"/>
	Pre-feasibility Study	<input checked="" type="checkbox"/>	Engineering Design	<input checked="" type="checkbox"/>
	Feasibility Study	<input type="checkbox"/>	Environmental/Water/Other Permits	<input type="checkbox"/>
	Environmental and Social Studies	<input checked="" type="checkbox"/>	Power Purchase Agreement/ Off-taker Agreement	<input checked="" type="checkbox"/>
	Business Plan	<input checked="" type="checkbox"/>	Partial Funding	<input checked="" type="checkbox"/>
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE				2019

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)				
	Power Purchase Agreement	<input checked="" type="checkbox"/>	Off-taker Agreement	<input checked="" type="checkbox"/>
		<input checked="" type="checkbox"/>	Partial Funding	<input checked="" type="checkbox"/>

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	\$53,995,000.00	Nil
	Source(s)	Indian Government	Nil

(11) RENEWABLE RESOURCE (Mark all that apply with X)

Solar	<input checked="" type="checkbox"/>		
Photovoltaics	<input checked="" type="checkbox"/>	PROJECT SIZE (in watts, kW, MW, or therms)	30MW

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

Grid-Connected Mini/Micro Grid	<input checked="" type="checkbox"/>	
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(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	30MW PV Power Plant to be located adjacent to Kainji Hydro Power Plant which is connected to the national grid
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	<input checked="" type="checkbox"/>	Energy Security (National or Regional)	<input checked="" type="checkbox"/>
Energy Access	<input checked="" type="checkbox"/>	Local Development	<input checked="" type="checkbox"/>

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The 30MW Solar PV Plant is to stand as a grid-connected co-generation feeder plant that would be located adjacent to the already existing Kainji HPP to form a Hydro / PV Hybrid Plant that feeds into the same feeder of the national grid.

The owner of the plant is expected to be a private investor who will emerge at the end of a competitive bidding process that is performed by the government (NBET).

The business model and business plan development for companies investing in renewable energy is described as well as options for owning and financing the project.

The PV Plant will require installing 96,760 modules to build an installed capacity of 29,996 kWp (STC). The necessary total PV area has been estimated to 404,500 m² or 40.4 ha.

In the first year of operation, the output is expected to exceed 49,272 MWh (P50, 50 % probability), while the absolute maximum power production is 23.8MWh per hour.

The new PV plant shall be installed adjacent to the already existing Kainji HPP to form a Hydro / PV Hybrid Plant. The PV Plant shall be connected to Kainji GS (busbar) to feed Jebba TS.

Based on a total investment of US\$ 43,762,500.00 (1,458.75 US\$/kWp), the levelised cost of electricity is estimated at 11.99 US\$ cents/kWh from the economic project point of view.

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Federal Ministry of Power, Works and Housing (Power Sector)
Acronym	FMPWH(Power)
For how long has the project owner been in business?	Federal Government Ministry
Name of Legal Representative	Louis O. N. Edozien
Address	Plot 14, Zambezi Crescent, Maitama, Abuja
State or Province	FCT, Abuja
Country	Nigeria
Telephone	+2348034001498
E-Mail	louis.edozien@power.gov.ng info@pwh.gov.ng
Website	www.pwh.gov.ng

EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	Federal Government Ministry		
Legal Status (mark one with X)			
Private/Public Partnership (PPP)	<input checked="" type="checkbox"/>		

(17) PROJECT POINT OF CONTACT	
Name	Engr. Faruk Y. Yusuf
Address	Federal Ministry of Power, Works and Housing (Power), Power House, Plot 14, Zambezi Crescent, Maitama, Abuja
City	Maitama, Abuja
State/Province	FCT
Country	Nigeria
Telephone	+2348038521476
E-mail	fyabo@yahoo.com
Project Role	Ag. Director (Renewable and Rural Power Access Department)

