



# **ENERGY IN REFUGEE SETTLEMENTS AND HOST COMMUNITIES**

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By

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# OUTLINE OF THE PRESENTATIONS



1. Introduction
2. Structure of the energy sector
3. Key Issues in the Energy Sector
4. Policy and Legal Framework in the Energy sector
5. Strategies being implemented inline with the Policy
  - I. Supply side strategies
  - II. Demand side strategies
6. Regulation principles for the energy sector
7. Opportunities for energy in refugees and host settlements
8. Conclusion



# A INTRODUCTION



## I. The Mandate and Sector Priorities

**The Mandate of the Ministry is to “Establish, Promote the Development, Strategically Manage and Safeguard the Rational and Sustainable Exploitation and Utilisation of Energy and Mineral Resources for Social and Economic Development”.**

### **The sector medium term priorities are:-**

- i. increase electricity generation capacity and transmission network;**
- ii. increase access to modern energy services through rural electrification and renewable energy development;**
- iii. promote and monitor petroleum exploration and development in order to achieve national production;**
- iv. develop petroleum refining and pipeline transportation infrastructure**
- v. streamline petroleum supply and distribution; and**



## Sector Priorities *continued*



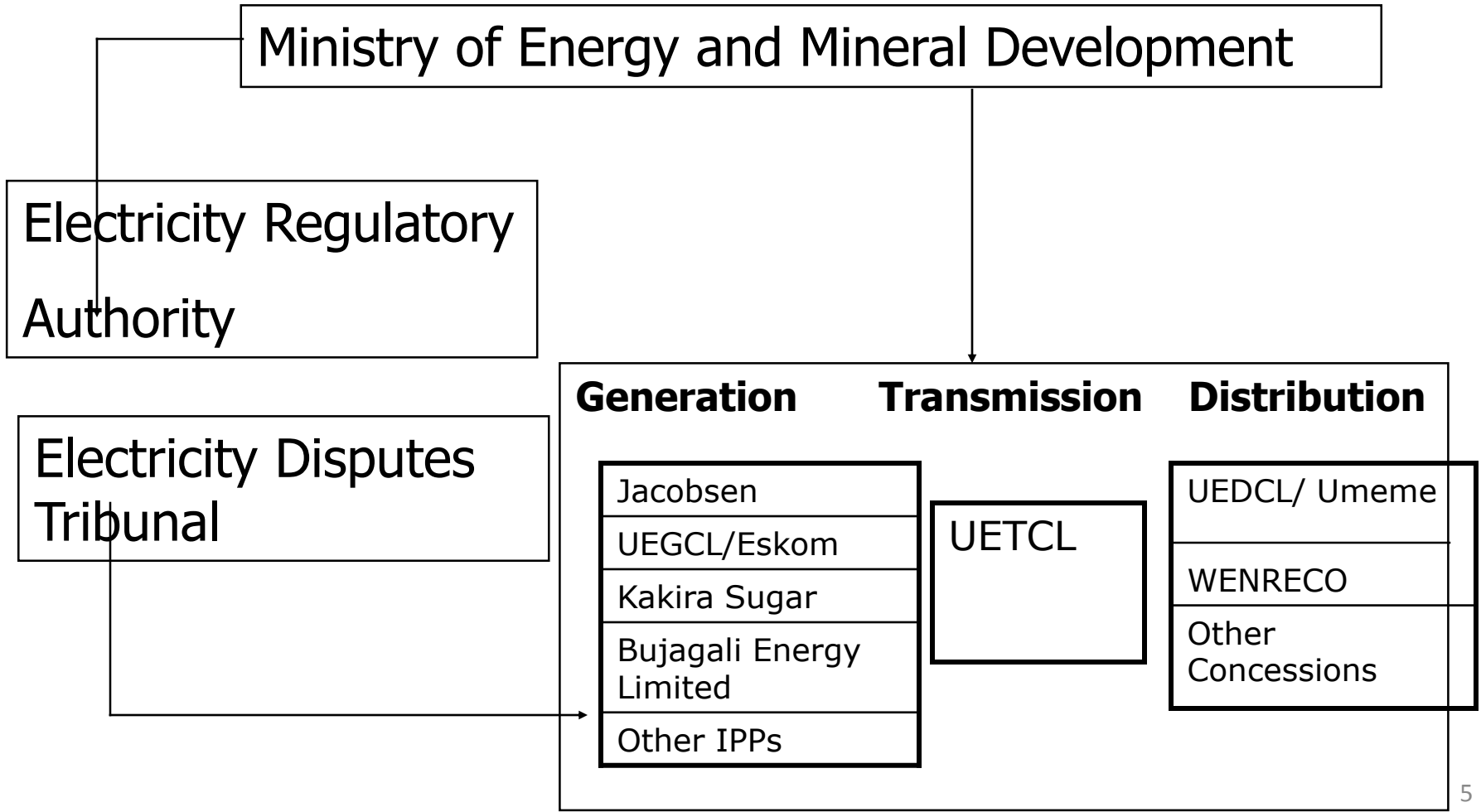
- vi. **promote and regulate mineral exploration, development, production and value addition.**

