Clean Energy Developments in the Southern African Region

By

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Presentation Outline

- Background (Southern Africa & RERA)
- Electricity Supply and Demand
- Energy Efficiency
- Other Renewable Energy (RE) Efforts
- Policies and Incentives
- Concluding Remarks
Background
(Southern Africa & RERA)
Background (1)

Southern African Region

- **15 Countries**
  - 12 main land
  - 3 islanded
- **280 Million people**
- **Electrification rate averaging about 25%**
- **Average Electricity growth rate 3% p.a. but increasing**
  - In 2007, demand growth South Africa was **4.9%** & **4.6%** for the whole region
About RERA

- 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)
11/15 SADC countries have energy/electricity regulators
10/11 are Members of RERA
ORE of Madagascar is in existence but not yet Members of RERA
4 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
About RERA - Membership

1. Angola - Institute for Electricity Sector Regulation (IRSE)
2. Lesotho - Lesotho Electricity Authority (LEA)
3. Malawi - Malawi Energy Regulatory Authority (MERA)
4. Mozambique - National Electricity Advisory Council (CNELEC)
5. Namibia - Electricity Control Board (ECB)
6. South Africa - National Energy Regulator of South Africa (NERSA)
7. Swaziland – Swaziland Energy Regulatory Authority (SERA)
8. Tanzania - Energy & Water Utilities Regulatory Authority (EWURA)
9. Zambia - Energy Regulation Board (ERB)
10. Zimbabwe - Zimbabwe Energy Regulatory Authority (ZERA)
Historic Electricity Development

The interconnection of the northern (hydro) and southern (thermal) networks created a platform for regional trade and cooperation.
Background (6)

SAPP Transmission System

- DRC-Angola
- Angola-Namibia
- ZIZABONA
- Zambia-Tanzania
- Malawi-Mozambique
- DRC-Zambia
Day Ahead Market (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
Electricity Supply & Demand
Electricity Supply & Demand (1)

Share of 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
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<td>56,896</td>
<td>51,622</td>
<td>50,770</td>
<td>55,949</td>
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Generation Capacity shortfalls up to 2015
Tight Reserve Margin Position for SAPP Members

Reserve Margin, %

- 21.0
- 18.0
- 15.0
- 12.0
- 9.0
- 6.0
- 3.0
- 0

Best practice reserve margin
SAPP weighted average reserve margin (10.2%)
Electricity Supply & Demand (5)

Some challenges

- **Economic Growth** of more than 5% in most countries resulting in unprecedented growth in electricity consumption and demand averaging 3% per annum.

- In the last 5 years demand in the SAPP increased by 15% which is equivalent to 5,200 MW.

- No corresponding investments in generation and transmission infrastructure, resulting in the current supply deficit that the region is experiencing.

- The challenge was identified and communicated but not adequately mitigated.
## Electricity Supply & Demand (6)

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Electricity Supply & Demand (7)

**Critical For Capacity**

**2015**

**Critical For Energy**

**2016**
Electricity Supply & Demand (8)

Introduction of Renewable Energy
(3% from renewable energy in 5 year period)
Transmission Projects USD 5.6 billion

2015: Mozambique-Malawi
2015: RSA Strengthening
2015: Botswana Strengthening
2015: Central Transmission Corridor (Zimbabwe)
2016: ZIZABONA
2016: Zambia-Tanzania
2016: DRC-Angola
2017: Mozambique Backbone
2017: Namibia - Angola
Energy Efficiency
Four technologies targeted:

i. Compact florescent lamps (CFLs)

ii. Solar Water Heaters (SWH)

iii. Hot Water Load Control (HWLC), and

iv. Commercial Lighting
Energy Efficiency (2)

2012 Actual vs. Target

CFL = 2045 MW
HWLC = 169 MW
SWH = 48.4 MW
CL = 42 MW

CFL = 136%
HWLC = 56%
SWH = 12%
CL = 4%

2,305 MW installed vs. 3,200 MW target (72%)
Policies & Incentives
Policies & Incentives (1)

Some policy initiatives to reform the ESI

An example of on-going discussions in South Africa
Incentives are varied across the region and include:

- Fiscal incentives (tax exemption & rebates)
- Subsidies (capital, interest rates & project preparation)
- Feed-in tariffs
- Demand side market participation
Other RE Efforts
With support from TRADE HUB and funding from the USAID, the following 5 training courses have been carried out in 2012:

2. Regulatory Commissioners Orientation Programme (May 2012 in Swakopmund, Namibia)
3. Regulation for Practitioners (July 2012 in Swakopmund, Namibia)
4. Renewable Energy Finance (September 2012 in Centurion, South Africa)
5. Renewable Energy Policy (December 2012 in Johannesburg, South Africa)

About 240 officials have been trained in 2012 on the 5 training courses.
Concluding Remarks
Concluding Remarks

- Electricity supply industry (ESI) in Southern Africa has evolved over a long period of time.
- Electricity supply situation is very tight and likely to ease up in 2016 should all projects be implemented.
- 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 (through IPPs and/or PPPs).
- Critical roles of renewable energy and energy efficiency are recognised and being incorporated in the country and regional plans.
- Opportunities for investments and work in the ESI in Southern Africa are vast and exciting.
Thank You!

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