



# Electricity reforms in Malawi; Impacts and Consequences

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## Abstract

This paper examined the progress of various reforms carried out in Malawi power sector from 1963 to 2016, their impacts and consequences on the power sector efficiency and operation. The utility company, Electricity Supply Corporation of Malawi (ESCOM), has not been able to meet current demand due to inefficiencies and this has led to deficient and undependable power supply. This has forced the government to re-examine its power development options which has called for new power reform strategies. These reform strategies include commercialization, unbundling, contract management, electricity law amendments and the introduction of Independent Power Producers (IPPs). The paper concludes that the effectiveness of power sector reform strategies is greatly interdependent and the success of power sector reforms will largely depend on the extent in which Malawi is able to synchronize private companies in the electricity generation, transmission and distribution. **Copyright © IJRETR, all rights reserved.**

**Keywords:** Power sector reforms, Unbundling, Corporatization, Commercialization, Electricity law amendment, Contract management, Independent power producers

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## Introduction

Lack of reliable energy supply system is one of the common problem facing many African countries including Malawi. Over the decades, the availability of electricity has become one of the biggest challenge the country is facing [1]. Persistence blackouts are the order of the day and this is hindering the economic development of the country. A report by [2] highlighted that some of challenges the Malawi power sector is facing are due to lack of



generation, transmission and distribution capacity relative to demand; need for regulatory and institutional reform; poor power quality and reliability of electricity service to the consumers; a financially constrained utility; lack of access to modern electricity for a large segment of the population; and lack of an enabling environment to attract private investment in the sector. Recently, the countries electric power production capacity (which is mainly hydropower) has been restricted due to low water flows. It is reported that as a result of poor rainfall Malawi is receiving, the generation capacity has been drastically reduced to 66 % during peak hours and 80 % during off-peak [3].

Malawi is a land-locked and densely populated country in Sub-Saharan Africa, lying between latitudes 09025'S and 17008'S and longitudes 32040'E and 35055'E in the southern end of the Great East African Rift Valley. The total area is 118 484 km<sup>2</sup> of which 20 % is covered by water mainly Lake Malawi. The country is bordered by Mozambique to the east, south and west; Tanzania lies to the north; and Zambia to the north-west. Malawi's primary energy supplies consist of hydropower, biomass, petroleum products, coal and other renewable energy sources [4]. Hydropower provides about 95 % of the country's electricity needs using the centrally located Shire River cascaded hydro schemes and Wovwe mini hydro plant in the Northern Region [5]. It is estimated that only 30 % of the urban population (about 6 % of households) in Malawi are supplied with electricity [6]. And about 85 % of people in Malawi reside in rural areas and only 2 % of rural households are electrified, representing 1 % of the rural population have access to public electricity supply systems [7]. Hence, Malawi is one of the least electrified countries in the Southern African Development Community region (SADC), with an average per capita consumption of 111 kWh per annum [8].

For the past two to three decades, a large number of developed and developing countries have introduced major electricity sector reforms which have altered significantly the sector's market structure and institutional framework [9, 10]. Many large and small countries of the world such as China, USA, Argentina, Chile, India, Nigeria and Bolivia have already embraced the reform programs. The electricity sector reforms taking place are increasing rapidly and the nature of the reforms being adopted are becoming more sophisticated, while being tailored according to countries needs and circumstances [11]. These reform programs have included privatization, vertical and horizontal unbundling, and the introduction of performance-based regulatory mechanisms implemented by independent regulatory agencies [9]. The reforms are aimed at introducing energy policies, legislation, regulations and institutions that would unfetter the monopoly of state-owned utilities and provide opportunities for private actors to participate in a competitive market [12].

