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Electricity Reform in Mauritius: The Case of PSP in Generation

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About the Author...



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Abstract

From 2000-2005, the Government of Mauritius embarked on a series of reforms in the electricity sector including the corporatization of the Central Electricity Board (CEB), the country's electric utility. A change in government in 2005, however, brought with it alternative plans for reforming the sector. In this article, **IP3 Alumnus, Chavan Dabeedin** describes the development and change in the government's reform strategies, and discusses its decision and method for leveraging the resources of the private sector in the electricity generation, while maintaining the status of CEB as a parastatal entity.

Brief History of the Central Electricity Board

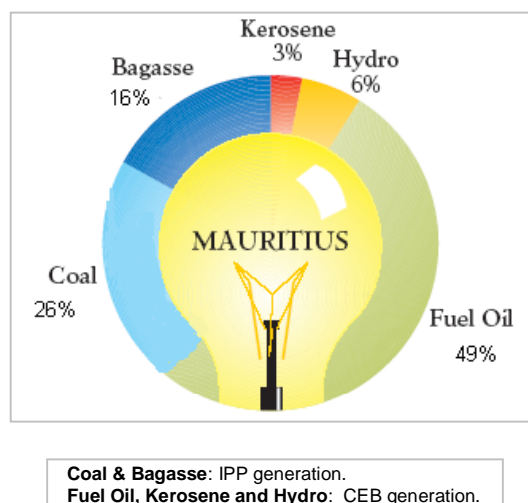
The Central Electricity Board is a parastatal body wholly owned by the Government of Mauritius, under the aegis of the Ministry of Public Utilities. Established on 8th December 1952 and empowered by the *Central Electricity Board Act* of 25 January 1964, CEB's business is to "prepare and carry out development schemes with the general object of promoting, coordinating and improving the generation, transmission, distribution and sale of electricity" in Mauritius.

At the time of Independence in 1968, the national rural electrification program got underway. Peak demand that year reached 31 MW and total energy sales to 91,234 customers reached 98 GWh. As the population increased and habitations cropped up all over the island, CEB was called on to connect schools, Central Water Authority pumping stations, housing estates and morcellements (parcelling of land for housing construction). Stone crushing plants, poultry farms, irrigation stations, and construction sites also appeared on the list of CEB's customers. From the early 1970s, CEB networks have continuously been extended to supply new industries such as those in the export processing zones. As the tourist sector, the textile industry, and the construction sector flourished in the 1980s, CEB expanded its transmission and distribution networks in all directions across the country. By 1981, the national rural electrification program was completed and the whole island was 100% electrified.

Today with a workforce of approximately 1700 employees, CEB safely and dependably delivers electricity to more than 357,000 customers through 7,300 km of distribution network. Sales reached 1741 GWh in 2005 and the system peak demand has risen to more than 353 MW.

Today, the country enjoys a more diversified economy, an extensive network of electricity supply facilities, and the benefits of a stable and continuous electricity supply. CEB has a proven record of providing reliable electricity for the country and this has come as a result of massive capital investment into the development of electricity infrastructure. In 2005, the CEB itself generated about 58 percent of electricity for the country's requirements – from its four thermal power stations and eight hydroelectric plants, which have a combined capacity of 367 MW. The remaining 42 percent of energy requirements was purchased from independent power producers (IPP), which have a total firm capacity of 147 MW and produce electricity from coal and bagasse (residue when sugar juice is extracted from sugar cane). The generation mix is shown in figure 1 below.

Figure 1: Electricity Generation Mix in 2005



Background of Government Reform Initiatives

From 2000-2005, the Government of Mauritius embarked on a series of sector reforms under which it would retain overall responsibility for essential public services, such as the provision of electricity, but at the same time implement the necessary legal and administrative steps with a view to moving the Central Electricity Board (CEB), the national electricity utility of Mauritius, from a parastatal body to a corporate entity. Having the CEB operate as a corporate entity operating according to sound business principles—while remaining fully owned by Government—would have allowed the Government to free up precious financial support and resources for other public needs.