### **Other priorities include: -**

- i. **promotion of efficient utilization of energy;**
- ii. **promote free and fair competition in petroleum supply and marketing industry; and**
- iii. **monitoring geotectonic disturbances and radioactive emissions.**



# 2.0 STRUCTURE OF THE ENERGY SECTOR





## 3.0 THE KEY ISSUES IN ENERGY SECTOR



- i) Power demand is growing at about 10% per year. Additional Power supply needed to match the growing demand.
- ii) Low level of energy access which is about 7% in rural areas and 17% nationally.
- iii) Over 90% of energy is from biomass resources and mostly utilized using traditional technologies. Not sustainable as population increases.
- iv) Low energy per capita consumption which is about 90kWh compared to Africa's average of 600kWh and south Africa 4,300kWh; UK 5,500; France 7,000; and USA 11,900.
- v) The nation is rich in natural resources that are largely undeveloped. These include: Hydropower, Solar, Geothermal, Uranium, Biomass



# 4.0 POLICY, LEGAL, REGULATORY AND INSTITUTIONAL FRAMEWORK

## The Energy Policy for Uganda 2002

### Policy Goal

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



# POLICY OBJECTIVES:



- To establish the availability, potential and demand of the various energy resources in the country
- To increase access to modern affordable and reliable energy services as a contribution to poverty eradication
- To improve energy governance and administration
- To stimulate economic development
- To manage energy-related environmental impacts





# 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.



# Policy Objectives



In order to achieve the Policy Vision and Goal, the following supporting objectives will be pursued:

- Maintain and improve the responsiveness of the legal and institutional framework to promote renewable energy investments.
- Establish an appropriate financing and fiscal policy framework for RET investments.
- Mainstream poverty eradication, equitable distribution and gender issues in renewable energy strategies.
- Acquire and disseminate information in order to raise public awareness and attract investments in renewable energy sources and technologies.
- Promote research and development, international cooperation, technology transfer and adoption of standards in renewable energy technologies.
- Utilize biomass energy efficiently, so as to contribute to the management of the resource in a sustainable manner.
- Promote the sustainable production and utilization of biofuels.
- Promote the conversion of municipal and industrial waste to energy.



# Legal Framework



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

- Liberalizing 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;
- 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.

