ACHIEVING UNIVERSAL ACCESS AND OPTIONS FOR FINANCING

Presented by

Ing. Sulemana Abubakari
(Dep. Dir. (materials), Ministry of Energy)

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Presentation Outline

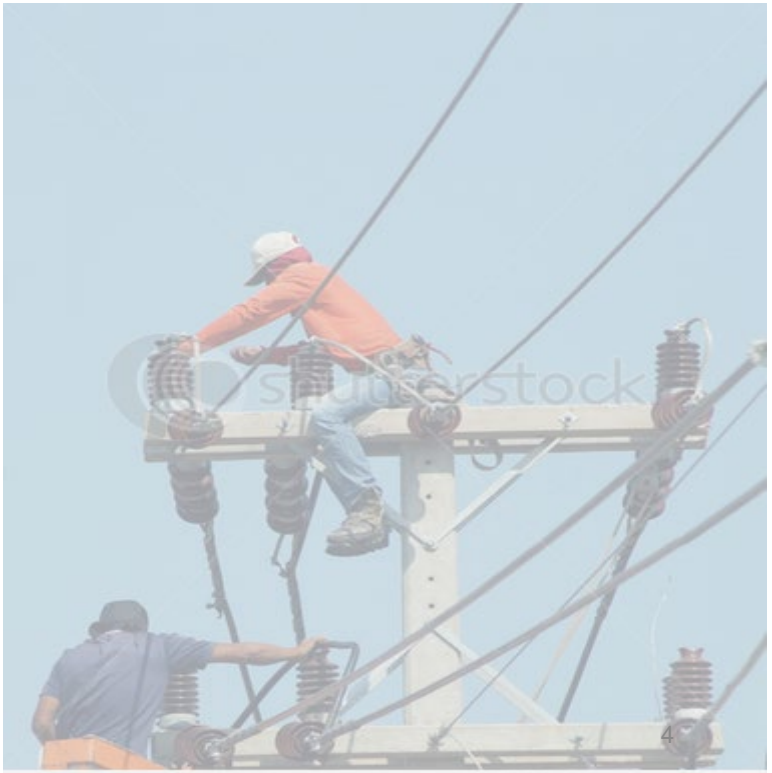
- National Electrification Scheme (NES)
- Goals and Objectives of the NES
- Self-Help Electrification Programme (SHEP)
- Regional Distribution of Electricity Access
- Financing NES Programmes
- Key Challenges of NES Programmes
- Way Forward

The National Electrification Scheme (NES)

- National Electrification Policy was instituted in 1989 to replace the 1970 policy.
- National electrification access was then about 20%.
- 46 out of the 110 district capitals existing then were connected to the grid.
- Less than 5% rural coverage estimated at the time.
- NES over 30 years, with 6no. 5-year phased programme

PROGRESS MADE

- SHEP is a complementary programme under the NES
- The implementation of SHEP was also in phases, in accordance with the main NES phases.
- By 2009, the NES/ SHEP was in its fourth phase of implementation and about
  4,132 communities
  (out of about **84,000** communities identified)
  representing electrification access of **66.7%**



PROGRESS CONTD

- In 2010, after 20 years of implementation of the NES Master Plan, Government commissioned a study to review its implementation, and to develop a revised Master Plan for the period 2011 to 2020 for achieving universal access.

- A total of **2,563** urban centres with population greater than 500 were identified in the revised plan involving an estimated total population of **2.6 million** representing national access of **86.5%**.

- The review indicated that an estimated implementation cost of **US$722** million was required.

- By the end of 2018, actual national electricity access was **84.3%**, with over **11,000** communities connected to the national grid, at a total cost of about US$2.0 billion

PROGRESS CONTD....

Item	Region	2009 (%)	2011 (%)	2013 (%)	2015 (%)	2016 (%)	2017(%)	2018 (%)
1	Greater Accra	95.77	97.00	97.00	96.43	96.61	96.83	96.83
2	Ashanti	80.91	82.00	85.10	90.48	90.62	91.45	91.45
3	Central	69.61	81.00	82.70	84.32	86.87	88.84	88.84
4	Brong Ahafo	62.53	67.00	71.70	75.77	79.50	80.18	81.89
5	Eastern	61.34	70.00	72.80	78.56	80.03	81.29	81.29
6	Western	59.30	68.00	72.50	78.12	82.34	85.90	85.93
7	Volta	58.33	65.00	67.80	79.09	82.87	82.73	82.73
8	Northern	43.52	50.00	50.00	54.53	62.69	62.73	62.73
9	Upper West	31.95	40.00	66.90	71.62	75.82	73.57	73.53
10	Upper East	30.39	44.00	50.60	51.65	58.78	60.62	60.62
National Access Rate		**66.70**	**72.00**	**75.60**	**80.51**	**83.24**	**84.10**	**84.32**

