The Southern African Power Pool

www.sapp.co.zw

SAPP Overview

South Asia Regional Workshop on Competitive Electricity Markets

March 18-20, 2014

Presented by: Mziyanda Mbuseleli
CONTENTS

1. INTRODUCTION TO SAPP
2. SAPP DEMAND & SUPPLY SITUATION
3. UPDATE ON PROJECTS IMPLEMENTATION
4. UPDATE ON MARKET ISSUES
5. KEY POWER SECTOR CHALLENGES
6. CONCLUSIONS
1. INTRODUCTION TO THE SAPP

Key Facts

- 12 Countries
- 280 Million people
- Installed Generation Capacity – 56 GW
- Available Generation Capacity – 51 GW
- Peak Demand – 54 GW
The SAPP Vision is to:

- Facilitate the development of a competitive electricity market in the Southern African region.
- Give the end user a **choice** of electricity supply.
- Ensure that the Southern African Region is the region of choice for **investment** by energy intensive users.
- Ensure sustainable energy developments through sound economic, **environmental** & social practices.
1950s: DRC – Zambia
500 kV HVDC - 1700km

1960s: Zambia – Zimbabwe
330 kV at Kariba Dam
(Zambezi River)

1975: Mozambique – South Africa
533 kV HVDC – 1400 km
Governing Legal Documents

- **Inter-Governmental MOU**
  - Established SAPP.
  - Signed by SADC Member Countries in 1995.
  - Revised document signed on 23 February 2006.

- **Inter-Utility MOU**
  - Established the Management of SAPP.

- **Agreement Between Operating Members**
  - Signed by Operating Members.
  - Revised document signed May 2008

- **Operating Guidelines**
  - Revised in 2013

- **Market Guidelines**
  - Draft
SAPP Reporting Protocol

SADC Council (Heads of States)

SADC Integrated Council of Ministers (Ministers responsible for Energy)

SADC Committee of Senior Government Officers

SADC Directorate of Infrastructure and Services

SAPP
<table>
<thead>
<tr>
<th>No</th>
<th>Full Name of Utility</th>
<th>Status</th>
<th>Abbreviation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Botswana Power Corporation</td>
<td>OP</td>
<td>BPC</td>
<td>Botswana</td>
</tr>
<tr>
<td>2</td>
<td>Electricidade de Mocambique</td>
<td>OP</td>
<td>EDM</td>
<td>Mozambique</td>
</tr>
<tr>
<td>3</td>
<td>Electricity Supply Corporation of Malawi</td>
<td>NP</td>
<td>ESCOM</td>
<td>Malawi</td>
</tr>
<tr>
<td>4</td>
<td>Empresa Nacional de Electricidade</td>
<td>NP</td>
<td>ENE</td>
<td>Angola</td>
</tr>
<tr>
<td>5</td>
<td>ESKOM</td>
<td>OP</td>
<td>Eskom</td>
<td>South Africa</td>
</tr>
<tr>
<td>6</td>
<td>Lesotho Electricity Corporation</td>
<td>OP</td>
<td>LEC</td>
<td>Lesotho</td>
</tr>
<tr>
<td>7</td>
<td>NAMPOWER</td>
<td>OP</td>
<td>Nam Power</td>
<td>Namibia</td>
</tr>
<tr>
<td>8</td>
<td>Societe Nationale d’Electricite</td>
<td>OP</td>
<td>SNEL</td>
<td>DRC</td>
</tr>
<tr>
<td>9</td>
<td>Swaziland Electricity Board</td>
<td>OP</td>
<td>SEC</td>
<td>Swaziland</td>
</tr>
<tr>
<td>10</td>
<td>Tanzania Electricity Supply Company Ltd</td>
<td>NP</td>
<td>TANESCO</td>
<td>Tanzania</td>
</tr>
<tr>
<td>11</td>
<td>ZESCO Limited</td>
<td>OP</td>
<td>ZESCO</td>
<td>Zambia</td>
</tr>
<tr>
<td>12</td>
<td>Zimbabwe Electricity Supply Authority</td>
<td>OP</td>
<td>ZESA</td>
<td>Zimbabwe</td>
</tr>
<tr>
<td>13</td>
<td>Copperbelt Energy Corporation</td>
<td>ITC</td>
<td>CEC</td>
<td>Zambia</td>
</tr>
<tr>
<td>14</td>
<td>Lunsemfwa Hydro Power Station</td>
<td>IPP</td>
<td>LHPS</td>
<td>Zambia</td>
</tr>
<tr>
<td>15</td>
<td>Hidro Cahora Bassa</td>
<td>OB</td>
<td>HCB</td>
<td>Mozambique</td>
</tr>
<tr>
<td>16</td>
<td>Mozambique Transmission Company</td>
<td>OB</td>
<td>MOTRACO</td>
<td>Mozambique</td>
</tr>
</tbody>
</table>

