



THE CASE FOR COST REFLECTIVE IMPLEMENTATION - IS ZAMBIA GETTING IT RIGHT?

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ABBREVIATIONS AND ACRONYMS

AfDB	African Development Bank
CoSS	Cost of Service Study
ERB	Energy Regulation Board
IPPs	Independent Power Producers
kWh	Kilowatt hour
SADC	Southern African Development Community
SAPP	Southern Africa Power Pool
US¢	United States Dollar Cents

INTRODUCTION

Generally, most countries in Africa **charge tariffs that are much lower than the actual cost of generating, distributing and retailing electricity.** The difference between the tariffs most customers pay and the actual cost of electricity is subsidised by Governments. For this reason, in 2008 Southern African Development Community (SADC) Ministers of Energy were prompted to approve migration of unsustainable electricity tariffs towards cost reflectivity¹ within five years and set a deadline of 31st December 2013. However, by 2015 only Namibia and Tanzania in the 15-country regional bloc had successfully achieved cost-reflectivity, despite an earlier commitment by all member states to meet the objective by 2013. Consequently, [SADC] energy ministers further extended the deadline to 2019 by which member countries were required to produce road-maps for transitioning their electricity supply industries towards cost-reflective tariffs by 2019 in an effort to improve the sustainability of the sector and create the basis for greater investment in new generation capacity by state utilities and independent power producers (IPPs).² Cost-reflective tariff designs send price signals to various stakeholders that lead to better decisions with respect to consumption, production and the expansion of networks.

To this effect and in accordance with the Electricity Act Chapter 433 of the Laws of Zambia, ZESCO on 22nd March 2019 issued notices to its consumers of its intention to adjust electricity tariffs and connection fees by a weighted average rate of 113 percent and 213 percent respectively. However, on 3rd May 2019, a pronouncement was made that Government suspended ZESCO's application after consultations with various stakeholders .

The question that begs answers is whether ZESCO's proposed tariff adjustment over the years is justified?

BACKGROUND TO COST REFLECTIVE TARIFFS IN ZAMBIA

First Cost of Service Study

The first cost of service study (CoSS) was conducted in 2006 with the **aim of determining the cost incurred by the country's vertically integrated electricity utility company called ZESCO in generating, transmitting, distributing and supplying power to various categories of consumers.** The key findings of the **study indicated that the electricity tariffs in Zambia were not cost reflective.** The findings further recommended an average increase of tariffs by 45.4 percent in the 2007/2008 financial year. With such a rise the residential customers would have carried the highest increase of the tariff at 147.6 percent, followed by large power customers at 46.3 percent while commercial and services customers increase would have been 2.4 percent and 6.3 percent respectively. The rationale after reaching cost reflective tariffs has always been that tariffs would be adjusted annually to account for changes in economic fundamentals such as inflation and exchange rate volatiles as the case is with petroleum pricing mechanism in Zambia. In the Petroleum sector, ERB reviews the retail prices of petroleum products every six weeks and each period is supposed to coincide with a new cargo of crude oil procured. As a rule, the ERB only adjusts the price if the cost margins escalate beyond 2.5 percent threshold⁴. Figure 1 on the right indicates that ZESCO had not made applications to vary its tariffs in some years even when economic fundamentals had arguably significantly changed in the said years. ZESCO has however made several tariff applications since the 2006 Cost of Service Study resulting in the ERB approving average tariff increases of 27 percent, 35 percent, 26 percent, 16 percent, 75 percent in 2008, 2009, 2010, 2014, 2017 respectively.³ The latest application to increase tariffs was made in March 2019.