NES Strategy

- At the inception of NES implementation, about 4,200 communities were identified as communities having **population** of more than **500,** and therefore qualified for connection to the national grid.
- The **NES Master Plan** identified and prioritized **69** grid-based electrification project packages for implementation over six 5-year phases.
- The connection of District Capitals was given first priority (64 district capitals in total) as well as completion of already ongoing projects, and thus included in the first phase of the Master Plan.
- Subsequent phases were prioritized based on **economic criteria**, as well as **political, traditional and historical** factors.

Key Considerations

Continuous review of the NES within the context of the exigencies of Ghana's last-mile electrification (grid and off-grid) vis-a-vis;

- analysis to identify **optimal technology solutions** for un-electrified communities and assess the required system sizes and quantities
- prioritized project packages accompanied by **investment appraisals**
- **Investment Plan** for the implementation of the prioritized project packages, towards universal access.

Key Considerations - Contd

1. **The applicable Electrification Technologies -** (technical specifications and standards, maintainability of systems, equipment sizing, modularity, safety, construction standards, low maintenance, Productive-Uses, and environmental impact for grid and off-grid solutions, etc.);
2. **The Financing Arrangements** – (analysis of the per connection cost implications of various funding sources, the implications in respect of implementation limitations imposed by certain funding sources, and the general pros and cons of the existing funding arrangements and sources; the financial management procedures and processes over the project cycle..)
3. **The Institutional Arrangements** – (an assessment of the existing roles and capacities of the institutions for undertaking the key functions such as arranging for finance, System design, System installation, Project Management, Monitoring and Evaluation, and Operations and Maintenance)
4. **The implementation processes from start to finish**, to optimize the time, cost and quality assurance procedures and processes associated with project delivery
5. **The Criteria for developing project packages,** as well as prioritizing and scheduling projects in the Electrification Master Plan

Role of Development Partners

- The World Bank and other Bi-lateral funding agencies have supported the implementation of the National Electrification Scheme (NES) from its inception in 1989.
- The National Electrification Project (NEP), which was donor funded and executed between 1995 and 2000 comprised the electrification of the first two phases of the NES as outlined in the National Electrification Master Plan (1990-2020).
- The project covered the electrification of 23 un-electrified District Capitals and four hundred (400) other towns/villages en-route to the District Capitals.
- Other electrification project concessions have been supported through Grant Aid financing by various foreign Governments and Development Partners to-date.

FUNDING OF THE NES & SHEP PROJECTS

Project	Funding Agency	Type of funding
NES	JICA, DANIDA World Bank, Dutch Govt.(ORET), SIDA, FINIDA, NDF, etc.	Grant Soft loans*
SHEP	Indian Exim Bank, US Exim Bank, SIDA, FINNIDA & South African Govt., Chinese Exim Bank India Exim Bank Govt. budgetary support	Soft loans*

*Subject to Ministry of Finance's Concessionality Criterion

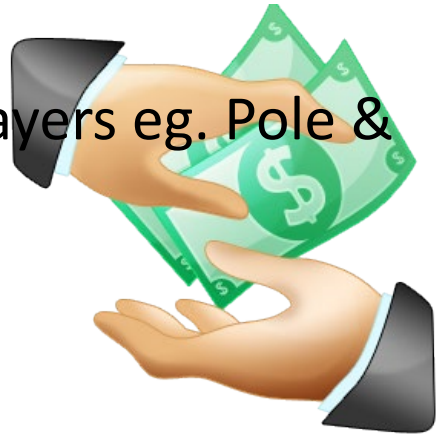
NATIONAL ELECTRIFICATION ACCESS BASED ON POPULATION				
Region	**Access Rate (%)**	**Population**	**Population with access**	**Population without access**
ASHANTI REGION	91.45%	5,216,023	4,769,915	446,108
BRONG AHAFO REGION	90.88%	1,163,029	1,056,974	106,055
AHAFO REGION	79.75%	461,206	367,832	93,374
BONO EAST REGION	72.05%	961,434	692,675	268,759
CENTRAL REGION	88.85%	2,097,288	1,863,402	233,886
EASTERN REGION	81.29%	2,991,222	2,431,665	559,557
GREATER ACCRA REGION	96.47%	4,769,188	4,600,851	168,337
NORTHERN REGION	67.04%	1,679,098	1,125,633	553,465
NORTHERN-EAST REGION	57.28%	464,045	265,791	198,254
SAVANNAH REGION	48.17%	394,438	190,004	204,434
UPPER EAST REGION	60.62%	1,113,487	675,004	438,483
UPPER WEST REGION	73.53%	761,894	560,198	201,696
VOLTA REGION	88.81%	1,985,453	1,763,345	222,108
OTI REGION	66.09%	710,326	469,444	240,882
WESTERN REGION	90.21%	1,716,812	1,548,682	168,130
WESTERN NORTH REGION	77.14%	830,986	641,056	189,930
TOTAL	**84.28%**	**27,315,929**	**23,022,470**	**4,293,459**
NATIONAL AVERAGE	**Population with Access/Total Population**			**84.30%**

