Outline of Presentation

1. Summary of power sector and country investment environment

2. Detailed summary of geothermal resources

3. Geothermal enabling environment, procurement procedures and financial incentives

4. Specific opportunities for geothermal project investors

5. Current Corporate funding initiatives and future funding goals

6. Key Contacts
1. ORGANISATION: POWER SECTOR IN KENYA

Ministry of Energy (MoE) (responsible for policy matters)

Energy Regulatory Commission (ERC) (responsible for regulating the entire energy sector)

Transmission & Distribution

Generation

KPC (Transport) KPLC (Distribution & Existing Transmission) REA (Rural Electrification) IPPs (Power Generation)

KPRL (Refinery) NOCK (Marketer) Private Marketers

TRANSMISSION & DISTRIBUTION

KenGen (Power Generation) GDC (Geo-Resource Assessment) IPPs (Power Generation)

KE-TRACO (New Transmission)

Private Marketers have ~80% installed capacity market share and IPPs ~20%

Source: KenGen;
Summary of power sector and country investment environment

- **Geothermal**
  - Potential >10,000MW (425MW developed) Excluding 140MW OLK 1AUs under commissioning

- **Coal**
  - Under exploration (Mui Basin)

- **Oil & Natural Gas**
  - Under exploration across the country
  - Proven resource in Turkana, Wajir, Lamu

- **Hydro**
  - Potential > 2.1 GW (Around .9GW developed)

- **Solar & Wind**
  - Solar under exploration,
  - Wind potential > 4,000MW
  - Developed 25.1 MW

- **Biogas**
  - Developed 22MW

Source: The Tanzanian Energy Sector: ILO, IEEJ : June 2012
PROJECTED POWER DEMAND IN KENYA
THE 40- MONTH 5000+MW Strategy

The Energy sector Strategy is derived from the Government Development agenda; principally the Vision 2030 and the Jubilee Government manifesto

<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>
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<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>
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<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>
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<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>

61% is Renewable Capacity
2. Geothermal Resources

- Suswa,
- Longonot,
- Olkaria,
- Eburru,
- Menengai,
- Arus-Bogoria,
- Lake Baringo,
- Korosi,
- Paka,
- Lake Magadi,
- Badlands,
- Silali,
- Emuruangogolak,
- Namarunu
- Barrier
- Mwananyamala
- Homa Hills
- Nyambene Ridges
- Chyulu Hills
2. Geothermal Fields Development

Fields where Geothermal development is more advanced
- Appraisal drilling / power production complete

<table>
<thead>
<tr>
<th>FIELD</th>
<th>FIELD POTENTIAL</th>
<th>DRILLED (MW)</th>
<th>DEVELOPED</th>
</tr>
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<tbody>
<tr>
<td>OLKARIA</td>
<td>&gt; 1,000</td>
<td>655</td>
<td>425</td>
</tr>
<tr>
<td>EBURRU</td>
<td>&gt; 60</td>
<td>3.5</td>
<td>2.4</td>
</tr>
<tr>
<td>MENENGAI</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
</tbody>
</table>
3. Geothermal enabling environment

• The Government of Kenya has enacted the following policies and Laws/regulation with regard to Geothermal


• Public Procurement & Disposal Act 2005, Regulation 2006

• Public Private Partnership Act- 2013

  – Energy resource areas
  – Industrial Parks
3. Geothermal enabling environment

- The Government of Kenya through the Ministry of Energy allocates geothermal drilling blocks to investors
  - MoEP has allocated blocks to investors for geothermal development - Examples: Ormat, Agil, Akiira

- The Government of Kenya formed Geothermal Development Company (GDC) to undertake upfront geothermal activities to reduce risk to investors
  - These include risks associated with planning and logistics, surface exploration, exploratory drilling, appraisal drilling and feasibility studies, and production drilling
3. Geothermal Financial Incentives

• The Government of Kenya provides incentives in the form of:
  - Full cost recovery of their investment through
    - Power Purchase Agreements (PPA)
    - Steam Supply Agreements
  - Feed-in-Tariff Policy
  - Government Guarantees - Letters of Comfort to Investors
3. Geothermal Procurement Procedures

- KenGen is guided by the provisions of the Government PPD Act - 2005 and according to the source of funding.

<table>
<thead>
<tr>
<th>Source of Funding/ Development</th>
<th>Procurement Procedure</th>
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</thead>
<tbody>
<tr>
<td>1 Corporate Balance Sheet</td>
<td>International competitive bidding</td>
</tr>
<tr>
<td>Multilateral/ Bilateral Financing</td>
<td>Expression of Interest /Prequalification</td>
</tr>
<tr>
<td>2 Public Private Partnership (PPP) (Guided by PPP Act) - 2013</td>
<td>International competitive bidding</td>
</tr>
<tr>
<td></td>
<td>Expression of Interest /Prequalification</td>
</tr>
<tr>
<td></td>
<td>Tendering for Investors/ Partners</td>
</tr>
<tr>
<td></td>
<td>Unsoliciteted proposals</td>
</tr>
<tr>
<td>3 Direct Procurement</td>
<td>Under special circumstances</td>
</tr>
</tbody>
</table>
4a. Opportunities for Geothermal Investors

Supplies and Services

- Rigs, Geo-exploration tools and equipment
- Drilling materials and services
- Steam field design, equipment supply and steam pipeline construction services
- Consulting services including feasibility studies
- Direct use of geothermal resource
- Supply of Power plants and equipments

Development Opportunities

- Specialized engineering services
- Development of generation equipment; wellhead and conventional power plants
- Transmission and substation construction
- Civil and infrastructure development
### 4b. Opportunities for Geothermal Investors - KenGen

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Opportunities</th>
<th>Capacity (MW)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olkaria I Unit 6</td>
<td>Contractors</td>
<td>70</td>
<td>Financing Stage</td>
</tr>
<tr>
<td>Olkaria –V</td>
<td>Contractors</td>
<td>140</td>
<td>Financing Stage</td>
</tr>
<tr>
<td>Olkaria –VI</td>
<td>Consultants/Contractors/Investors/Developers</td>
<td>140</td>
<td>PPP – Tender/drilling Stage</td>
</tr>
<tr>
<td>Eburru Geothermal</td>
<td>Contractors</td>
<td>25</td>
<td>Pre-feasibility stage</td>
</tr>
<tr>
<td>Training</td>
<td>Consultants</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>655</strong></td>
<td></td>
</tr>
</tbody>
</table>
5. Corporate Funding Initiatives and Future Funding Goals

* Energy Sources
  - Geothermal
  - Wind, Hydro
  - Solar, Fossils

* Conversion (Generation)
  - Going beyond traditional sources of funds

* Transportation (Transmission)

* Delivery (Distribution)

* End Users (Consumers)

**Financing Options/ Sources**

1. **Wider Capital Markets** (Equity & Fixed Income instruments e.g. Asset Backed Securities, Infrastructure Bonds).

2. **Development Financial Institutions (DFIs):** AfD, ADB, IDA, JICA, EIB, and others.

3. **Commercial & International Project Finance Banks** – Export/Import Banks.

4. **Joint Ventures.**

5. **BOT/BOOT/Concessions.**

6. **Government of Kenya**

7. **Carbon Credits**

**PIBO** > US$ 300m

**DFIs** ~US$ 1,300m

Pursuing JVs for development of new capacity (Coal, Wind, Solar and Geothermal)
5. Key Contacts

• David Kagiri - KenGen
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• Geoffrey Muchemi - KenGen
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• Elizabeth Njenga - KenGen
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