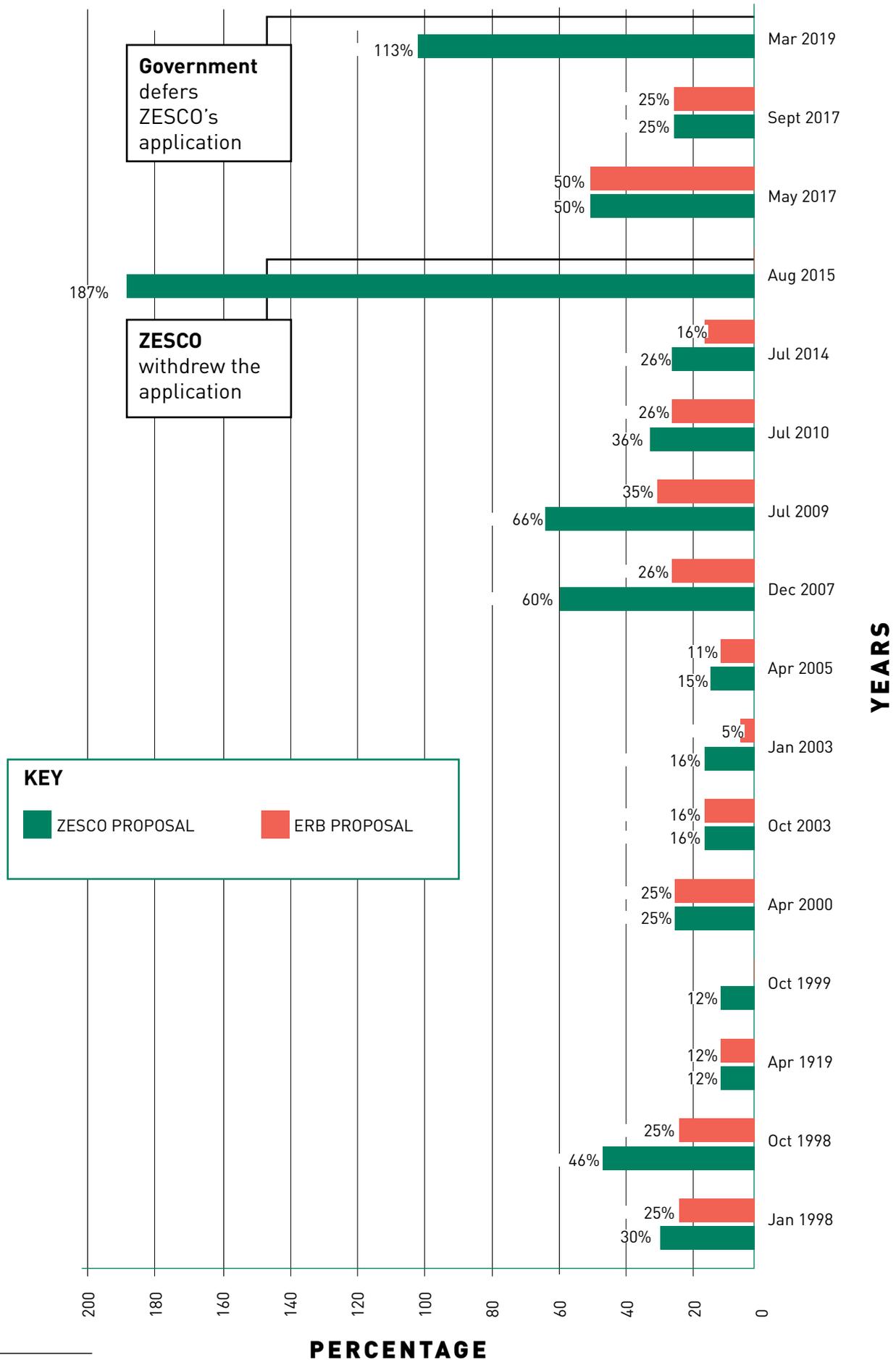
1. A cost reflective tariff is one which reflects the true cost of supplying electricity and removes the reliance on Government subsidies to cover the variance between the current tariff and the true cost of supply of electricity

2. Namibian Sun Newspaper, 'SADC Ministers Set 2019 for Cost-Reflective Tariffs', Namibian Sun Newspaper, 27 July 2015 <<https://www.namibiansun.com/news/sadc-ministers-set-2019-for-cost-reflective-tariffs>>.

3. Lusaka Times, 'President Lungu Directs Minister of Energy to Defer ZESCO Tariff review.' Lusaka Times, 4 May, 2019 <<https://www.lusakatimes.com/2019/05/04/president-lungu-directs-minister-of-energy-to-defer-zesco-tariffs-review/>>ity in the SADC Region-A Case Study of Zambia: (Livingstone: Annual Competition and Economic Conference, 2016) <[https://doi.org/10.3929/ethz-b-000238666](https://doi.org/https://doi.org/10.3929/ethz-b-000238666)>.