PROJECT INFORMATION FOR 20MW SOLAR PV POWER PLANT FOR KADUNA DISCO AT AFAKA*

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	20MW PV Power Plant as embedded generation at Afaka under Kaduna DisCo
(2) TYPE OF PROJECT What technology is used; for what is it used?	Solar PV
(3) TOTAL COST OF THE PROJECT (2017 US\$)	\$37,680,000.00
(4) STATE(s) in which the project named in (1), above will be executed.	Afaka, Kaduna (10 ⁰ 35'36.64N, 7 ⁰ 21'19.73"E)
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	20MW PV Power Plant as embedded generation at Afaka under Kaduna DisCo
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	Nigeria
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	PPA

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Environmental and Social Studies	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X	Partial Funding	X
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			2019	

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT				
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)				
	Power Purchase Agreement Off-taker Agreement	X	Partial Funding	X

(10) FUNDING SOUGHT – FINANCIAL CLOSING			
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)			
FINANCIAL STRUCTURE FOR PROJECT IMPLEMENTATION / CONSTRUCTION (US\$, by source)		Debt	Equity
	Amount US\$	\$37,680,000.00	Nil
	Source(s)	Indian Government	Nil

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	X		

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Photovoltaics	X	PROJECT SIZE (in watts, kW, MW, or therms)	20MW

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Grid-Connected Mini/Micro Grid	X		

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)**DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION**

20MW PV Power Plant as embedded generation at Afaka to be fed into Kaduna DisCo which is connected to the grid

(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	<input checked="" type="checkbox"/>	Local Development	<input checked="" type="checkbox"/>
Energy Access	<input checked="" type="checkbox"/>	Energy Security (National or Regional)	<input checked="" type="checkbox"/>

(15) PROJECT NARRATIVE

DESCRIPTION OF THE PROJECT (1) SEEKING FUNDING Attach a one-page overview of project. You may include any project information you choose, and expand on answers to any of the previous questions.

The 20 MWp PV Plant is to be connected to the existing 33 kV distribution network of the local distribution (i.e. Kaduna DisCo).

The owner of the plant is expected to be a private investor who will emerge at the end of a competitive bidding process that is performed by the DISCO.

The PV Plant will require installing 64,520 modules to build an installed capacity of 20,001 kWp (STC). The necessary total PV area has been estimated to 256,600 m² or 25.6 ha.

In the first year of operation, the output is expected to exceed 34,964 MWh (P50, 50 % probability), while the absolute maximum power production is 17.1 MWh per hour.

The theoretical annual normalized production is 1,748 kWh/kWp while the theoretical annual performance ratio is 82.3 %.

The new PV Plant shall be connected to the relatively new Mother Cat injection station (fed by Mando T.S. T4) on 33 kV voltage level.

Based on a total investment of USD 37,680,000.00 (1,884.00 USD/kWp), the levelised cost of electricity is estimated at 14.66 USD cents/kWh from the economic project point of view.

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Federal Ministry of Power, Work and Housing (Power Sector)
Acronym	FMPWH (Power)
For how long has the project owner been in business?	Federal Government Ministry
Name of Legal Representative	Louis O. N. Edozien
Address	Plot 14, Zambezi Crescent, Maitama, Abuja
State or Province	FCT, Abuja
Country	Nigeria
Telephone	+2348034001498
E-Mail	louis.edozien@power.gov.ng info@pwh.gov.ng
Fax	
Website	www.pwh.gov.ng

EXPERIENCE IN EXECUTING SIMILAR PROJECTS (years; short summary of results)	15 Years
Legal Status (mark one with X)	
Private/Public Partnership (PPP)	<input checked="" type="checkbox"/>

(17) PROJECT POINT OF CONTACT	
Name	Engr. Faruk Y. Yusuf
Address	Federal Ministry of Power, Works and Housing (Power), Power House, Plot 14, Zambezi Crescent, Maitama, Abuja
City	Maitama, Abuja
State/Province	FCT
Country	Nigeria
Telephone	+2348038521476
E-mail	fyabo@yahoo.com
Project Role	Ag. Director (Renewable and Rural Power Access Department)