**OP**: Operating  
**NP**: Non-Operating  
**ITC**: Independent Transmission Company  
**OB**: Observer  
**IPP**: Independent Power Producer
SADC POTENTIAL ENERGY SOURCES

SOUTHERN AFRICAN POWER POOL
SOUTHERN AFRICAN POWER POOL

Generation Mix & Contributions – Year 2013

- **74.3%** Coal
- **20.1%** Hydro
- **4.0%** Nuclear
- **1.6%** Gas/Diesel

- **80.4%** South Africa
- **5.0%** Mozambique
- **4.1%** Zimbabwe
- **3.6%** Zambia
- **2.6%** DRC
- **4.4%** Rest
## 2. SAPP Demand and Supply Situation

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Angola</td>
<td>ENE</td>
<td>2,028</td>
<td>1,805</td>
<td></td>
<td>1333</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Botswana</td>
<td>BPC</td>
<td>352</td>
<td>322</td>
<td></td>
<td>580</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>DRC</td>
<td>SNEL</td>
<td>2,442</td>
<td>1,268</td>
<td></td>
<td>1342</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lesotho</td>
<td>LEC</td>
<td>72</td>
<td>72</td>
<td></td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Malawi</td>
<td>ESCOM</td>
<td>351</td>
<td>351</td>
<td></td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Mozambique</td>
<td>EDM / HCB</td>
<td>2308</td>
<td>2,279</td>
<td></td>
<td>763</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Namibia</td>
<td>NamPower</td>
<td>501</td>
<td>392</td>
<td></td>
<td>635</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>South Africa</td>
<td>Eskom</td>
<td>44,170</td>
<td>41,074</td>
<td></td>
<td>38775</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Swaziland</td>
<td>SEC</td>
<td>70</td>
<td>70</td>
<td></td>
<td>222</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Tanzania</td>
<td>TANESCO</td>
<td>1380</td>
<td>1,143</td>
<td></td>
<td>898</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Zambia</td>
<td>ZESCO / CEC/LHPC</td>
<td>2,128</td>
<td>2,029</td>
<td></td>
<td>2287</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Zimbabwe</td>
<td>ZESA</td>
<td>2,045</td>
<td>1,600</td>
<td></td>
<td>2267</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL SAPP</td>
<td></td>
<td>57,847</td>
<td>52,405</td>
<td></td>
<td>(4,592)</td>
<td>5.4%</td>
</tr>
<tr>
<td></td>
<td>Total interconnected SAPP</td>
<td></td>
<td>54,088</td>
<td>49,106</td>
<td></td>
<td>(2,787)</td>
<td>4.3%</td>
</tr>
</tbody>
</table>
- Projects are facing delays

- Capacity balance by 2017 but energy balance by 2019

- This is due to low load factor plants being commissioned.
Tight Reserve Margin Position for SAPP Members

Generation Capacity shortfalls up to 2017.

Reserve Capacities vs Requirements

All SAPP Members Reserve Margin, %

Operating Members Only Reserve Margin, %

Best practice reserve margin

SAPP weighted average reserve margin

Operating Members Only Reserve Margin, %

Best practice reserve margin

SAPP weighted average reserve margin
Power Supply Challenges in SAPP

- Demand for power in Southern African has been increasing at an average rate of 3% per annum.

  ✓ In 2007, demand growth for South Africa was 4.9% and for the whole region 4.6%.

- In the last 10 years demand in the SAPP increased by more than 32% which is equivalent to 13,000 MW (from 41,000 MW in 2004 to 54,000MW in 2013).

