Restructuring of the Electricity Industry:
Experience of Southern Africa

By

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Presentation Outline

- Background (Southern Africa)
- About RERA
- About SAPP
- Electricity Governance and Reform Initiatives
- Electricity Market Developments
- Cross Board Power Trading
- Concluding Remarks
Background
(Southern Africa)
Southern African Region

- **15 Countries**
  - 12 main land
  - 3 islanded
- **280 Million people**
- **Average Electricity growth rate 3% p.a. but increasing**
  - For South Africa demand growth was **4.9% in 2007** and for whole region **4.6%**.
Institutional Set-Up

- Council of Ministers
- SADC Ministers Responsible for Energy
- SADC Energy Ministers Task Force - Energy Projects
- SADC Secretariat - Desk officers for all energy subsectors
- ICPs (Observer)
- SAPP
  - Power Projects Teams (SAPP, Utilities and Others)
  - Electricity Renewable Energy
- REPAGA
  - Petroleum and Gas Industry Project Teams
- Coal Association
- Biofuels
- RERA
  - Coal Industry Project Teams
Historic Electricity Development

1950s: DRC – Zambia
1 x 220kV, 210MW

1960s: Zambia – Zimbabwe
2 x 330kV, 1,400MW

1975: Mozambique – RSA
500kV HVDC, 2,000MW
The two networks were linked by weak lines 220kV & 132kV via Botswana until 1995 when the 400kV was constructed.
# Background (5)

## Electricity Supply & Demand

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<td>1,690</td>
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<td>TOTAL SAPP</td>
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<td>56,896</td>
<td>51,622</td>
<td>50,770</td>
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<td>(4,327)</td>
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</table>
Generation Mix & Contribution

- **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**
About RERA
About RERA (1)

- SADC Energy Ministers approved the establishment of RERA at a meeting in Maseru, Lesotho on 12 July 2002

- RERA was launched on 26 September 2002 in Windhoek, Namibia though the Secretariat became functional in 2005 – 10th Year RERA Anniversary

- As the first electricity regulatory association in Africa, RERA considers itself as one of the building blocks of the African Forum for Utility Regulators (AFUR)
About RERA (2)

Membership

- **11/15** SADC countries have energy/electricity regulators
- **10/11** of the energy/electricity regulators are Members of RERA
- ORE of Madagascar is in existence but not yet a Member of RERA
- **3** are electricity regulators, **5** are energy regulators & **2** are multi-sector (energy/water) regulator
- Remaining **4** countries (Botswana, the DRC, Mauritius & Seychelles) are at various sector reform stages
Membership

- Angola - Institute for Electricity Sector Regulation (IRSE)
- Lesotho - Lesotho Electricity Authority (LEA)
- Malawi - Malawi Energy Regulatory Authority (MERA)
- Mozambique - National Electricity Advisory Council (CNELEC)
- Namibia - Electricity Control Board (ECB)
- South Africa - National Energy Regulator of South Africa (NERSA)
- Swaziland – Swaziland Energy Regulatory Authority (SERA)
- Tanzania - Energy & Water Utilities Regulatory Authority (EWURA)
- Zambia - Energy Regulation Board (ERB)
- Zimbabwe - Zimbabwe Energy Regulatory Authority (ZERA)
About SAPP
In 1995, the Ministers responsible for energy in the Southern African Development Community (SADC) signed an Inter-Government MOU that lead to the creation of a power pool under the name, Southern African Power Pool (SAPP)

The interconnection of the northern (hydro) and southern (thermal) networks created a platform for regional trade and cooperation
### Membership

<table>
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<th>Full Name of Utility</th>
<th>Status</th>
<th>Abbreviation</th>
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<td>Electricity Supply Corporation of Malawi</td>
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<td>ESCOM</td>
<td>Malawi</td>
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<td>Empresa Nacional de Electricidade</td>
<td>NP</td>
<td>ENE</td>
<td>Angola</td>
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<td>Swaziland Electricity Board</td>
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<td>Copperbelt Energy Corporation</td>
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<td>14</td>
<td>Zimbabwe Electricity Supply Authority</td>
<td>OP</td>
<td>ZESA</td>
<td>Zimbabwe</td>
</tr>
</tbody>
</table>

