The energy sector of Ethiopia: 
*Policies, Action Plan and Investment Opportunities*

G20 Compact with Africa (CwA): The Policy Panel

November 7th, 2018

Presented by: 
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*Minister of Water, Irrigation and Energy of Federal Democratic Republic of Ethiopia*
Section 1

Country Energy Sector Overview
Ethiopia Energy Sector Snapshot

I. Potential

- **Solar energy reserve**
  - >2 Trillion MWh p.a.
  - Average irradiance 5.5 kWh/m^2/day
  - High PV potential: nationwide grid connection is about 6%.

- **Hydropower reserve**
  - 45,000 MW
  - Small scale hydropower is estimated to be 7% of the total hydropower potential (3000 MW).

- **Geothermal Potential**
  - 10 GW
  - 2,500 MW to be developed by 2030
  - All geothermal resource zones located within the rift valley system.

- **Average Wind Speeds**
  - > 7 m/sec at 50 m above ground level
  - Expansion of national wind power capacity total 544 MW by 2020 to be developed by IPPs

Production in 2017

- 4300 MW
  - Total Installed Capacity

- 0%
  - Of supply is generated by IPPs

Electric power generation by source:

- Hydro (88.9%)
- Wind (7.6%)
- Geothermal (0.2%)
- Diesel (3.3%)

Key Indicators in 2017

- Ethiopia’s Population: 106 Million
- Urban Access: 85% 21% of Population
- Rural Access: 79% of Population
- Demand Growth Per annum: 19%
- Peak Demand: 2491 MW
- Electrification Rate: 25%
Policy Priorities & Reforms

I. Policy Priorities

National Electrification Program (NEP): Ethiopia’s plan for achieving universal electricity access nationwide by 2025,
- New 14 million household customer connections (65% of the population in 2025)
- Access for the remaining 5.7 million rural households (35% of the population in 2025)
- Solar systems and isolated mini/micro-grids

The Ethiopian Electric Power (EEP) 25-year Master Plan (2014) and the GMSP planning program to identify Generation projects for Procurement using:
- Load Forecast
- Generation Planning
- Transmission Planning

The 20 Years Distribution Master Plan Study for Addis Ababa Has completed in 2016
- The implementation of this master plan will lead to single digit loss levels in Addis

Recent and Prospective Reforms

- Overall Energy Policy and Strategy Guidance by the Regulatory Body – Ethiopian Energy Authority (EEA)
- First Level Sector Unbundling Generation and Transmission (EEP) and Distribution and Sales (EEU)
- Private Sector Engagement through IPP and Shareholding in the Existing Enterprises
- Cost Reflective Tariff Adjustment
- Establishment of PPP unit
- PP model being considered
- Partial Privatization
Section 2

Joint Action Plan
Status Update

Addressing investment risks and bottlenecks
<table>
<thead>
<tr>
<th>Actions</th>
<th>Progress</th>
<th>Next Steps or Required Support</th>
</tr>
</thead>
</table>
| 1. Capacity building to Procure IPPs:  
  • Clarification on the rules/processes  
  • Easier access to information | ✓ AfDB SEFA TA grant to build capacities of IPP/PPP  
✓ WB TA to implement PPP (Proclamation, Directive, Transaction Screening Tool, and Sector Specific Guidelines)  
✓ WB technical advisory services for 500 MW Scaling Solar and proposed 500 MW WBG Scaling Wind.  
✓ Danish Energy Agency TA for devp’t of IPP framework and tender documents for wind | ✓ MOFEC and MOWIE to lead in IPP procurement by appointing: (i) a focal point at MOWIE responsible for setting up/leading the IPP unit between MOFEC and (ii) an advisor in the PPP directorate and Legal unit/NBE/CBE |
| 2. International Arbitration: Ratification of the New York Convention | ✓ MOWIE/MOFA/MOFEC to discuss the proposal to ratify the New York Convention | ✓ Led by MOWIE (DG of MOFA/MOFEC) to discuss the procedure to ratify the New York Convention |
| 3. Access to forex for IPPs  
  • Credit enhancement facilities/financial instruments for FX availability | ✓ Developers engaged with syndicated banks to setup offshore accounts to meet lenders requirement.  
✓ Project Sponsor’s legal team, GOE’s legal team and Power Africa submitted a proposed structure for the offshore account to NBE/CBE for consideration  
✓ WB coverage of certain forex/liquidity risks under IDA Guarantees, PRGs | |
| 4. Tariff adjustment implementation | ✓ Approval and implementation of a multi-year, cost-reflective power sector tariff reforms to ensure financial viability of the sector | ✓ Tariff adjustment roll out and implementation in Q1 2019  
✓ Design a PR strategy for the implementation of the tariff adjustment |
| 5. Reforms to improve financial management and operational efficiencies of utility | ✓ The tariff adjustment enactment by the Council of Ministers is one action the government took to get the utilities finances in order.  
✓ Partial privatization is another initiative being pursued by the the PM Office to provide EEP with some liquidity | ✓ As indicated in Actions 4, the government needs assistance implementing the tariff adjustment.  
✓ Similarly the government needs assistance on how to conduct its privatization initiative |
Section 3

