



**REPUBLIC OF MOZAMBIQUE
MINISTRY OF ENERGY**

COUNTRY REPORT PRESENTED
BY
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MINISTRY OF ENERGY OF MOZAMBIQUE

Tokyo, 04 June 2013

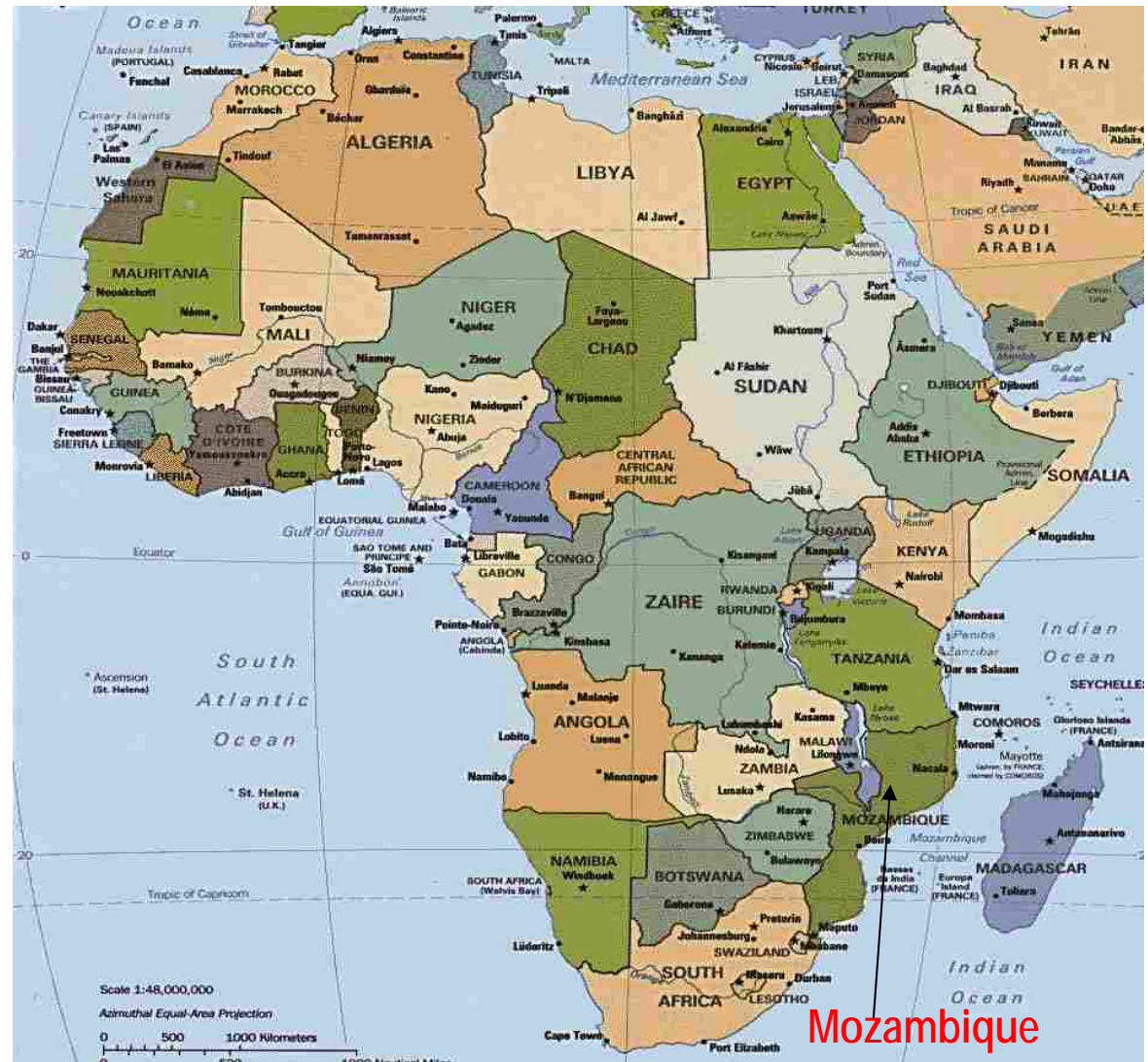


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GENERAL INFORMATION

1. Population: 22 million
2. Area: 799.860 km²
3. Location: Southern Africa
4. Average of Economic growth for last 6 years: 7%
5. Currency: Metical (USD1/28MT)
6. Official Language: Portuguese
7. Energy Strategy – to be updated in 2013
8. Electricity Law - in process of updating
9. Electricity Master Plan – in process of updating
10. Installed Capacity: 2.300 MW
11. Renewable Energy ATLAS to be concluded on July, 2013





1. CURRENT ENERGY POLICY AND MEASURES

- Access to modern energy services and sustainability of energy systems are widely recognized to be instrumental for equitable and sustainable development and the achievement of many development goals, namely: reducing poverty, increasing food security, providing safe water and sanitation, improving health care and education, creating economic opportunity and enhancing socio-economic development.
- *Mozambique Energy Policy* define the following mean objectives: to increase level of access to modern energy services in good economic conditions in order to support social and economic development activities(1), to increase electricity export to neighboring countries (2), the construction of new and rehabilitation of existing energy generation and transmission infrastructures(3), to increase energy efficiency(4), and to update the Energy Sector Legislation in order to attract private investments.