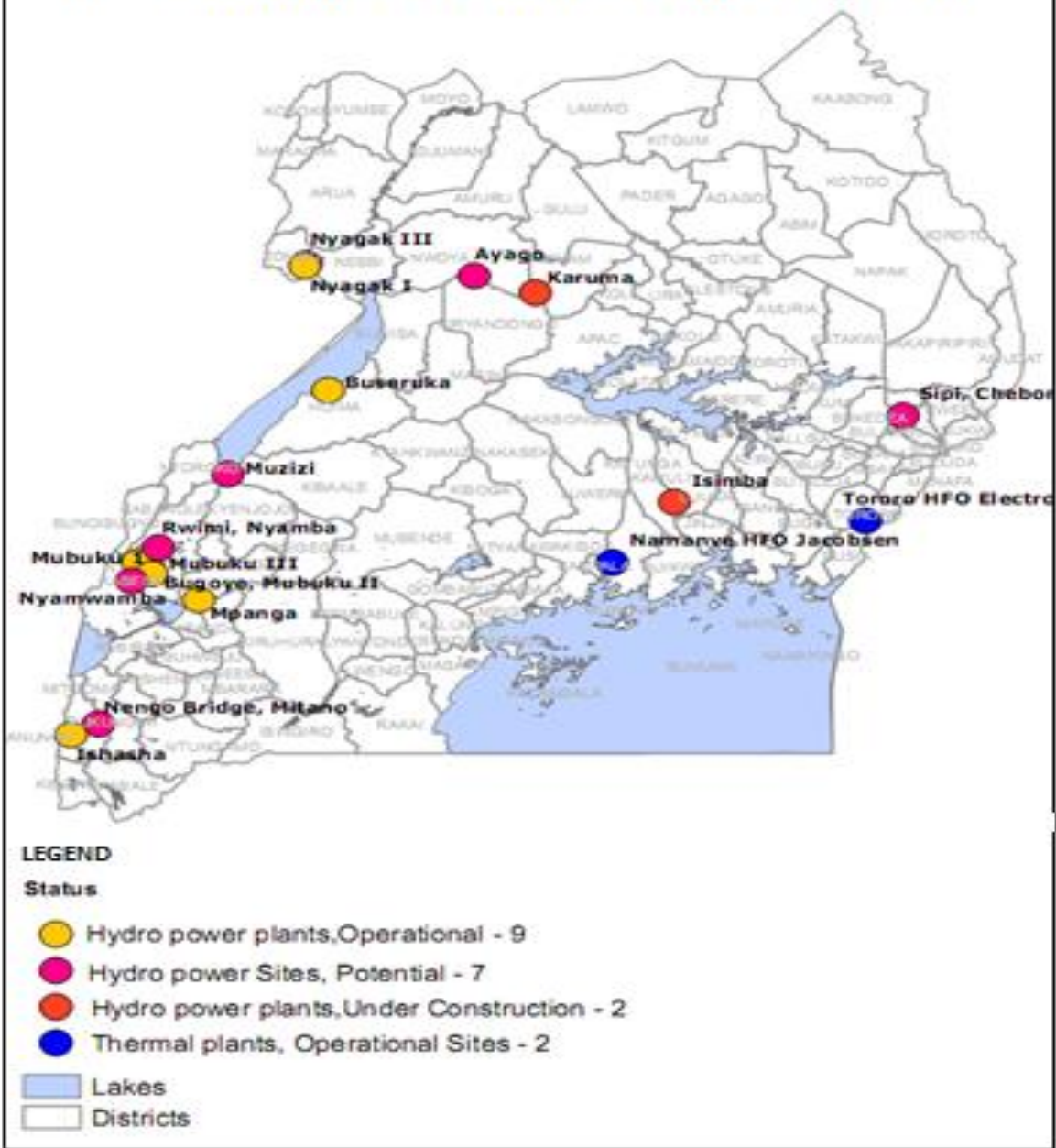


# Power Generation Plants in Place

Status	Power Plants	Installed Capacity (MW)
<b>Grid Connected Power plants</b>	Nalubale and Kiira HPP	380
	Bujagali HPP	250
	Electromaxx Tororo (Thermal)	50
	Jacobsen Namanve( Thermal)	50
	Kakira Co-gen	50
	KCCL	9
	Kinyara Co-gen	5
	Mobuku1	5
	Ishasha small hydro	6.5
	Mpanga small hydro	18
	Bugoye small hydro	13
Kabalega HP	9	
		845.5

Status	Power Plants	Installed Capacity (MW)
Off grid Power plants	Nyagak 1	3.5
	Kisizi Small hydropower plant	0.35
	Kuluva Small hydropower plant	0.12
	Kagando Small hydropower plant	0.06
	Off-grids Thermal Power Plants	2

