

MINISTRY OF ENERGY AND PETROLEUM

RENEWABLE ENERGY PROGRAMMES AND MINIGRIDS ACTIVITIES

Eng. Isaac N. KIVA
11-12th May 2015, Intercontinental Hotel, Nairobi



May, 2015



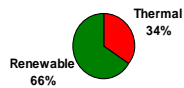
Overview of Kenya Power Situation

TYPE OF GENERATION PLANT	INSTALLED CAPACITY (MW)
Hydro	816
Geothermal	418
Thermal	648
Co-generation	26
Wind	5.1
Off-grid (Solar& Wind)	1.29
Off-grid (Thermal)	16.71
TOTAL	1931.1

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Overview of Kenya Power Situation (..2)

Renewable energy component is
about 66%







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Energy Policy Framework

-  The Policy framework on Energy in Kenya is anchored in Sessional Paper No.4 of 2004, currently under review
-  Energy Act No. 2006 contains major policies articulated in the Energy Policy, currently under review
-  The energy initiatives including Green Energy are contained in the LCPDP

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Feed-in-Tariff (FiT) Policy

-  Instrument to promote generation of electricity from RE sources
-  FiT Policy established in April 2008 and reviewed in Jan 2010, and Dec 2012
-  Reviews to accommodate new technologies, as well as cost of equipments and money
-  Model PPA and Connection guidelines also done

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Renewable Energy Feed-in-Tariffs

Technology	Plant Capacity (MW)	Tariff (\$/KWh)
Geothermal	35-70	0.088
Wind	0.5-50	0.11
Small Hydro	0.5-10	0.105-0.0825
	10.1-20	0.0825
Biomass	0.5-40	0.10
Biogas	0.2-10	0.10
Solar-Grid connection	0.5- 40	0.12
Solar (off-grid only)	0.5-10	0.2

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Energy Regulations

- The Energy (Solar Water Heating) Regulations, 2012
- The Energy (Energy Management) Regulations, 2012
- The Energy (Solar Photovoltaic Systems) Regulations, 2012
- Plan to legislate mandatory use of improved institutional woodstoves

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Incentives to Investors

- Duty waiver on RE plant and equipment
- Government offers letters of comfort to IPPs
- Resource assessment and feasibility studies availed to investors through a bidding process
- No licensing required for small power plants less than 1 MW

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Wind Energy Resource

- Preliminary wind resource assessment shows good wind regimes ranging from 8 to 14 m/s
- A Wind Resource Atlas giving guidelines on wind regimes for the whole country is available
- Government undertaking wind data logging in high potential areas to obtain actual wind data

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Wind Energy Resource...2

- 95 wind masts and wind data loggers (at 40 meters) installed in the last four years.
- Analysis of data done, a report and wind energy prospectus prepared
- Installation of 18 wind masts at 100 meters for pre-investment data in high potential areas in progress.
- Data to be shared with investors

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Solar PV Energy Resource

- Annual market for solar PV panels estimated at 500 kW and projected to grow at 15%
- Government programme started in 2005 to provide basic electricity to boarding schools and health facilities in remote areas
- 1170 solar systems with a capacity of 2.6MW installed. Total cost of USD 28 million.

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Solar PV Energy Resource...2

- Solar water pumping provided as an added benefit where water wells exist
- One company (UBBINK) has set up assembly plant for solar panels in Naivasha

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Hybrid Systems in Off-grid Areas

Commenced installing solar/wind hybrid systems at off-grid power stations

Solar hybrids at Lodwar (60kW), Hola (60kW), Merti(10kW), Elwak(50kW), Mandera(300KW),Takaba(50kW),Eldas(80 kW), Rhamu(80kW) and Laisamis(80kW)

Wind hybrids at Marsabit(500kW)
Solar/Wind hybrid at Habaswein

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Hybrid Systems in Off-grid Areas...2

To do more, with funds from GoK, AFD, World Bank, Nordic Development Fund

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Small Hydropower Energy

- Mapping of all Rivers Countrywide to produce a GIS Based National Small Hydropower Atlas nearly complete.
- To continue assisting with resource assessment. Feasibility Studies for further ten (10) sites ongoing
- Continues to offer support to communities to develop small hydropower for own use.
- Collaborating with Numerical Machining Complex (NMC) to pilot local manufacture of turbines.

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Bio-energy

- Majority of Kenyans, especially in the rural still depends on biomass for energy needs
- Strategies are to ensure sustainable production and utilization of biomass;
- Ongoing projects/activities:-
 - * Promotion of improved cookstoves for domestic and institutional use*

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Bio-energy...2

- * Promotion of fast growing trees for wood energy production*
- Approach is to facilitate market strategies, for sustainability
- Focus on removal of barriers-policy, regulatory, technical, financial

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Biogas Technology

- The Ministry through its Energy Centres offer technical assistance and Capacity building on biogas installation.
- Ministry steered the domestic biogas plants' installation initiative under the KENDBIP phase I financed by the Netherlands Government- Targeted 8,000 plants in 4.5 years (2009- Dec 2013), achieved 12,000. A subsidy of 25,000 for each plant was provided.

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Biogas Technology...2

- KENDBIP Phase II (2014-2018) is ongoing with a target of 25,000 and with no subsidy.
- Piloted Institutional biogas plants using sewerage and flower waste, for cooking and electricity generation
- Seeking partnership with financial Institutions for credit.

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Energy Efficiency

- Support to KAM to undertake energy efficiency audits and other programmes
- Since 2006 extended Kshs. 240 Million
- Done 235 site audits, 110 Investment grade Audits, 30 specialized trainings
- In 2009/2010, did retrofit with 1.25 million energy saving bulbs- led to savings of about 60 MW

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Energy Efficiency...2

- AFD to fund a similar project
- AFD credit line to assist in those who wish to implement energy efficiency measures(as well as develop renewable energy)

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Water Catchment Conservation

■ Afforestation of Catchments feeding hydro electric generation power plants with Indigenous trees

■ Upper River Tana

Phase I: A total area of 266 hectares was successfully planted with indigenous trees during the 2011/2012 and site maintained for two years after planting. Project came to an end in May 2014

a)Phase II: A total of 353 ha planted with indigenous trees during 2012/2013, maintenance of the sites is ongoing. Project expected to end in December 2015

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Water Catchment Conservation...2

■ Sondu Miriu River Catchment- 298 ha on going.

■ Has been collaborating with KFS and Community Forests Association(CFA)

■ To continues with similar activities, and to also cover riverlines

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Thank you

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