4. Deborah Bwalya and Lungisani Zulu, 'Cost Reflective Price Regulation of Petroleum: Case of Zambia'.

Figure 1: ZESCO's Tariff applications against ERB's approvals from 1998-2019



Source: Adapted by PMRC⁵

5. In 2015, following Government's decision to migrate to cost reflective tariff levels, ZESCO made an application to increase tariffs by a weighted average of 187% across all customer categories except the mines and exports but the application was withdrawn. For 2019 application ERB is yet to make its decision as the public consultation process is still going on.

Second Cost of Service Study

It must be noted that the 2006 study focused primarily on ZESCO which was at that time the producer and supplier of about 96% of the electricity consumed in the country. Significant changes have since taken place in the Electricity Sector in Zambia. There have been **new entrants into the sector, such as Independent Power Producers (IPPs)⁶, who have invested in power generation with associated higher generation costs.** By 2015 the average tariff ZESCO was paying to purchase power from IPPs ranged from USc 7/kWh to USc 13.23/kWh but the average end user tariff charged by ZESCO was USc 6/kWh⁷. There has also been a growing emphasis on developing the renewable energy resources of the country as stated in the Seventh National Development Plan. However, current electricity prices are well below both economic and financial costs. To this effect in 2017 ERB embarked the second cost of service study (CoSS) with funding from the African Development Bank (AfDB). One of the key tasks of the study was to determine the appropriate structure and level of tariffs for each consumer category.

A Cost of Service study was important to ensure that ZESCO's inefficiencies were not passed on to consumers. A more reason why the other key deliverable task of Cost of Service study focused on detailed review of ZESCO's cost structure by benchmarking with cost structure of similar efficient utilities with similar technical structure⁸. The study was going to be the basis on which to determine future tariffs adjustments for categories of consumers⁹. However, the cost of service study was suspended midway by the consultant and by the first quarter of 2019, ERB was still evaluating bids for a new consultant to undertake the Cost of Service study.

Without a CoSS, it therefore, implies that the **2019 proposed tariff hikes by ZESCO with a weighted average of 113 percent may suggest inaccuracies in arriving at the proposed new pricing. For any successful implementation of tariff hike that is widely acceptable by all stakeholders, the need for an independent Cost of Service study cannot be over emphasized.** Availing of all micro data on cost and operations by utilities to all stakeholders reduces resistance to tariff hikes and helps Government to make the right decisions. **Tariff designs should be characterized by transparency, predictability, efficiency, fairness, simplicity and lack of controversy¹⁰.**

ZAMBIA ELECTRICITY TARIFF NOT COST REFLECTIVE

Justification for Cost reflective Tariffs

Research evidence indicates that Zambia's electricity tariffs are not cost reflective. Members of the regional Southern African Development Community (SADC) to which Zambia belongs had agreed to migrate to cost-reflective tariffs by the end of 2019.

6. The following IPPs have recently joined the power sector; Itezhi-Tezhi Corporation Limited, Maamba Collieries Limited and Ndola Energy Company Limited.

