Overview of the Southern African Power Pool (SAPP) energy programme for the Southern African Development Community (SADC)

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Objectives

• Overview of the overarching SAPP programme, including
  ▪ key single- and multi-country energy initiatives; and
  ▪ priority projects identified for planning, implementation and operation.

• Share the current opportunities and constraints to the roll-out of the programme

• Interventions being put in place to enable the effective delivery of a reliable electricity supply throughout the SADC region
Disclaimer

• Information presented is based on publicly available documentation and SRK’s understanding via interaction with SAPP

• Not presented on behalf of SAPP or any it’s the member utilities

• Acknowledge SAPP as primary source of information presented
What is SAPP

• Created with the primary aim of providing a reliable and economical electricity supply to the consumers of each of the 16 SAPP member utilities

• Consistent with the sustainable utilisation of natural resources and avoidance and minimisation of environmental and social impacts.
What is SAPP

• The SAPP is governed by four agreements:
  ▪ The Inter-Governmental Memorandum of Understanding
  ▪ The Inter-Utility Memorandum of Understanding
  ▪ Agreement Between Operating Members
  ▪ Operating Guidelines
SAPP Challenges

- Insufficient generation surplus capacity within SAPP became manifest in 2007/8

- Due to inadequate investments in generation and transmission infrastructure over the last 30-years
Average Unconstrained Price For Selected Day: USD/MWh: 41.36
SAPP Challenges

- The challenges being faced include, but not limited to:
  - Generation and transmission projects identified for implementation are not properly prepared;
  - Capacity constraints within SAPP utilities to prepare projects and bring them to bankability stage; and
  - Project preparation funds have not been secured rapidly enough to prepare a sufficient number of projects.
SAPP Challenges

• In 2009 SAPP completed a revision of the Pool Plan
• Funded by the World Bank and the government of Norway
• Identified a number of priority projects to be prepared and implemented
• The status of project implementation was reviewed by the SAPP Executive Committee in 2011:
  ▪ Most of priority projects required further work to be bankable
  ▪ To achieve this, project preparatory funds were required
• Responses received to assist with a number of priority projects:
  ▪ The government of Norway
  ▪ Swedish International Development Agency (Sida)
  ▪ Development Bank of Southern Africa
  ▪ Agence Française de Développement (AFD)
  ▪ Asian Development Bank (ADB)
SAPP Challenges

- In 2013, AfDB renewed its support to the Inga Hydro-power Project in the Democratic Republic of the Congo: $73 million technical assistance grant.
- Support development phase of a new dam on the Congo River by contributing to the financing of the technical design, the development of an institutional structure to manage the investment and the negotiation of a public-private partnership.
- This preparatory work will lay the foundation for further investment operations which will install a new plant with a 4,800 MW capacity.
- Expected to boost electricity access in DRC from 9% (2014) to >40% in 2022.
SAPP Challenges

• The World Bank has responded by assisting the SAPP to roll-out a Program for Accelerating Transformational Energy Projects
  • An International Development Agency (IDA) grant up to $20M was provided for the establishment of a PAU within SAPP and provision of technical support
Program for Accelerating Transformational Energy Projects

• $20M from the World Bank: To help accelerate preparation of selected priority regional power generation and transmission projects in the operational region of the SAPP to value of

• Projects will be large-scale, complex regional energy projects

• Including technical, economic and financial feasibility studies, environmental assessments, legal documentation and financial transaction advisory work.
Program for Accelerating Transformational Energy Projects

- The project is comprised of three components:
  - setting up the projects acceleration team: charged with moving ahead with preparation of regional projects identified as priorities;
  - project preparation funds: including technical, economic and financial feasibility studies; and
  - regional analytical support: support critical analytical work deemed important for advancing preparation of priority projects
Program for Accelerating Transformational Energy Projects

- Component A: Setting up the PAU under the SAPP (US$ 7 million which would fund the mobilization of a high caliber team)

- Component B: Project Preparation Funds (US$10 million, initially). The funds in this component would be managed by the PAU. Key focus will be on environmental and social performance of projects

- Component C: Analytical support to SAPP (US$3 million). This component would support analytical work to update critical non-project specific information used by SAPP to support project preparation, including revision of the SAPP Pool Plan
Program for Accelerating Transformational Energy Projects

• The PAU will:
  ▪ Conduct regional analytical work
  ▪ Use the grant funding received by the SAPP-CC to screen, select, prepare and monitor the implementation of regional priority projects
  ▪ Play an advisory role to SADC governments
  ▪ Be accountable for the preparation and implementation of selected and agreed priority regional electricity projects in the Southern African Power Pool region
• SAPP Member States operate in different legislative environments, with variability in national environmental and social safeguard requirements

• SAPP Environmental and Social Guidelines developed over a period of time to address some of these challenges

• Capacity building and training prioritized – SRK assistance in 2014/15

• Capacity constraints within many member utilities to comprehensively identify, assess, avoid or mitigate, and manage environmental and social risks and impacts remain
Program for Accelerating Transformational Energy Projects

- Environmental and Social Impact Assessment Guidelines For Transmission infrastructure for the SAPP Region
- SAPP Guidelines on the Use and Disposal of CFL Lamps
- SAPP Occupational Health & Safety Environmental Guideline
- Guidelines for Environmental Impact Assessment (EIA) for Thermal Power Plants
- SAPP Position on Climatic Change
- SAPP PCB Guidelines Jan 2008
- SAPP Guidelines on the Management of Oil Spills
- Guidelines for the safe Control, Processing, Storing, Removing and Handling of Asbestos and Asbestos Containing Materials and Articles for SAPP
- Guidelines for the Management and Control of Electricity Utility Infrastructure with regard to Animal Interaction for SAPP.
- Guidelines for Environmental and Social Impact Assessments for Hydro Projects in SAPP Region
Program for Accelerating Transformational Energy Projects

