Outcome of Virtual Energy Technical Workshop
held on March 30

MARCH 31, 2020
Diverse systems in EAPP and HoA create a strong rationale for regional integration

- EAPP and HoA are home to a diverse and vast pool of low-cost renewable energy resources.
- Regional integration can provide win-win opportunities:
  - Financial benefits from exports AND imports
  - Economy of scale benefits by linking regional markets
  - Increase resilience of national power system
  - Enable leap frogging of lagging regions
- There is a strong focus on the regional integration agenda in Eastern Africa and the EAPP countries.
The time is right for a deeper regional energy integration in EAPP and HoA

- Massive physical infrastructure investment over the last decade in EAPP coming to fruition. Focus on optimizing soft infrastructure.
- The current 11 EAPP members are expected to be connected by 2022.
- Existing interconnector capacity is ~1 GW in EAPP and 4+ GW is expected to come online shortly.
- Soft infrastructure is critical for optimal utilization of physical infrastructure – planning, operations, and commercial.
- HoA needs to expand physical infrastructure and help drive the development of regional soft infrastructure.

<table>
<thead>
<tr>
<th>Interconnectors</th>
<th>Voltage (kV)</th>
<th>Transfer Limit (MW)</th>
<th>Expected CoD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethiopia – Kenya (HVDC)</td>
<td>500</td>
<td>2000</td>
<td>2021</td>
</tr>
<tr>
<td>Uganda - Kenya</td>
<td>220</td>
<td>300</td>
<td>2021</td>
</tr>
<tr>
<td>Tanzania - Kenya</td>
<td>400</td>
<td>1600</td>
<td>2021</td>
</tr>
<tr>
<td>Rwanda - Uganda</td>
<td>220</td>
<td>342</td>
<td>2021</td>
</tr>
<tr>
<td>Tanzania - Zambia (EAPP-SAPP)</td>
<td>400</td>
<td>600</td>
<td>2025</td>
</tr>
</tbody>
</table>
Significant gains (~$8 bn in medium term) from power trade can accrue to the EAPP, including HoA

Level of Integration

- **BAU**
  - Trade remains at current levels
  - Optimized generation expansion at national level

- **SHALLOW**
  - Same generation capacity as in BAU
  - Optimized trade along existing and committed interconnectors
  - Integration with SAPP

- **TIGHT**
  - Optimized region-wide generation and transmission planning
  - Optimized trade along existing, committed, and planned interconnectors
  - Integration with SAPP

Economic benefits are attributed to:
- avoided fuel costs
- reduced unmet demand
- avoided operation and maintenance costs
- avoided CAPEX for new generators
- Gains from trade with other power pools

Shallow integration could lead to **11x increase in trade volumes** compared to levels in 2018

Increased integration could lead to **increased RE generation** and a ~10% reduction in GHG emissions over 2020-2030

HoA countries can capture large economic benefits from regional integration
Power trade can evolve in a phased manner

- Develop regional power market in a phased manner: growing bilateral trade followed by a larger share of competitive trade
  - Phase 1: Scale up bilateral trade/Minimum level of operational coordination
  - Phase 2: Increased bilateral/Larger share of centralized trade
  - Phase 3: Integrated, liquid, efficient power pool with strong regional institutions

- EAPP’s initial goal is to unlock bilateral trade: facilitate **PPA negotiations and commercial agreements** between utilities, adopt contract templates for power purchases and wheeling and adopt rules for cross border imbalances

- **Market design** is underway and high-level design will be completed by mid-2021
HoA countries need to actively engage in EAPP to reap the benefits of trade

- EAPP and WB convened representatives (PSs/MoE/Utility Heads) from HoA countries, IRB, African Union Commission, RECs (COMESA/EAC), and Donors (AfDB, AFD, EIB, EU, Korea EXIM Bank, NORAD, SIDA, USAID)
- Mr. Abdourazak Ahmed Idriss, SG of the Ministry of Economy and Finance (Government of Djibouti) and Eng. Lebbi Changullah (SG of EAPP) chaired the workshop
- HoA countries’ representatives signed the workshop synopsis and agreed to the following endorsements:

<table>
<thead>
<tr>
<th>HoA country action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Infrastructure / Planning</strong></td>
</tr>
<tr>
<td>Continue to develop regional interconnectors</td>
</tr>
<tr>
<td>Integrate regional supply options in national power sector plans</td>
</tr>
<tr>
<td><strong>Operational</strong></td>
</tr>
<tr>
<td>Improve compliance with the EAPP interconnection code and operating guidelines</td>
</tr>
<tr>
<td><strong>Market</strong></td>
</tr>
<tr>
<td>Adopt standardized bilateral power purchase agreements and foster bilateral trade</td>
</tr>
<tr>
<td>Participate in the centralized market</td>
</tr>
<tr>
<td>Strengthen financial performance of utilities</td>
</tr>
<tr>
<td><strong>Institutional Strengthening</strong></td>
</tr>
<tr>
<td>Ensure active EAPP membership by participating in technical committees to develop and improve operational and market frameworks</td>
</tr>
<tr>
<td>Contribute human/financial resources to EAPP and regional regulator (IRB)</td>
</tr>
</tbody>
</table>
THANK YOU