HIGHLIGHTS OF THE ETHIOPIAN ENERGY SECTOR

**ETHIOPIA**

- Per capita electricity consumption < 100 kWh/a
- From 2002 to 2006, average annual electricity demand grew by 13%.
- Present growth rate > 20%
- Geographic access to electricity grid – 55%
  - Connectivity ~ 30%
- Electrified towns ~ 6,000
- Customers > 2 million

**Plan (Grid Connected PV)**
- 300MW

**Plan (Rural Electrification)**
- GTP II, 3.6Mill lanterns and SHS 400,000 by 2020
- 40,000 solar home Systems installed in 7 year instalment loan (REF) program
- Close to 60,000 (by NGOs and private companies)
- Close to 1 million lanterns sold (NGOs and private companies)

*Over 14 million Ethiopian rural households demand for solar*
CURRENT ENERGY SITUATION

- **Potential** 45,000 MW
  - Current 3,810 MW
  - GTP II 11015MW (2020)

- **Potential** 1,350 GW
  - Current 324 MW
  - GTP II 1520MW

- **Potential** 5.5 kWh /sq
  - Current 7 MW
  - (<100,000SHS and <1000000lanterns)
  - GTP II plan by2020 300MW Grid Connected OFF/Grid
    - 3.6Mil. Lanterns
    - 40000 SHS

- **Potential** ~ 10,000 MW
  - Current
  - GTP II plan by2020 1270MW
# The Energy Resource Potential

<table>
<thead>
<tr>
<th>Resource</th>
<th>Unit</th>
<th>Exploitable Reserve</th>
<th>Exploited</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Amount</td>
</tr>
<tr>
<td>Hydropower</td>
<td>MW</td>
<td>45,000</td>
<td>~2100</td>
</tr>
<tr>
<td>Solar/day</td>
<td>kWh/m²</td>
<td>4 – 6</td>
<td></td>
</tr>
<tr>
<td>Wind: Power Speed</td>
<td>GW m/s</td>
<td>1350 &gt; 7</td>
<td>171MW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Under construction</td>
</tr>
<tr>
<td>Geothermal</td>
<td>MW</td>
<td>7000</td>
<td>7.3 MW</td>
</tr>
<tr>
<td>Wood</td>
<td>Million tons</td>
<td>1120</td>
<td>560</td>
</tr>
<tr>
<td>Agricultural waste</td>
<td>Million tons</td>
<td>15-20</td>
<td>~6</td>
</tr>
<tr>
<td>Natural gas</td>
<td>Billion m³</td>
<td>113</td>
<td>-</td>
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<tr>
<td>Coal</td>
<td>Million tons</td>
<td>&gt;300</td>
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<tr>
<td>Oil Shale</td>
<td>Million tons</td>
<td>253</td>
<td>-</td>
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Power Demand Forecast
Target and Moderate forecast

According to the Target scenario, electricity demand will be expected to grow by 32% for the period 2011-2015.
MAJOR POWER GENERATION PROJECTS

+ Power plants under construction
  + Grand Ethiopian Renaissance Dam – 6,000MW
  + Gibe III – 1,870 MW (started power production)
  + Genale Dawa III – 254 MW
  + Aluto Langano geothermal expansion – 75 MW
  + Repi Waste-to-Energy power – 50 MW
# Power Plants Under Construction

<table>
<thead>
<tr>
<th>No</th>
<th>Hydro Plants</th>
<th>Installed Capacity (MW)</th>
<th>Average energy (GWh/yr)</th>
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<tbody>
<tr>
<td>1</td>
<td>Genale III</td>
<td>254</td>
<td>1,200</td>
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<tr>
<td>2</td>
<td>Gibe III</td>
<td>1,870</td>
<td>6,240</td>
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<tr>
<td>3</td>
<td>Grand Renaissance</td>
<td>6,000</td>
<td>15,700</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>8,124</td>
<td>23,140</td>
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</table>

<table>
<thead>
<tr>
<th>Wind Farms</th>
<th>MW</th>
<th>Wind Farms</th>
<th>MW</th>
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</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td>Ashegoda</td>
<td>120</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Adama II</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grand Total</td>
<td>8,397</td>
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GRAND ETHIOPIAN RENAISSANCE DAM PROJECT

- 6000 MW installed capacity
- 48% Completed
- Fully Public Financed Project
Land fill area,
- 50 MW Installed Capacity
- Municipal Solid waste (Addis Ababa)
- The first W to E Plant in Africa
- 68% completed
Memorandum of Understanding on power export signed with Tanzania, Rwanda and Yemen
Mini-grid systems based on:

- Solar, small-hydro, hybrid systems, etc

There are various investment incentives

- Tax-free importation of capital goods,
- Money repatriation, etc

Equipment and appliance manufacturing and supply

- Hydro, solar and wind generator components
- Transmission & distribution components (transformers, cables, accessories, poles and towers, meters, etc)
- Solar home systems, heating systems, etc
THANK YOU