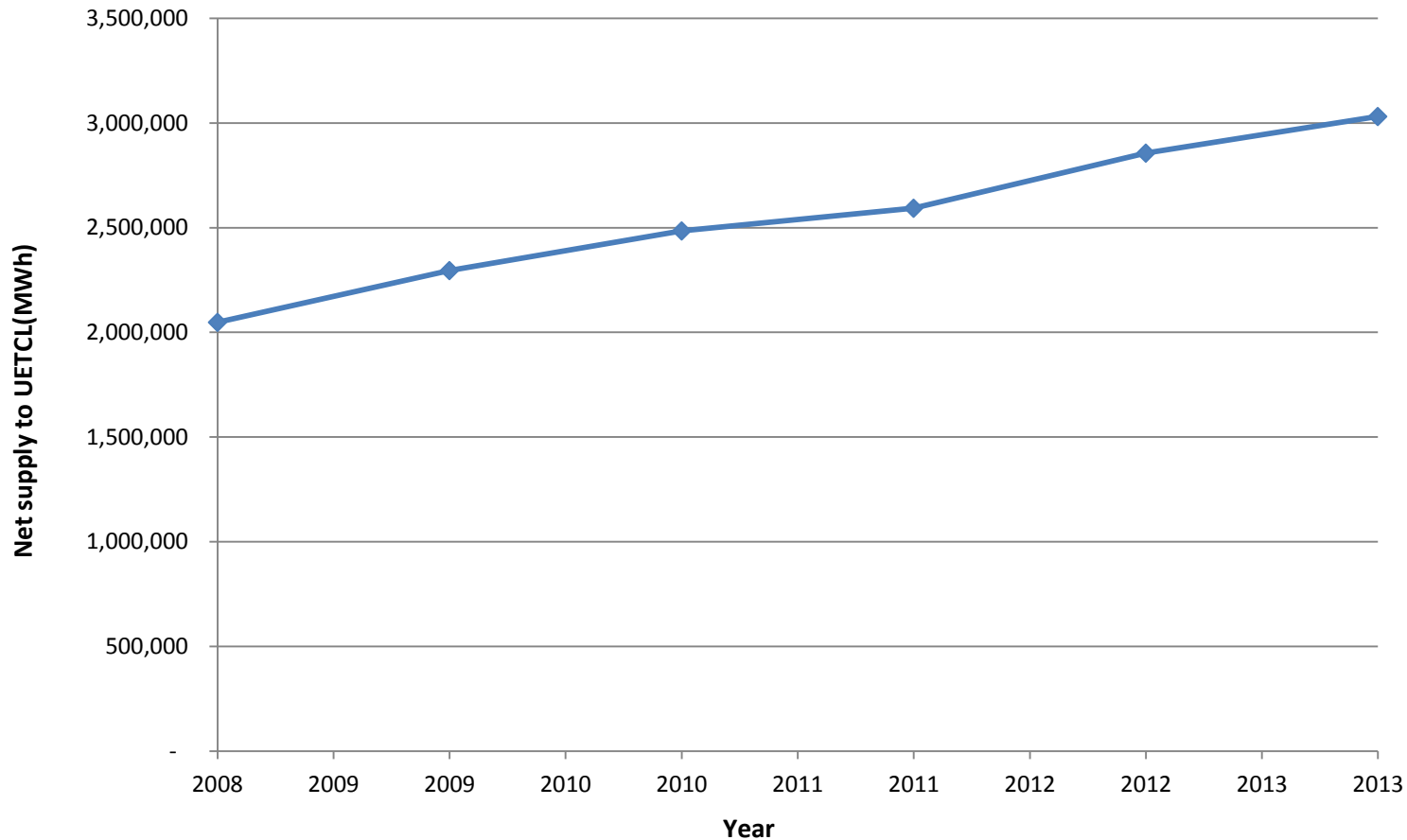
**MAP OF UGANDA SHOWING HYDRO AND THERMAL POWER GENERATION SITES**





# Power supply pattern for the last 5 years

Growth in Power Supply for the Last Five Years





# 5.0 STRATEGIES BEING IMPLEMENTED IN LINE WITH THE ENERGY POLICY



## i. Supply side strategy

### Establishment of the Energy Investment Fund

- The Fund was established to enable government to speed up investments in hydro power projects and the associated infrastructure.
- Money from the treasury is put into the fund annually.





# Progress on Plans to increase Generation Capacity



PROJECT	CAPACITY (MW)	STATUS
<b>Medium Term</b>		
Karuma Hydropower Project	600	Construction on-going.
Isimba Hydropower Project	183	Compensation of project affected people on going.
Ayago Hydropower Project	600	Feasibility studies on-going
Kabaale Thermal power plant	50	
Co-generation from Bagasse(Kaliro)	9	
Mini-hydro power plants ( Siti 1 &2, Kikagati, Nyamwamba, Rwimi, Waki, Kakira,Nengo Bridge, Lubilia, Muvumbe)	95.6	Licenses granted and Feasibility studies completed. Being implemented under GET-FIT program

# Pictures: Tunnel Construction at Karuma HPP





# Renewable Energy Development



## Development of other Small Hydro Power Projects

- Detailed feasibility studies for a number of sites totalling over 80 MW were completed and are due for implementation once negotiations with UETCL and Government are complete.
- These include: Kikagati (16 MW), Mitano (2.9 MW), Lubilia (5.4 MW), Nyagak III (4.4 MW); Siti (21.5 MW), Waki (5.4 MW), Rwimi (10.54MW) Ndugutu (0.5 MW), Nkusi (4.8MW) Nyamwamba (9.2 MW), Nengo Bridge (6.5 MW), and Esia (0.11 MW).