**PROJECT INFORMATION FOR 850KW SOLAR PV POWER PLANT
FOR FEDERAL SECRETARIAT COMPLEX, ABUJA***

SUMMARY OF CLEAN ENERGY/ENERGY EFFICIENCY PROJECT OR PROGRAM	
(1) PROJECT NAME	850 KW SOLAR PV POWER PLANT AT FEDERAL SECRETARIAT COMPLEX, ABUJA
(2) TYPE OF PROJECT What technology is used; for what is it used?	SOLAR PV EMBEDDED GENERATION
(3) TOTAL COST OF THE PROJECT (2017 US\$)	USD \$ 1,500,000
(4) STATE(s) in which the project named in (1), above will be executed.	F.C.T. ABUJA
(5) SUMMARY DESCRIPTION OF THE PROJECT OR SERVICE PROPOSED IN (1), Above. A fuller description may be presented at (15), below.	SOLAR PV POWER PLANT FOR PROVISION OF ELECTRICITY FOR THE FEDERAL SECRETARIAT COMPLEX TOWARDS IMPROVING RENEWABLE ENERGY AND ENERGY MIX IN THE NATIONS'S POWER GENERATIION
(6) TARGET MARKET FOR THE PROJECT A fuller description may be presented at (15), below.	TO PROVIDE UNINTERRUPTED POWER 24 HOURS FOR THE SECRETARIAT COMPLEX
(7) COMMERCIAL ARRANGEMENTS (Contract, agreement, PPA, etc.)	RFP, CONCESSION AGREEMENT AND POWER PURCHASE AGREEMENT

(8) PROJECT STATUS				
PROJECT DOCUMENTATION (Mark all that apply with X)	Resource Studies	X	Site	X
	Pre-feasibility Study	X	Engineering Design	X
	Feasibility Study	X	Power Purchase Agreement/ Off-taker Agreement	X
	Business Plan	X		
EXPECTED TIME OF PROJECT COMPLETION FROM FINANCIAL CLOSE			6 MONTHS	

(9) FUNDING SOUGHT – PROJECT DEVELOPMENT		
PROJECT DEVELOPMENT FUNDING SOUGHT (US\$)	USD \$ 1,500,000	
USE/PURPOSE FUNDS SOUGHT (Mark all that apply with an X)	Partial Funding	X

(10) FUNDING SOUGHT – FINANCIAL CLOSING	
PROJECT IMPLEMENTATION FUNDING SOUGHT (US\$)	USD \$ 1,500,000

(11) RENEWABLE RESOURCE (Mark all that apply with X)			
Solar	X		

(12) CONVERSION TECHNOLOGY ¹ (Mark all that apply with X)			
Photovoltaics	X	PROJECT SIZE (in watts, kW, MW, or therms)	850KW

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)			
Grid-Connected Mini/Micro Grid	X		

¹ Technology to convert the renewable resource into energy or an energy resource that is delivered through the energy solution described in (12).

(13) ENERGY SOLUTION OR BUSINESS PROPOSITION – IN WHAT TECHNICAL OR COMMERCIAL FORMAT WILL THE ENERGY CONVERSION TECHNOLOGY IDENTIFIED IN (11) BE OFFERED TO THE ENERGY END-USER (Mark all that apply with X)

DESCRIBE ACTUAL ENERGY SOLUTION OR APPLICATION	SOLAR PV POWER PLANT TO GENERATE 850KW
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(14) EXPECTED PROJECT CO-BENEFITS (Mark all that apply with X)

Emission Reduction	X	Local Development	X
Energy Access	X	Energy Security (National or Regional)	X

(16) PROJECT SPONSOR (Organization / Institution)

Name or Trade Name	Federal Ministry of Power, Work and Housing (Power Sector)
Acronym	FMPWH (Power)
For how long has the project owner been in business?	Federal Government Ministry
Name of Legal Representative	Louis O. N. Edozien
Address	Plot 14, Zambezi Crescent, Maitama, Abuja
State or Province	FCT, Abuja
Country	Nigeria
Telephone	+2348034001498
E-Mail	louis.edozien@power.gov.ng info@pwh.gov.ng
Website	www.pwh.gov.ng

