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13th ANNUAL

UNIVERSAL ACCESS TO ENERGY:
Ghana’s Rural Electrification – A Case Study

AFRICAN
UTILITY
WEEK
DELIVERING BEYOND TOMORROW

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PRESENTATION OUTLINE

- Overview of the Ghana
- Historical Background
- National Electrification Scheme
- Implementation Strategy & Schemes
- Managing Rural Electrification
- Financing Strategy
- Financing Sources
- Key Challenges
- Key Success Factors
- Way Forward
- Conclusion
Overview of Ghana

- Land Area: **238,500 km²**
- Population: **24,658,823** (2010 Census)
- Electricity Access: **72%** (2011)
- Rural Access: **45%** (2011)
- Consumption/Capita: **443.3kwh** (2012)
- Av. GDP Growth Rate: **9.2%** (2012)

Major Export: **Cocoa, Gold, Timber, Bauxite, Oil, Electricity** (Togo, Benin & Burkina Faso)
HISTORICAL BACKGROUND

• **Rural Electrification** was initiated in Ghana in 1970

• **Objective** was to bring electrification to rural areas, as a means of reducing the urban-rural inequalities and increase economic activity in the rural areas

• About 70 communities benefited from the installation of diesel generating plants with corresponding distribution networks

• Beneficiary communities contributed about 1% of the capital cost.
Rural Electrification -
The National Electrification Scheme

- National Electrification Policy was instituted in 1989 to replace the 1970 policy.
- National electrification access was then about 25%.
- 46 out of the 110 district capitals existing then were connected to the grid.
- Less than 5% rural coverage estimated at the time.
- *National Electrification Levy* was instituted and the levies collected were paid into a *National Electrification Fund* established to support implementation of the rural electrification programme.
National Electrification Scheme (NES)

- **Goal** of NES is to achieve universal access of reliable electricity supply to all communities over a 30-year period (1990-2020).

- **Aims:**
  - to enhance socio-economic development nationwide; and
  - to reduce level of poverty nationwide, particularly in the rural areas.
National Electrification Scheme –
Specific Objectives

• Promote use of local and indigenous resources for a cost effective implementation of rural electrification.
• Create employment and increase productivity and wealth.
• Promote growth of agro-based & small scale industries.
• Reduce the rate of rural-urban migration.
• Improve information access and communication services nationwide.
• Improve the quality of life of rural folks.
National Electrification Scheme – Implementation Strategy

• Developed a comprehensive National Electrification Master Plan for 4,221 communities.
• All possible options of electrification to be considered including grid extension and off-grid renewable energy-based solutions such as biomass, solar, wind & small hydro.
• 69 grid-based electrification project packages identified and prioritized for implementation over six 5-year phases.
National Electrification Scheme – Implementation Strategy (Contd.)

• Connection of district capitals given first priority (64 district capitals in total) and completion of already ongoing projects - Phase One

• Subsequent phases prioritized based on: economic, political, traditional & historical factors:
  - potential for small-scale industry activity;
  - status as commercial market center;
  - tourism potential;
  - political dispensation; and
  - historical importance of area.
National Electrification Scheme – Self-Help Electrification Programme (SHEP)

• SHEP is complementary electrification programme instituted to support the main NES.
• Rationale: To accelerate the connection of communities to the national electricity grid.
• Introduced by government to encourage the self-help developmental initiatives of communities.
• Communities that initiate their township electrification projects receive government support for completion of the projects earlier than the scheduled date of connection under the NEMP.
SHEP
Criteria for joining SHEP

- Community must be within 20 km of an existing 11kV or 33kV network suitable for further extension.
- Community must procure and erect all the low voltage electricity poles required for the local network.
- Evidence of a minimum of one-third of houses in the community wired and ready to receive electricity.
- Community must apply to join SHEP thru its District Assembly.
Managing Rural Electrification

- Rural Electrification is Managed and Implemented by the Ministry of Energy
- Designed and Supervised by Local Consultants
- Constructed by Local and Foreign Contractors
- Co-supervised by Engineers of the beneficiary agencies which are the Distribution Utilities.
FINANCING STRATEGY

• Public Private Partnership Arrangements
• Multilateral & Bilateral Sources from Development Partners
• Public Sector – Budget & Concessional Loan Facilities for “Special” Infrastructure Programmes
• National Electrification Levy (Consumers)
• Internally Generated Funds from Power Sector Companies
Financing Sources
NES programmes are financed through a mixture of Local and External Sources.

