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RENEWABLE RESOURCE ASSESSMENT IN KENYA

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KENYA

Power Supply Situation

- Kenya's power supply consists of the national interconnected system and several mini-grids serving areas located far from the national grid.
- The interconnected system has total installed capacity of 1,741 MW made up of 812 MW of hydro, 646 MW of thermal, 251.8 MW of geothermal, 5.1 MW of wind , 26MW from cogeneration
- Hydro accounts for about 50% of the total energy supply.
- Registered national peak demand is 1334MW.
- Currently, there are 14 existing off-grid diesel power stations , which are managed by Kenya Power (KPLC) (12 stations) and Kenya Electricity Generating Company, (KenGen) (2 stations).
- The existing mini-grids have a total installed capacity of 19.16MW comprising of 18.1MW thermal, 0.55MW wind and 0.51MW solar.
- National electrification rate is 30%, set to rise to 65% by 2022, and reach universal access by 2030

GROWTH SCENARIO

- Energy is key driver to achieving Vision 2030, the national blue print which aims at having the country reach newly industrialized status and have high quality of life by 2030
- Demand projected to grow to 5,000 MW by 2020 and 17,000 MW by 2030. Much of the needed capacity to come from renewable energy sources, as per the LCPDP
 - Geothermal 5,110 MW
 - Wind 2,036 MW
 - Hydro 1,039 MW
 - Imports 2,000 MW
 - Thermal 3,615 MW
 - Coal 2,420MW
 - Others(Solar, MSW, Cogen 3,000 MW
- In 2003, the Government embarked on an ambitious sector development plan and institutional reform, including accelerated promotion of development and use of renewable energy.

STRATEGIES

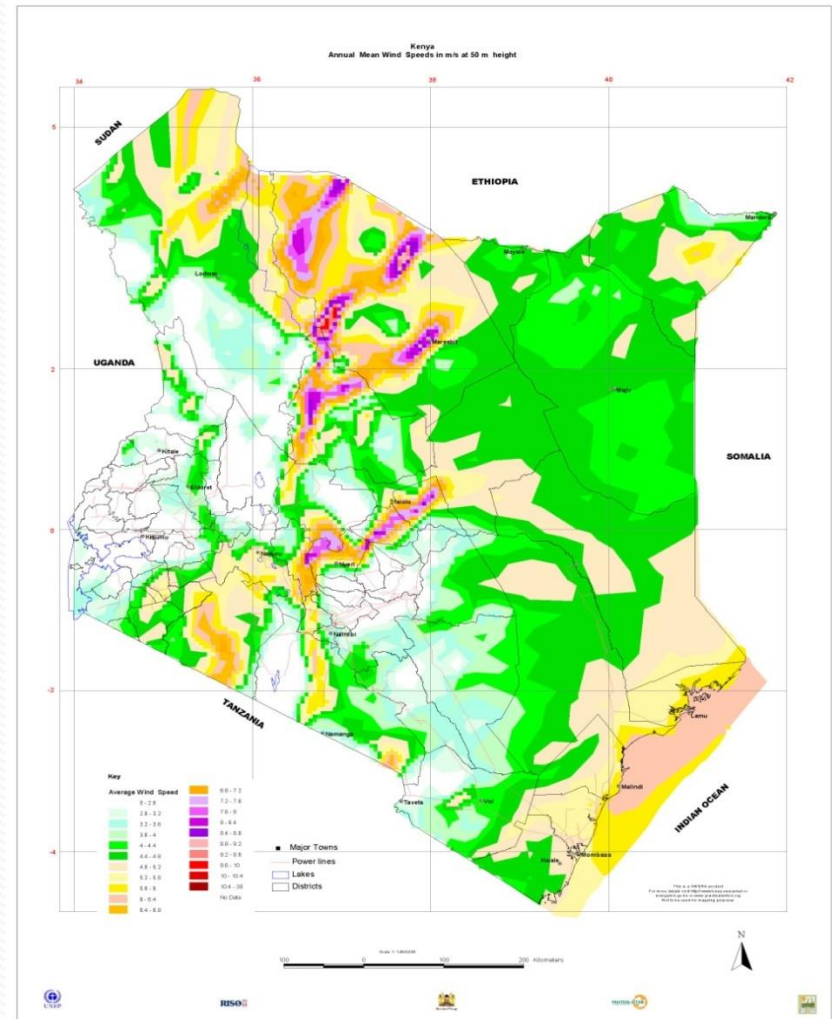
- Resource mobilization
- Fiscal Incentives-Duty waiver on RE plant and equipment, Government's letter of support(comfort) to IPPs
- Establishment of favourable policy and regulatory frameworks- PPP framework, Feed-in Tariffs Policy, RE regulations, simplified(and facilitated) licensing procedures
- Renewable resource assessment and feasibility studies to facilitate faster implementation

POTENTIAL

- Kenya endowed with vast indigenous renewable energy resources
- The key focus is now on development of renewable energy
- The development will largely be done by private sector
- GoK will invest in expansion of Transmission and Distribution facilities for effective power evacuation
- GoK has undertaken to facilitate resources assessment to assist private investors

SOLAR and WIND

- Solar and Wind Atlas done in 2003 using synoptic weather, later improved in 2008 with higher resolution
- Indicated good potential, like for wind areas with speeds rated good and above is 22,000 sqkm, with a potential of generating 10,000 MW
- In 2009, GoK embarked on installation of 40 m wind masts and data loggers in high potential areas
- So far 95 wind masts erected
- A consultancy has been hired to analyze the data and prepare wind profiles, high resolution wind atlas and wind energy prospectus