- Unfortunately, there has been no corresponding investments in generation and transmission infrastructure, (11,202MW generation added from 2004 to 2013) resulting in the current supply deficit that the region is experiencing.
Why has the SAPP run into supply deficit?

1. **Economic Growth** of more than 5% in most of the SADC member countries resulting in unprecedented growth in electricity consumption and demand.

2. Increase in demand for base metals resulting in high metal prices on the World Market with new mining companies being established in the SADC region in the last few years.

3. **Inadequate Investments** in generation and transmission infrastructure over the last 20-years.

4. **Electrification Programmes** have partly contributed to the increased consumption and demand.

5. The **challenge** was identified and communicated but not adequately mitigated.
MANAGING THE GENERATION SHORTFALL

- SAPP is managing current generation shortfall through:
  - Promotion of sharing of available resources
  - DSM Initiatives
  - Load management incl. time of use tariffs, demand response and load shedding
  - Implementing Projects (short, medium and long term)
DSM INITIATIVES

- SAPP embarked on DSM initiatives to manage generation shortfalls targeting **CFLs, HWLC, SWH & Commercial Lighting**

- Most utilities are still focusing on **CFLs** currently and planned roll-out for the next three years.

- Some utilities are also focusing on **Hot Water Load Control (HWLC)** for peak demand reduction.

- Most utilities have started awareness campaigns in the **commercial, industrial and residential sectors**.

- There is marginal activity on **SWH** and **commercial lighting** due to the cost of the programs.

- Other DSM initiatives include; **Power Alert**, retailing of **EE appliances** at subsidized price.
DSM VIRTUAL POWER STATION – WHERE IS THE SAPP?

Demand Reduction (MW)

- HWLC
- Commercial Lighting
- SWH
- CFL

2,450 MW saving and Virtual Power Station established
3. UPDATE ON PROJECTS IMPLEMENTATION
# Projects Commissioned in 2013

## Generation Projects Commissioned 2013

<table>
<thead>
<tr>
<th>No</th>
<th>Utility</th>
<th>Country</th>
<th>Name</th>
<th>Type</th>
<th>Capacity [MW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BPC</td>
<td>Botswana</td>
<td>Morupule B</td>
<td>Coal</td>
<td>450</td>
</tr>
<tr>
<td>2</td>
<td>IPP</td>
<td>Zambia</td>
<td>Ndola Energy</td>
<td>HFO</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>SNEL</td>
<td>DRC</td>
<td>Inga 1</td>
<td>Hydro</td>
<td>55</td>
</tr>
<tr>
<td>4</td>
<td>IPP</td>
<td>Tanzania</td>
<td>Mwanza HFO</td>
<td>Gas</td>
<td>60</td>
</tr>
<tr>
<td>5</td>
<td>Eskom</td>
<td>South Africa</td>
<td>Komati</td>
<td>Coal</td>
<td>202</td>
</tr>
<tr>
<td>6</td>
<td>Eskom</td>
<td>South Africa</td>
<td>Grotvlei</td>
<td>Coal</td>
<td>40</td>
</tr>
<tr>
<td>7</td>
<td>Eskom</td>
<td>South Africa</td>
<td>Koeberg</td>
<td>Nuclear</td>
<td>30</td>
</tr>
<tr>
<td>8</td>
<td>IPP</td>
<td>South Africa</td>
<td>Solar</td>
<td>Solar</td>
<td>130</td>
</tr>
<tr>
<td>9</td>
<td>IPP</td>
<td>Malawi</td>
<td>Kapichira</td>
<td>Hydro</td>
<td>64</td>
</tr>
<tr>
<td>10</td>
<td>ZESCO</td>
<td>Zambia</td>
<td>Kariba North</td>
<td>Hydro</td>
<td>180</td>
</tr>
<tr>
<td>11</td>
<td>IPP</td>
<td>Mozambique</td>
<td>Ressano Gassia</td>
<td>Gas</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>TOTAL</strong> 1361</td>
</tr>
</tbody>
</table>

