Mozambique (2012)

Source: REEEP Policy Database (contributed by SERN for REEEP)

Energy sources

Electricity

Total installed electricity capacity (2009): 2.308 GW

Hydropower is the dominant source of electricity, accounting for 99.7% of the total.

Total Primary Energy Supply in 2009: 9766 ktoe (IEA)

- Biomass (wood, charcoal, and animal waste): 78.3%
- Hydropower: 14.3%
- Oil: 6.5%
- Coal/ Peat: 0.1%
- Natural gas: 0.8%

Mozambique has large reserves of coal. Total coal reserves are estimated to be about 3 billion tons. There are exploitable reserves of natural gas that might be as high as 3 trillion cubic feet. Natural gas is exported to South Africa via a pipeline.

Reliance

Mozambique consumes and imports 685,848 tonnes of oil per year, the bulk of which is in the form of diesel. At present there is no oil refinery and as a result, all refined products must be imported. On April 3, 2008, the government approved the construction of a 350,000 bpd oil refinery in southern Maputo province, but the project is currently in stand-by.

Mozambique is a net exporter of electricity, 73.44% of the 2,075MW generated by the Hidroelectrica de Cahora Bassa (HCB) is exported to South Africa.

Extend network

The electrification rate is just 14%. It is estimated at 26% of urban areas and estimated 5% of rural areas. In rural districts, kerosene is the main fuel for lighting.

EDM prepared a Master Plan for the expansion of the country's national power grid and distribution networks with the goal of reaching 15% of the population by the year 2020, from the present 5%. This goal was archived in 2010 .

Power transmission in Mozambique is an especially critical issue for the country for two reasons. First, the large size of the country and its dispersed settlement patterns make dispatching power to the entire population extremely expensive. Secondly, HCB must first export power to Eskom, which in turn sells the power back to southern Mozambique at an increased rate. There are serious technical, financial and national security implications of this. In addition, long-distance dispatching of power wastes a considerable amount of power due to line losses.

Capacity concerns

Nearly all of Mozambique's electricity is produced by the Cahora Bassa Dam, built and completed before independence. Some 60% of Cahora Bassa electricity is used by the Mozal aluminium plant, 30% is a net export to South Africa and, to a lesser extent, Zimbabwe, and the rest used in Mozambique. However, there is no direct line within Mozambique to the main consumption center, the Maputo province. The main line goes through South Africa.

Energy demand is growing considerably, at an average annual rate around 7-8% per year. The electric supply is not consistent and there are blackouts. It is reported to be one of the reasons for the failure of some industries, particularly the clothing industry. All businesses, except Mozal, are constrained by very high electricity costs. In addition, service is unreliable and available only 60-70% of the time. As a result, many businesses and individuals purchase small fuel generators, which add to investment costs and pollution.

Several hydro-generation projects are designed or in the feasibility phase. A major thermal plant project of 600 MW in phase I, to be upgraded to 2,400 MW in phase 2, is being implemented near the new coal mine of Moatize.

Renewable energy

Hydropower

Mozambique has become a large hydroelectricity producer. Its hydropower generation potential is estimated at roughly 15,000 MW per year, of which only 2,100 MW is currently being exploited. The Government has identified roughly 100 locations with hydropower potential including Manica, Tete and Niassa. As electricity demand across the South African Power Pool (SAPP) grows, developing Mozambique's hydropower potential, and the necessary transmission links to neighbouring countries, will be one of the keys to keeping costs and carbon emissions low.

Solar

Mozambique has a huge and virtually unexploited solar potential. Annual incident solar radiation, distributed evenly across the country, is about 1.49 million GWh – thousands of times more than the country's current annual energy demand.

Wind

In the context of promoting clean energy, measurements of the wind power potential in the country are taking place in the Ponta de Ouro, District of Matutuine, in Maputo Province and Tofinho, city of Inhambane, in the province of the same name. More measurements in other locations to map the national wind power potential are planned.