Legal Status (mark one with X)

Private/Public Partnership (PPP)	X		
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(17) PROJECT POINT OF CONTACT

Name	ENGR. FARUK Y. YUSUF
Address	FEDERAL MINISTRY OF POWER, WORKS & HOUSING (POWER SECTOR), POWER HOUSE, PLOT 14, ZAMBEZI CRESCENT, MAITAMA, ABUJA
City	ABUJA (FCT)
State/Province	ABUJA
Country	NIGERIA
Telephone	+2348038521476
E-mail	fyyabo@yahoo.com
Project Role	Ag. Director (Renewable and Rural Power Access Département)

ADDITIONAL PROJECTS					
S/N	Project Name	Capacity (MW)	Investment USD MN	Location	Status
1	Shiroro PV Complex, Niger	300	479	Niger State	April 2016 - North South Power Company and Sinohydro Corporation signed USD478.66mn agreement for power plant construction; November 2015 - Proposal sent to Bureau of Public Enterprises and the Nigerian Electricity Regulatory Commission for approval; Phase I is expected to be completed in 2017"
2	GreenWish partners	100, 50,50		Enugu State, kaduna & Jigawa State	"The plants will be expected to start producing electricity in the first quarter of next year. The power project will be funded 70% through debt and 30% through equity and on completion will provide power to 2.5 million people."
3	Delta State Utility-Scale Solar Project	3000	5000	Delta State	March 2016 - Work to begin soon; May 2014 - SkyPower Global and FAS Energy signed agreements with Nigeria Government to deliver the project over next five years
4	University of Ilorin Solar Power Plant	500	2300	Kwara State	May 2016 - Arrow Capital and University of Ilorin had concluded arrangements for construction of 500MW solar power plant; Construction expected to commence immediately and completed within five months; Project cost - NGN600bn
5	FirstGate Solar Park	1000	1000	Kogi State	February 2015 - MOU signed between FirstGate Group and Government of Nigeria, FirstGate Group will have its technical partners from South Korea and Turkey; Project involves construction of 1000 MW solar farm on 2,700 hectares (27 mn sq metres) of land
6	Shiroro PV Complex	300	479	Niger State	April 2016 - North South Power Company and Sinohydro Corporation signed USD478.66mn agreement for power plant construction; November 2015 - Proposal sent to Bureau of Public Enterprises and the Nigerian Electricity Regulatory Commission for approval; Phase I is expected to be completed in 2017
7	Motir DuSable Solar Power Plant	300	400	Enugu State	August 2016 - Motir DuSable Power signed MoU with government to develop the project; Project has two phases where Phase I (USD200mn) will inject 100MW and Phase II (USD200mn) will add 200MW; Project will be completed in next 12 to 18 months

8	Motir DuSable Solar Power Plant - Phase I	100	200	Enugu State	August 2016 - Motir DuSable Power signed MoU with government to develop the project; Project has two phases where Phase I (USD200mn) will inject 100MW and Phase II (USD200mn) will add 200MW; Project will be completed in next 12 to 18 months
9	Panyam Solar project	70	150	Plateau State	April 2016 - Work expected to start by end 2016 with completion within 18 months; August 2015 - MOU signed between Siemens and CT Cosmos; Plant to supply power to National Grid; Total Project Value - EUR132mn
10	Nova Scotia Power Project, Dutse	100	150	Jigawa State	December 2016 - Joint development agreement signed with African Development Bank to secure investment; August 2016 - Scatec Solar signed agreement with CDIL and BPS to develop the project; Project will reach financial close by 2017 and start commercial operations 12 months later; July 2016 - 20 year PPA signed with Nigerian Bulk Electricity Trading
11	Manchok Ranch Solar Power Project	50	100	Kaduna State	November 2015 - Access Infra Africa entered a joint development agreement with Quaint Global Energy Solutions to invest in the project
12	Kankia Solar Power Plant	30	70	Katsina State	November 2012 - Katsina State Governor has flagged-off the project, to be completed within eight months; Project to be developed as part of Nigerian-German Energy Partnership; Project cost - EUR55mn
13	Kaduna Solar Power Project	30	63	Kaduna State	August 2012 - Kaduna State government signed MOU with Helios Energy; Project to be developed under Nigerian-German Energy partnership; Project cost - EUR50mn
14	Osun Solar Park	13	40	Osun State	November 2015 - Osun State Government awarded contract toVergnet; Project launch is planned for first half of 2016; Project cost - EUR35mn
15	Kumbotso Solar Plant	50		Kano State	September 2014 - Group of US investors in discussion with Nigerian government to build two 50 MW solar plants in Kumbotso and Karu; Combined cost of two projects is USD106mn
16	Ekiti Solar Power Plant,	125		Ekiti State	February 2015 - Construction to commence in 2016; France based Global EcoPower SA to buy Morocco based Nova Power Group and carry out the project