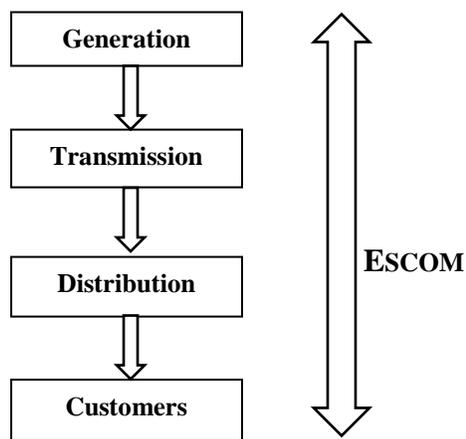
Following the development of the power sector reform strategy, the Malawi government, through the department of energy in close collaboration with key stakeholders started to implement broader reforms in the energy sector [13]. In 2011 the Millennium Challenge Corporation (MCC) and World Bank signed agreements with the Government of Malawi to fund several projects in order to improve the current energy system. The projects are aimed at



rejuvenating the structural, operational and financial inefficiencies of power subsector institutions, and the generation, transmission and distribution capacity constraints faced by the country's power subsector. During the reform process, the Electricity Supply Corporation of Malawi (ESCOM), a state owned power producing company, is to undergo unbundling and the introduction of private sector in the participation of ESCOMs operations.

### **Electricity Supply Corporation of Malawi Profile**

ESCOM is a limited liability company established under the Companies Act of Parliament in 1957 which was revised in 1963 and then 1998 [14]. It assumed the assets and liabilities of the former Electricity Supply Commission of Malawi, a parastatal organization established in 1963. The mandate of the Corporation is to generate, transmit and distribute electricity in the country. ESCOM is divided into three distinct directorates: Generation, Transmission and Distribution which runs as a vertically integrated utility company as shown in Figure 1. Generation is responsible for running all power generation stations. Transmission operates the national electricity grid and comprises of 132 kV main transmission line and 66 kV sub-transmission lines that extends through the entire length of the country. The distribution system is divided into three geographical regions of the country: Southern Electricity Supply (SES), Central Electricity Supply (CES) and Northern Electricity Supply (NES) [2]. SES, CES and NES provide an interface between ESCOM and its customers and are responsible for the distribution of electricity throughout the country at 33 kV, 11 kV and 400/230 V. The utility through its Board of directors reports to the Ministry of Natural Resources and Environmental Affairs (as ministry responsible for energy affairs) on all technical and related policy matters to the Department of Statutory Corporation on administrative and the Ministry of Finance on finance and budgetary matters [13].



**Figure 1:** ESCOM Structure

Nearly all of Malawi's electricity is provided by hydropower with total installed capacity of about 351 MW. The breakdown of the present generation installed system is shown in Table 1.



**Table 1:** Generation Installed Capacity

Nkula A	❖ 3 units at 8 MW each, installed in 1966
Nkula B	❖ 3 units at 20 MW each, installed in 1980
	❖ 1 unit at 20 MW, installed in 1986
	❖ 1 unit at 20 MW, installed in 1992
Tedzani I	❖ 2 units at 10 MW each, installed in 1973
Tedzani II	❖ 2 units at 10 MW each, installed in 1977
Tedzani III	❖ 2 units at 25 MW each, installed in 1996
Wovwe Small Hydro	❖ 3 units at 1.5 MW each, installed in 1995
Kapichira Phase I	❖ 2 units at 64 MW each, installed in 2000

Changes of power demand scenarios coupled with tremendous environmental degradation within the past years has severely and negatively affected the operation of the existing power generation plants and their efficiency in Malawi [15, 16]. [4] reports that the projected electricity demand was 598 MW in 2015 and it will edge up further to 874 MW in 2020. It is quite obvious that the demand for electricity in Malawi is very high and ESCOM, the sole generator, transmitter and distributor of electricity in the country fails to meet the demand. Furthermore, Malawi's current transmission and distribution system is mostly old and outdated, and maintenance is well below international standards because of lack of spare parts and skill sets of utility employees [2]. Thus the electric transmission and distribution network is not in good condition and results in substantial losses of about 18 to 22 % of the generated electrical energy [14]. This has forced the government to re-examine its power development options in the short and medium term which calls for new power reforms and strategies.

### **Power Sector Reform Strategies**

Power sector reforms have usually involved some combination of product market competition, privatization and regulation [10]. However, according to [17], they are five major power sector reform options which have been implemented in many developing countries, particularly in Africa. These include: (1) corporatization/commercialization, also referred to as restructuring, (2) management contracts, (3) unbundling, (4) independent power producers (IPPs) and (5) electricity law amendment. The reforms are aimed mainly at reducing government involvement and political influence in the electric subsector. Some of these power reform options have already been implemented in Malawi, while some will be rolled out in near future. Therefore, this paper presents a review on the progress of the electricity sector reforms in Malawi and their associated impacts and consequences on the power sector efficiency and operation.



