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The Electricity Sector in Mozambique

**An Analysis of the Power Crisis and its Impact on the Business
Environment**

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Summary

- Underplanning for Growth
- Policy focus on Grid Extension
- Generation, maintenance, transmission lagging:
- Load Shedding, Blackouts
- Urgent need for diversification, infrastructure
- 27% Administration, T & D Losses
- Uneconomic tariff for Investors



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Study Goals

Raise public awareness of:

- The national energy deficit
- The challenge of meeting growing demand ahead of a rapid **development phase in the natural resources sector.**

Contribute to the discourse around:

- The role of the State; the need to stimulate investment
- Suggesting policy measures for urgent implementation

Mozambican National Electric Power Network: Medium Load forecast: **Medium Load forecast**

Medium Forecast	2012	2016	2021	2026	AAG (%)
Energy (GWh)	3 255	10 019	12 930	22 753	13.8%
Peak Demand (MW)	563	1 589	2 075	3 293	12.5%



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Statement of the Problem

Load exceeds available capacity, giving rise to excess power imports, from SAPP, IPPs at cost in excess of tariff

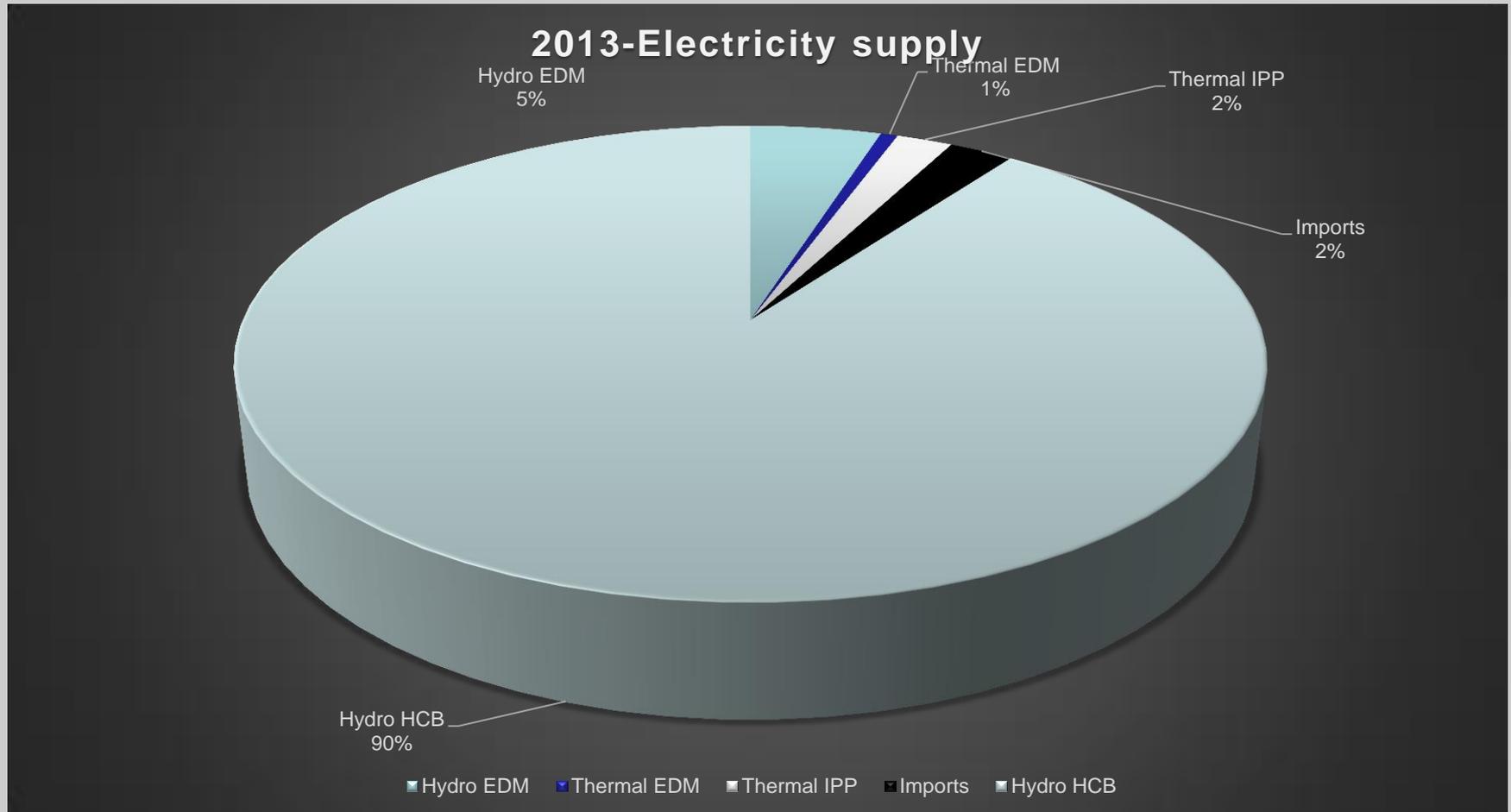
Urgent need to promote the construction of additional and alternative sources of power to create transmission infrastructures and

Deliver power to load centers with cost effective rates

Implement measures aimed at stimulating new investment, achieving efficient supply.