- ❑ At present only 38% of the population has access to electricity. In order to accelerate the access to electricity, the Mozambique Energy Policy emphasizes the combination of National Electricity Grid and the adoption of hybrid solutions, in particular for remote areas (solar, wind).
- ❑ In terms of energy resource potential, the hydropower potential in Mozambique is estimated to be 12,000 MW with a corresponding total energy output of 60,000 GWh/year. Approximately 5,500 MW based on natural gas, plus 5,000 MW based on coal.
- ❑ In order to develop its vast resources, the government of Mozambique has launched several major initiatives. In generation projects include the Mphanda Nkuwa hydropower plant with a planned capacity of 1,500 MW and on the Cahora Bassa North Bank Dam (CBNB) with a planned capacity of 1,245 MW, the coal thermal power plants connected to mining projects in Moatize, with a planned initial capacity of 2x300 MW with an installed capacity of 2400 MW and Benga with a planned capacity of 500–600 MW and an installed capacity of 2000 MW. In the south region of Mozambique, it is planned to install about 290 MW of natural gas fuelled thermal power plants.



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- ❑ Most of these projects are located on the Zambezi Valley (Tete Province), which requires the construction of a power transmission line from Tete to Maputo, well known as the Backbone Transmission Project, to allow for power evacuation to the major load centers, in the country and the region.
- ❑ The Backbone Transmission Line Project will consist of a system of ± 500 kV HVDC lines, and a system of 400 kV HVAC lines, with an investment amount of USD1.8 billion for initial phase, to evacuate about 3100 MW from the Zambezi Basin, with potential for future expansion up to 9200 MW.
- ❑ In order to better understand the renewable energy contribution, the government is developing a Renewable Energy Atlas and an appropriate Regulatory Framework for market creation (REFIT), to be concluded in 2013.



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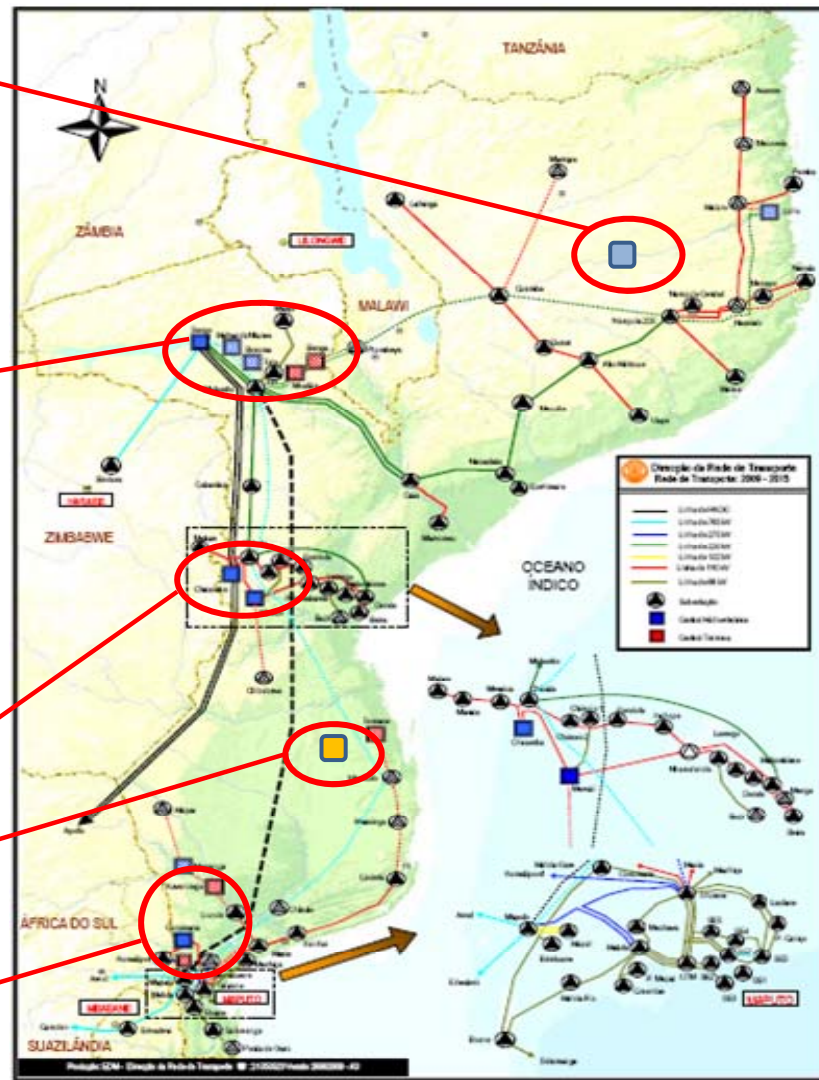
LURIO BASIN
120 MW + 80 MW