## **Corporatization or Commercialization**

Corporatization or commercialization is the act of transforming a state-owned utility into a limited liability corporate body often with the government as the main shareholder [17]. It is aimed at transforming state-owned utilities into separate (from the ministry/government) legal entities and restore financial discipline thereby ensuring that its revenue fully covers its costs [9]. Following the repeal of the 1963 Electricity Act, the Electricity Supply Commission of Malawi was corporatized in July 1998 and the utility was renamed Electricity Supply Corporation of Malawi [17]. This led the utility to enforce revenue collection, increase tariff levels and its separation from the ministry. In 2014, the Malawi Energy Regulatory authority (MERA) approved a gradual increase in the average tariff of 37.28% over the course of the following four years, which will result in the increase of the average tariff from MK 31.54 per kWh (US\$.06) to 43.24 per kWh (US\$.08) [18]. However, ESCOM is 99 % owned by the Government of Malawi with Malawi Development Corporation (MDC) holding the remaining 1 % share [13]. As a result, the utility company does not operate on its commercial principles as there is still too much of political interference. In addition, though Malawi has seen a dramatic increase in electricity tariff over the past few years, the prices have still been heavily subsidized by the government and the country is yet to achieve a cost reflective tariff [2].

## **Management Contracts**

A management contract, usually seen as part of the wider commercialization process, describes a situation where the management of the utility is contracted out to a private entity [17]. However, the government still plays most of the investment decisions of the utility and remains the owner of its major assets. In mid-2001, ESCOM signed a management contract with South Africa's Technology Services International, a division of Eskom Enterprises. This power reform option was a follow up of commercialization/corporatization of ESCOM and was aimed to improve further the utility efficiency and profitability.

## **Unbundling**

Another energy reform option that Malawi is exploring is unbundling. Unbundling is the separation of potentially competitive generation and retail activities from the natural monopoly segments of transmission and distribution [9]. There are two forms of unbundling which can be undertaken by a power utility; vertical and horizontal unbundling. Vertical unbundling divides a vertically integrated utility into separate companies for generation, transmission and distribution. On the other hand, horizontal unbundling separates a national monopoly utility in order to have each province or region with its own generation, transmission and distribution entities. Unbundling, according to [17], plays three important roles within power reform context; (1) unbundling allows management to gain a clearer understanding of the technical and financial performance of the previously integrated components of a vertically integrated utility; (2) it increases opportunities for competition since the unbundled generation entity is expected to



compete with private sector-led IPPs; and (3) unbundling would lead to improved technical and financial performance as it is expected that the unbundled entities are managed independently.

Malawi started moving towards vertical unbundling soon after the corporatization and management contract energy reform options. [17] attest that many African countries appear to prefer the implementation of vertical unbundling over horizontal unbundling. In 2002, ESCOM was partially unbundled vertically into generation, transmission and distribution as still all branches were under the same entity. Though unbundling has been widely advocated for as a necessary mechanism to encourage private investment, it appears that unbundling is less desirable in small, low-income countries with less developed institutional capacity [19]. As a result, the unbundling process was eventually halted in Malawi and there is uncertainty as to whether or not it will resume or what form it may take [2].

### **Independent Power Producers (IPPs)**

IPP is a private utility company which owns facilities to generate electric energy for sale to public utility and end users. IPPs aims at facilitating investment in generation even in the absence of comprehensive sectoral reform [9] and constitute an important form of private sector participation in Africa's power sector [17]. The climate of doing business in Malawi has improved in recent years as Government has shifted its policy in favor of provision of services by these private sector [8]. Basing on the Malawi Electricity Act of 1998, the power sector was liberalized by introducing separate licensing for generation, transmission and distribution permitting private sector participation. The Power Sector Reform Strategy (PSRS) approved in 2003 also allows private sector participation and competition as a driver of the overall National Energy Policy (NEP) [2].

