IFC International Finance Corporation
World Bank Group

GSMA Green Power for Mobile

In partnership with the Netherlands

etisalat

GREENING THE NETWORK

BY

ETISALAT NIGERIA

Introduction: Etisalat Nigeria

Emerging Markets Telecommunication Services (EMTS), trading as Etisalat, is a Nigerian company duly incorporated under the laws of Nigeria in partnership with Mubadala Development Company and Etisalat of the United Arab Emirates. Incorporated in Nigeria as a private company, it acquired the Unified Access License from the Federal Government in January 2007. The license includes a mobile license and spectrum in the GSM 1800 and 900 MHz bands. Etisalat acquired a 40% stake in EMTS and is now the operator of the Unified Access License. In Nigeria, Etisalat made the first official call on its network on 13 March 2008 in the presence of officials from the Nigerian Communications Commission (NCC) and the Senate of the Federal Republic of Nigeria.

In September of same year, it kicked off commercial operations with the innovative 0809uchoose campaign which enabled Nigerians choose numbers special to them as their mobile numbers. Full commercial operations began in October 2008.

Etisalat Nigeria has seen unprecedented growth in the Nigerian telecoms industry with 15 million subscribers as at December 2012 and consistently demonstrates its core values of – teamwork, integrity, passion for excellence, empowering our people and growing our people to Nigerians as it offers them world-class telecommunications services.

Etisalat Nigeria & energy challenges

Energy challenges faced in the course of operation includes:

- Non availability or low availability/reliability of grid supply.
- Huge Capex on diesel generators for powering up sites
- High maintenance/service cost on diesel generators
- Huge Opex cost as a result of reliance on diesel for running of the generators.

IFC International Finance Corporation
GSMA Green Power for Mobile
In partnership with the Netherlands

etisalat

Difficulties encountered in energy provision and management

Mobile network operator(s) are confronted with the challenge of growing their networks to satisfy the rising customers demand.
Hence, they encounter pain points in terms of energy provision and management as highlighted below:

- Non availability or low availability/reliability of grid supply
- Energy cost
- Fuel theft
- Climatic information
- Telecom traffic growth and associated power growth
- Technologies used and deployed
- Site design
- Managing the energy part of the network as a separate stream of the other operational network activities

IFC International Finance Corporation
GSMA Green Power for Mobile
In partnership with the Netherlands

etisalat

Key drivers for green power deployment and targets for going green

Energy cost- Opex savings.

•Environmental friendly

•Improved Network availability

• Better Return on Investment(ROI)

•Reliability & Resilience

•BTS sites located in off grid town/villages were targeted for green power.

•Also, BTS sites in urban/metropolitan cities were targeted for green power to reduce the carbon foot print and as such ensure healthy environment.

Major challenges in implementing the green power initiatives and way forward

- Delay in arrival of ordered hybrid power equipment
- Operational issues at sites
- Load growth
- Battery cabinet were prone to theft
- Different remote monitoring systems

Challenges in choosing CAPEX vs. OPEX model for green power deployment

There are challenges in choosing green power deployment in terms of CAPEX vs. Opex as stated below:-

•High CAPEX is always associated with green power models- most especially where the site load is relatively high.

•Solar panels are prone to theft and vandalism thus increasing Capex replacement

•Since energy has to be stored, cost of battery is expensive, Thereby diving the CAPEX.

•There is need for Standardized metric for measuring energy efficiency of different green power models.

•Availability of spare parts and local support.

•High Opex cost –during battery replacement.

•Diesel consumption

•Generator maintenance and replacement cost when used as secondary source in the green sites

IFC International Finance Corporation
GSMA Green Power for Mobile
In partnership with the Netherlands

etisalat

Challenges in choosing CAPEX vs. OPEX model for green power deployment

•Space constraint as green power models like solar hybrid, require more space for the solar panels hence posing a challenge in terms of site size which in turn form additional cost in acquiring bigger sites.

•Climatic conditions in terms of solar radiation, wind speed and average temperatures determines the type of green power model to be deployed in a particular geographical location to maximize savings. This also makes it difficult to have generic model for all site of same load configuration.

