Access to energy for all in rural areas in Africa
Progress and perspectives within the CLUB-ER:
The Expériences of Kenya
Sheraton Djibouti Hôtel, 26 November 2013
ABOUT KENYA

- Kenya is in East Africa
  Equator cuts across the country
- Borders Ethiopia, Somalia, Tanzania, Uganda plus Lake Victoria and Sudan
  Population nearly 40 million
- The national language is Kiswahili
- English is the official language
INSTALLED CAPACITY (1,664 MW)

- Existing hydropower plants contribute about 770 MW (46%) of national annual electricity generation.
- Thermal generation accounts for 622.6 MW (37%).
- At present, the country has 241 MW (14%) installed capacity of Geothermal power.
- Cogeneration by sugar factories is about 26 MW (1.9%).
- Kenya has great potential for solar energy throughout the year because of its strategic location across the equator.
### 5000MW Additional New Capacity (MW)

#### New Capacity Additions (MW)

<table>
<thead>
<tr>
<th>TIME IN MONTHS</th>
<th>6</th>
<th>12</th>
<th>18</th>
<th>24</th>
<th>30</th>
<th>36</th>
<th>40</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>24</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>24</td>
</tr>
<tr>
<td>Thermal</td>
<td>87</td>
<td>163</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>250</td>
</tr>
<tr>
<td>Geothermal</td>
<td>90</td>
<td>176</td>
<td>190</td>
<td>50</td>
<td>205</td>
<td>150</td>
<td>785</td>
<td>1,646</td>
</tr>
<tr>
<td>Wind</td>
<td>-</td>
<td>-</td>
<td>20</td>
<td>60</td>
<td>300</td>
<td>250</td>
<td>-</td>
<td>630</td>
</tr>
<tr>
<td>Coal</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>960</td>
<td>-</td>
<td>960</td>
<td>1,920</td>
</tr>
<tr>
<td>LNG</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>700</td>
<td>350</td>
<td>-</td>
<td>-</td>
<td>1,050</td>
</tr>
<tr>
<td>Co-Generation</td>
<td>-</td>
<td>-</td>
<td>18</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>201</td>
<td>339</td>
<td>228</td>
<td>810</td>
<td>1,815</td>
<td>400</td>
<td>1,745</td>
<td></td>
</tr>
<tr>
<td>Cumulative Additions</td>
<td>201</td>
<td>540</td>
<td>768</td>
<td>1,578</td>
<td>3,393</td>
<td>3,793</td>
<td>5,538</td>
<td></td>
</tr>
</tbody>
</table>
Expected Demand Drivers By 2018

- Economic activities in counties
- Mining and Process industries
- Irrigation
- Electrification of rail;
- Powering resort cities and new economic zones.
The Government established the rural electrification program in 1973.

In 2004, connectivity was 4% and access level was 8%.

The Government undertook to accelerate the pace of rural electrification through creation of a special purpose rural electrification agency.

REA was consequently established in 2006 under the Energy Act No. 12 of 2006 and became operational in July 2007.
REA’s Mandate

- Management of the Rural Electrification Programme Fund
- Development and updating of the rural electrification master plan
- Implementation and sourcing of additional funds for the rural electrification programme
- To promote the use of renewable energy sources
- Management of the delineation, tendering and award of contracts for licences and permits for rural electrification
Policy Adopted in Rural Electrification Programme

- **Phase I 2008-2012**  - Connect all main Public Facilities
  To form the basic infrastructure
  - Increase connectivity from about 12% to 22%

- **Phase II 2013-2022**  - Connect all primary schools to increase the existing network and increase access.
  - Connect 1 Million Customers

- **Phase III 2022-2030**  - Connect Customers (increase connectivity from 65% to 100%)
Strategic plan, 2013 – 2017

**Goal**

- Increase in electricity access level from the current 63% to 100%
- Increase connectivity levels (rural) from current 26% to 60%

**Target:**

- Connect an estimated 11,000 public facilities (primary schools) and a minimum of 1 million rural customers.
Public Facilities Electrified before 2003/4 and Electrification Status by 2012/13

• By 2003, i.e. 30 years, after inception of the R.E programme connectivity in the rural areas was only about 4%, while access was estimated at 8%  
• By then only about 1,029 main public institutions were connected to electricity.  
• However by 2013, about 23,167 main public facilities were connected to electricity (TC,HC,SSCH)  
• Electricity access level in the rural areas was thereby increased to about 63% while connectivity was increased to 26%
# Achievements of Rural Electrification

(Public facilities electrified by Dec 2013)

<table>
<thead>
<tr>
<th>Type of Facility</th>
<th>Total Number</th>
<th>Electrified By 2003</th>
<th>Electrified Facilities by 2013</th>
<th>Un - Electrified Facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Trading Centers</td>
<td>13,135</td>
<td>1,096</td>
<td>10,429</td>
<td>79%</td>
</tr>
<tr>
<td>Secondary Schools</td>
<td>8,195</td>
<td>285</td>
<td>8,195</td>
<td>100%</td>
</tr>
<tr>
<td>Health Centres</td>
<td>4,543</td>
<td>348</td>
<td>4,543</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25,873</td>
<td>1,729</td>
<td>23,167</td>
<td>90%</td>
</tr>
<tr>
<td>Electricity Access</td>
<td>8%</td>
<td></td>
<td>90%</td>
<td></td>
</tr>
<tr>
<td>Electricity Connectivity</td>
<td>4%</td>
<td></td>
<td>26%</td>
<td></td>
</tr>
</tbody>
</table>
Factors contributing to the success of Rural Electrification Programme

• Continued Government support including increased budgetary allocation.

• Passion to light up the rural Kenya.

• Use of L&T contractors.

• Community involvement- provide free way leaves.

• Use of renewable energy. In ASAL areas. i.e. Solar PVs, Biogas and Wind
Methods of Rural Electrification

- Grid extensions – for the interconnected areas.
- Stand alone diesel station – for off-grid areas.
- Solar Pvs – for institutions & homes within the off-grid areas
- REA is promoting the use of other renewable energy sources such as mini-hydro, wind and biogas
Challenges Faced and Measures put in Place

Procurement of materials

- Long lead times in procurement and delivery of materials as most materials and imported and manufactured on order.

Solution:

- Bulk & timely procurement of materials.
- Promoting more locally manufactured materials.
Wayleaves Acquisition

- Huge compensations required.
- Delay in acquisitions consent

Solution:
- Involvement of communities, local leaders to sensitize communities on the importance of granting free wayleaves.
Customer Connectivity

- High connection charges.
- Low rural incomes.
- Perceived high cost of electricity.

Solution:
- Revolving fund set to provide credit facilities.
- Communication & Marketing Strategy
Limited use of renewable energy

- Limited capacity in the use of renewable energy in the rural areas.

Solution:

- Promote use of solar PVs in the off-grid areas.
- Promote use of wind and biogas
- Development of hybrid systems combining renewable energy and conventional sources.
Vandalism

- Vandalism of transformers and other line equipment.

Solution:

- Promoting community participation/ownership of Projects.
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Thanks for your attention

Rural Electrification Authority