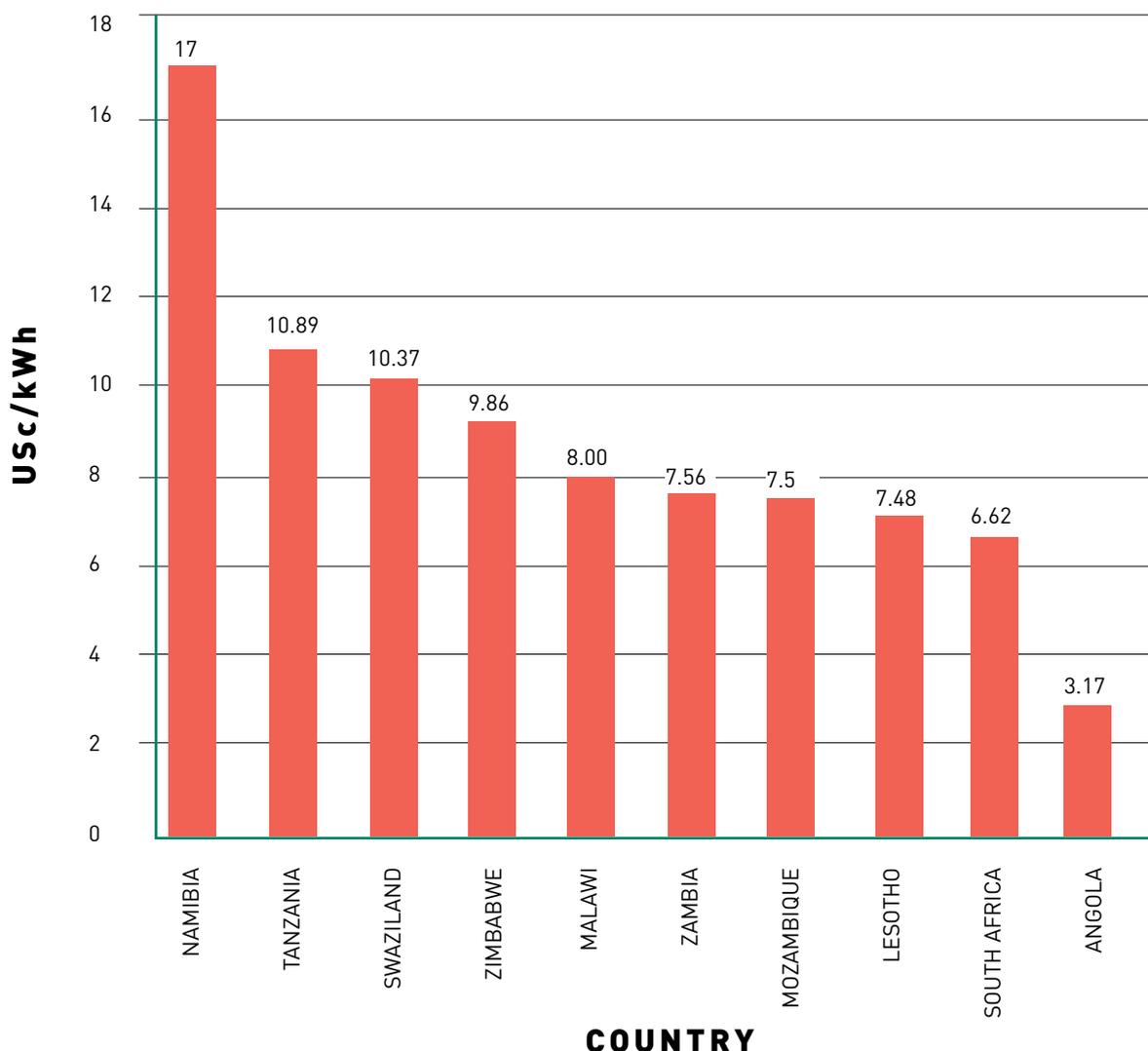
7. Sikwanda.

8. Energy Regulation Board, 'Terms of Reference for Electricity Cost of Service Study and Determination of Economic Cost Based Tariffs.', Energy Regulation Board Webpage, 2016 <<http://www.erb.org.zm/downloads/tor.pdf>>.

9. Energy Regulation Board, Energy Sector Report for 2017 (Lusaka, 2017).

10. Bwalya and Zulu

Figure 2: SADC Average Electricity Tariffs (US Cents/Kwh) as at December 2017



Source ERB,2017

Figure 2 shows that only two countries namely Namibia and Tanzania were cost reflective by 2013. The concern for the SADC is that only Namibia and Tanzania have successfully achieved cost reflective tariffs, **despite an earlier aspiration for all member States to meet the objective by 2013 leading an extension of the deadline to 2019.**