# Development of other Small Hydro Power Projects Cont'd



- In addition, feasibility studies for other sites Over 180 MW such as Nsongezi (38 MW), Ntono (2.5 MW), Sindoro (5.6MW) Achwa-Agago (88 MW) Kakaka (7.2 MW), Muvumbe (4.5MW) Muyembe (3.2 MW), Kyambura (8.3 MW) and Muzizi (26 MW) are in their final stages.



# Biogas technology



## Uganda Domestic Biogas Programme

- 6200 biogas systems have been constructed in households in Uganda under the Heifer project.
- 1 bio-latrines for demonstration purposes constructed in Uganda Martyrs Secondary School – Kayunga District
- 10 bio- latrine systems under construction - (2 per region)



# Dissemination of solar systems

## Energy for Rural Transformation Programme

- 8,376 households connected to Solar PV systems
- 706 Solar water heater Installations
- 437 Health centers connected with Solar Energy Packages
- 31 Water Pumping Stations powered by Solar Energy Packages
- 369 rural secondary schools with Solar Energy Packages

# Dissemination of Solar Systems



Solar street lighting, Solar PV installed for lighting and Solar

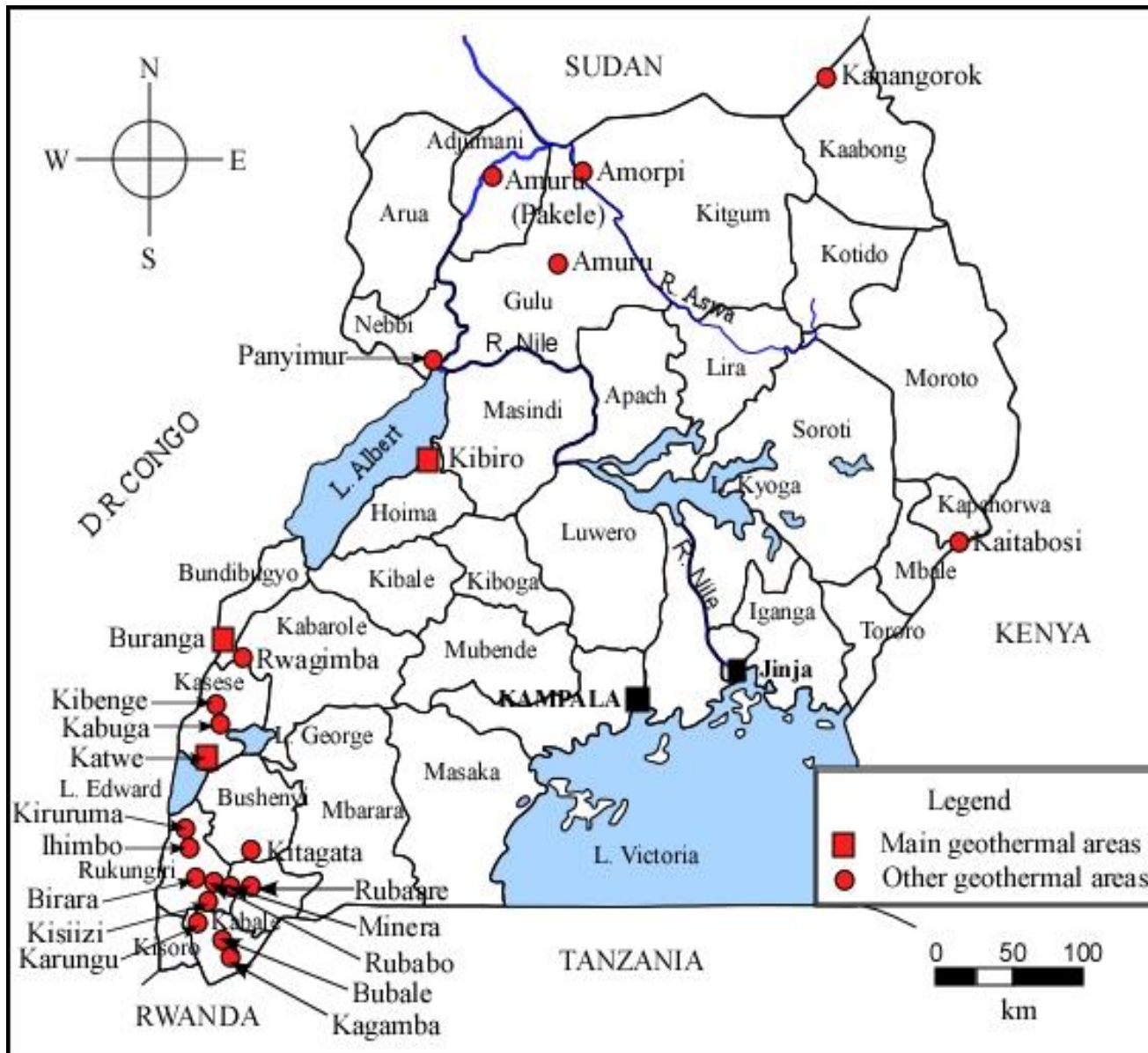


# Geothermal Energy Development

- The country's geothermal potential is estimated at 450 MW.