Financing NES Programmes

Funding Sources

Internal Sources

- Consolidated funds (Government of Ghana Budget)
- Levy on consumers of electricity (NES Levy)
- Contribution from electricity Utility Agencies,
- Local government sources (District Assemblies & MP's Common Fund)
- Communities and
- Local Content (Industrial Players eg. Pole & Cable Manufacturers)

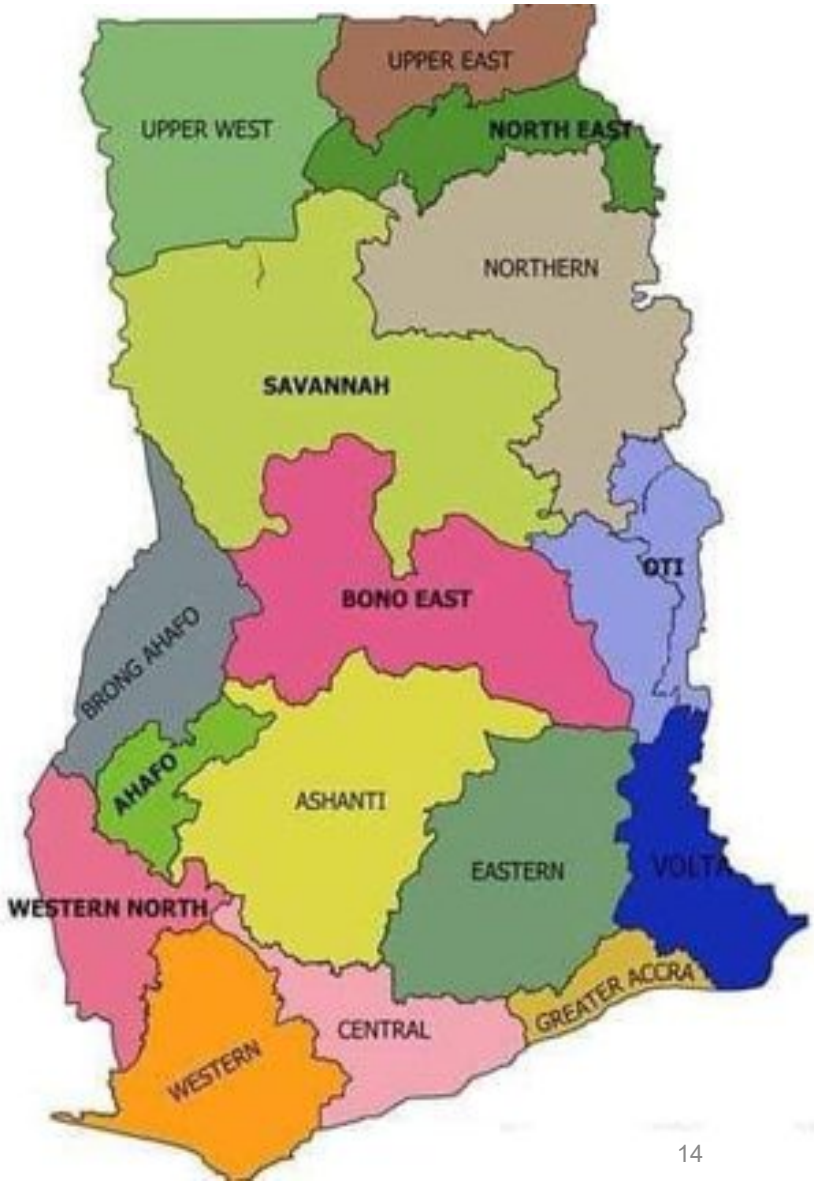


External Sources

- Grants
- Export Credits and
- Concessionary loans from Multilateral & Bilateral Funding Agencies
- Suppliers Credit (Guarantee Eximbank)

