



renewable  
energy  
& energy  
efficiency  
partnership

# Mozambique

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## Section 1: Energy provision<sup>1</sup>

### **1.1 Main fuel sources for direct use and power generation**

Mozambique has vast energy resources that have considerable potential for national energy-intensive industry and for export, including hydropower, gas, coal, and perhaps petroleum. The energy sector in Mozambique is characterised by abundant resources with generally a low level of exploitation and internal use. Forest resources provide more than 85% of the energy requirements overall and more than 95% in rural areas. The one significant hydropower source is the Cahora Bassa Power Station, though almost 90% of the 2,075 MW capacity is exported to South Africa. Considerable natural gas reserves exist, where export to South Africa has recently begun, while domestic use is marginal. There are large reserves of coal. Oil exploration activities are taking place, but no commercially viable fields have been found. Mozambique also has large biomass and solar energy potential for more local energy needs.

### **1.2 Degree of reliance on imported energy**

Mozambique is a net exporter of electricity, 90.36% (1,875 MW) of the 2,075MW generated by the Hidroelectrica de Cahora Bassa (HCB). 850 MW is imported from South Africa. The degree of reliance on energy imports is not regarded as significant.

### **1.3 Extent of connection to electricity network (households and businesses; rural and urban)**

Within the national economy, the key activity is the electrification of urban areas. A large part of external resources for the energy sector are allocated to electricity transmission, distribution rehabilitation and expansion. Mozambique is a vast country with a low population density. At present, it is estimated that only about 5% of the population has access to electricity. The electrification rate is estimated at 20% of urban areas and 1-2% of rural areas.

### **1.4 Any capacity concerns (power generation and/or transmission/distribution)**

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<sup>1</sup> Based on information collected from: The Status of "Clean Cooking Fuels" in Mozambique, Fabio Cumbe , Deepak Sharma, Carlos Lucas and

<http://www.scanteam.no/reports/2004/MOZAMBIQUE%20Energy%20Sector%20Coordination.pdf>

Energy demand is considerably growing, at an average annual rate around 7%. However, available national energy resources should be sufficient to address the exponential demand. But lack of sufficient national skills and financing might impair the capability to efficiently address the demand, especially from an infrastructure perspective. The role of external funding and technical assistance remain important for many years to come for the sustainable development and modernisation of the energy sector.

### **1.5 Potential for renewable energy, energy efficiency and co-generation (i.e. any authoritative assessments)**

Mozambique has confirmed potential for hydroelectricity. The country also has potential for solar energy. Wind energy potential is considered limited, and enough agricultural waste should warrant the development of biofuels.

## Section 2: Energy market

### **2.1 Ownership (state/municipality/private/mixture) of electricity and gas utilities and other sources of energy**

The Electricidade de Mozambique (EDM) is the Mozambican national utility transformed from a state monopoly to a public enterprise in 1995.

### **2.2 Extent of competition in power generation and energy retail**

EDM accounts for the bulk of electricity distribution in the country, about 97% of total electricity consumed. However, a number of Independent Power Producers (IPPs) exist. A privatisation project was implemented in 1999 in Vilankulos and in two adjacent towns. The most important IPPs include:

- Hidroeléctrica de Cahora Bassa (HCB), is privately owned by Portugal (82%) and Mozambique (18% )
- MOTRACO has been formed between ESKOM, South Africa's electric utility, Mozambique's EDM and the Swaziland Electricity Board, to supply electricity from South Africa to Swaziland and Maputo.

Power generation is dominated by HCB with its 2,075 MW capacity against EDM's 100 MW hydropower. HCB's transmission line to South Africa and MOTRACO's 850 MW to Maputo are considerably larger than EDM's southern and central-north lines, though in terms of coverage of national consumers EDM is more important. Private participation in electricity supply is being developed through a concession approach.