- The Uganda NDP is targeting generation of 100MW of electricity from Geothermal by the year 2017.
- The strategic objective is to develop geothermal energy to complement hydro and other sources of power to meet the energy demand of rural areas in sound environment.



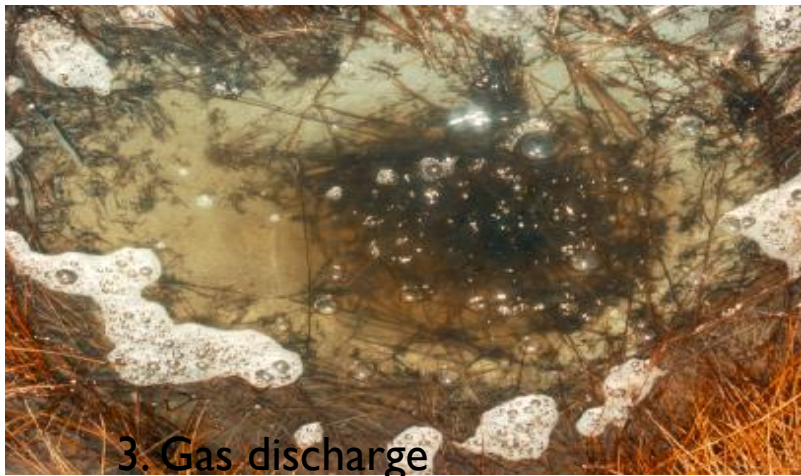
# Location of Geothermal resources





# Results of recent investigations: Buranga

## Surface manifestations





## RURAL ELECTRIFICATION PROJECTS



The Projects implemented are categorized as follows:-

- Large and medium scale grid extension projects
- Small community schemes within proximity of service provider footprints
- Independent grids for closely settled communities which cannot access the grid in the near future
- Provision of solar Photo voltaic systems for dispersed households or buildings



# Photo Voltaic Target Market Access model (PVTMA)

- The Ministry is also promoting the utilization of solar energy through the Photo Voltaic Target Market Access model (PVTMA).
- This promotes consumer credit and provides consumer subsidies under the Energy for Rural Transformation Programme Phase Two.
- To-date 15,000 PV systems have been installed through this country wide approach.
- The target is 27,000 systems by 2016.