17	Nasawara Solar Power Plant	150		Nasawara	February 2015 - Construction to commence in 2016; France based Global EcoPower SA to buy Morocco based Nova Power Group and carry out the project
18	Solar Power Project, Lokoja,	120		Kogi State	December 2015 - IFC and Alten to co-develop the solar project; Financial close expected by the fourth quarter of 2016
19	Black Rhino-Dangote Solar Project	100		Kano State	March 2016 - Part of USD10bn joint investment by Black Rhino Group and Dangote Group in energy infrastructure projects which includes coal power plant and a solar energy project in Kano, as well as gas pipeline project from Akwa Ibon to South west Nigeria
20	Sokoto Solar Power Plant	100		Sokoto State	June 2016 - Kunming Engineering and Sokoto state government signed MoU for the project
21	Yola Solar Power Plant, Adamawa	100		Yola State	July 2016 - Nigerian government signed MoU with Nigus Greenergy and Volt Renewables to develop a total of 300 MW which entails investment of USD600mn
22	Kano Solar Power Plant	100		Kano State	July 2016 - Nigerian government signed MoU with Nigus Greenergy and Volt Renewables to develop a total of 300 MW which entails investment of USD600mn
23	Delta State Utility-Scale Solar Project	3000	5000	Delta State	"At planning stage March 2016 - Work to begin soon; May 2014 - SkyPower Global and FAS Energy signed agreements with Nigeria Government to deliver the project over next five years"
24	University of Ilorin Solar Power Plant	500	2300	Kwara State	"At planning stage May 2016 - Arrow Capital and University of Ilorin had concluded arrangements for construction of 500MW solar power plant; Construction expected to commence immediately and completed within five months; Project cost - NGN600bn"
25	FirstGate Solar Park	1000	1000	Kogi State	"At planning stage February 2015 - MOU signed between FirstGate Group and Government of Nigeria, FirstGate Group will have its technical partners from South Korea and Turkey; Project involves construction of 1000 MW solar farm on 2,700 hectares (27 mn sq metres) of land
26	Karu Solar plant, Nasarawa	50			September 2014 - Group of US investors in discussion with Nigerian government to build two 50 MW solar plants in Kumbotso and Karu; Combined cost of two projects is USD106mn
27	Katsina Solar Power Plant	125			February 2016 - Nova Solar power in partnership with Katsina state government is set to construct power plant under PPP

28	Kaduna Solar Power Project	30	63	Kaduna State	"At planning stage August 2012 - Kaduna State government signed MOU with Helios Energy; Project to be developed under Nigerian-German Energy partnership; Project cost - EUR50mn "
29	Osun Solar Park	13	40	Osun State	"Contract Awarded November 2015 - Osun State Government awarded contract to Vergnet; Project launch is planned for first half of 2016; Project cost - EUR35mn"
30	Ajakanga Waste-To-Energy Project, Oluyole	5	25	Oyo State	June 2015 - Ground breaking ceremony held for the project
31	NNPC Renewable Energy Plant		300	Benue State	At planning stage July 2016 - NNPC concluded plans to set up plant that will use agro products to generate energy; Financing will be through joint partnership with foreign partner