Biofuel

Use of biomass electricity has the potential to generate the most jobs because Mozambique's small and medium sized enterprises can be involved in all stages of the supply and production chain. Bagasse wastes from the sugar industry, copra wastes from the coconut industry and the other sources could enable Mozambique to quickly build up a power industry based on clean, indigenous biomass fuels.

Energy efficiency

Thus far, in its electricity strategies, Mozambique has done little to seriously promote energy efficiency.

Ownership

Electricity

The state-run monopoly in the energy sector ended in 1995 with the creation of Electricidade de Mocambique (EDM) as a public power utility company. EDM is the major electricity supplier and also maintains the national grid system. EDM is undergoing a restructuring process through the separation of accounts and the creation of business units.

The Electricity Law was introduced in 1997. It allowed for private participation in the electricity industry under a concession system, as well as maintaining a special position and responsibility for EDM as the primary driver of the law. The law was supplemented with the Decree no. 8/2000 from 2000 which further specifies procedures concerning concession for generation, transmission, distribution and sale of electricity.

In 2007 policy nº 48/2007 de 22 de October, Rule for licence for electrical installations, was approved.

In 2009 Resolution n 62/2009 14 of December (Development Policy of Renewable Energy) and Resolution n 22/2009 (Strategic and Policy of Biofuel) was approved.

Petroleum and natural gas

Control of the country's upstream oil industry rests with the parastatal upstream oil company, Empresa Nacional de Hidrocarbonetos de Mocambique (ENH) which has exclusive rights to explore for and develop petroleum in Mozambique, and is permitted to exercise these rights in association with foreign investors

The main players in the upstream industry include: Enron Oil and Gas Resources Inc, Energy Africa, Sasol Petroleum International, Leopardus Resources Limited, Zarara Petroleum Resources, TotalFinaElf SA, Trefoil Ltd, and Lonrho de Provuma Petroleum.

BP, Elf and Western are involved in geophysical surveys of offshore areas.

The downstream oil industry relies on imports, mostly from South Africa. Distribution and marketing of fuel products and lubricants is carried out by the state owned oil company Petromoc. Other companies include BP, Caltex.

Competition

Electricity

Electricidade de Mocambique (EDM) is in charge of generation, transmission and distribution, although it only has a limited generation capacity of its own (255.68MW).
Hidroelectrica de Cahora Bassa (HCB), a company jointly owned by Portugal and Mozambique, is the major generator and the largest hydroelectric scheme in Southern Africa (2,075 MW).

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Energy framework

- One of the main policy documents is the Energy Policy (1998). The Government's Energy Policy is straight-forward, presenting a clear statement on the importance of providing energy to the households and productive sectors. It aims to build capacity and improve management within the electricity sector, increasing exports and efficiency, as well as other relevant matters.
- The Energy Sector Strategy (2000) focuses specifically on how to implement the Energy Policy, including increasing the role of the private sector, developing more competitive markets, and the need for regulation. The Strategy complements the Energy Policy, outlining and making explicit the intentions of the government in the development of plans of action, programmes, projects, investments and other actions for the various energy sub-sectors. It provides necessary guidance for operators in the sector, financial institutions and investors.
- The Energy Reform and Access Project (2003-2011) aims to accelerate the use of electricity for economic growth and social services in a commercially viable manner. Thereby improving the quality of life in un-served and under-serviced areas, as well as strengthening Mozambique’s ability to increase access to modern energy. The project supports the Government's National Energy Strategy that looks to reform the country’s energy sector and increase private participation. The project also encourages the development of renewable energy, in particular solar photovoltaic systems and micro-hydro projects, as well as contributing to the reduction of Greenhouse Gases.
- The Electricity Master Plan for Development of the National Grid 2005-2019 focuses on Grid Supply Expansion in the short-to-medium term.

Energy debates

One of the main questions relates to the adoption of a single-buyer model with wholesale competition. This includes re-structuring of EDM through vertical separation into hydro generation, transmission, and distribution businesses; which is complemented by the horizontal separation of distribution through concessions to EDM, local authorities and private participants.