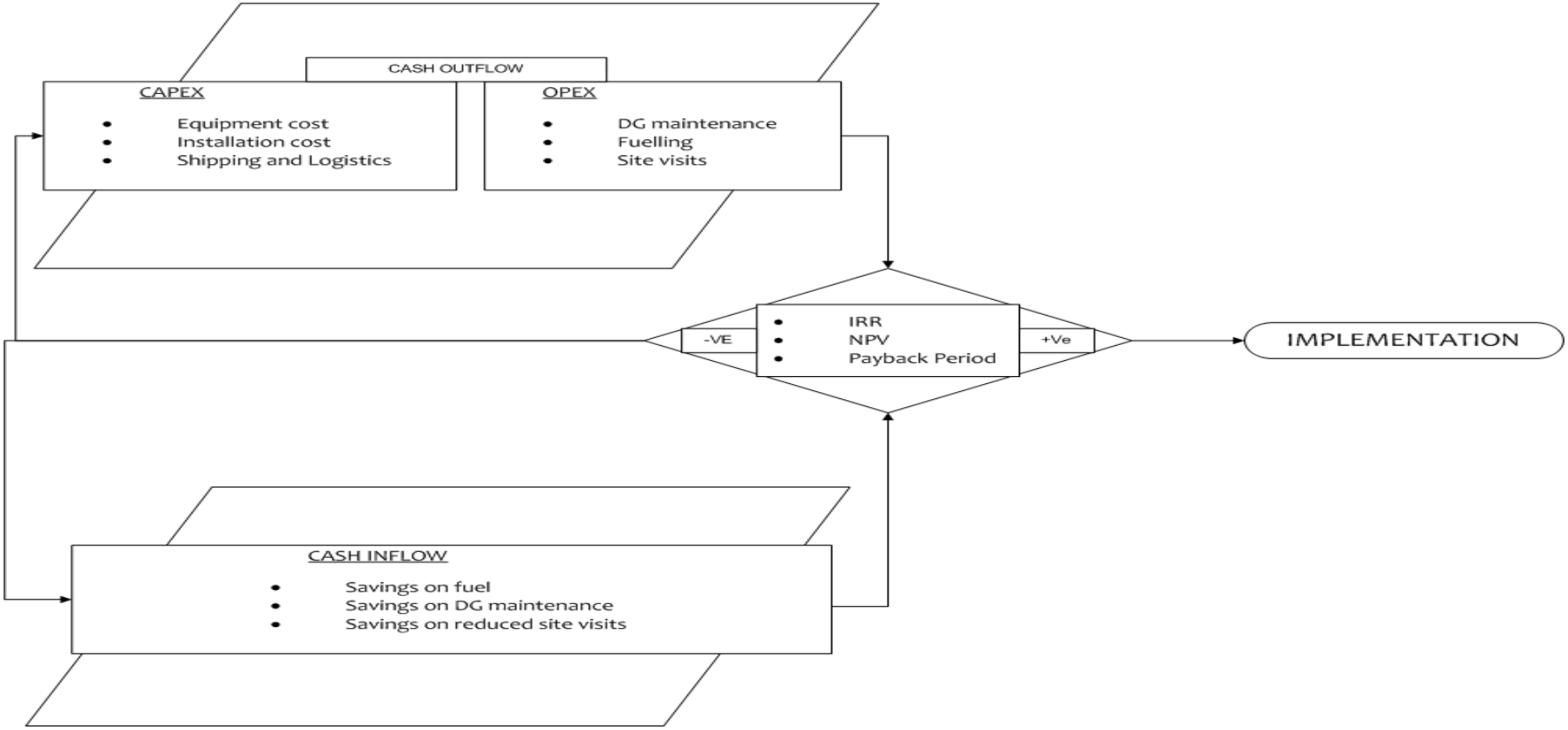
•Return on investment (ROI)varies for different green power models.