3.3 PROGRAMME SUPPORT OPPORTUNITIES IN THE PUBLIC SECTOR

Programme/TA FICHE 1: Management Support for the Nigerian SEFORALL Secretariat

<p>Programme Description: This programme aims to provide SEforAll Technical Advisory services to Federal Ministry of Power on the establishment of the SEforAll Secretariat that will be responsible for the overall development, implementation and monitoring of the SEforAll activities in the Country.</p>	<p>Implementation: Agency: Federal Ministry of Power Partners: TBD</p>
<p>Specific Objectives/Outcomes: E4ALL Secretariat established with a clear mandate, defined functions, implementation programme and an operational budget to fund its SEforAll activities; SEforAll Secretariat with personnel's capacity developed in the different areas integrated in Nigeria's SEforAll Action Agenda (AA) and Investment Prospectus (IP); Nigeria's SEforAll AA and IP revised and updated, with clear defined actions for the post-transitional period (including specific actions at regional level); State Energy Desks to work with the SEforAll Secretariat, to lead, identify, implement and monitor SEforAll activities in their region. SEforAll and State Energy Desks' personnel's capacity developed on SEforAll related activities. Information on SEforAll AA initiatives and objectives and IP investment opportunities disseminated.</p>	<p>Financing: Cost Overview: TBD Funding Allocated: 0 Funding Needs: TBD Status:</p>
<p>Proposed activities</p> <p>(i) Prepare a programme document in support of the institutionalisation and operation of Nigeria's SEforAll Secretariat. This document should include a budget and proposed sources of funding. Once this programme document is approved, support should be provided to the Federal Ministry of Power in pursuing the funding request.</p> <p>(ii) Review and completion of the Nigeria's SEforAll AA:</p> <ul style="list-style-type: none"> • Review of Nigeria's SEforAll Action Agenda, which includes current initiatives by Government, Development Partners, Multilateral Development Banks and other key stakeholders. • Develop a Plan for Energy Data Collection and Processing. • Develop and implement a SEforAll Information Database. • Further develop the SEforAll Monitoring, Evaluation and Reporting (MER) Plan. <p>(iii) Support the SEFORALL Secretariat in designing and implementing SEforAll AA at State level:</p> <ul style="list-style-type: none"> • Creation of State Energy Desks to report on SEforAll planning and implementation and monitoring activities. • SEforAll secretariat to support the Energy Desks in piloting a needs assessment and gap analysis to build a bottom-up approach to improve and update actions under the SEforAll AA and the identification of initiatives/projects suitable for funding (to update and extend the Investment Prospectuses, expand the SEforAll Information Database on a regional level). • Establish a programme for institutional and human resources on a regional level to increase the role of Regional Governments on local and regional energy planning needs and monitoring. <p>(iv) Development of a communication, awareness, sensitisation campaign regarding the Nigeria's:</p> <ul style="list-style-type: none"> • SEforAll AA objectives and initiatives; • IP investment opportunities • Regulatory and Enabling Environment <p>(v) Build capacity of SEforAll Secretariat and State Energy Desk personnel:</p> <ul style="list-style-type: none"> • Management of SEforAll activities implementation; • SEforAll related subjects and nexus areas; and • Monitoring, evaluation and reporting of the SEforAll activities. <ul style="list-style-type: none"> ○ M&E at Generation/Transmission/Distribution nodes of utility grid <p>(vi) Exploration of Innovative Financing Schemes/Partners</p> <ul style="list-style-type: none"> • Project Development Financing • Energy Performance-based Financing 	
<p>Resources (person/months) TBD</p>	
<p>Timeline: ASAP</p>	