Electricity Supply 2013: Dominance of HCB





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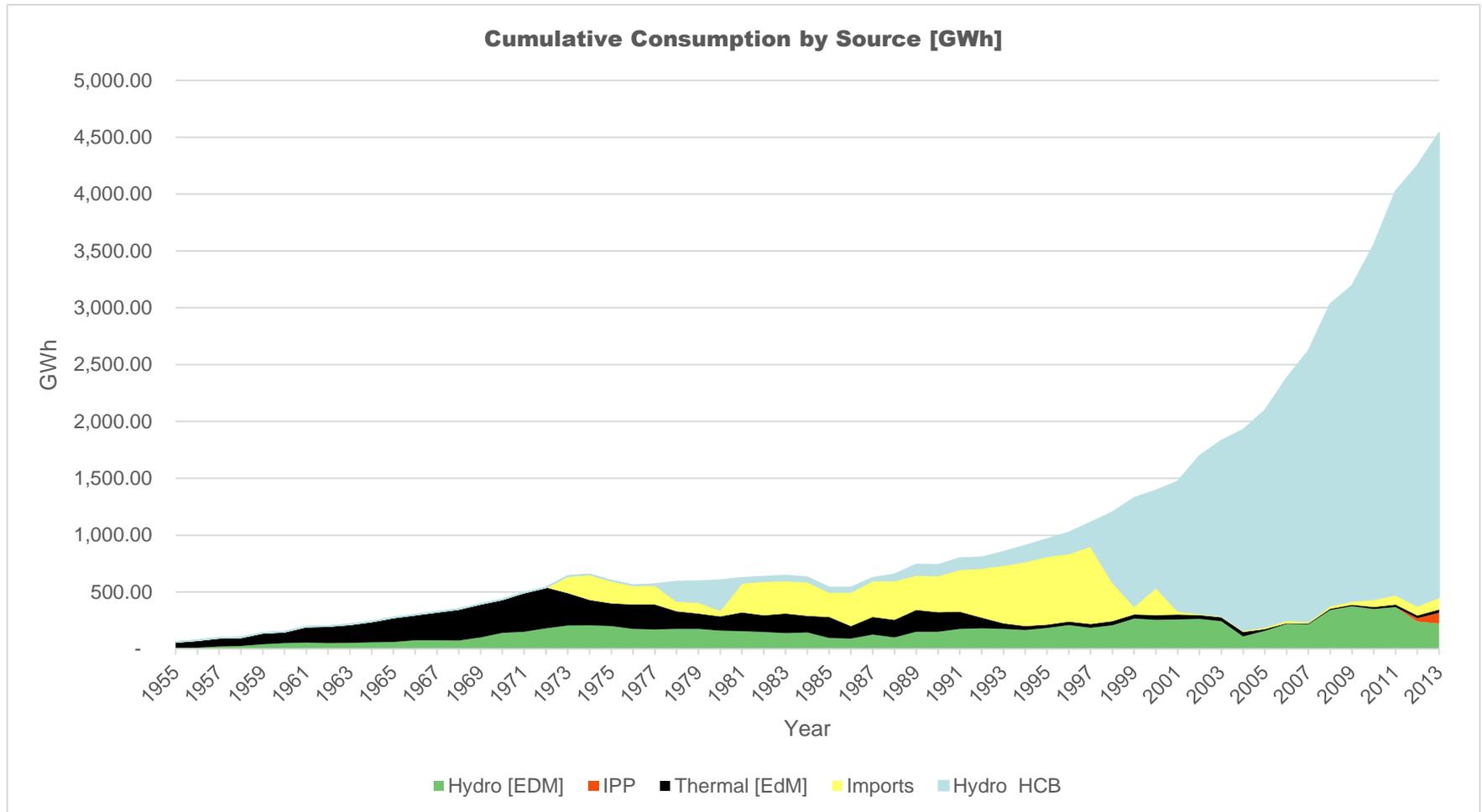
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Evolution of the Power Matrix

- Commercial operation of HCB – began 1975 contributing significantly to the load up to 1981 when war disrupted generation
- EDM thermal generation gradually diminished while imports dominated until 1992 Peace Accords
- Only in 2012 came the construction at Gigawatt Park/AGGREKO in the Ressano Garcia area