**OP** = Operating Member  
**ITC** = Independent Transmission Company  
**IPP** = Independent Power Producer  
**NP** = Non-Operating Member
Electricity Governance and Reform Initiatives
Governance & Reform (1)

• RERA with support from the Southern Africa Trade Hub (SATH) and funding from USAID carried a regional ESI survey in **2009** and **not much** has changed to-date

• Some notable observations regarding electricity governance and reforms are as follows:

  1. ESI policies are generally in line with international best practices and trends focusing on:
     a. Independent industry regulation
     b. Private sector participation and investment
Some notable observations regarding electricity governance and reforms are as follows:

2. Some countries were shifting towards self-sufficiency as opposed to regional energy pooling.

3. All countries have introduced some form of power sector reforms during the past two decades.

4. Most of the reforms such as full liberalised and unbundled markets have NOT been successfully completed.

5. 13/15 countries have enacted new power sector legislation that advocates private sector participation.
Some notable observations regarding electricity governance and reforms are as follows:

6. 12/15 countries have introduced some kind of regulatory oversight in form of energy or electricity regulators.

7. Private sector participation is either temporary or limited to management contracts and marginally through IPPs contracted to State Owned Utilities.

8. Most of the power utilities have changed status from *sui generis* statutory bodies to corporates wholly owned by government.
Some notable observations regarding electricity governance and reforms are as follows:

9. Vertically integrated utilities dominate the market and in most cases inherently as single buyers
Some notable observations regarding electricity governance and reforms are as follows:....

10. Notwithstanding the challenges, Namibia has partially restructured its electricity distribution industry with the creation of 3/5 operational Regional Electricity Distributors (REDs)
Governance & Reform (6)

• Some notable observations regarding electricity governance and reforms are as follows:….

11. South Africa is considering establishing an Independent System and Market Operator (ISMO)

• ISMO Bill establishes, an autonomous state owned company, mandated to execute the following functions

  2. Buying of power from generation
  3. Electricity trading at a wholesale level
  4. System Operations
Governance & Reform (7)

Envisaged Industry Structure with ISMO

- ESKOM GX: Generation
- ESKOM TX: Transmission
- ESKOM DX: Distribution

- ISMO SOC: System Operator
  - National Control
  - Wholesaler
  - Single Buyer

- IPP’s
- RE-IPP

- ISMO-TX agreement

- Imports

- GSACS
- DX

- MUNICS
- KSACS

- ISMO

Agreement
Electricity Market Developments
Market Developments (1)

EARLY YEARS
- Bilateral contracts

CURRENT AND FUTURE
- Bilateral contracts
- Day-Ahead Market (DAM) – From 2009
- Energy Imbalance Settlement - 2010
- Ancillary Services Market
- Balancing Market
- Financial Market

FROM YEAR 2001
- Bilateral contracts
- Short-Term Energy Market (STEM) - 2001
- Post STEM (Balancing Market) - 2002
DAM System

SAPP DAM Main Trading System
- Used by Market Operator in Harare

SAPP DAM Client Server Systems
- Used by all other participants to communicate with the Main Trading System over the internet, via email or fax

Market Developments (2)
Cross Border Power Trading
## Possible Obstacles to Cross Border Trading