- CAHORA BASSA - 2075 MW (Installed Capacity)
- CB Norte - 1250 MW
- MPHANDA NKUWA - 1500
- BOROMA - 200 MW
- Lupata - 600 MW
- MOATIZE (Coal) - 300 MW (phase1)
- BENGGA (Coal) - 300 MW (phase1)
- Ncondezi - 650 MW (phase1)
- JINDAL- NHATSANGA 660 MW - phase1

- REHABILITATION OF THE HYDROPOWER PLANTS**
- CHICAMBA - 40 MW
 - MAVUZI I - 50 MW

TEMANE (GAS)
80 MW

- Massingir (Hydro) - 28MW
- Ressano Gas Projects - 240 MW
- Kuvaninga Gas Project - 50MW





Mozambique Regional Transmission Backbone Project





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2. ENERGY DEMAND AND SUPPLY

- ❑ Total demand for electricity comprises mega projects, household and commercial demand. Currently, the major part of domestic non-megaprojects electricity consumption is supplied by Cahora Bassa Hydropower Dam. In addition, in terms of supply, Electricidade de Moçambique (utility company) has own capacity with the hydro dams of Mavuzi(52MW), Chicamba(38,4MW), Corumana(16,6MW) Cuamba(1,1MW) and Lichinga(0,75MW).
- ❑ Mozambique already generates hydroelectricity, mainly at Cahora Bassa (2,075 MW) and is exported electricity to the region, mainly to South Africa and Zimbabwe. Most of the neighbouring countries are experiencing an actual or imminent shortfall of generation capacity and are eager to purchase competitively priced hydropower.
 - *Currently around 95% of power generated in Mozambique is Hydro.*
 - *Hydro potential is >60 % of the total energy resources in the Zambezi Valley.*
 - *The region is dominated by coal fired thermal power generation: >85%.*





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Excluding kuvaniga, gigawatt, EDM/SASOL gas power plant projects and additional allocation from HCB





