INVESTMENTS IN ENERGY SECTOR IN KENYA

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Director of Renewable Energy, MoEP
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NAIROBI
Kenya is the Economic Hub of East Africa, has Demonstrated Capacity to Convert Investments into Sustainable Growth

<table>
<thead>
<tr>
<th>Territory</th>
<th>581,309 Sq. Kilometres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital</td>
<td>Nairobi</td>
</tr>
<tr>
<td>Population (m, 2015)</td>
<td>44.2</td>
</tr>
<tr>
<td>GDP Growth Rate (2015)</td>
<td>5.6%</td>
</tr>
<tr>
<td>Nominal GDP (2015)</td>
<td>US$ 59.3 billion</td>
</tr>
<tr>
<td>GDP Per Capita (US$, 2015)</td>
<td>1,409</td>
</tr>
<tr>
<td>Sovereign Credit Ratings</td>
<td>B1 (Moody’s) / B+ (S&amp;P) / B+ (Fitch)</td>
</tr>
<tr>
<td>Currency</td>
<td>Kenya Shilling (“KES”)</td>
</tr>
<tr>
<td>Average Exchange Rate</td>
<td>USD/KES: 101.7856 (through March 2016)</td>
</tr>
<tr>
<td>System of Government</td>
<td>Multi-party democracy with five (5) year election cycles since 1992 Next general elections scheduled to take place in August 2017</td>
</tr>
<tr>
<td>Borders</td>
<td>Uganda, Tanzania, Ethiopia, South Sudan, Somalia</td>
</tr>
</tbody>
</table>

Kenya is Sub-Saharan Africa’s 5th Largest Growing Economy with a Track Record of Resilient and Inclusive Economic Growth

Source: Euromonitor International from national statistics/Eurostat/OECD/UN/IMF

Note: (1) Estimates. The real GDP growth data compares data from KNBS for Kenya and IMF World Economic Outlook (WEO) October 2015 data for Sub-Saharan Africa (SSA) and World.
One of the Best Business Environments in Africa

Kenya Steps-Up in Ease of Doing Business

<table>
<thead>
<tr>
<th>Year</th>
<th>Rank</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>108</td>
<td>21</td>
</tr>
<tr>
<td>2015</td>
<td>129</td>
<td></td>
</tr>
</tbody>
</table>

Logistics Outperformance Cementing Status as Trade Hub

<table>
<thead>
<tr>
<th>Country</th>
<th>Logistics Performance Index</th>
<th>Sub Saharan Africa Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>34</td>
<td>1</td>
</tr>
<tr>
<td>Malawi</td>
<td>73</td>
<td>2</td>
</tr>
<tr>
<td>Kenya</td>
<td>74</td>
<td>3</td>
</tr>
<tr>
<td>Nigeria</td>
<td>75</td>
<td>4</td>
</tr>
<tr>
<td>Cote d’Ivoire</td>
<td>79</td>
<td>5</td>
</tr>
<tr>
<td>Rwanda</td>
<td>80</td>
<td>6</td>
</tr>
<tr>
<td>São Tomé and Principe</td>
<td>84</td>
<td>7</td>
</tr>
<tr>
<td>Namibia</td>
<td>93</td>
<td>8</td>
</tr>
</tbody>
</table>

One of the Largest Middle Class Populations in SSA

- Ghana: 47%
- Gabon: 46%
- Congo: 45%
- Angola: 38%
- Senegal: 36%
- Nigeria: 23%
- Uganda: 19%
- Zambia: 14%
- Kenya: 75%

Inflation Under Control

- Lower Bound: 2.5
- Medium Term Target: 5.0
- Upper Bound: 7.5

Sources: UN Human Development Index, AFDB Middle Class Index, World Bank Logistics Performance Index 2014, World Bank Doing Business 2016

Stable Currency Relative to Peers
Mission & Vision

Mission

To facilitate provision of:
✓ clean,
✓ sustainable,
✓ affordable,
✓ competitive and
✓ secure energy
for national development while protecting the environment …