<table>
<thead>
<tr>
<th>Category</th>
<th>Obstacles</th>
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</thead>
<tbody>
<tr>
<td>Political / Legal</td>
<td>Legal framework does not support cross-border power trading</td>
</tr>
<tr>
<td></td>
<td>Uncertain political environment and high country risk</td>
</tr>
<tr>
<td></td>
<td>Insufficient political support for regional power sector organisations</td>
</tr>
<tr>
<td>Financial</td>
<td>Lack of financial resources available for cross-border transactions</td>
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<tr>
<td></td>
<td>Insufficient revenue certainty as a result of high regulatory risk</td>
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<td></td>
<td>Buyers do not have financial capability to enter into large transactions</td>
</tr>
<tr>
<td>Technical</td>
<td>Lack of understanding of technical impacts of cross-border projects</td>
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<td></td>
<td>Creation of unacceptable technical risks through a cross-border project</td>
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<td></td>
<td>Insufficient monitoring and operational discipline in interconnected system</td>
</tr>
<tr>
<td>Regulatory</td>
<td>Risk of regulatory expropriation after investments have been committed</td>
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<tr>
<td></td>
<td>Regulatory decisions are unclear and subject to high level of discretion</td>
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<tr>
<td></td>
<td>Benefits of cross-border transactions are not shared with price-regulated customers</td>
</tr>
</tbody>
</table>

- Addressed through SADC initiatives
- Addressed in the RERA Regulatory Guidelines
- Addressed through SAPP initiatives
Cross Border Power Trading (3)

Regulatory Guidelines.....

Overall objective:
• Ensure that efficient cross-border deals are not constrained by unclear or complicated processes for making regulatory decisions

More specifically:
• To clarify how regulators will carry out their powers and duties in regulating cross-border electricity transactions in order to minimise regulatory risks for power investors and customers
• To promote efficient and sustainable cross-border electricity transactions that are fair to selling and buying entities, are consistent with least-cost sector development and help to ensure security of supply
• To promote transparency, consistency and predictability in regulatory decisions
Cross Border Power Trading (4)

Country A Exporting
- Licence generator
- Licence transmission company
- Licence exporter
- Approve sale and wheeling agreements
- Review financial impacts (if seller supplies captive customers)

Country B Transit
- Licence transmission company
- Licence importer and exporter
- Approve wheeling agreements
- Review financial impacts (if transmission company supplies captive customers)

Country C Importing
- Licence transmission company
- Licence importer
- Approve power purchase agreement between seller and buyer
- Review value for money (if buyer supplies captive customers and transaction is not competitively tendered)
- Approve wheeling charges through Country B
- Approve pass-through of purchasing costs (power and transmission) into regulated tariffs

Typical Regulatory Decisions
Proposed nine (9) Regulatory Guidelines for regulating cross-border power trading in SADC are as follows:

1: Regulator’s powers and duties in cross-border trading
2: Working to ensure compatible regulatory decisions
3: Timing of regulatory interactions for proposed cross-border transactions
Proposed nine (9) Regulatory Guidelines for regulating cross-border power trading in SADC are as follows:....

7: Approving cross-border agreements in transit countries

8: Approving transmission access and pricing and ancillary services

9: Promoting transparency in the regulation of cross-border trading
Proposed nine (9) Regulatory Guidelines for regulating cross-border power trading in SADC are as follows:

4: Licensing cross-border trading facilities, imports and exports

5: Approving cross-border agreements in importing countries

6: Approving cross-border agreements in exporting countries
Concluding Remarks
Concluding Remarks (1)

- ESI in Southern Africa has evolved over a long period of time
- ESI restructuring efforts are varied in terms of form and time span among the countries
- Some countries have started addressing the structural issues with a view to enhance the ESI performance and/or attract other players such as the private sector
- For cross border power trading to materialize, there should be recognition and clear demonstration of the benefits that can accrue from such arrangements
Concluding Remarks (2)

Proper functioning of cross border electricity trading entails:

- developing and adopting appropriate frameworks, standards, guidelines and methodologies in advance
- paying particular attention to agreed operational requirements
- devising workable mechanisms to ensure compliance with adopted standards, guidelines and operational requirements

Stakeholders involvement and cooperation is critical in the development and integration of regional energy markets
Thank You!

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