Programme/TA Fiche 2: Program in Support of the Nigerian SEFORALL Secretariat

<p>Programme Description: The programme aims to provide a Central Data Management System SEforAll Technical Advisory services to the Government of Nigeria to operationalization the country's Central Data Management System that will be responsible for the overall collation, monitoring and evaluation of SEforAll activities in the Country</p>	<p>Implementation: Lead Agency: Federal Ministry of Power, Works and Housing Partners: TBD</p>
<p>Specific Objectives/Outcomes:</p> <ul style="list-style-type: none"> • To operationalize the Nigerian SEforAll Central Data Management System, which will be the platform for the overall collation of data and monitoring of the SEforAll activities in Nigeria; • To develop Nigeria's SEforAll data gathering and data validation scheme. • To develop a functional website for data management and coordination of SEforAll activities. 	<p>Financing: Cost Overview: N100,000,000 Funding Allocated: Funding Needs: N100,000,000 Status:</p>
<p>Proposed activities</p> <ul style="list-style-type: none"> (i) Prepare a programme document in support of the institutionalisation and operation of the SEforAll data gathering, data validation and public access to data. This document should include a budget and proposed sources of funding (ii) Standardized format for data acquisition and data sharing to the public. Establish reporting format for data management in the country. (iii) Create a user friendly web based data access platform for the general public. (iv) Train and develop capacity for local data gathering expert for a sustainable data management system. (v) Primary Data Collection (Energy Data) 	
<p>Resources (person/days) Sr. International Energy Expert Sr. International Data Management expert Sr. National Energy Expert 100 persons/days distributed through six months of International Expert and 6 months of Local Expert</p>	
<p>Timeline: December 2017 – May 2018</p>	

Programme/TA Fiche 3: Program in Support of the Nigerian SEFORALL Secretariat

<p>Programme Description: The Jigawa Energy City is a concept envisioned by the Ministry of Power, Works and Housing in partnership with the Jigawa State Government, to develop a world class energy City for renewable energy generation companies to produce approx. 1,000 MW of power for evacuation onto the National grid, renewable equipment manufacturers and research institutions.</p>	<p>Implementation: Lead Agency: Federal Ministry of Power, Works and Housing Partners: TBD</p>
<p>Specific Objectives/Outcomes: The key objectives of the project are to:</p> <ul style="list-style-type: none"> • Reduce the country’s energy dependency on gas fired power plants; • Develop a world-class energy cluster for renewable energy developers, equipment manufacturers and research institution to support capacity development and innovation in the renewables sector. • Provide opportunity for solar PV developers to invest and develop power plants to generate clean electricity. • Create jobs in construction, renewable energy development, solar generation etc. • Encourage the development of renewable energy and captive power plants. This is in line with Nigeria’s Nationally Determined Contributions (NDCs) under the Paris Agreement with respect to developing renewable energy projects as an alternative cleaner source of energy. 	<p>Financing: Cost Overview: N200,000,000 Funding Allocated: Funding Needs: N200,000,000 Status:</p>
<p>Proposed activities</p> <p>The key Project development activities are:</p> <ol style="list-style-type: none"> i. Environmental Social Impact Assessment (ESIA) ^[1]_{SEP} ii. Site Survey and Geotechnical Survey iii. Construction of Perimeter Fencing iv. Energy Yield Report/ Analysis v. Power Evacuation Study vi. Development of Masterplan for the Jigawa Energy City 	
<p>Resources (person/days) 3 Sr. International Energy Expert 2 Sr. National Energy Expert 100 persons/days distributed through six months of International Expert and 6 months of Local Expert</p>	
<p>Timeline: December 2017 – May 2018</p>	

Programme/TA Fiche 4: implementation of green credit line – concessionary loan for small and medium renewable energy and energy efficiency projects