---

SOUTHERN AFRICAN POWER POOL
# Projects Planned to be Commissioned in 2014

<table>
<thead>
<tr>
<th>No</th>
<th>Utility</th>
<th>Country</th>
<th>Name</th>
<th>Type</th>
<th>Capacity [MW]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ENE</td>
<td>Angola</td>
<td>Lomaum</td>
<td>Hydro</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>ENE</td>
<td>Angola</td>
<td>CFL New</td>
<td>Coal</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>ENE</td>
<td>Angola</td>
<td>BIOCOM</td>
<td>Coal</td>
<td>50</td>
</tr>
<tr>
<td>4</td>
<td>ENE</td>
<td>Angola</td>
<td>BOM- JESUS</td>
<td>Coal</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>IPP</td>
<td>Tanzania</td>
<td>Kinyeredzi</td>
<td>Gas</td>
<td>150</td>
</tr>
<tr>
<td>6</td>
<td>IPP</td>
<td>Tanzania</td>
<td>Sao Hill</td>
<td>Gas</td>
<td>10</td>
</tr>
<tr>
<td>7</td>
<td>IPP</td>
<td>Tanzania</td>
<td>Somanga</td>
<td>Gas</td>
<td>290</td>
</tr>
<tr>
<td>8</td>
<td>Eskom</td>
<td>RSA</td>
<td>OCGT</td>
<td>Gas</td>
<td>800</td>
</tr>
<tr>
<td>9</td>
<td>Eskom</td>
<td>RSA</td>
<td>Medupi</td>
<td>Coal</td>
<td>722</td>
</tr>
<tr>
<td>10</td>
<td>Eskom</td>
<td>RSA</td>
<td>Ingula</td>
<td>Hydro</td>
<td>1332</td>
</tr>
<tr>
<td>11</td>
<td>IPP</td>
<td>RSA</td>
<td>Cogen</td>
<td>Gas</td>
<td>100</td>
</tr>
<tr>
<td>12</td>
<td>IPP</td>
<td>RSA</td>
<td>Sere</td>
<td>Wind</td>
<td>100</td>
</tr>
<tr>
<td>13</td>
<td>IPP</td>
<td>RSA</td>
<td>RE - Round 1</td>
<td>PV, CSP, Solar</td>
<td>1328</td>
</tr>
<tr>
<td>14</td>
<td>IPP</td>
<td>RSA</td>
<td>RE - Round 2</td>
<td>PV, CSP, Solar</td>
<td>554</td>
</tr>
<tr>
<td>15</td>
<td>IPP</td>
<td>Mozambique</td>
<td>Ressano Garcia</td>
<td>Gas</td>
<td>175</td>
</tr>
<tr>
<td>16</td>
<td>BPC</td>
<td>Botswana</td>
<td>Morupule</td>
<td>Coal</td>
<td>150</td>
</tr>
<tr>
<td>17</td>
<td>ZESCO</td>
<td>Zambia</td>
<td>Kariba North</td>
<td>Hydro</td>
<td>180</td>
</tr>
<tr>
<td>18</td>
<td>ZESCO</td>
<td>Zambia</td>
<td>Lunzua</td>
<td>Hydro</td>
<td>15</td>
</tr>
</tbody>
</table>

**TOTAL** \[6141\]

685 MW Not Interconnected

1982 MW Renewable Energy
## SAPP Committed Generation Projects

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Angola</td>
<td>235</td>
<td>0</td>
<td>1280</td>
<td>2271</td>
<td>3,721</td>
</tr>
<tr>
<td>2</td>
<td>Botswana</td>
<td>150</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>150</td>
</tr>
<tr>
<td>3</td>
<td>DRC</td>
<td>-</td>
<td>580</td>
<td>-</td>
<td>240</td>
<td>820</td>
</tr>
<tr>
<td>4</td>
<td>Lesotho</td>
<td>-</td>
<td>-</td>
<td>35</td>
<td>-</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>Malawi</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>6</td>
<td>Mozambique</td>
<td>175</td>
<td>-</td>
<td>40</td>
<td>300</td>
<td>515</td>
</tr>
<tr>
<td>7</td>
<td>Namibia</td>
<td>-</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>RSA</td>
<td>4,936</td>
<td>2,527</td>
<td>3,717</td>
<td>1,918</td>
<td>13,098</td>
</tr>
<tr>
<td>9</td>
<td>Swaziland</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Tanzania</td>
<td>450</td>
<td>240</td>
<td>660</td>
<td>250</td>
<td>1,600</td>
</tr>
<tr>
<td>11</td>
<td>Zambia</td>
<td>195</td>
<td>735</td>
<td>40</td>
<td>126</td>
<td>1,096</td>
</tr>
<tr>
<td>12</td>
<td>Zimbabwe</td>
<td>-</td>
<td>15</td>
<td>-</td>
<td>1,140</td>
<td>1,155</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td>6,141</td>
<td>4,097</td>
<td>5,787</td>
<td>6,279</td>
<td>22,304</td>
</tr>
</tbody>
</table>
Priority transmission projects are defined as follows:

1. Outstanding transmission interconnectors whose aim is to interconnect non-operating members of the SAPP:
   - Mozambique-Malawi
   - Zambia-Tanzania-Kenya and
   - Interconnection of Angola

2. Transmission interconnectors aimed at relieving congestion on the SAPP grid, and

3. New transmission interconnectors aimed at evacuate power from generating stations to the load centres.
Transmission Projects
USD 5.6 billion

2016 - 2017: ZIZABONA - 220/330 kV

2016: Mozambique Malawi

2017: Zambia - Tanzania - 400 kV

2018: DRC - Angola - 400 kV

2017: MOZAMBIQUE BACKBONE - RSA

2015-2025: 765 kV Strengthening

2016: RSA Strengthening

2017: Botswana Strengthening
4. UPDATE ON MARKET ISSUES
Evolution SAPP trading platforms

Co-operative

Competitive
SAPP Market Design Objectives

- Carefully designed market
  - Short and long term efficiency
  - Sustainable matching of the load curve
  - Investments attraction
  - Transfer of efficiency gains to consumers
EARLY YEARS

- Bilateral contracts

CURRENT AND FUTURE

- Bilateral contracts
  - Day-Ahead Market (DAM) – From 2009
  - Energy Imbalance Settlement – From 2010
  - Post Day Ahead Market – From 2013
  - Ancillary Services Market – From 2014/15
    - Balancing Market – From 2017/8
    - Financial Markets – From 2018

FROM YEAR 2001

- Bilateral contracts
  - Short-Term Energy Market (STEM) - 2001
1. **Bilateral Trading Objectives are mainly**
   - To meet long term demand and supply balance
   - To underpin Generation and Transmission Investments

2. **Over The Counter Trading (OTC) Objective is**
   - To meet short term demand and supply balance

3. **DAM & PDAM Trading Objectives are mainly**
   - To optimize supply & demand portfolios in a bid to minimize cost of supply and maximize participants profits
   - Assists in managing load and generation fluctuations

- **Bilateral, OTC and DAM trading compliment each other and are not meant to compete against each other**
DAM & PDAM Main Features

Market for secure, effective and non-discriminatory trade of electricity:
- Trading to be concluded daily for delivery next day
- Forward bidding up to 10 days
- Participants submit bids (purchase) & (sale) offers
- Closed market – only market operator and participant know the details of the bid / offer
- Price discovery

Provides a neutral reference price
- Open and competitive market
- Provides platform to manage demand & supply fluctuations
- Gives price signals to policy makers
- Stable & Liquid market will give investor confidence
DAM – Two Tier Market Concept

**Day-ahead Market**

- **Bid form**
  - Prices (ZAR//MWh)
  - Hour:
    - 0: 0
    - 1-6: 200, 201, 300, 3000
    - 07-18: 300, 300, 150, 150, 150
    - 18-24: 

- **Day of Trading**
  - Price / volume bids
  - Price determination based on bids and transmission capacities
  - Binding contracts - de-centralised dispatch
  - Financial settlement based on contracted volume and price.
  - Price = local energy price

- **Real Time Market/ balancing mechanism**
  - Calculation of Imbalances
  - Resources
  - Commitments
  - Metered generation
  - Spot sale
  - Contract
  - RTM price
  - Spot price

- **Day of Operation or Delivery Day**
  - Real Time Market based on bids of increments and decrements of generation and load.
  - Imbalance = contracted volumes - metered volumes.
  - Financial settlement based on imbalance volumes and RTM-price.
Post Day Ahead Market (PDAM) – Main Features