Cumulative Consumption by Source, 1955-2012





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Future Generation Projects

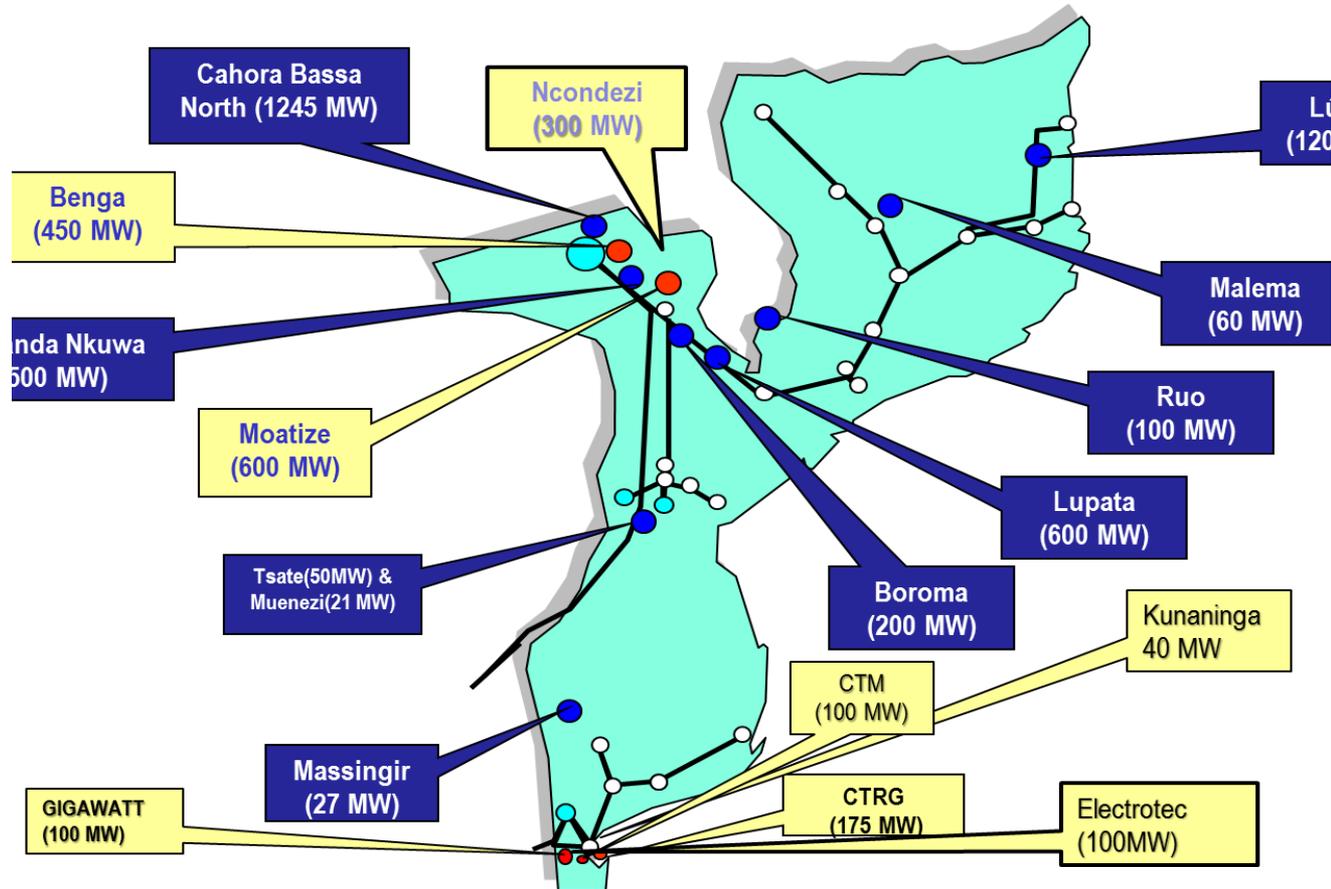
- New supply from the north continues to exploit Hydropower (Mphanda Nkuwa, Cahora Bassa, Lurio etc)
- **Coal** will continue to play a role in the centre: Moatize, Benga, Nkondezi
- **Thermal Power** burning natural gas will play a major role in the south (Maputo and Ressano Garcia areas)



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Generation projects (Hydro & thermal) by location