In meeting its social obligations as electricity provider to a rapidly growing island nation, the Central Electricity Board has not always been able to operate on commercial principles. This has contributed to a weak financial position for the utility over the years. Given that the country is now completely electrified and the standard of living have risen for a majority of the population, CEB may now envisage to balance its social obligations with operations as a commercial entity.

To realise its plans for the sector, the Government of Mauritius committed in October 2000 to improve the financial condition of the sector through improvements in efficiency, reductions in system expansion costs, and injection of fresh capital through private participation by taking the following distinct steps:

- Corporatise the CEB as a vertically-integrated utility;
- Set up an independent, multi-sectoral regulator; and
- Invite a strategic partner to assist in the management of the CEB.

However, the policy of the new government, which took over in July 2005, while also geared towards a self-sustaining electricity sector, was not necessarily committed to the corporatization of the CEB or the invitation of a strategic partner to assist its management.



Mauritius

Population: 1.2 million

Area: 2040 km²

GDP per capita: purchasing power parity: \$13,300 (2005 est.), highest in Africa

Geography: an island in the Indian Ocean grouped with Southern African Development Community (SADC), also member of Common Market for Eastern and Southern Africa (COMESA), and Common Wealth

Languages: English, French (both official); Hindi & Creole

Ethnicity/race: Indo-Mauritian 68%(Indian origin), Creole 27% (African origin), Sino Mauritian 3% (Chinese origin), Franco-Mauritian 2% (French Origin)

Religions: Hindu 52%, Christian 28.3% (Roman

Catholic 26%, Protestant 2.3%), Islam 16.6%, others 3%

Politics: Stable & Democratic

New Government Reform Initiatives

The previous Government of Mauritius (2000-2005)—and more so the new government—after watching the extent and outcome of reforms in other countries, wisely recognised that Mauritius is neither ready for, nor in need of, large-scale electricity reform. In general, reforms elsewhere were intended to reduce costs to customers by making the sector more competitive. Vertically integrated electricity monopolies have typically been separated into generation, transmission, and distribution entities. Of these, typically only generation and distribution have been privatised and competition induced by dividing these entities into multiple companies. To function properly, competitive markets require many buyers and sellers. On an island the size of Mauritius—there are no economies of scale to be gained by such division. The previous Government (2000-2005) had, therefore, opted to corporatise CEB as a vertically integrated company and to retain CEB in Government ownership. In 2004 and 2005 the enabling legislation was enacted to provide the legal basis for these reforms, but these acts have not been promulgated yet. At present the corporatisation of CEB does not fall under the priorities of the new government.

The previous Government also wanted to introduce an independent multi-sector ‘Utility Regulatory Authority’ to oversee sector development. Draft legislation was put in place but not yet promulgated and the utility regulator is yet to be formed.

Even though CEB operates today as a vertically integrated utility—which means that it bears responsibility for the full range of electricity services, including generation – **a notable feature of both the previous and new Governments’ reform process is the move towards a more competitive electricity generation sector**, with both CEB and private sector participating in the generation of electricity.

Independent Power Producers (IPPs)

Mauritius has had private power generators since electricity was first available on the island. Since the 1990s, this private sector participation has been formalised through policy directives, such as the Bagasse Energy Development Program which gave rise to an increased number of seasonal independent power producers (IPPs) at sugar estates scattered around Mauritius and, since the late 1990s, through the signing of power purchase agreements (PPAs) with FUEL Steam and Power Generation Co. (FUEL), Consolidated Energy Ltd. (CEL), and Compagnie Thermique de Belle Vue (CTBV). The result is that today virtually all bagasse from sugar processing on the island is burned for electricity generation and cogeneration purposes.

The previous government was committed to give the private sector an important role to play in the development of electricity facilities with a view to freeing up precious public funds for needed improvements in social services such as education, health care, sanitation, etc. The new Government is, however, taking a cautious approach to sector reform by maintaining vital infrastructure, such as the electricity network, in the hands of CEB and put a rational share of electricity generation in the hands of CEB. Development, expansion, and operation of the transmission and distribution network will remain solidly in CEB's hands. What CEB will do is to ensure equal access to the network to all generators in Mauritius and, monitoring capacity and contractual constraints, move to a practice of least-cost dispatch based on the marginal cost of generation. This will produce more transparent and cost-effective operations for the benefit of all electricity customers and suppliers.