<p>Programme Description: A Green Line revolving refinance facility providing long term low interest rate concessionary loans from an Apex Financial Institution through second tier lenders (commercial bank partners) to Small and Medium renewable energy and energy efficiency. Loans to the SM-RE/EE will be granted in local currency. The Green Line Facility will have a volume of \$100million. Topping up of the Facility by Nigerian contribution is considered.</p>	<p>Implementation: Lead Agency: Federal Ministry of Finance Partners: DBN, BOI etc.</p>
<p>Specific Objectives/Outcomes:</p> <ul style="list-style-type: none"> • To provide concessionary loans at low interest rate to Small and Medium Renewable Energy and Energy Efficiency investors; • To facilitate the development of concession renewable energy project by private investors 	<p>Financing: Cost Overview: Funding Allocated: Funding Needs: Status:</p>
<p>Proposed activities</p> <p>(vi) Prepare a framework for the disbursement of the fund.</p> <p>(vii) Prepare a refinancing scheme between the commercial banks and the Development Bank of Nigeria</p> <p>(viii) Prepare guarantee structures for the facility</p>	
<p>Resources (person/days) Sr. International Energy Expert Sr. International M&E expert Sr. National Energy Expert 100 persons/days distributed through six months</p>	
<p>Timeline: September 2017 – February 2018</p>	

Programme/TA FICHE 5: Fund Technical Assistance to ensure fully functioning/Roll-out of the Rural Electrification Fund (REF)

<p>Programme Description: The REF is expected to provide capacity subsidies and grants to the private sector in a clear and transparent manner in order to support electrification in locations that may be considered to be economically unviable. The REF requires skilled personnel to develop key competencies and ensure that the REF operates in an efficient manner.</p>	<p>Implementation: Agency: REA Partners:</p>
<p>Specific Objectives/Outcomes: A fully functioning Fund that supports development of projects in rural communities via capital grants and technical assistance to the private sector. The Fund is also expected to support the REA in the implementation of special projects that will further ensure increased electricity access.</p>	<p>Financing: N/A Cost Overview: Funding Allocated: Funding Needs: Status:</p>
<p>Proposed activities</p>	
<p>Resources (person/months) A</p> <ul style="list-style-type: none"> • Financial specialist, • Technical Specialist, • Legal Expert, • 6 REF managers in each geopolitical zone • Contract management specialist • Regulatory/tariff specialist • Knowledge/Document Management Specialist 	
<p>Timeline: 2 years</p>	

Programme/TA FICHE 6: Rural Electrification Fund (REF) - Fund Embedded Consultants

<p>Programme Description: The Nigerian Rural Electrification Strategy & Implementation Plan (RESIP) envisages that the REA decentralizes technology options for rural electrification, towards more mini-grid/SHS systems.</p>	<p>Implementation: Agency: REA Partners:</p>
<p>Specific Objectives/Outcomes: A REA with competence across board and efficient in carrying out her duties</p>	<p>Financing: N/A Cost Overview: Funding Allocated: Funding Needs: Status:</p>
<p>Proposed activities</p>	
<p>Resources (person/months)</p> <ul style="list-style-type: none"> • IT Team • Project Management Unit • Trust Agents 	
<p>Timeline: 2 years</p>	

ⁱ Total emission avoided in 3 years = 50,000 systems x 1.080 kW x 8 hours per day x 22 working days per month x 12 months x 3 years x 7.03×10^{-4} metric tons CO₂ / kWh = **240,527.232 metric tons CO₂ in 3 years**

ⁱⁱ 50,000 solar systems x 1080 W x 8 hours per day x 22 working days per month x 12 months = 114,048,000,000 Watts (114.048 GWh) every year

ⁱⁱⁱ The 50,000 solar PV systems are targeted at empowering 50,000 MSMEs

^{iv} 50,000 MSMEs x 5 new employees per MSME = 250,000 new direct jobs

^v Payback Period = Total System Cost ÷ Value of Electricity Generated ÷ Your Annual Electricity Usage =
700,000 / 24 N/kWh / 2280.96 kWh = 12.787 years

^{vi} 50,000 solar PV systems x 1,080 Watts per system = 54,000,000 Watts (54,000kW or 54MW)

^{vii} Capital Expenditure – Procurement of 50,000 units of 1.08 W solar PV systems @ € 2,220 = € 111,000,000.00

Developmental + Project Administrative costs = € 3,120,000.00

Total Project Cost = € **114,120,000.00**