Mozambique has put in place a fairly modern legislative framework for the energy sector in general and the power sector in particular. But some aspects are still unclear, in particular the contribution the energy sector is to make to poverty reduction.

While the legislative framework is largely in place, implementation and enforcement appear to lag behind considerably. Other issues may arise from the implementation of the ambitious reform of the energy sector.

Energy studies

N/A

Role of government

The Ministry of Energy (Ministério da Energia, ME) is responsible for all energy resources, while the Ministry of Mineral Resources is responsible for all mineral reserves in the country.

Relevant for energy are three directorates, and several "technical" units:

- The National Directorate for Electrical Energy (Direcção Nacional de Energia Eléctrica, DNEE),
- National Directorate of New and Renewable Energy (Direcção Nacional de Energias Novas e Renováveis)
- National Directorate of Fuell (Direcção Nacional de Combustíveis)

The National Directorate for Electrical Energy (DNEE) is a central technical body within the ME, responsible for the analysis, preparation and elaboration of energy policies.

Government agencies

The management of traditional fuels that are forest-based is under the Ministry of Agriculture and Rural Development (Ministério da Agricultura - MINAG).

Ministry for the Coordination of Environmental Affairs, MICOA, (Ministério para a Coordenação da Acção Ambiental,) has legislative power regarding the environment, and one of its key functions is to coordinate with line ministries on environmental issues.

MICOA is responsible for Environmental Impact Assessment approvals, Kyoto Protocol reporting and any future Clean Development Mechanism (CMD) application, all of which are relevant to the energy sector and require strong links to both MINAG and ME.

Energy procedure

Under the energy sector program for electrification of rural areas, 83 districts headquarters of a total of 128 were electrified through national electricity grid, as well as small isolated systems based on group of diesel generators, solar systems and also through the connection to the grid of neighbouring countries. Electrification, however, has been concentrated only on hospitals, schools and upper class inhabitants. The majority of these consumers were located in the southern part of the country.

Besides the very limited benefits of this program, the high rise in kerosene price had a significant impact especially in rural areas where almost 13 million people live and the majority in extreme poverty (spending less than US$1/day). With such price increase, many of them can no longer afford it, forcing them to use fuelwood for lighting and creating unhealthy indoor living conditions.

Energy regulator

The Electricity Law 1997 established the National Electricity Council (CNELEC) as a governmental consultative body which works a s regulatory instrument concerning generation, transmission and sale of electricity.

It was created in 2004 and is housed in the National Energy Council (CNELEC) (http://www.cnelec.org.mz)

Degree of independence

The Mozambican Ministry of Energy still supervises EDMs responsibilities concerning the generation, transmission and distribution of electricity. Although the Ministry of Energy still retains control of the high voltage transmission system and Mini grids, CNELEC has more autonomy and supposedly acts independently from the Ministry.

Regulatory framework

The regulatory framework is comprehensive and encompasses the following statutes:

- Ministerial Law No. 20/97, which is the Organic Act for the DNEE, establishing its duties, areas of activity, levels of administration and structure, including the services to be rendered by the various departments defined in the structure.
- The Electricity Law (No. 21/97), defines the general policy for the organization of the electrical energy sector and the administration of the supply of electrical energy. It also prescribes the general legal framework for electrical energy generation, transmission, distribution and sale within the country; and controls the exportation and importation of energy from outside of the national territory, and the granting of concessions for such activities.

Regulatory roles

CNELEC mediates and arbitrates differences arising with energy supply policy, projects, concession requests and other related matters. Its advisory and arbitration role is not very clear and it remains organizationally weak.

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Regulatory barriers

The development of CNELEC into a independent regulatory agency is one of the main aspects of the government's reform agenda for the electricity supply industry. However, there is a question whether the establishment of CNELEC is premature, and that its establishment may fragment the very limited resources the public sector has for managing the energy sector.

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