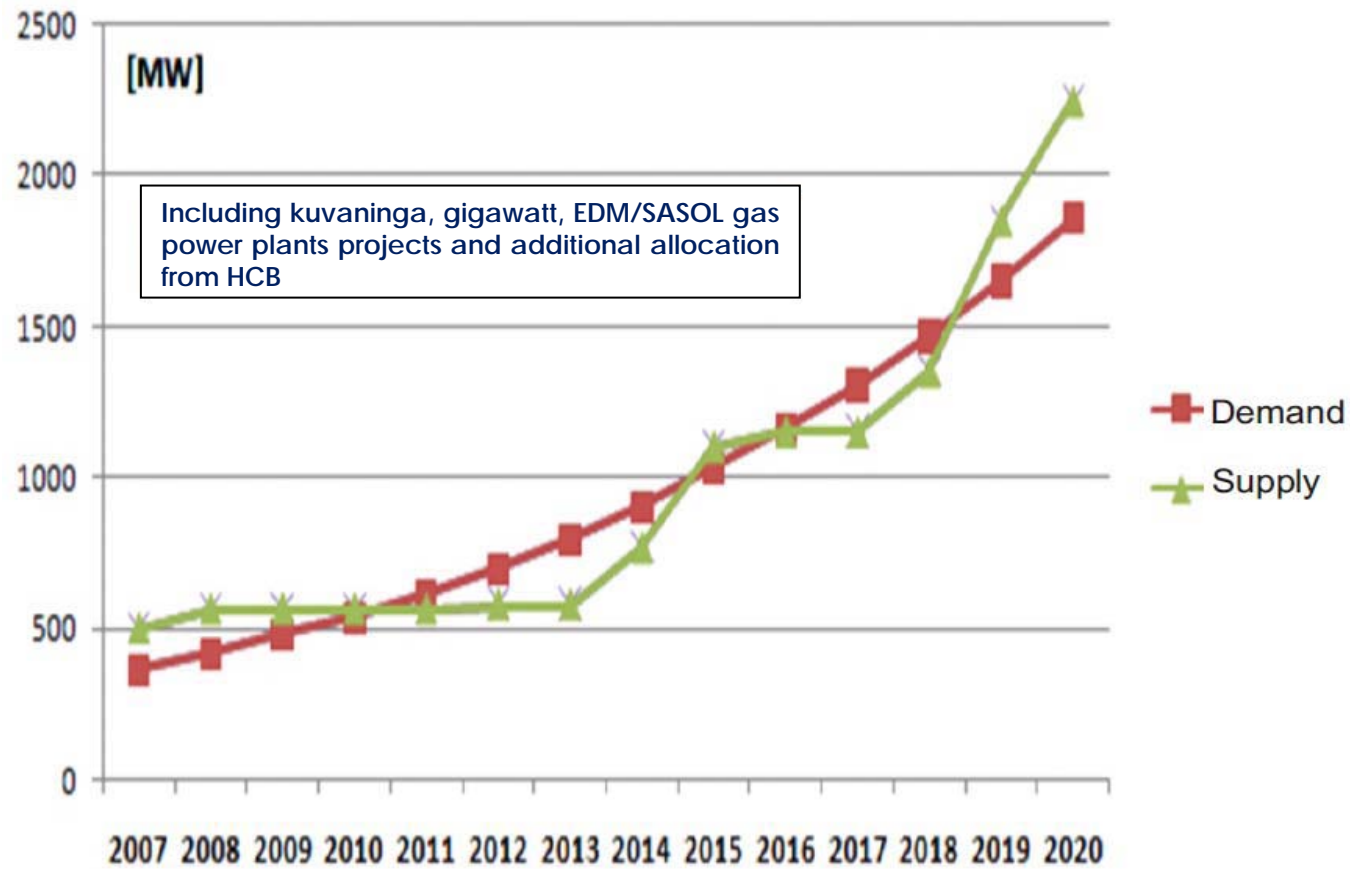
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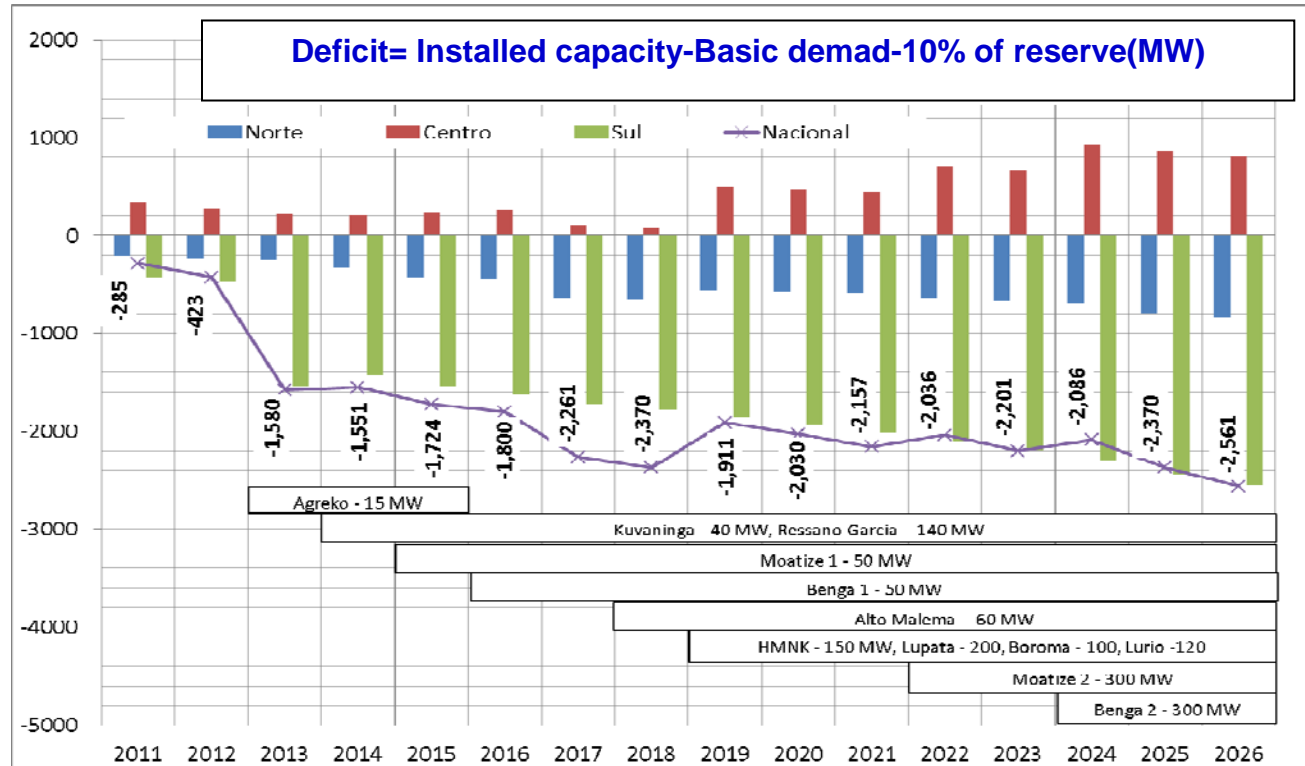


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Projected Demand (MW)

Ano	Norte	Centro	Sul	Nacional
2011	182	217	1,394	1,793
2012	211	276	1,432	1,919
2013	230	330	1,475	2,035
2014	296	342	1,534	2,172
2015	384	358	1,619	2,361
2016	397	379	1,699	2,475
2017	587	518	1,790	2,895
2018	652	549	1,847	3,048
2019	667	574	1,908	3,149
2020	683	598	1,976	3,257
2021	700	626	2,047	3,373
2022	750	657	2,128	3,535
2023	773	693	2,219	3,685
2024	798	733	2,323	3,854
2025	885	788	2,439	4,112
2026	920	827	2,539	4,286