Investment Opportunities
III. Project #1: Corbetti

**IMPACT**

| 500 MW | X Households Electrified | X Emissions Savings |

**Deal Snapshot**

- To be developed in four phases. Phase 1 of 20 MWs to be developed using 100% equity financing with subsequent phases to be developed using project financing.
- Currently waiting for Parliamentary ratification of the Implementation Agreement
- Debt and Equity financing

**Alignment with Action Plan**

- As base load generation, this particular project will enable the country to meet its growing internal demand as well as external obligation for exports to neighboring countries
- The development of a 500 MWs geothermal project is 12% of the current installed capacity which will help the country to achieve Universal Access to electricity and perhaps become East African Power Hub
- Ratification of the New York Convention on the government side
- ALSF support needed to finalize the Direct Agreement and review of loan agreements
III. Project #2: Tulu Moye

**IMPACT**

- **500 MW**
- **X** Households Electrified
- **X** Emissions Savings

**Deal Snapshot**

- To be developed in four phases. Phase 1 of 50 MWs to be developed using debt, grant and equity financing with subsequent phases to be developed using project financing.
- Currently waiting for Parliamentary ratification of the Implementation Agreement
- Debt and Equity financing

**Alignment with Action Plan**

- As base load generation, this particular project will enable the country to meet its growing internal demand as well as external obligation for exports to neighboring countries
- The development of a 500 MWs geothermal project is 12% of the current installed capacity which will help the country to achieve Universal Access to electricity and perhaps become East African Power Hub
- Ratification of the New York Convention on the government side
- ALSF support needed to finalize the Direct Agreement and review of loan agreements
- Partial Risk Guarantee to be considered.
III. Project #2: Metehara Solar Project

**IMPACT**

- **100 MW**
- **X Households Electrified**
- **X Emissions Savings**

**Deal Snapshot**

- Enel Green Power has been awarded the 100 MW Metehara Solar project to develop under an IPP model through competitive bid.
- Currently Enel Green Power and Ethiopian Electric Power have signed a Letter of Intent that will set the course to execute the PPA and IA.
- The execution of both the PPA and IA will allow for Enel Green Power to start the development of the project.

**Alignment with Action Plan**

- This project will allow EEP to diversify its generation fleet by mixing solar energy with the predominantly hydro generation it currently operates.
- Unlike Corbetti and Tulu Moye projects, which are base load generations, the solar generation will serve load during daylight saving water for hydro generation to be dispatched during evening peak.
- This project will also require ratification of the New York Convention on the government side to make the project bankable.
## Power generation projects approved for development

<table>
<thead>
<tr>
<th>No.</th>
<th>Project</th>
<th>Capacity</th>
<th>Estimated Project Cost (bil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hydro Power Genale Dawa 6</td>
<td>469MW</td>
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<td>2</td>
<td>Hydro Power Genale Dawa 5</td>
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<td>3</td>
<td>Hydro Power Chemoga-Yeda I &amp; II</td>
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<td>4</td>
<td>Hydro Power Halele Warabessa</td>
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<td>5</td>
<td>Hydro Power Dabus</td>
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<td>6</td>
<td>Scaling Solar IPP Gad - Phase 1</td>
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<td>7</td>
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<td>8</td>
<td>Mekele Solar</td>
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<td>9</td>
<td>Humera Solar</td>
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<td>10</td>
<td>Welenchetti Solar PV project</td>
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<tr>
<td>13</td>
<td>Hurso Solar PV Project</td>
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<td>.150</td>
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</table>

### Hydro Power Projects

### Solar Power Projects

### HV and MV Transmission Line Projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Project</th>
<th>Estimated Project Cost (bil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td>Transmission and Substation Projects</td>
<td>18 specific transmission projects</td>
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Thank you for your attention.