“Electricity Infrastructure: The NamPower Perspective”

A PRESENTATION AT THE
Infrastructures Partnerships for
African Development (iPAD)

Southern Africa - Power Industry Forum
Luanda, Angola

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Discussion Points

- NamPower profile
- Infrastructure
- SAPP Trading Partners
- Market framework
- Power distribution
- Project Funnel and project updates
- Funding plan
- Conclusion
Company Profile

- **Established:** 19 December 1964 under the Companies Act, became operational in 1972
- **Core Business:** Generation, Transmission and Energy Trading (Regulated by ECB).
- **Non-core Business:** Property; hospitality and telecommunications
- **Governance:** Government sole shareholder, Board & Management, Board Committees, Compliance with King 2 & 3
- **Employees:** 950
- **Regional Presence:** Southern Angola and Western Botswana
- **Installed Capacity:** 384 MW (62.5% - hydro; 37.5% - thermal)
- **Maximum Demand:** 450 MW
- **NamPower** has 28% shareholding in distribution
- **First SOE to get Fitch rating** – An investment grade
Challenges for the next 5 years

- Same as SAPP Challenges
  - Energy shortage
  - High Demand growth & step loads
  - Rural Electrification (New connections)
  - Shortage of resources (HR and financial)
  - Cost reflectivity
Infrastructure...Power Generation in Namibia

- Ruacana: 249 MW
- Van Eck: 120 MW
- Paratus: 24 MW

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
</tr>
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<tbody>
<tr>
<td>Domestic</td>
<td>40%</td>
<td>42%</td>
</tr>
<tr>
<td>Imports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eskom</td>
<td>41%</td>
<td>53%</td>
</tr>
<tr>
<td>Others</td>
<td>19%</td>
<td>5%</td>
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</tbody>
</table>
Infrastructure... Existing NamPower Network

Legend
- 400 kV
- 330 kV
- 220 kV
- 132 kV
- 66 kV
- HVDC

- Existing Generation
- Potential Generation
- Transmission Substation
# SAPP Trading Partners

<table>
<thead>
<tr>
<th>Utility</th>
<th>Agreements</th>
<th>Duration</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESKOM</td>
<td>Supplementary Power Supply Agreement</td>
<td>Year on year</td>
<td>Varies according to requirements</td>
</tr>
<tr>
<td>ESKOM</td>
<td>Bilateral PS Agreement</td>
<td>15 yrs (signed 01 June 2006)</td>
<td>Varies according to availability</td>
</tr>
<tr>
<td>EDM (Mozambique)</td>
<td>Power Supply Agreement</td>
<td>Renewable (non-firm)</td>
<td>40 MW</td>
</tr>
<tr>
<td>ZESA (Zimbabwe)</td>
<td>Power Supply Agreement</td>
<td>5 years (commencing 2008)</td>
<td>150 MW (firm)</td>
</tr>
<tr>
<td>ZESCO (Zambia)</td>
<td>Power Purchase Agreement</td>
<td>10 years</td>
<td>100 MW (50 MW firm)</td>
</tr>
<tr>
<td>SNEL (DRC)</td>
<td>Power Purchase Agreement (Head of Terms signed)</td>
<td>5 years</td>
<td>50 MW</td>
</tr>
</tbody>
</table>
Electricity Supply Industry Market Framework

MME - policymaker

ECB - Regulator

Foreign Generators

Transmission Customers

IPPs

Energy

Trading

Transmission

REDS

Foreign Customers

NamPower Generation

SAPP

IPP Customers

REDS Customers
NamPower % Shareholding in Distribution (REDs)

33%

48.3%

10.2%

35.8% (Interim)

11% (Interim)
National Demand Forecast Scenarios

Demand Forecast Scenarios

- Medium Forecast
- High Growth
- Low Growth
- Vision 2030 scenario


Energy Demand Levels:
- 2009: 400
- 2011: 500
- 2013: 600
- 2015: 700
- 2017: 800
- 2019: 900
- 2021: 1,000
- 2023: 1,100
- 2025: 1,200
- 2027: 1,300
- 2029: 1,400
- 2031: 1,500
- 2033: 1,600
- 2035: 1,700
**Immediate**

**Long Term**

**Medium Term**

**Short Term**

**Immediate**

**Nuclear**

**Municipal Waste, Wave**

**Renewable:** Invader Bush; CSP

**Thermal:** Slop

**Hydro:** Orange River;

**Renewable:** CSP

**Thermal:** 4th Turbine @ Ruacana

**Hydro:** Baynes

**Thermal:** Walvis Bay Power

**Gas:** Kudu Power

**Hydro:** Hwange

**Transmission:** Caprivi Link

**Demand Side Management:** DMP; CFL; ToU

**Thermal:** Small GT’s

**Demand Side Management**

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**Renewable:** Wind

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**Demand Side Management**
Expected commissioning dates

- **Caprivi link**: June 2010
- **Anixas**: December 2010
- Ruacana 4th Unit: February 2012
- Wind and slop (first IPP): 2012
- ZIZABONA: 2013
- Orange River hydro's: 2013
- Kudu/Walvis Bay coal: 2014
- Baynes: 2016
Projects…Hwange

- Loan of U$ 40 million to ZESA.
- All 4 units rehabilitated.
- PPA (150 MW) effective as from 2008.
- A good example of regional cooperation.
Projects... Caprivi link

Caprivi Link

- 400kV HVAC Link
- HVDC Link

- 330kV HVAC Link
- 950km, 350 kV HVDC Bipolar Line
- 385km HVAC 400kV Line
Projects... Caprivi Link: Some highlights