Selected EDM future and current off-take Agreements

SELECTED EDM CURRENT & FUTURE INDUSTRIAL OFF TAKE AGREEMENTS

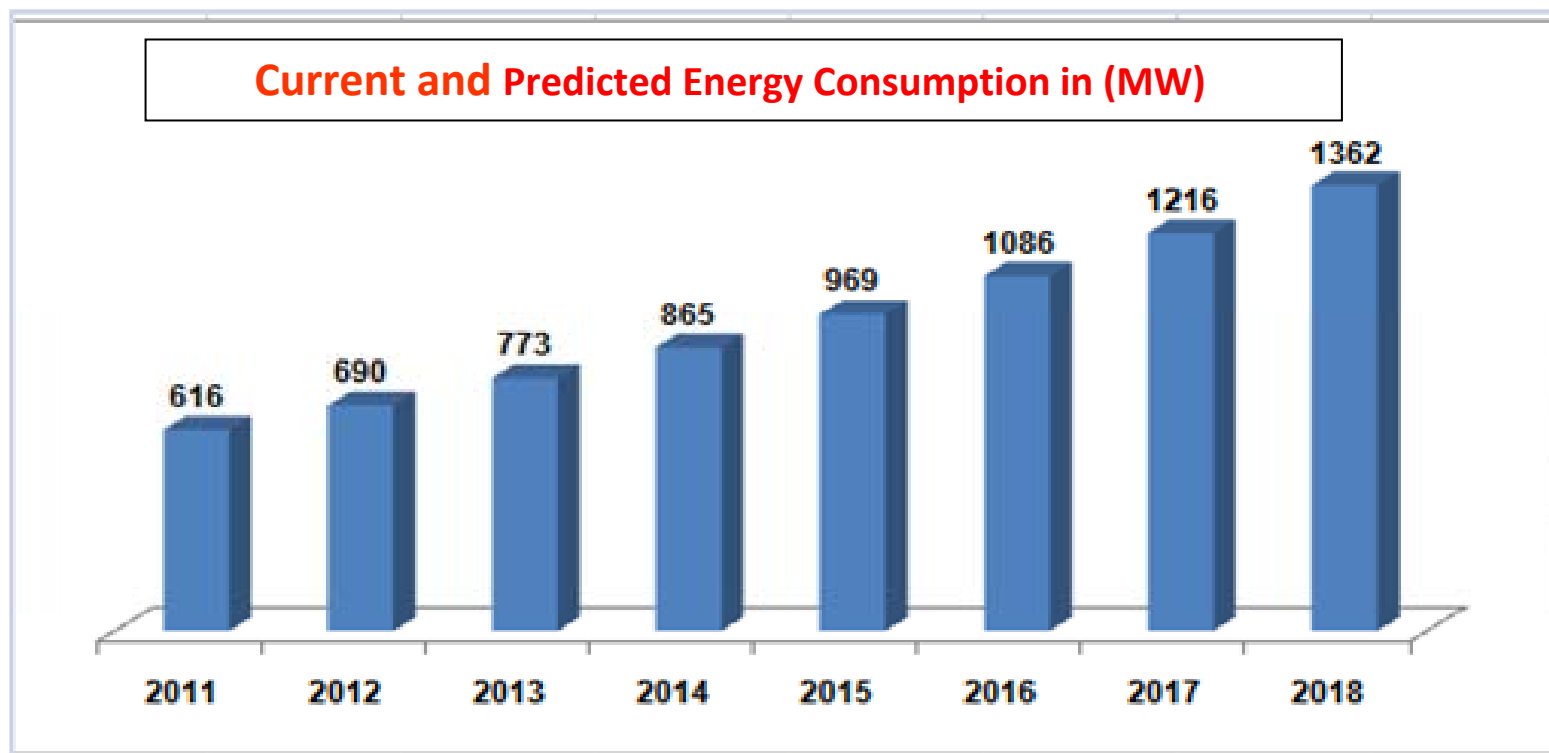
WITH BIG CUSTOMERS BY 2015/16

ORDER	CUSTOMER NAME	LOCATION	INITIAL LOAD (MW)	STATUS
1.	Vale Moçambique	Moatize/Tete	42	Operational
2.	Vale Moçambique	Nacala/Nampula	10	Operational
3.	Rio Tinto	Moatize/Tete	20	Operational
4.	JSPL/Jindal	Moatize/Tete	20	Construction
5.	Kenmare	Moma/Nampula	30	Operational
6.	Kenmare expansion	Moma/Nampula	30	Operational
6.	Anglo American Corp/Nippon Steel/POSCO	Revubue	20	Committed 2014-15
7.	ENRC	Chitima/Tete	90	Committed 2014-15
8.	Arcelor Mittal	Beluluane/Maputo	22	Potential
10.	HAMC	Various/Zambezia	20	Operational/Potential 2014-15
11.	Nacala Corridor/Harbour	Nacala/Nampula	30	Operational/Expansion 2012
12.	GS Cimentos	Beluluane/Maputo	20	Committed 2014
13.	Cimentos da Beira	Munhava/Beira	10	Committed 2014
14.	ADIL Cimentos	Maputo	10	Potential 2014
15.	CIF MOZ	Salamanga	20	Construction
16.	Cim Magude/Africa Great Wall	Magude/Maputo	22	Committed 2014
17.	Cim Moç-Matola/CIMPOR	Matola/Maputo	15	Operational/Expansion
18.	Cim Moç-Dondo/CIMPOR	Dondo/Sofala	13	Operational/Expansion
19.	Cim de Moç-Nacala/CIMPOR	Nacala/Nampula	8	Operational
20.	Essar Bulk Terminal	Beira	37	Potential 2015
21.	CFM Beira Harbour	Beira	10	Operational
22.	Mozambique Leaf Tobacco	Tete	6	Operational
23.	Beira Coal Terminal	Beira	20	Operational
24.	Mafambisse Sugar	Dondo/Beira	13	Operational
25.	Incomati Sugar	Xinavane/Maputo	15	Operational
