

The future of Private Sector investment in Renewable Energy in Uganda

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Presentation

by

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OUTLINE OF PRESENTATION

- 1) Introduction
- 2) Key Issues/Challenges in the Energy sector
- 3) Measures to address the challenges
- 4) Future of Renewable Energy Development
- 5) Scaling up Renewable Energy Project
- 6) Conclusion.

1.0 INTRODUCTION

Energy is a key priority sector for
Government

Key Priorities in the Energy Sector

- a. increase electricity generation capacity and transmission network;
- b. increase access to modern energy services through rural electrification and renewable energy development;
- c. Promotion of efficient utilization of energy.

2.0 ISSUES/CHALLENGES IN THE ENERGY SECTOR

- Energy projects are capital intensive hence the need to secure reasonably priced capital for the projects.
- Inadequate financing mechanisms and other incentives to facilitate investment in RETs.
- Low level of access to electricity (about 20%) coupled with low Per capita electricity consumption (100 kWh) compare with other countries, Africa - 600 kWh (Average) Korea – 8,500 kWh, South Africa – 5,000 kWh and China – 2,400 kWh.

2.0 ISSUES IN CHALLENGES IN ENERGY SECTOR CONT'D

- Population is widely dispersed making rural electrification expensive.
- High power losses in the power network that has a negative impact on the tariff.
- Low public awareness about the benefits and availability of renewable energy technologies (RETs):
- Underdeveloped markets in RETs equipment and services.

3.0 MEASURES TO ADDRESS THE CHALLENGES

A. Reforms in the power sector were introduced.

- To increase investment in the power sector.
- To increase financial and operational efficiency of the sector.
- Increase access to affordable electricity services.
- To improve energy governance and administration

3.0 MEASURES TO ADDRESS THE CHALLENGES

B. Putting in place an Appropriate Policy in place

i) The Energy Policy for Uganda

Goal: To meet the energy needs of Uganda's population for social and economic development in an environmentally sustainable manner

ii) Renewable Energy Policy for Uganda 2007

- It aims to provide a framework to increase in significant proportions the contribution of renewable energy in the energy mix.

Main features:

- Introduced the feed in tariffs.
- Standardized Power Purchase Agreements.
- Obligation of fossils fuel companies to mix products with biofuels up to 20%.
- Tax incentives on renewable energy technologies.

C) Appropriate Legal Framework

The Electricity Act, 1999: The salient features of the Act are to provide the enabling legislation for:

- Liberalising the electricity industry;
- Unbundling of the Uganda Electricity Board into three entities namely generation, transmission and distribution;
- The establishment of Electricity Regulatory Authority (the “ERA”) to regulate the sector;

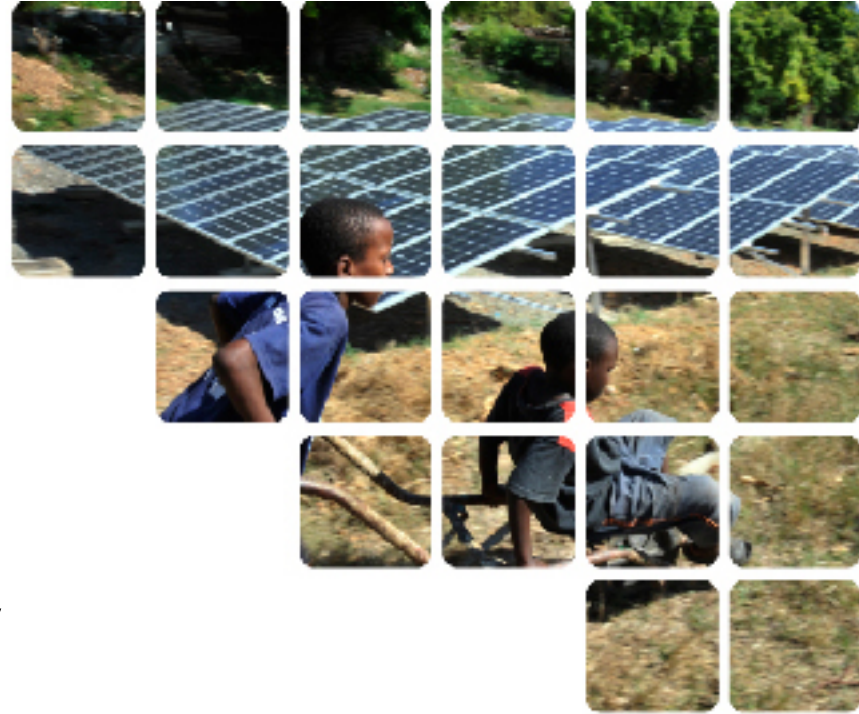
C. Salient features of the Act Cont'd

- The establishment of the Rural Electrification Fund (the “REF”), with the main objective of enhancing rural access to electricity; and
- The establishment of the Electricity Dispute Tribunal (the “EDT”) that has jurisdiction to hear and determine electricity sector disputes which are referred to it.

Impact of Reforms in the Power Sector

- Reforms have improved the sector performance and attracted additional investments which include:
 - Generation infrastructure such as Bujagali Hydropower, about US\$ 860 M
 - Over US\$ 300 M from Construction of Renewable energy projects such as Nyagak 3.5 MW Mpanga 18 MW, Bugoye 13MW, Buseruka 9 MW, Ishasha 6.5 MW Cogeneration over 80Mw etc
 - Over US\$450 Million from GET Flt
 - Generation concession Eskom invested over US \$ 20 M

4.0 Future of Renewable Energy In Uganda



Renewable Energy Potential

Potential is still significant beyond hydropower, and includes biomass, solar, geothermal and wind.