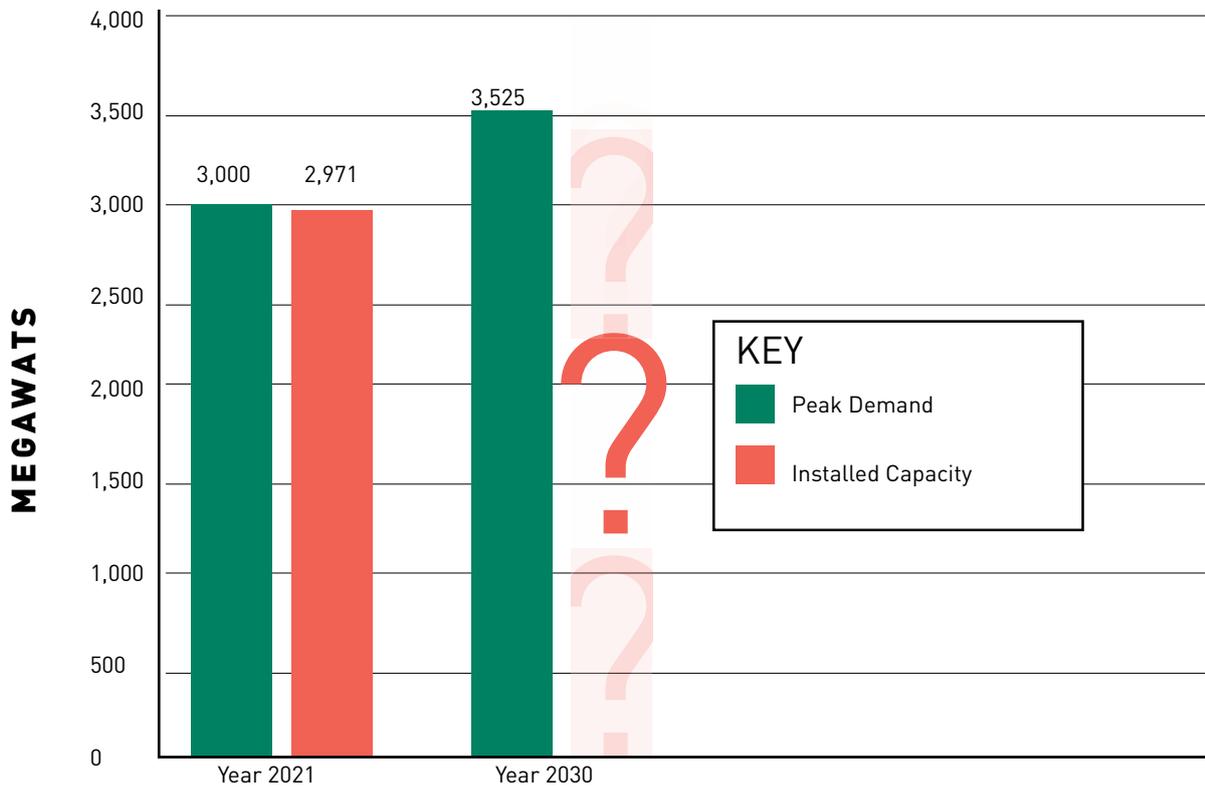
The case for cost reflective tariffs is also supported because energy plays a fundamental part in the economic growth process. More than three-quarters of the studies reviewed find a positive correlation between energy use and economic growth, and half the studies find a positive and significant causal link from energy use to economic growth¹¹. Energy use is either the cause or the facilitator of economic growth. To achieve economic growth and consequently, development, it is therefore of utmost importance for developing economies to stimulate growth in energy provision. In view of the structural problems facing Zambia and other developing nations, an influx of private and public investments will be instrumental in increasing the country's productive capacity source.

11. Commonwealth Development Corporation, What Are the Links between Power, Economic Growth and Job Creation?, 2016 <<https://assets.cdcgroup.com/wp-content/uploads/2016/01/25150848/Links-between-power-economic-growth-and-job-creation.pdf%0D>>.

Forecasted Electricity Demand on the Rise

Zambia's electricity demand was forecasted to be over 3000 megawatts in 2021 against an estimated installed capacity of 2971 megawatts in the same year. This demand is projected to continue rising in the subsequent years.

Figure 3: Zambia's Electricity Installed capacity vs Demand from 2021 to 2030



Source: compiled by author from ZESCO data,2017¹²

The differences in the projected demand for electricity and project installed capacity can be explained by the lack of investments in the sector despite Government's initiatives to deregulate this industry. This is largely due to low electricity tariffs prevailing. Therefore, there is need for cost reflective tariffs so that ZESCO and other IPPS can have an incentive to invest in the sector.

The deficit in the installed capacity has had some adverse effects on the economy. For instance, the country was forced to import power especially between 2014 to 2016. By July 2015, ZESCO had increased the extent of load shedding to at least eight (8) hours a day for the majority of its household, commercial and industrial consumers¹³. During which enterprises resorted to reducing their work outputs resulting in reduced turnover whilst incurring additional costs such as idle labor and overtime. Some enterprises suffered losses due to equipment damage and high replacement costs¹⁴.

12. ZESCO, Fourth Intergrated Report-Another Step Forward in Prompting Transparency in Corporate Reporting (Lusaka, 2017).