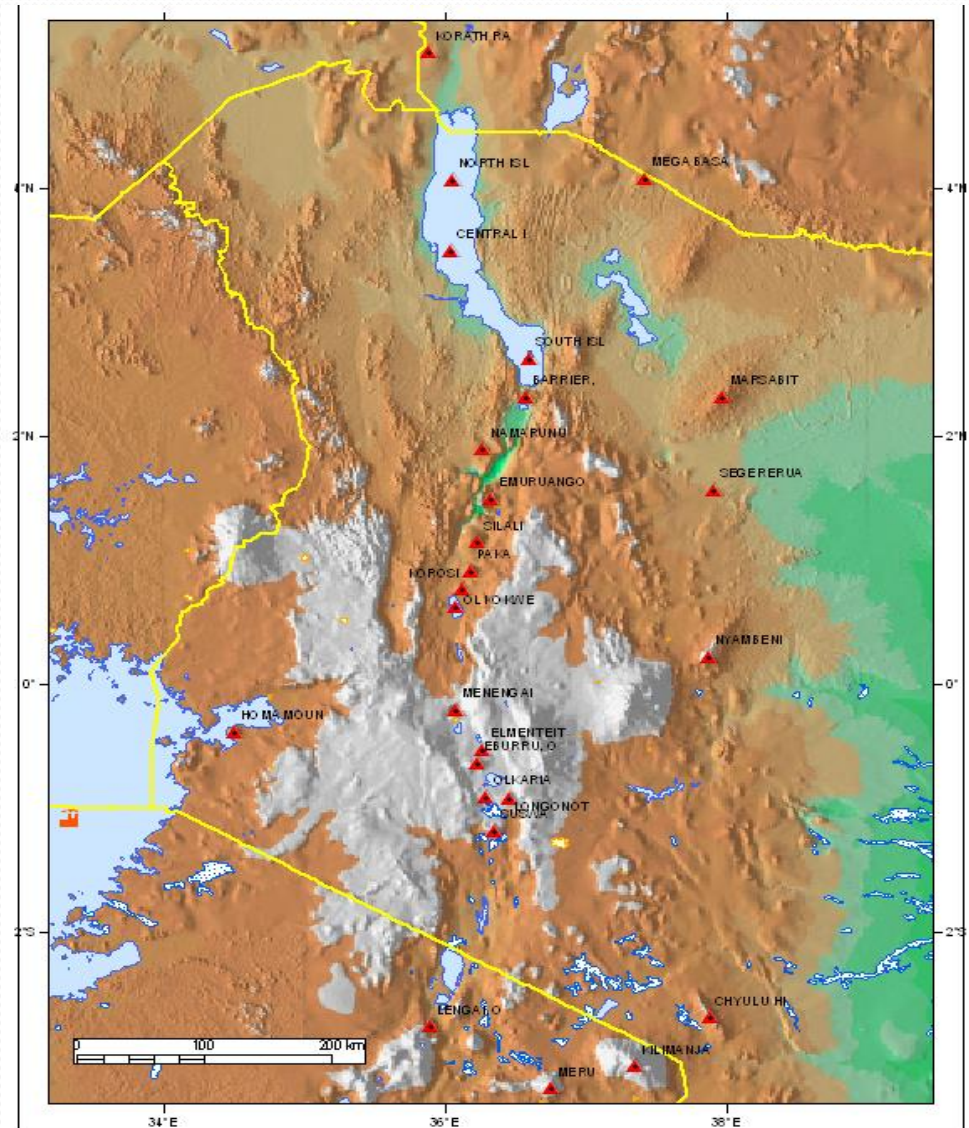


SMALL HYDRO

- Initial assessment done identified potential of 3 GW
- Detailed feasibility study done for 12+14 sites, with individual capacities ranging between 0.7 to 2 MW
- KTDA developing 12 of these sites for captive use by tea factories and excess to the grid
- Developing a national small hydro power atlas, which will be GIS based interactive, overlaid with relevant layers-grid, road, population, load centres etc
- Concurrently doing detailed feasibility studies in a further 10 sites

GEO THERMAL

- Dedicated state agency, the Geothermal Development Company established to undertake resource assessment
- The potential of geothermal energy is 10,000 MW, as mapped from 14 sites
- Initial surface exploration undertaken at these potential sites
- GDC doing geothermal well drilling, from exploration, to appraisal and finally to production wells
- Two models for private sector participation, either energy conversion or in drilling of wells



Hybrid Mini-grids

- Following successful implementation of hybrid off-grid pilots, it is intended to scale up this programme to especially, accelerate rural electrification
- MoE, KPLC and REA has prepared a programme document, which Identified, surveyed and documented 68 sites
- Total estimated cost
 - Retrofitting existing(9)- USD 25 million
 - Retrofitting stations under constr.(15)- USD 18.6
 - Green fields(44)- USD 173.8 million
- Each serving between 500 and 50,000 households
- Capacities for each between 300-2000kW for green fields
- Survey will continue to identify and document additional sites

Municipal Solid Waste

- With assistance of Development Partners, done feasibility studies on use of MSW in major towns, including Nairobi(JICA), Mombasa , Kisumu and Eldoret(AFD)
- With setting up of functional and empowered County Governments, this is now considered apt for implementation.

WAY FORWARD

- GoK will continue to facilitate resource assessment
- Huge resources are required for this.
- The assistance of development partners and other International Organizations is required
- Standardization of format and content could be considered to harmonize the presentation of results
- To involve the Private sector in formulation of strategies, plans, and activities
- To cater for other implementers, including local communities and Civil Society who have a stake in provision of modern energy services



Thank you



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