Potential

Hydro	Large hydro (2000MW), mini hydro (200MW)
Biomass	460 million tonnes of biomass standing stock with a sustainable annual yield of 50 million tons
Solar	5.1 kWh/m ² of solar energy
Geothermal	450 MW
Wind	Preliminary data from weather stations has shown high wind speed in the Karamoja Region

Renewable Energy Potential Cont'd

RE is key to addressing some of the challenges in the sector and country at large.

- ❖ Diversifying the energy mix
- ❖ Mitigating climate vulnerabilities
- ❖ Meet the country's energy needs
- ❖ Improve energy access
- ❖ Reduce environmental pressures
- ❖ Create “green” jobs

Strategies for increasing Power Supply from Renewable Energy

- Development of the large hydropower plants
 - Karuma Hydroelectric Project (600MW) and Isimba HPP 183 MW are under construction.
 - Ayago 840 MW, Kiba 290 MW and Orianga 400 MW to be developed in the medium term.
- Renewable Energy Generation Projects.
 - Over 160 MW small hydros being developed and over 100 MW being studied
 - There is good solar radiation 5.1 kWh/m² of solar energy with Solar PV of 20 MW under construction and off-grid applications both home systems and institutional systems.
 - Cogeneration using bagasse Kinyara Sugar Limited 30 MW and Sugar Corporation of Uganda Ltd 16 MW. MayugeMW. More sugar factories can upgrade their facilities,
 - Geothermal, 200 MW still under investigation.
- Generation of power from Peat 33 MW in Kabale??.

5.0 SCALING UP RENEWABLE ENERGY PROJECT

- Uganda was selected among the pilot countries to benefit from the Scaling Up Renewable Energy Project (SREP)
- implemented by the Climate Investment Fund (CIF).
- The African Development Bank (AfDB) is the lead Multilateral Development Bank (MDB) for Uganda.
- Uganda's SREP Investment Plan was develop.
- The SREP Investment Plan for Uganda was approved in November 11, 2015.

SREP – Investment Projects

Project

1

**Development of
130MW of
Geothermal in
Uganda**

*Executed by:
AfDB/IFC and GRD*

Funded by:

SREP:	USD
33.8m	
MDBs:	USD
70.0m	
PS:	USD
230.0m	
GoU:	USD
7.0m	

DPs/Others: USD

48.0m

Project

2

**Decentralized
Renewables
Development
Program**

*Executed by:
AfDB and RED/REA*

Funded by:

SREP:	USD
9.4m	
MDBs:	USD
14.6m	
PS:	USD
0.0m	
GoU:	USD
2.1m	
DPs/Others:	USD
0.0m	

Project

3

**Wind Assessment
and Pilot Wind
Farms**

*Executed by:
AfDB and RED*

Funded by:

SREP:	USD
6.8m	
MDBs:	USD
14.0m	
PS:	USD
230.0m	
GoU:	USD
5.4m	
DPs/Others:	USD
14.0m	

14.0m

Project 1 : Development of 130 MW of Geothermal

- ❖ Eastern Africa region known to have abundant geothermal potential,
- ❖ High entry costs followed by relatively cheap electricity production,
- ❖ Potential estimated at 450MW in areas of Kibiro, Katwe-Kikorongo, Panyimur and Buranga, and
- ❖ GoU plans to use SREP funds for pre-drilling and proceed to exploration drilling at two most promising sites .



Project 1 : Development of 130 MW of Geothermal Cont'd

SREP Intervention Expected Results :

- ❖ Annual electricity output increase from renewable energies in GWh (once power plants start being commissioned),
- ❖ Annual increase in public and private investment in Uganda in USD,
- ❖ Increase in installed capacity in MW,
- ❖ Number of jobs created for men and women, businesses and community services benefiting from increased grid penetration,
- ❖ Green-house gas emissions saved, and
- ❖ Replication of this project.

Project 2 : Decentralized Renewables Development Program

Decentralized Mini-Grids

- ❖ Develop an off-grid master plan for the electrification of islands across Lake Victoria to determine priority investments; and
- ❖ Design and construct at-least 10 mini-grids in different islands where impact can be maximised.

Decentralized Urban Small-Scale Solar PV with net metering

- ❖ Install 10x25KW solar PV rooftop in national buildings around Kampala, Jinja, Mbale and Entebbe to test this technology before a scale-up for private sector; and
- ❖ Develop regulations, legislation, standards, strategy and investment guidelines.



Project 3 : Wind Assessment & Pilot Wind Farms

Wind mapping exercise

- ❖ Procure & install 6 wind measurement equipment; and
- ❖ Establish wind speed database.

2 pilot wind farms at the most promising site

- ❖ Conduct feasibility study to select 2 suitable sites;
- ❖ Package and implement 20MW demonstration wind farm; and
- ❖ Support capacity building/training of local workers/engineers.



Financing Plan

Indicative Funding Sources

- SREP – Uganda IP is USD 455.1 million.
- CIF/SREP contribution is USD 50.0 million
(mix of grants and concessional loans)

Financing Table (million USD)

PROJECTS	GoU	SREP	MDBs	PS	DPs/ Others	Total
1. Development of 130 MW of Geothermal	7.0	33.8	70.0	230.0	48.0	388.8
2. Decentralized Renewables Development Program	2.1	9.4	14.6	0.0	0.0	26.1
3. Wind Assessment & Pilot Wind Farms	5.4	6.8	14.0	0.0	14.0	40.25
Total	14.5	50.0	98.6	230.0	62.0	455.1

Conclusion

- Government has now prioritized Energy Development as a high level issue for the country.
- The policy and Legal framework is in place to promote the sector.
- Government's strategy to increase generation capacity involves private sector participation.
- Uganda's energy sector provides excellent opportunities for investment in Renewable Energy by the private sector.

Thank You for Your Attention !!!