•Internal rate of return(IRR) varies for different green power models

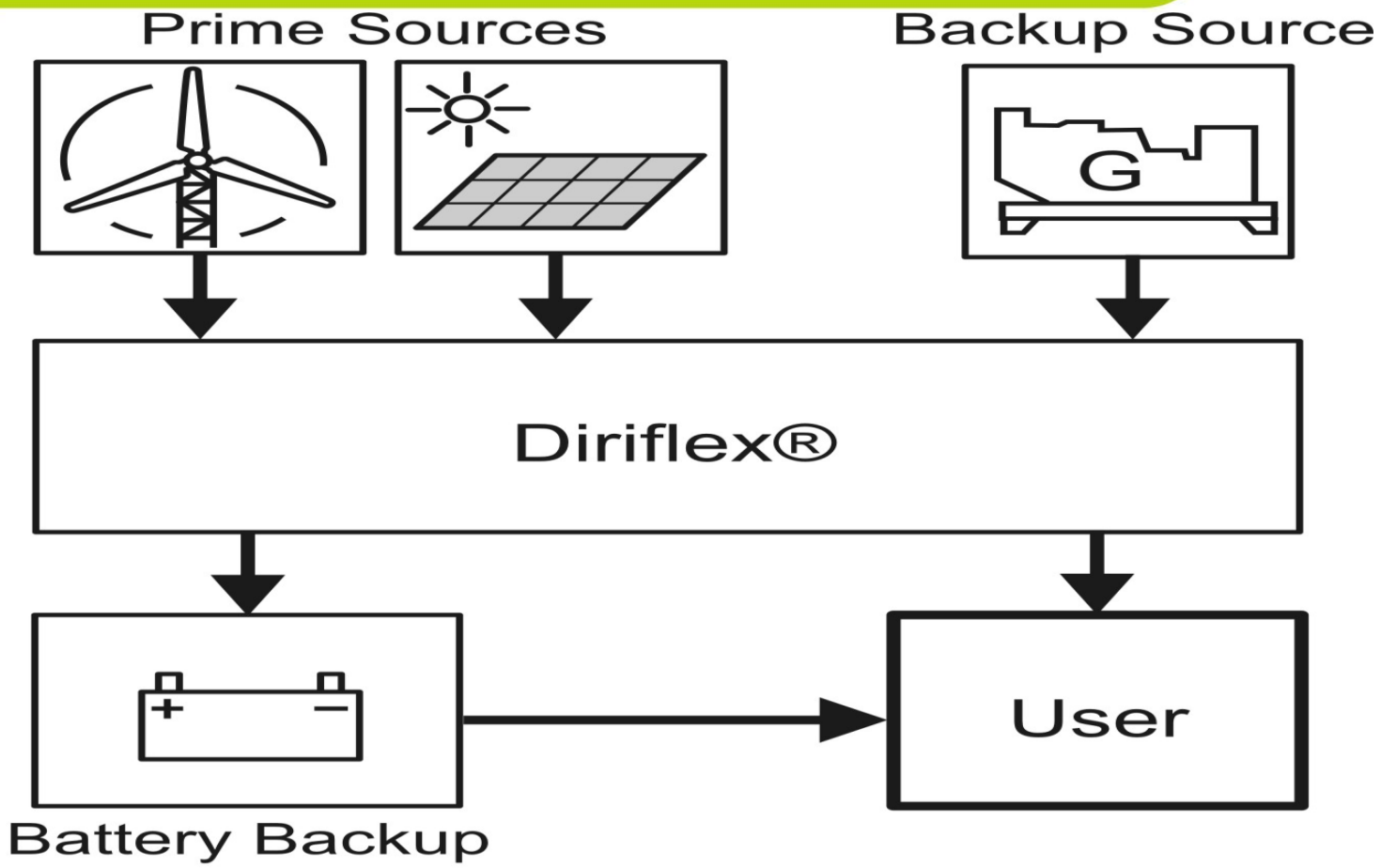
•Net present value(NPV) varies for different green power models

•Total cost of ownership(TCO)