### **2.3 Structure: extent of vertical integration of generation/ transmission/ distribution/ retail.**

The energy market in the country used to be predominantly a vertically integrated monopoly. The state-run monopoly in the energy sector ended in 1995 with the creation of EDM as a public power utility company. EDM controls the national grid network and a limited liability company PETROMOC administrates petroleum products. Since the end of the state run monopoly there has been a significant rise in the number of private participants.

## Section 3: Energy policy framework

### **3.1 Existence of an explicit energy policy framework and key policies– what role is envisaged for sustainable energy?**

One of the main policy documents is the Energy Policy (1998). The Government's Energy Policy is straight-forward and provides a clear statement on the need for providing energy to the household and productive sectors, building capacity and improving management in the sector, increasing exports and efficiency, and other relevant matters. The main objectives are:

- to ensure reliable energy supply, at the lowest possible cost, so as to satisfy current levels of consumption, and the needs of economic development;
- to increase the availability of energy for the domestic sector, particularly coal, kerosene, gas and electricity;
- to promote reforestation in order to increase the availability of firewood and charcoal;
- to strengthen the institutional capacity of the main agencies that supply energy in order to improve their performance;
- to promote economically viable investment programmes, with a view to the development of energy resources (hydro-electricity, forests, coal and natural gas);
- to increase the exports of energy products;
- to increase efficiency in the use of energy;
- to promote the development of conversion technologies and environmentally benign energy uses (solar power, wind power and biomass); and
- to promote a more efficient, dynamic and competitive business sector.

The Energy Sector Strategy (2000) is also an important policy. The Strategy focuses more specifically on how to implement the Policy, including the increasing role of the private sector, the development of 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, and for the guidance of operators in the sector, financial institutions and investors. The strategy has the following concerns as its point of departure:

- Limited access and financial difficulties;
- Development of large scale projects and exports;
- Institutional capacity and efficiency in sector administration;
- Regulation of the sector;
- Environment, health and safety.

Further, the strategy elaborates on the objectives pronounced in the energy policy, thereby providing a degree of guidance to stakeholders. However, the whole strategy is not fully developed and clear.

Mozambique has also undertaken a restructuring of the energy sector to create more modern management of its energy resources. The national power utility has been transformed into a state company; a regulator has in principle been created; a national fund to promote rural energy through innovative activities has been created, private sector engagement and an enhanced role for local authorities is in place; a national petroleum institute has been created

to address the role of the private sector in gas and petroleum exploitation; links to the Southern Africa Power Pool have been established; and the Ministry is trying to strengthen its policy development and oversight functions.

As part of much broader macroeconomic reforms initiated in the late 1980s, market-oriented reforms were introduced in the Mozambican energy sector in 1997. These reforms have been justified on the ground that they would improve the performance of the Electricity Supply Industry (ESI), increase access to electricity and provide economy-wide benefits. The energy reform programme encompasses private participation in the energy market and establishment of an independent regulatory body in the electricity market.

### **3.2 Any current energy policy debates/developing legislation**

One of the main questions relates to the adoption of a single-buyer model with wholesale competition. The re-structuring of EDM through vertical separation into hydro generation, transmission, and distribution businesses, complemented by horizontal separation of distribution through concessions (to EDM, local authorities and private participants) also seems to be an important issue. The increase of IPPs to strengthened competition is also a crucial matter. 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, and in particular the contribution the energy sector is to make to poverty reduction. While the legislative framework is considered 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.

### **3.3 Any specific policies or programmes to promote sustainable energy**

Mozambique's Poverty Reduction Strategy, PARPA, has energy as one of the six main pillars. There is also a policy for Rural Energy Development which aims to promote rural energy development by giving access to the poor to intermediate (kerosene, LPG) and modern (electricity) forms of energy.

In addition, two specific plans for electrification have been developed:

- The Rural Electrification Strategic Plan (Focus on Policy and Off-Grid Electrification, Intermediate Solutions)

The Electricity Master Plan for Development of the National Grid 2005-2019 (Focus on Grid Supply Expansion in the short-to-medium term)

### **3.4 Role of government in energy policy – which departments are involved?**

The Ministry of Mineral Resources and Energy (Ministério dos Recursos Minerais e Energia, MIREME) is responsible for all other energy resources and mineral resources of the country.