Vision

… affordable, competitive quality energy
for all Kenyans …
KENYA ENERGY SECTOR INSTITUTIONAL FRAMEWORK

New Energy Bills being enacted to align the sector to the New Constitution…

IPPs – Independent Power Producers
KPC – Kenya Pipeline Company Ltd
Core Objectives of Kenya’s Strategic Energy Plan

- Increase electricity generation capacity from cheaper, sustainable and reliable energy sources – **lower cost of power**
  (To cost about 9 US cents for industries and 10 US cents for domestic tariff by 2020)

- Expand and upgrade the transmission and distribution network infrastructure – **reduce power loss, lower cost of power, increased revenue generation, stable power network**

- Increase electricity access country wide to increase the uptake of power and grid / off-grid network extension – **socio-economic growth, increased and devolved industries**
  To achieve access of 70% by 2017 and universal access by 2020
Kenya Vision 2030 Power Demand Projections
PILLARS OF THE 5,000+ MW PROJECT

- ADEQUACY: roadmap to raise generation capacity from 2323 MW in 2015 to over 6,700 MW by 2020

- RELIABILITY: enhanced through diversified energy mix

- REDUCE COST: by increasing generation from cheaper energy sources and reduced power losses
Target Tariff and Generation Progression

Our Aspirations are to Improve Affordability and Access Whilst Generating Positive Returns for Investors and Partners

<table>
<thead>
<tr>
<th>Month</th>
<th>Cumulative Capacity (MW)</th>
<th>Industrial / Commercial Tariff (US¢ / kWh)</th>
<th>Domestic Tariff (US¢ / kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1,664</td>
<td>14.14</td>
<td>19.78</td>
</tr>
<tr>
<td>6</td>
<td>2,342</td>
<td>12.49</td>
<td>17.73</td>
</tr>
<tr>
<td>12</td>
<td>3,402</td>
<td>11.03</td>
<td>13.46</td>
</tr>
<tr>
<td>24</td>
<td>5,017</td>
<td>9.03</td>
<td>13.46</td>
</tr>
<tr>
<td>36</td>
<td>6,762</td>
<td>10.43</td>
<td>11.19</td>
</tr>
<tr>
<td>40</td>
<td></td>
<td>9.00</td>
<td>10.43</td>
</tr>
</tbody>
</table>

47% reduction Domestic tariff

37% reduction Industrial tariff
<table>
<thead>
<tr>
<th>Source</th>
<th>Installed MW</th>
<th>Effective MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro</td>
<td>820.73</td>
<td>800</td>
</tr>
<tr>
<td>Geothermal</td>
<td>632.00</td>
<td>624</td>
</tr>
<tr>
<td>Thermal (MSD)</td>
<td>716.32</td>
<td>690</td>
</tr>
<tr>
<td>Temporary Thermal</td>
<td>30.00</td>
<td>30</td>
</tr>
<tr>
<td>Thermal (GT)</td>
<td>60.00</td>
<td>54</td>
</tr>
<tr>
<td>Wind</td>
<td>25.50</td>
<td>26</td>
</tr>
<tr>
<td>Biomass</td>
<td>28.00</td>
<td>24</td>
</tr>
<tr>
<td>Interconnected System</td>
<td>2312.55</td>
<td>2247</td>
</tr>
<tr>
<td>Off grid thermal</td>
<td>27.00</td>
<td>23</td>
</tr>
<tr>
<td>Off grid wind</td>
<td>0.57</td>
<td>1</td>
</tr>
<tr>
<td>Off grid solar</td>
<td>0.55</td>
<td>0</td>
</tr>
<tr>
<td>Imports</td>
<td>0.00</td>
<td>0</td>
</tr>
<tr>
<td>Total Capacity MW</td>
<td>2341</td>
<td>2270</td>
</tr>
</tbody>
</table>

% (effective)