- HVDC light (latest ABB technology)
- Capacity: 300 MW in phase 1 and 600 MW in phase 2
- Investment of N$3,2 billion (US$ 430 million)
- Loan of Euro 105 million with EIB, KfW & AFD in May 2009
- Delay of commissioning date from January to June 2010
Projects...ZIZABONA (Project routes)
Projects…ZIZABONA (Progress to date)

- Joint venture project between NamPower, ZESA, ZESCO and BPC
- Project cost USD 225 million (USD 81 m phase 1 and USD 144 m in phase 2)
- IUMOU signed in December 2007
- Environmental, technical, economic and financial studies completed
- Wheeling agreements with ZESA & ZESCO being finalized
- Commercial negotiations between the four utilities under way
- Possible grant funding from DBSA, NORAD, NEPAD and AFD for the preparatory works
Projects... Kudu Power Project

- Failure to conclude GSA mainly due to the following:
  - higher gas price
  - forex management
  - no power off-taker (Eskom pulled out in 2007)
- PDA signed with the 5 parties in 2009 for the use of CNG technology
  - Shipping of gas to Walvis Bay (new site for power station)
  - Power station size limited to 500 MW (for Namibian market only)
  - Rest of the gas to be shipped to RSA (negotiation with Gigajoule)
- Expiry of Tullow (upstream) license in September 2009
- Restructuring of upstream structure with inclusion of Gazprom (for a pipeline and the 800 MW option)
- Due diligence by Gazprom and preparation of the new development program to Government in progress
- NamPower responsible for power station (partnership with strategic partner)
Projects...Orange River Hydro sites
Projects…Orange River Hydro's (Salient Facts)

- 12 sites with total capacity of 108 MW
- No dams required, all intake levels from natural pools and head attained through canals/tunnels down stream (to minimize impact on environment)
- Little forex exposure as most equipment to be manufactured in CMA region
- Development in phases: Phase 1 involving 3 sites with total capacity of 45 MW at a cost of N$1.8 million
- NamPower into partnership with Clackson Power with the intention to:
  - Purchase power from power stations
  - Build required transmission interconnection
  - Invest as shareholder in power station company (up to 50 percent)
- Expected completion date: 2013
Projects... 4th Unit Ruacana
Projects…4th Unit Ruacana: Progress to Date

- Installation of the 4th unit to increase capacity by 92 MW to 341 MW
- Owner’s Engineer: Norplan (from Norway)
- EPC contractor: Alstom (France) and Andritz (Austria)
- Civil contractor: Murray and Roberts
- Transformer and GIS tender contract: ABB and Siemens respectively
- Project Cost N$750 million (Euro 35 million loan agreement with KfW)
- Design and manufacturing of equipment in progress
- Expected commercial operation first quarter 2012
Projects... Anixas
Projects...Anixas

- 21.5 MW Diesel Generator at Walvis Bay (next to Paratus)
- Project cost N$ 380 million
  - N$ 250 million subsidy from GRN
  - N$ 130 million from NamPower balance sheet
- Design Philosophy to allow for future extensions
- FIDIC EPC contract awarded to Barloworld Namibia
- Time for Completion 1 year
- Commercial operations: December 2010
Projects… Walvis Bay Coal Power Station

- Capacity from 200 to 800 MW
- An IPP project, with possible minimum NamPower equity contribution
- ESEIA study completed in June 2009 and submitted to MET for conditional environmental clearance (RoD)
- Invitation of IPP developers through a transparent tender process to be made in cooperation with MME and ECB
- To be followed by a detailed techno-economic study
Projects…Baynes Hydropower station

- 500 MW mid-merit/peaking Power Station on Kunene River
- Joint venture project between Angola and Namibia
- Coordination through the PJTC
- Estimated project cost USD 1.1 billion
- Techno-economic feasibility study by Kunene Consortium and EIA by ERM due for completion by August 2010
- Political will from both parties to expedite project
IPP Projects

- **Slop:**
  - Setting up of 80 MW IPP thermal power station in Erongo region
  - MOU between NamPower and Natura Energy (project developer)
  - Completion of feasibility study by December 2010
  - Project value chain
    - Collection of bunker oil from vessels at Walvis Bay
    - Fuel refining process
    - Electricity generation and or fuel sales

- **Wind:**
  - PPA negotiations between NamPower and Aelous for 40 MW wind farm at Luderitz at an advanced stage
  - Conditional licenses by the ECB to Electrawinds and Innowinds for wind farms at Walvis Bay
Our funding requirements over next 5 years: N$17.4 billion, sourced from:

- **Equity**
  - Balance sheet
  - Equity injection from GRN (N$ 1 billion)

- **Borrowing**
  - Concessional (DFIs)
  - Bonds (Registration of N$ 3 billion bond on NSX and BESA in 2007, N$ 500 million raised in 2007 and N$ 250 million in November 2009)

- Cost reflective tariffs by 2012 (agreed with ECB)
- Favorable Fitch rating (BBB- foreign funding and AA- ZAR funding), sustained over the past 5 years, enabling favorable debt financing
Conclusion

- The power supply situation in the country will remain challenging at least until 2013/14 when new large scale power plants will be commissioned.

- Situation firmly under control and NamPower confident of overcoming the power supply challenges successfully.

- Favorable policy, legislative and regulatory framework, in addition to the sound investment climate as well as peace and stability.

- Invitation to potential investors to join NamPower as joint venture equity partners or IPP developers to invest in the Namibian power sector.
I thank you for your attention