26.	Maragra Sugar	Manhiça/Maputo	10	Operational
27.	Marromeu Sugar	Marromeu/Sofala	15	Operational

28.	Facim-Sogex Multipurpose Building	Maputo	15	Construction
29.	New Sommershield	Maputo	15	Committed 2014
30.	Matola Mall	Matola Maputo	15	Committed 2014
31.	Steel Tube Factory	Beluluane/Maputo	10	Operational
32.	Chibuto Heavy Sands	Chibuto/Gaza	45	Potential
33.	Chibuto Heavy Sands Smelting	Chibuto/Gaza	88	Potential
34.	Techobanine Port	Salamanga/Maputo	18	Potential 2015-16
35.	Matola Coal Terminal – Fase IV	Matola/Maputo	10	Expansion
36.	FerroxChang	Belluluane/Maputo	7	Potential 2015-16
37.	Intaka 5000 Houses	Maputo	20	Construction
38.	Portucel Paper Pulp	Gurue/Zambezia	8	Potential
39.	Lurio Paper Pulp	Nampula	8	Potential
40.	Natural Gas expansion	Mocimboa/C. Delgado	5	Committed 2017
41.	Expansion Pemba Port	C. Delgado	10	Potential 2015-16
42.	Anadarko Rovuma Oil Fields	C. Delgado	5	Committed 2017
43.	HCB North Bank Construction Power	Tete	5	Potential 2017
44.	Lupata/Boroma construction Power	Tete/Zambezia	5	Potential 2017
45.	Marropino/Morrue Tantalite	Nampula	8	Operational/Expansion
46.	Manga Industrial Area	Manga	20	Construction
47.	Catembe Bridge + Residential Expansion Zone	Maputo	30	Construction to start 2013
48.	Exports to SEC	Swaziland	100	Operational
49.	Exports to LEC	Lesoto	20	Operational
50.	Exports to ZETDC	Zimbabwe	50	Operational
TOTAL			1095	



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Excluding consumption of MOZAL - aluminum smelter (900MW) and Moma Heavy Sand Mine (22MW)