- Hydro: 37.2%
- Geothermal: 27.0%
- Thermal (MSD): 29.7%
- Temporary Thermal: 1.4%
- Thermal (GT): 2.5%
- Wind: 1.2%
- Cogen.: 1.0%
- Solar: 0.0%
- Imports: 0.0%
CURRENT ENERGY CONSUMED BY SOURCE
CURRENT TARIFF EVOLUTION

KSh/kWh

- 25.00
- 22.50
- 20.00
- 17.50
- 15.00
- 12.50
- 10.00
- 7.50
- 5.00
- 2.50
- 0.00

Domestic unit cost (KShs/kWh)
Commercial/Industrial unit cost (KShs/kWh)
Lifeline Consumer (KShs/kWh) (50 units)
Fuel Cost Charge (KShs/kWh)

PARTICIPATION

Mode of Participation

1. **Competitive Bidding**
   - Through competitive PPP arrangements, Advertisements normally in press and in websites of Ministry and Agencies.

2. **Feed-In-Tariffs**
   - Renewable Energy Projects done under Feed-in-Tariff Policy- soon transiting to Energy Auctions framework, other than for very small sized projects.

3. **PPP initiated Proposals for concessions**
   - Concessional projects e.g. geothermal
Electricity Access Growth: Customer Numbers

Our Intention is to Deliver Universal Access to Energy in Kenya by 2020

<table>
<thead>
<tr>
<th>Year</th>
<th>Population size “Million”</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>41.8</td>
</tr>
<tr>
<td>2014</td>
<td>43.0</td>
</tr>
<tr>
<td>2015</td>
<td>44.2</td>
</tr>
<tr>
<td>2016</td>
<td>45.7</td>
</tr>
<tr>
<td>2017</td>
<td>46.3</td>
</tr>
<tr>
<td>2020</td>
<td>52.0</td>
</tr>
</tbody>
</table>

Average household size is 5.5
Electricity Access Strategies

Last Mile Connectivity:

- Phase 1 – Those near transformers – target 3.4M Kenyans
- Phase 2 – Increasing the transformers
- Phase 3 – Reaching Off grid areas

Global Partnership Output Based Aid (GPOBA)

- Targeting highly populated settlements e.g. Kibera 1.9 million Kenyans to benefit across all 47 counties

Transformers for every constituency

- Aimed at supporting fast-tracking the connectivity programs
OFF-GRID

• Currently there are 21 public operational mini grids. Another seven under development
• All these are diesel based but nine have been retrofitted with Renewable Energy
• REA developing 25No. solar mini-grids of about 60kWp each
• To do more, with funds from GoK, AFD, World Bank, Nordic Development Fund (NDF), DFID, KfW, GIZ and other Development partners
• Study on National Electrification Strategy underway, and GeoSpatial mapping about to commence- To inform areas and strategies for electrification by grid, mini-grid and other distributed energy
• 150m $ World Bank Facility being formulated
Transmission & Distribution Infrastructure

Regional Transmission Lines:
Kenya-Uganda-Rwanda; Ethiopia-Kenya; Kenya-Tanzania-Zambia
Increase in Km of transmission lines in the country:
Cumulative growth Km
- Mar 2013 3,621km
- Sept 2016 4,400km (+779Km)
- Aug 2017 6,379km (+1,979 km)
- Dec 2018 7,831km (+1,452 km) (Total 4210 Km added)

MoEP has allowed for open access and therefore concessioning framework in the New Energy Bill and Policy. Concessioning to be implemented once power costs reduction is realised.
Transmission in Kenya
REGIONAL INTERCONNECTION

To Kigali

400KV Lessos-Tororo (Completion Dec-2016)

400KV Suswa-Isinya (83% complete)

400KV Kenya-Tanzania (Procurement of Contract ongoing)

400KV Mombasa-Nairobi (93% complete)

To Ethiopia

500KV HVDC
Ethiopia-Kenya
Contractors Mobilised

To Zambia

400KV Mombasa
(93% complete)
www.energy.go.ke

THANK YOU