Consequently, between 2011 to 2015 period, the Malawi government has signed Memorandum of Understandings (MoUs) with 17 IPPs who are at various stages of developing power plants to enter the power sector in the country [20, 21]. Atlas Energy, CTI Africa LLC, JCM Clean Power Development, Africa Energy and Power Corporation, CDC Group, Bua Hydro power and Ulalo Capital Investments are some of the IPPs that have signed the MoUs [20]. At the moment, most of these IPPs are waiting to sign a Power Purchase Agreement (PPA) with ESCOM and negotiations are still underway for these parties to reach amicable solution [22]. However, the absence of market rules, a reliable grid code and a tariff regime reflective of the cost of service at the present continues to be major obstacles to private investments in the sector. As a result, even though the electricity supply industry in Malawi is now liberalized and open to other participants, ESCOM as the national power utility, continues to be vertically integrated and to dominate the power sector with little room for private participation [2].

### **Electricity Law Amendment**

Enactment of electricity law or legislation provides a legal mandate for restructuring and creation of (independent) regulatory agencies with adequate information, capacity and statutory authority [9]. On the positive note, the amendment of electricity laws has been progressing well in Malawi in response to specific challenges. The



amendment of electricity laws are usually passed by the Parliament, one of the three important arms of the Malawi government. Consequently, the passing of the laws is greatly influenced by the political will. Among other things, the changes in the electricity legal and regulatory framework in Malawi has involved provision of regulatory authority, licensing of IPPs and gazette of license application and license grant.

The power reform initiatives started with the passing of the Electricity Act of 1998 which resulted in establishment of ESCOM with responsibilities of generation, transmission, distribution and retailing of electricity throughout Malawi. Thus, Malawi began a corporatization process following the electricity amendment of 1998. In addition, a NEP approved in 2003 resulted in the formation of MERA. Consequently, Malawi followed another common reform recommendation in 2004 and established the MERA under the Energy Regulatory Act No. 20 [2]. MERA's objective is to regulate the energy sector in Malawi in a fair, transparent, efficient and cost effective manner for the benefit of the consumers and operators. Its specific mandate is: to approval of wholesale and retail tariffs; development of regulations for quality of supply and service; improving consumer satisfaction and; promulgating a regulatory framework to encourage private participation in energy development, management and operations. However, MERA's regulatory reform progress has been slow as evidenced by a virtual absence of any private participation in the power sector [18].

Other notable energy amendment acts are the Rural Electrification Act No. 21, Electricity Act No. 22, Liquid Fuels and Gas, Production and supply Act No. 24, which are contained in the Legal and Regulatory framework in the Energy Laws of December 2007 [8]. All of these laws and regulations are tailored to address a specific area of concern, for instance, the Rural Electrification Act deals with all aspects of renewable energy system. On 21 June 2016, the Malawi Parliament passed Electricity Amendment Bill into law that will see ESCOM unbundling into two separate entities for distribution while the other one will be responsible for generation and transmission [23]. The amendment of the Electricity Bill, among other things, seek to give ESCOM the mandate to import and export electricity power to and from neighboring countries [24] and intends to put a legal framework to help unlock power challenges besetting the country's energy sector [23]. The passing of the Bill was part of the PSRP, a component of the \$350.1 million MCC energy compact that seeks to improve generation and distribution infrastructure in the country [25]. Following the passing of the Bill, ESCOM was completely unbundled on 31 December 2016 and a new company called Electricity Generation Company (EGENCO) Limited was born [26].

## **Conclusion**

The Malawi government, through the Malawi Growth and Development Strategy (MDGS), recognizes energy as one of the key crucial input for any industrial processing and a stimuli for any economic growth. Since attaining independency in 1964, Malawi has gone through a number of power reform options in order to liberalize its energy sector. This started with corporatization, contract management, unbundling and setting up of regulatory authority. All these reforms involved the amendment of electricity laws through the National Assembly. However, despite the country undergoing several power reform options, the energy sub-sector continues to be below standards with an



installed capacity of 351 MW representing a 10 % electrification rate, making Malawi one of the most severely constrained power sectors in sub-Saharan Africa. The effectiveness of power sector reform strategies is greatly interdependent and the success of power sector reforms will largely depend on the extent in which Malawi is able to synchronize private companies in the electricity generation, transmission and distribution.

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