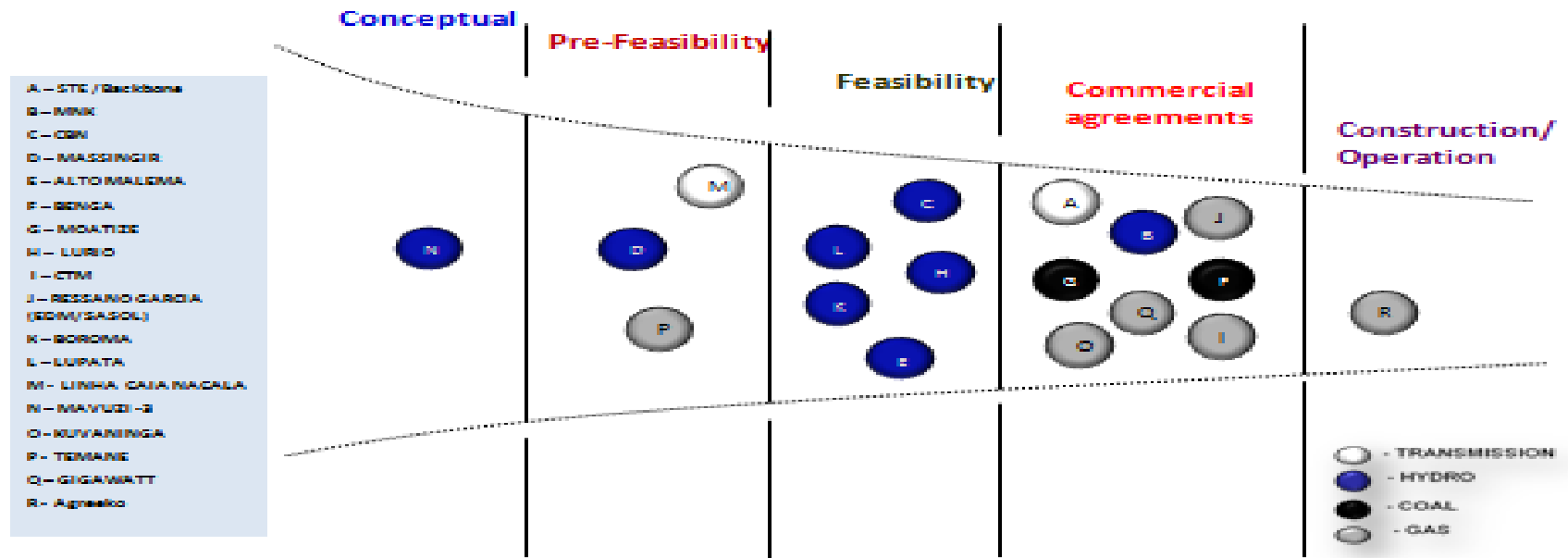
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- ❑ In order to meet the future demand, Mozambique's hydro generation capacity will be increased shortly with the construction of the Mphanda Nkuwa Hydropower(1500MW), HCB North Bank(1245MW) and a number of other initiatives [such as Lupata(600MW), Boroma(200MW) and Lurio(120MW)] and large *natural gas* reserves *discovered in Rovuma Basin* (160Tcf).
- ❑ The construction of the Backbone – North–South Transmission Line Project will facilitate evacuation of all power generated by different sources (hydro and coal) from central Mozambique (Tete) to Maputo and to South Africa.
- ❑ Mozambique already generates hydroelectricity, mainly at Cahora Bassa (2,075 MW) and is exported electricity to the region, mainly to South Africa and Zimbabwe. Most of the neighbouring countries are experiencing an actual or imminent shortfall of generation capacity and are eager to purchase competitively priced hydropower.





GENERAL STATUS OF THE POWER PROJECTS

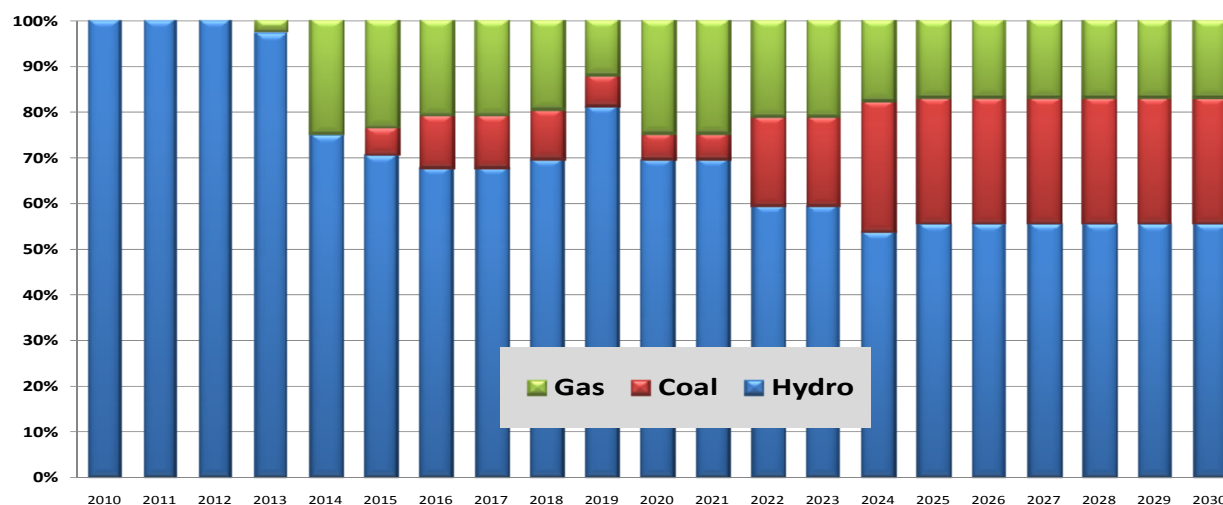




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MOZAMBIQUE ENERGY MATRIX - 2030



The Energy Matrix that the Energy Policy intends to achieve in 2030





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3. MAJOR DIFFICULTIES AND BOTTLENECKS CURRENTLY FACED IN FORMULATING MOZAMBIQUE ENERGY POLICY

- For a large number of countries, individual national action will not be enough to bridge the energy gap because of the *lumpiness and costliness of energy investments and, the uneven distribution of energy resources*. Consequently, making the best use of hydropower, natural gas, and other resources will require regional integration and the building of a regional energy infrastructure.
- Lack of prioritization of decentralized energy access within Action Plan, and coordination of energy access and industrial planning.