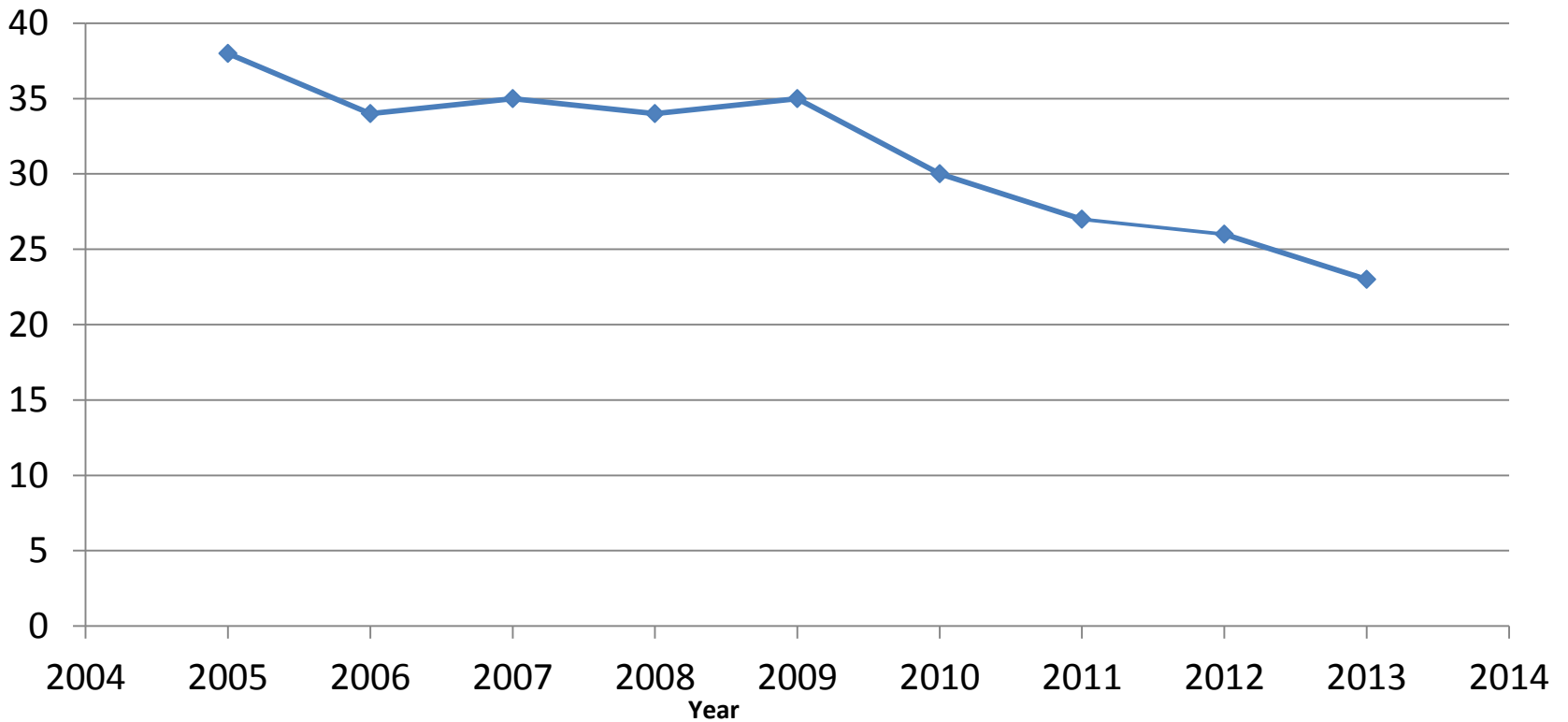


- An exhibition of Energy Efficient and Renewable Energy technologies has been held in different places: Kampala (2012, 2013) Mbale (2011), Mbarara (2010), Kampala (2009), Jinja (2008), Kampala (2007), Kampala (2006), Kampala (2005).
- Road shows promoting Energy Efficient and Renewable Energy technologies
- Capacity Building: Training of Energy managers



## Energy Losses performance

Losses  
%



### iii. Promotion of Efficient Biomass Technologies



Institutional Stove constructed in one of the Prisons



# Challenges in the sector



- i) High upfront cost of renewable energy technologies like solar and small hydro power projects.
- ii) High costs and delays in land acquisition for power projects.
- iii) Limited public and domestic financial resources to invest in large infrastructure power projects.
- iv) Power theft and vandalism of electrical Infrastructure
- v) High power losses and low level of efficiency in the utilization of energy.
- vi) Inadequate capacity in terms of personnel to meet the increased demand of energy services.





# 8.0 CONCLUSION



- Government has now prioritized Energy Development as a high level issue for the country and as a result it is taking the lead in energy development and investment.
- The Policy and Legal framework for the energy sector has provided enabling environment for private sector participation.
- Government's medium term plan to provide adequate and reliable power supply is in progress with the construction of large hydropower projects and several renewable energy projects under development.
- The long term plans to increase power generation include development of geothermal resources and use of nuclear. Preliminary work is being undertaken.
- Uganda's energy sector is on course to grow so that it provides the engine for social and economic development of the country.



# OPPORTUNITIES FOR ENERGY IN REFUGEES



- Green Charcoal Project
- UNBS stoves certification;
- Promotion of Renewable Energy and Energy Efficiency Program;
- Mini- grids development



# Thank You for Your Attention !!!