<table>
<thead>
<tr>
<th>Local Sources</th>
<th>External Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Consolidated funds,</td>
<td>• Grants</td>
</tr>
<tr>
<td>• Levy on consumers of electricity,</td>
<td>• Export Credits and</td>
</tr>
<tr>
<td>• Contribution from electricity Utility Agencies,</td>
<td>• Concessionary loans from Multilateral &amp; Bilateral Funding Agencies</td>
</tr>
<tr>
<td>• Local government sources (District Assemblies &amp; MP’s Common Fund)</td>
<td>• Suppliers Credit (Guarantee Eximbank)</td>
</tr>
<tr>
<td>• Communities and</td>
<td></td>
</tr>
</tbody>
</table>
## Summary of Funding

<table>
<thead>
<tr>
<th>Source of Funding</th>
<th>Beneficiary Communities</th>
<th>Foreign USD (million)</th>
<th>Local USD (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilateral</td>
<td>1002</td>
<td>183.58</td>
<td>13.02</td>
</tr>
<tr>
<td>Multilateral</td>
<td>554</td>
<td>163.03</td>
<td>0.28</td>
</tr>
<tr>
<td>Government of Ghana</td>
<td>1,865</td>
<td>207.80</td>
<td>118.12</td>
</tr>
<tr>
<td>On-going</td>
<td>4,880</td>
<td>966.55</td>
<td>94</td>
</tr>
<tr>
<td>Renewable</td>
<td></td>
<td>28.75</td>
<td></td>
</tr>
</tbody>
</table>
KEY CHALLENGIES

• Poverty Level of the Rural People
• High Cost of Grid Extension to thinly Populated and Remote Areas.
• Lackluster Acceptability of Off-grid Systems
• Ownership, Management & Operations of Renewable Systems especially Mini-grid.
• Inadequate Funding - Government Budget Support – Inadequate & Unreliable; Low Level of Electrification Levy.
• Lack of Private Capital
• Lack of Commitment of the Utilities
Key Success Factors

• Political Will
• National Consensus and Policy Drive
• National Priority on Infrastructure Development
• Mix Technology Approach
• Governance Structure
• Funding
Key Success Factors  Cont…

• Implementation Plan and Execution
  – Prepare National Electrification Master Plan (NEMP)
  – Community involvement or participation is key
  – Execute in phases through acceptable criteria
  – Use as much as possible Local capacity - Consultants and Contractors.
WAY FORWARD

• Financing RE Projects is a daunting task for developing countries
• Government Policy towards Poverty Alleviation/Wealth Creation in Rural Areas must be pursued vigorously
• Rural Electrification Fund (REF) must be established
• Local Government, Communities and Consumers should contribute to the RE Fund (directly or indirectly)
• Private Investors should be encouraged to fund RE Projects
WAY FORWARD  cont…

• The RE Levy should be made a percentage of Energy Consumption
• Government Budgetary Allocation should be adequate and released timely
• Development Partners should continue to assist RE with lesser conditionalities
• Planning for Electrification Access must be holistic to cater for the entire power value chain, to avoid Generation shortfalls and Transmission & Distribution Systems overloads.
• Hybrid Renewable Schemes should be considered.
• Grants & Micro-financing schemes can be instituted for Renewable Projects for Remote Areas
Access to Electricity is essential for reducing urban-rural inequalities.

It is a catalyst for improving socio-economic development of the people.

Empowers them to create wealth and reduce their poverty levels.

Ghana is on course to achieving universal access by 2016.

The collaboration and commitment of government, development partners, local communities, private sector, utility agencies and consumers are crucial.
THANK YOU AND GOD BLESS YOU