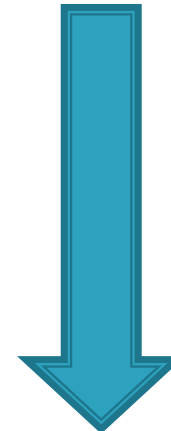


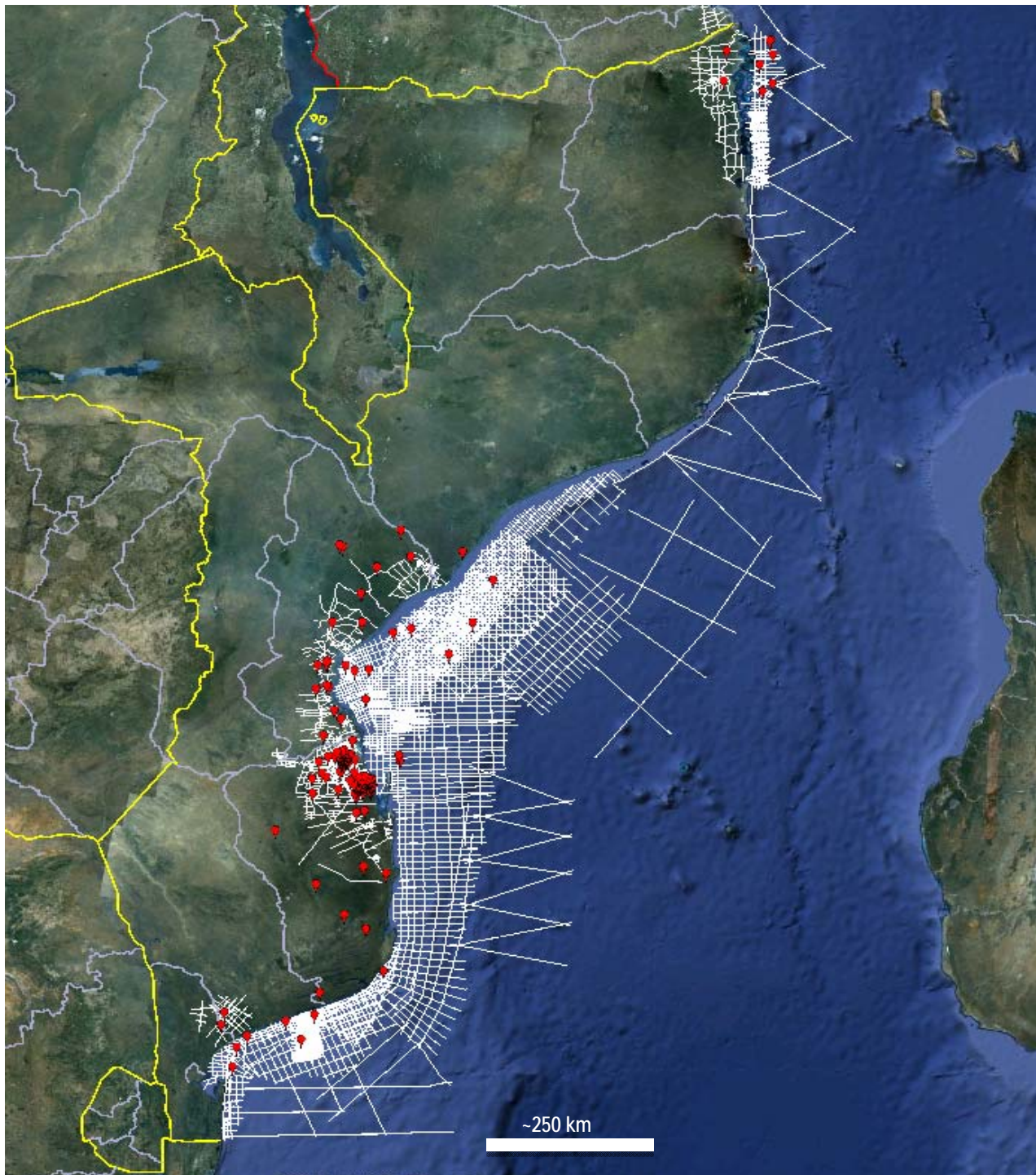
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4. SUBJECTS THAT I WOULD LIKE TO STUDY IN ORDER OF PRIORITIES AND THE REASONS

- ❖ Policy Development and Implementation
- ❖ Policy Analysis for Senior Planners
- ❖ Strategic Planning Skills for Planners

The motivation of choosing the three subjects is related to my today's professional position , responsibilities and because





Energy potential to be explored

1. Hydro: 12.000 MW

2. Gas: 160 Tcf

3. Coal: 25 billion tons

4. Solar & Wind



I thank you for your attention!