Relevant for energy are three directorates, and several "technical" units: The National Directorate for Energy ((Direcção Nacional de Energia, DNE), the National Directorate for Coal and Hydrocarbons (Direcção Nacional de Carvão e Hidrocarbonetes, DNCH), and the Directorate of Economics (Direcção de Economia, DoE). DNCH has recently been split. Oil and gas related activities have been moved into the recently established National Petroleum Institute (Instituto Nacional de Petróleo, INP), while coal was moved to the National Directorate of Mines within MIREME.

The National Directorate for Energy (DNE) is a central technical body within MIREME, responsible for the analysis, preparation and elaboration of energy policies. Its main tasks encompass:

- To study, propose and administer the energy policy in the country;

- To promote the diversification of energy use and optimise the use of various energy sources;
- To address environmental issues;
- To provide the plans and the programmes for the development of the sector;
- To promote and to maximise the rational use of the national energy sources with relevance to the installed capacity, namely, through the encouragement of investors;
- To promote the co-operation with public and private institutions, national or foreign, in achieving the maximum potential in the technical development and sector regulation.

### **3.5 Any government (or government funded) agencies with a specific role in sustainable energy and/or environmental protection (with an energy role)**

The management of traditional fuels that are forest-based is under the Ministry of Agriculture and Rural Development (Ministério da Agricultura e Desenvolvimento Rural, MADER). A system of licensing exists for charcoal production and sale.

Other important entities are the National Electricity Council (Conselho Nacional de Electricidade, CNELEC), the corporatised but state-owned electric utility (Electricidade de Moçambique, EDM), the state-owned national hydrocarbon enterprise ENH which is engaged in upstream gas development. The National Energy Fund (Fundo Nacional de Energia, FUNAE) has also been set up to fund new energy projects. The technical unit for hydropower implementation, UTIP (Unidade Técnica de Implementação dos Projetos Hidroeléctricos), is responsible for large-scale hydropower development.

The National Directorate for Coal and Hydrocarbons (DNCH) has the responsibility for certain activities in the oil and gas sub-sector, as follows: establishment of a legal framework; development of policy objectives/licensing strategy; promotion/industry communication; negotiation/licensing; supervision of license activity; resource assessment; data management; other institutional support projects.

Ministry for the Coordination of Environmental Affairs, MICOA , (Ministério para a Coordenação a Acção Impacto Ambiental,) has legislative power regarding the environment, and one of its key functions is to coordinate with line ministries on such matters. Strong links to both MADER and MIREME are thus required, as MICOA is responsible for Environmental Impact Assessment approvals, but also Kyoto Protocol reporting and for any future Clean Development Mechanism (CMD) application, all of which are relevant to the energy sector.

### **3.6 Any energy planning procedure in place**

EDM is undergoing a restructuring process through the separation of accounts and the creation of business units. EDM has 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%.

## **Section 4: Energy regulation**

### **4.1 Is there an energy or utility regulator? When was it established?**

The national energy regulator of Mozambique is housed in the National Energy Council (CNELEC) and was created in 2004.

#### **4.2 Degree of independence of the regulator from government (legal structure, who appoints the regulator and board)**

The Mozambican Ministry of Energy still supervises the 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.

#### **4.3 Regulatory framework – legislation, duties, powers (any references to environment, sustainable energy)**

The regulatory framework is comprehensive and encompasses the main following statutes:

- Ministerial Law No. 20/97, which is the Organic Act for the DNE, 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), which defines the general policy for the organisation 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, as well as its exportation to and importation from outside of the national territory, and granting concessions for such activities.
- Municipal Legislation: Municipal legislation was enacted in 1997, giving municipalities certain functions in investment planning and the operation of electricity services in local authorities.

#### **4.4 Regulator's roles – key tasks (e.g. price controls, promoting competition etc), actions to date, any action/role in the sustainable energy field)**

It 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. It also remains organisationally weak. 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.