Choice of green power: inputs and variables



Wind-Solar Power Solution (Pilot) in Etisalat Nigeria



IFC International Finance Corporation
GSMA Green Power for Mobile
In partnership with the Netherlands

etisalat

Wind-Solar Pilot Site in Etisalat Nigeria





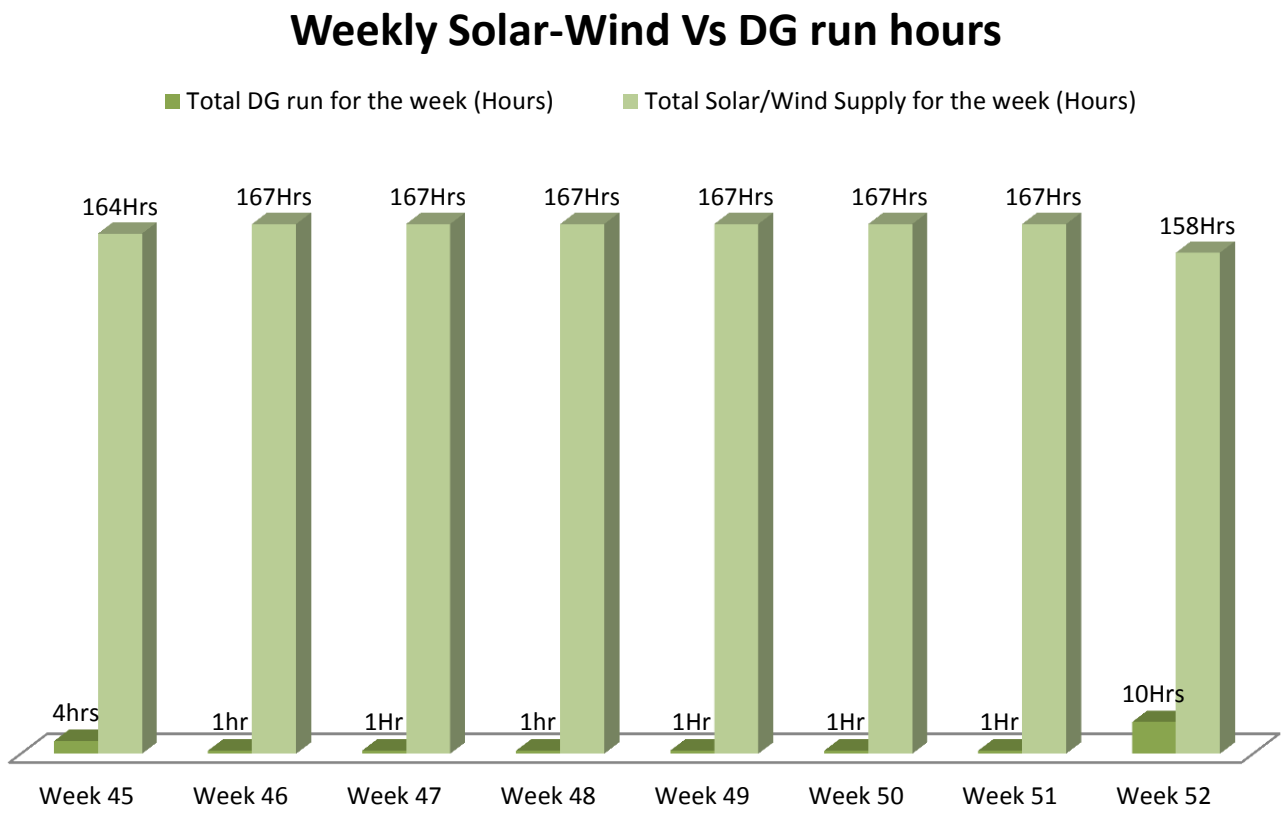


Wind-Solar Pilot Site

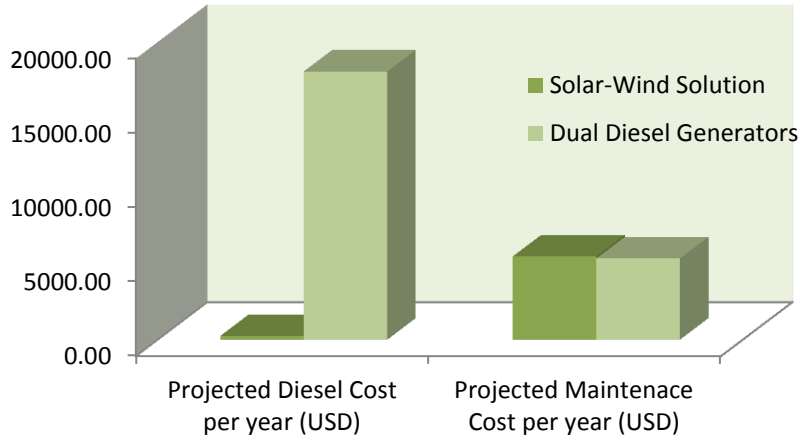
1. Site Details	
SITE ID:	B2354
LOCATION:	Malam Madori Jigawa State
TRX CONFIGURATION	2/2/2/2
SITE DC LOAD	1.5kW
GENERATOR CAPACITY:	13KVA