Regional Distribution of Electricity Access

REGION	ACCESS RATE (%)
UPPER WEST	73.53
UPPER EAST	60.62
NORTH EAST	57.28
NORTHERN	67.04
SAVANNAH	48.17
BONO EAST	72.05
BRONG AHAFO	90.88
AHAFO	79.75
ASHANTI	91.5
EASTERN	81.29
OTI	66.09
VOLTA	88.81
WESTERN NORTH	77.14
WESTERN	90.21
CENTRAL	88.85
GREATER ACCRA	96.47
NATIONAL	84.28



UNIVERSAL ACCESS TO ELECTRICITY FORECAST

- Reference to the Ministry's NES GIS-based data, a little over Three Million (3,000,000) of Ghana's population do not yet have access to the electricity grid.
- It is estimated that between USD 600 million to USD 900 million would be required to connect outstanding communities (about 17,300) to the national grid.
- This estimate includes cost for both materials supply only component and turnkey (i.e. supply & installation).
- The material supply only component which is executed under the NES directly by the Ministry of Energy is estimated at USD130 million.

ASSUMPTIONS

- The average cost for electricity connection (by existing grid) to a household is USD 1000.
- The average cost for electricity connection (through mini-grid or similar stand-alone systems) to a household is USD 2000.
- The population per household is 6.
- Based on a population of 3.5 million, about six hundred thousand (600,000) households remain to be connected to the national grid.
- Universal access means $\geq$ 90% access.

ON-GOING ELECTRIFICATION PROJECT

Item No.	Project Description	No. of Towns
1	Self-Help Electrification Project (SHEP) Phase IV	1,796
2	Self-Help Electrification Project (SHEP) Phase V	312
3	Turnkey Electrification Project by Weldy Lamont	326
4	Turnkey Electrification Project in 5 regions by CWE Ph-2	580
5	Turnkey Electrification Project by Hunan Ph-1	556
	Total	**3,570**

PIPELINE GRID ELECTRIFICATION PROJECTS

Item No.	Project Description	No. of Towns	Budget (Million USD)
1	Turnkey Electrification Project by CWE Ph-2	700	103
2	ECOWAS Bank for Investment & Dev't funded project	220	30
3	Turnkey Electrification Project by Sinoydro	2000	185
4	Turnkey Electrification Project by TBEA Hengyang Co. Ltd.	400	50
5	Turnkey Electrification Project by Sinoydro	1098	100
Total		**4,418**	**468**

Key Challenges of NES Programmes

- Poverty level of the Rural People.
- Growing Cost of Grid Extension to sparsely populated areas
- Inadequate funding due to Strict conditionalities of Development Partners and rising cost of borrowing
- Financial Constraints of the Utilities and Inadequate Tariffs
- High investment cost for renewable Energy technologies
- Pressure on existing Transmission /Generation facilities

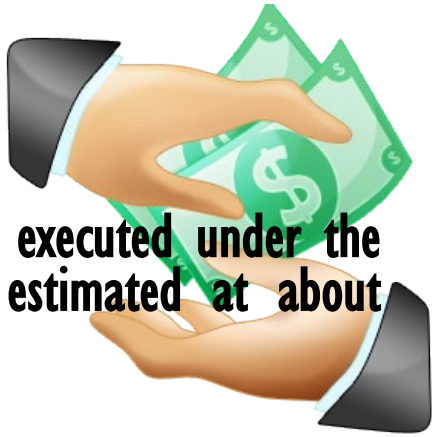
MINI/OFF GRID ELECTRIFICATION

- This component of the National Electrification Scheme is to connect communities in remote (hard to reach) and off-grid areas through mini/off-grid solutions.
- Over 100 mini-grid systems and 33,000 stand-alone solar systems have been earmarked by the ministry for which socio-economic studies have been done. The estimated cost is USD83 million.
- Over 20 mini grid systems installed
- Funding secured for new mini grids installations

Financing NES Programmes

- It is estimated that between USD 600 million to USD 900 million would be required to connect outstanding communities to the national grid

- This estimate includes costs for both materials procurement only (installation by local contractors) and turnkey /EPC contracts (i.e. supply & installation)



- The material supply is the only component which is executed under the NES directly by the Ministry of Energy and it is estimated at about USD130 million

Way Forward

- The NES has come a long way in advancing Ghana towards universal access to electricity (current access is 84%).
- Completion of the remaining scope of works (including remote areas) by the targeted date is achievable if the funding requirements are adequately and timely met!
- Options for more favourable financing terms and evolving implementation strategies necessary!
- The Feasibility And Investment Planning Study for Ghana's Last-mile Electrification under the Ghana Energy Sector Transformation Initiative Project (GESTIP) may help provide some solutions!