• Component of Program includes development of an *Environmental and Social Management Framework (ESMF)*

• Purpose: provide technical guidance for environmental and social (impact and risk) assessment and management during preparation of the selected priority regional energy projects
Program for Accelerating Transformational Energy Projects

- **Environmental and Social Management Framework (ESIA)**
  - Screening and guidance tool to assist in the high-level environmental and social screening of projects during preparation
  - Strengthen the assessment and management of risks and impacts
  - Particularly relevant where project loans from regional or international financial institutions are required
  - Cater for projects of different categories based on the extent and significance of likely impacts and risks
SAPP Priority Projects

• For transmission projects, the following categories were agreed to:
  
  ▪ Outstanding transmission interconnectors whose aim is to interconnect non-operating members of the SAPP
  
  ▪ Transmission interconnectors aimed at relieving congestion on the SAPP grid
  
  ▪ New transmission interconnectors aimed to evacuate power from generating stations to the load centers
# SAPP Priority Projects Screening

<table>
<thead>
<tr>
<th>Item No</th>
<th>Key Aspects</th>
<th>Weight %</th>
<th>1 Weak</th>
<th>2 Below Standard</th>
<th>3 Standard</th>
<th>4 Above Standard</th>
<th>5 Best</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Size of Project, MW</td>
<td>16</td>
<td>&lt;50</td>
<td>50-200</td>
<td>200-500</td>
<td>500-1000</td>
<td>&gt;1000</td>
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<tr>
<td>2</td>
<td>Levelised costs in Country (Including Transmission Lines), USD/MWh</td>
<td>25</td>
<td>&gt;=131</td>
<td>101-130</td>
<td>71 - 100</td>
<td>41 -70</td>
<td>&lt;=40</td>
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<tr>
<td>3</td>
<td>Transmission integration aspects/stability/ technology</td>
<td>10</td>
<td>&gt;750km</td>
<td>101-750km</td>
<td>50-100 km</td>
<td>&lt;50km</td>
<td>Existing infrastructure, plug in</td>
</tr>
<tr>
<td>4</td>
<td>Economic impact</td>
<td>10</td>
<td>Little impact, limited to small area</td>
<td>National impact only-jobs, &gt;GDP</td>
<td>Mainly national impact - jobs, &gt;GDP and some</td>
<td>Balance between regional and national impact</td>
<td>Mainly regional impact - jobs, &gt; GDP</td>
</tr>
<tr>
<td>5</td>
<td>Project Time domain (Commissioning date)</td>
<td>10</td>
<td>After 2019</td>
<td>2018</td>
<td>2017</td>
<td>2016</td>
<td>&lt; 2015</td>
</tr>
<tr>
<td>6</td>
<td>Percentage off-take committed</td>
<td>10</td>
<td>&lt;20</td>
<td>21 - 35</td>
<td>36 - 50</td>
<td>51 - 80</td>
<td>&gt;80</td>
</tr>
<tr>
<td>7</td>
<td>Regional contribution as a % of project replacement</td>
<td>15</td>
<td>&lt;20</td>
<td>21 - 35</td>
<td>36 - 50</td>
<td>51 - 80</td>
<td>&gt;80</td>
</tr>
<tr>
<td>8</td>
<td>Participating member countries</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>&gt;=5</td>
</tr>
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</table>

*Source: SAPP, SRK Consulting*
SAPP Priority Projects

- **Category A**: Outstanding transmission interconnectors whose aim is to interconnect non-operating members of the SAPP:
  - Mozambique-Malawi
  - Zambia-Tanzania-Kenya
  - Interconnection of Angola

- **Category B**: Transmission interconnectors aimed at relieving congestion on the SAPP grid:
  - Central Transmission Connector (CNC - Zambia)
  - Zimbabwe – Zambia – Botswana – Namibia (ZIZABONA)
  - Kafue-Livingstone Upgrade (Zambia)
SAPP Priority Projects

• **Category C: Transmission Projects related to new Generation projects**
  - Mozambique Transmission Backbone – CESUL

• **Other Candidate Transmission Projects**
  - Second Mozambique – Zimbabwe Interconnector
  - Second Zimbabwe – RSA Interconnector
  - Second DRC – Zambia Interconnector (Kolwezi – Solwezi)
SAPP Priority Projects

- **ZIZABONA (Zimbabwe – Zambia – Botswana – Namibia)**
  - Facilitate power trade across Zimbabwe, Zambia, Botswana and Namibia
  - Ease congestion on the existing north-south transmission corridor from South Africa to Zimbabwe
  - Add a 400 kV western corridor to the Southern African Power Pool
  - Support the transfer of 600 MW of electricity arising primarily from existing and future hydroelectric plants located in Zambia and Zimbabwe
  - Updated Feasibility Study is still to be completed
  - Estimated cost approx. R 223 million
SAPP Priority Projects

- **Mozambique Transmission Backbone – CESUL**
  - Transport electricity from new hydro power plants from Mphanda Nkuwa (1,500 MW) and Cahora Bassa (North Bank, 1,245 MW) to the markets.
  - 400kV HVAC (High voltage alternative) line and 800 kV HVDC (High voltage direct) line
  - Supply the major consumption zones within Mozambique and link with the South African market
  - Feasibility Study complete
  - Cost > $2 billion
Transmission Projects
USD 5.6 billion

2015: Mozambique- Malawi
2016: ZIZABONA
2015: RSA Strengthening
2016: Zambia-Tanzania
2016: DRC-Angola
2017: Mozambique Backbone
Thank you

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Project overview