Government and CEB have been doing their part to create an atmosphere conducive to private sector investment by, for example, introducing a transparent and competitive Request for Proposals process for acquiring new power generation resources. The new government is also moving to diversify private sector participants in the electricity generation sector, which has heretofore been dominated by the sugar sector seeking to optimize the use of bagasse as fuel.

Hand in hand with more private sector development of new generation, CEB will still retain the ability to implement its own generation and to redevelop or introduce efficiency improvements at its existing facilities, should this prove to be more cost effective for electricity consumers.

Power Purchase Agreements

CEB has power purchase agreements (PPAs) with three take-or-pay IPP plants FUEL, CEL, and CTBV and the two-part tariff IPP plants Compagnie Thermique du sud (CTDS) and the future Compagnie Thermique de Savannah (CTSav). Following the December 2002 Request for proposals, CEB reached agreement with CTDS in 2003, for the supply of electricity from a 30 MW coal-fired steam plant. Before the agreement was reached CEB carried out an evaluation exercise and, entered into a predevelopment agreement and negotiations respectively with CTDS. CEB and Compagnie Thermique du Sud (CTDS) finally signed a power purchase agreement on 15 October 2003. Under the terms of this agreement, Compagnie Thermique du Sud would be fully operational no later than October 2005. This was duly respected. Another request for proposals was issued in December 2003 for 60 MW to 70 MW of new generating capacity fired by bagasse and a complementary fuel. After evaluation Compagnie Thermique de Savannah Limitée (CTSav), with 65.5 /74 MW of capacity at delivery point during Crop/Intercrop respectively was found to be the preferred bidder. Negotiations were held from August 2004 to December 2004. The Power purchase Agreement was eventually signed with CTSav in February 2005. Under the terms of this agreement, CTSav will be fully operational in 2007.

CEB also has power purchase agreements with seven IPPs that produce electricity from bagasse during the crop season only. The capacity from the seasonal IPPs is 39 MW and is vital to CEB as it offsets the crop-season reduction in capacity from the other year-round IPPs.¹ In 2002, CEB and the seasonal IPPs renegotiated their PPAs. A modification to the price indexation formula has produced and will continue to produce considerable cost savings for CEB each year. At the same time, some operational procedures, which had been practised by tacit agreement, were formalised in the contracts. Over the five or six years that most of these seasonal IPPs have been operating under contract, they have successfully improved their operational efficiency, with the result that they are able to deliver more electricity to CEB from their supplies of bagasse.

Conclusion

To succeed as a viable business and to ensure a stable electricity future in line with the economic needs of our growing population, CEB will continue to rely on the private sector and IPP projects for new supply of energy and capacity, while continuing to invest in electricity generation to maintain an important share in power generation sector in Mauritius. I strongly believe that there is still room to improve any future power purchase agreements so that CEB can have greater flexibility to operate the power system in a least-cost, efficient manner, and allocate risk appropriately. I also believe that before pursuing additional electricity generation projects, CEB must evaluate both build and buy alternatives to find the best solutions for Mauritius. Any IPP program in Mauritius must reconcile at least the following three objectives:

- Reduce electricity costs through competitive capacity addition;
- Attract outside capital to meet growing electricity needs without imposing constraints on internal financial capabilities; and
- Assign risks in an efficient manner.

In my opinion the new government will try to keep the generation ratio of around 60% CEB and 40 % IPP, but in any scenario with independent power suppliers connected with CEB's power system, it is very important to ensure that each generator begins to share the responsibility for reliability and security of supply. Suppliers must be fully aware of our needs and expectations for power generation.

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¹ With the exception of CTDS, all year-round IPPs have a sugar mill attached to their facilities. The sugar mills provide them with bagasse as they are dual-fuelled bagasse/coal, and this fuel is used for sugar processing, resulting in a decreased generation capacity during crop season. Other sugar mills, which generate electricity only during crop season, offset the deficit of the year-round IPPs during that period of time.