2. Solar-Wind Power Parameters	
Solar Capacity	2.4kW
Wind Turbine Capacity	6kW
Battery Banks	760Ah

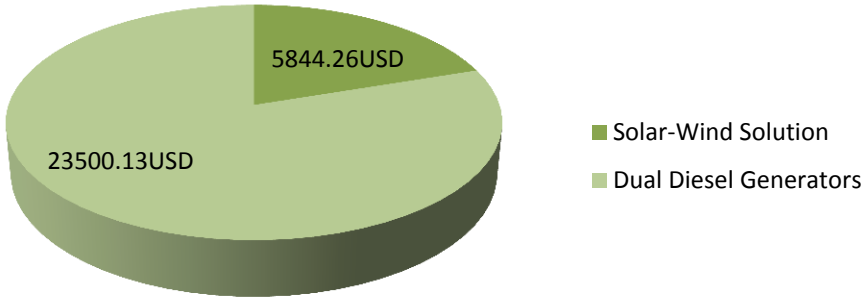
Wind-Solar Site (Pilot) in Etisalat: Performance



Wind-Solar Site (Pilot) in Etisalat: Opex Comparison



Total projected Opex per year (USD)



IFC International Finance Corporation

GSMA Green Power for Mobile

In partnership with the Netherlands

etisalat

Lesson learned from implementing the green power strategy and initiatives

•Based on the fact that different site type exist in terms of site configuration which translates to different sites load; green power strategy should endeavour to cover all site models and allow for unexpected growth on per site basis.

•Terminal sites with lesser load yield more saving when on green power solution.

•Green power is more environmental friendly due to reduction in diesel usage which will in turn reduce air and noise pollution thereby ensuring cleaner and healthier environment.

•Reduction in diesel consumption and generator run hours which translates to Opex savings.

• Reduced frequency of generators maintenance which translates to Opex savings

• Optimization of site electrical design in such way that new equipment are developed using newer technologies as they have low power consumption and as such savings in energy cost.

• In depth feasibility studies to be conducted on per site basis prior to deployment of green power so as to ensure the overall energy strategy/vision of the mobile network operator is captured at the design stage prior to implementation.

•Operational issues at existing sites earmarked for green power deployment should be resolved prior to implementation period to avoid delays plus elongated project completion date and as such affecting projected savings.

• Green power systems should adopt a universal monitoring tools that can easily fit into existing platforms.
•Adoption of scalable solutions to address reduced savings due to load growth.

Expectation from different stakeholders to promote green power

•**Government**:- Grant some subsidies on imported green power equipment or reduce the duty charged on such goods.
Provide research funds/grants that will enable local development /improvement in green power for mobile network operators as way of encouraging investors by reducing cost of doing business in the country which in turn will translate to lesser tariff being charged by operators thereby making their services affordable to all. Clearing process at the sea port should be improved by removing all identified bottlenecks so that goods are cleared within the shortest possible time-say within 48hours.

•**Regulators**:-The regulatory bodies should come up with a roadmap that will compel the mobile network operators to embrace the green power model in powering their BTS sites as this will reduce the MNO's Opex cost as well as reduce the carbon footprint. This will ultimately lead to tariff reduction on all MNO services.

•**Supply side**:- Vendors in green power projects should be thorough in their design / implementation to ensure it meets the mobile network operator's green power strategy. This way the overall objective of reduction in energy cost and friendly/healthier environment in terms of noise and air pollution will be greatly achieved.

IFC International Finance Corporation
Worldbank Group

GSMA Green Power for Mobile

In partnership with the Netherlands

etisalat

Together we shall adopt green power for our networks.

THANK YOU ALL