Generation projects under implementation

Generation Projects under implementation (at different development stages)						
		Expected Commissioning year				
Project	Fuel	2015 (MW)	2016 (MW)	2017 (MW)	2018 (MW)	2019 (MW)
CTRG	Gas	175				
Kuvaninga	Gas	40				
Electrotec	Gas		100			
Gigawatt	Gas		100			
Moatize	Coal			50		
ENI	Gas			75		
Benga	Coal				300	
CTM	Gas				100	
Nkonedzi	Coal					300
Total/ year		215	200	125	400	300
Total Cumul		215	415	540	940	1240



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Projects Proposed and Underway

- Chicamba and Mavuzi Power plants rehabilitation
- Reinforcement of several substations in the Northern grid
- New 275 KV line from Ressano Garcia to Macia
- New 400 KV from Caia do Namialo



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International Initiatives

- **Kenya:** partial public sale of shares in KenGen, national power gen company
- By 2013 seven IPPs generating 20% of total
- **Nigeria:** Grid only delivering 5 GW in 2013 to country of 170m; 25GW private generation
- Major overhaul of industry: most generation and distribution privatized, heavy local banking sector support; bottlenecks persist



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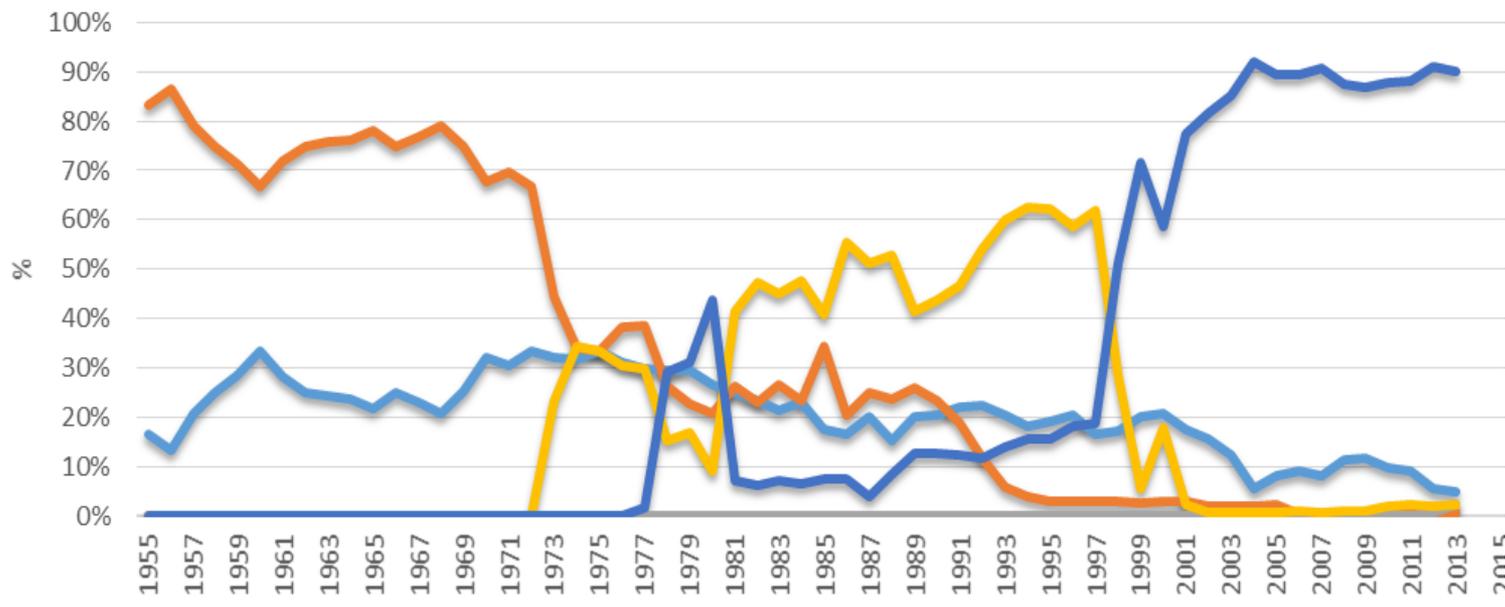
Discussion & Analysis

- Slow pace of regulatory, legislative reform
- Heavy price paid for policy of subsidized universal tariff, ignoring cost-benefit basis
- Unbundling of ownership, management of Generation and Distribution – PPAs
- Accelerated Development Zones: flexible adoption of existing incentive mechanisms



Concentration of Energy Supply by Source

Electricity supply by source 1955-2013 [GWh]



Growing dependence on a single source

- Hydro EDM
- Thermal EDM
- Thermal IPP
- Imports
- Hydro HCB



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Conclusion and Recommendations

- More flexible application of regulations in place, stimulation of incentive to invest
- Enhanced measures to combat network losses
- Unbundling with extension of IPP generation including mini-grid PPP distribution
- Tariff application based on greater cost-benefit assessment
- short term outsourcing of transmission O &M