- PDAM trading was introduced in April 2013 with the objective of maximizing trade:
  - After DAM is run, MO publishes a PDAM bulletin that shows power offered, requested and traded in DAM, supply and demand available after DAM and the MCP prices
  - MO then sends specific requests for power to suppliers at DAM MCP prices in accordance to power requested but not matched on DAM
  - Suppliers confirm power availability and prices offered in PDAM
  - MO then sends to specific members offers of power incl. prices
  - Buyers confirm PDAM volumes & prices
  - MO confirms traded volumes & prices on PDAM – trade confirmation
  - PDAM should be concluded & scheduled before 1600 on trading day
Market Performance Highlights – Bilateral Trading

- Bilateral Contracts registered in 2013 - 30 (28 for 2012)
  - Firm - 16 (18 for 2012)
  - Non firm - 14 (10 for 2012)
  - Active Contracts - 17 (15 for 2012)

- Generation and transmission constraints are the main reasons why some contracts are inactive

- Around 800,000 MWhr is traded bilaterally in a month

- Summary for the bilateral market performance for the period April 2013 to December 2014

- Appetite for trade 7,482,834 MWh

- Traded volume 6,324,122 MWh

- Difference not traded as a result of transmission constraints
Market Performance – Competitive Market

- Competitive market performance (April 2013 to December 2013)
- Matched - 214,892 MWh
- Traded on DAM – 48,788 MWh
- Traded on PDAM – 21,578 MWh (32% of total traded volumes)
- Matched volume is around 10% of power offered on the market
- Competitive Market share of total trade – 1%
- Competitive Market share could have been 3% had all matched energy been traded
- SAPP Target is to grow competitive market by at least 10% annually
SAPP Market Operations Overview

- SAPP MO
  - Transmission Capacity Allocation & Pricing, Losses calculation & pricing
  - Market Operations & Financial Settlement
  - Emergency energy rates
  - CFDs & Balancing
  - Real Time Balancing & Ancillary Services

- Bilateral Markets (Security of Supplies)
  - Short Term (OTC) Bilateral Contracts
    - Long Term Bilateral Contracts
      - Schedules
      - Schedules

- Competitive Markets (Resource Optimisation)
  - DAM
  - PDAM
    - Actual Tie Line Flows
    - Actual Flows
    - Schedules
    - Schedules

- System Operations (System Security)
  - Energy Imbalance Calculation
  - Energy Imbalance Settlement
5. **CHALLENGES – Demand and Supply**

a. **Supply Shortfall as a result of Slow/Lack of Projects Implementation**

   i. Projects Preparation and Packaging – Projects good on paper but lacks development to bankability levels

   ii. Tariffs Setting regimes and Levels not favorable for new projects development – focus is more on operational cost recovery and not LRMC recovery

   iii. Projects dates not linked to project preparation requirements

   iv. Weak Utility Balance Sheets – more reliance on “external” anchor customers

   v. Over reliance on IPPs and Project Finance mechanisms – these require complex processes, governance setups etc

- Current SAPP Projects Peer Review would assist Project preparation and packaging

- SAPP plans to strengthen Project Management capabilities
5. CHALLENGES – Trading and Operations

a. Members’ Market Structures

✓ Slow/Lack of Reforms of member utilities – most vertically integrated hence in reality unlevel playing field for new entrants

✓ Market structure is dominated by Single Buyer Models – not favorable for new entrants e.g IPPs, demand participation etc

b. Limited Transmission facilities & No Open Access

✓ Lack of investment in Tx projects – over reliance on project financing mechanisms

✓ Allocation criteria favors owners of assets ahead of regional use – no open access for pool usage (USA had FERC Order 888)

c. Bidding Patterns and Pricing

✓ Bids based on marginal power (excess or shortfall) and not entire portfolio – lacks overall optimization opportunities

✓ Market prices linked to tariffs as opposed to marginal costs – regulatory requirements
6. Conclusions

SAPP believes that the creation of a competitive market would:

- Help to *optimise* the use of regional resources
- Assist in determining the correct electricity price in the pool
- Send signals for *investments* and real time utilization of existing assets; transmission, generation and consumption.
- Enable the demand side to respond to the supply side price signals.
Thank you for your attention