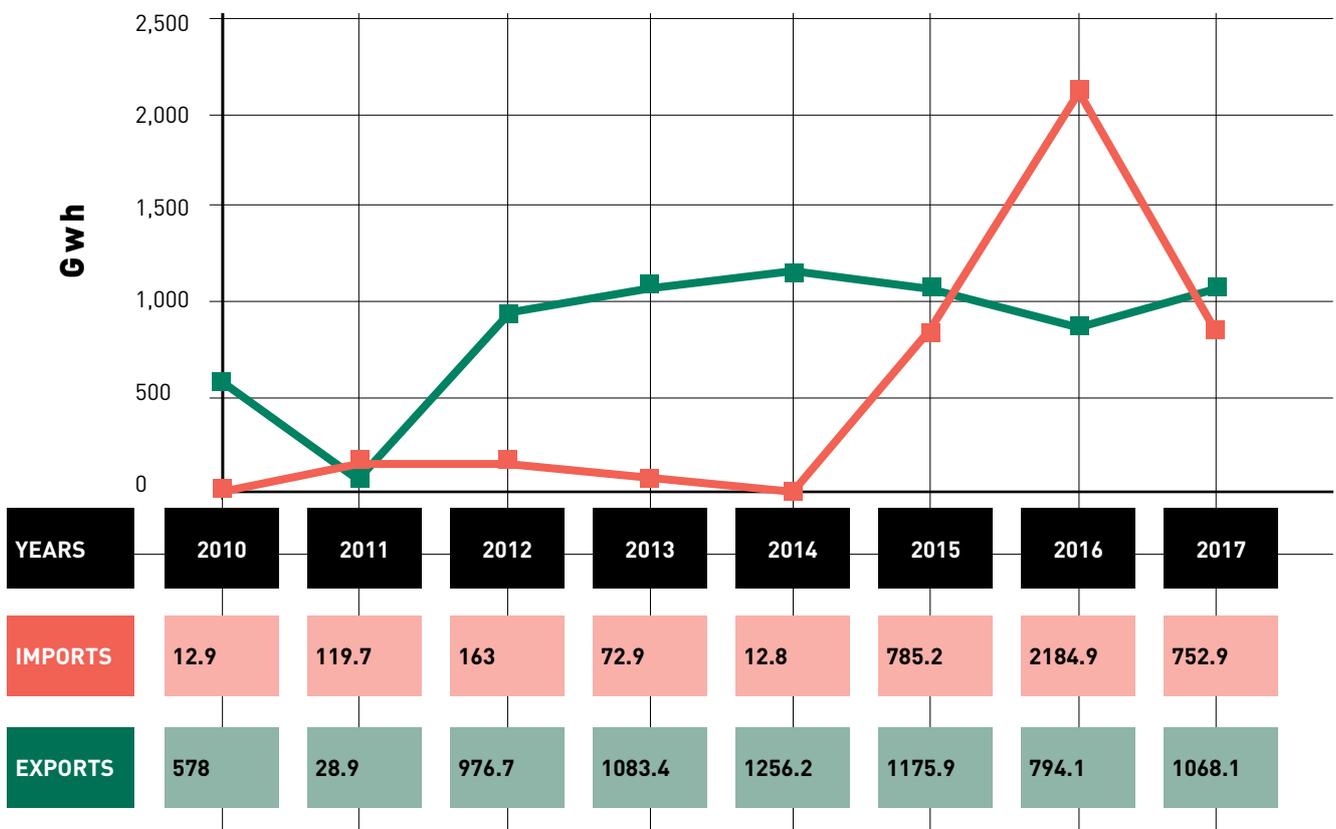
13. Alfred Mwila and others, Impact of Load Shedding on Small Scale Enterprises (Lusaka, 2017).

14. Mwila and others

ZESCO Still Engaged in Power Imports

Figure 4 indicates that ZESCO as a member of the Southern Africa Power Pool (SAPP) is still engaged in power trading, at least for the seven years before 2017, in order to balance the supply and demand on its network. Further, it is also committed to various trade protocols, such as Power Purchase/Supply Agreements, that obligates the utility to export and import as the case may be. **Cost reflective tariffs are thus inevitable to avert a scenario were ZESCO maybe importing power at a high rate then selling to its end user consumers at lower rate.**

Figure 4: Electricity imports and exports by ZESCO from 2010 to 2017



Source: ERB, Energy Sector Report 2017

CHALLENGES IN IMPLEMENTATION OF COST REFLECTIVE TARIFFS

Decreased Economic Activities

The implementation of cost reflective tariffs will affect different consumer categories differently. The increase in tariffs through the implementation of cost reflective tariffs may lead to **decrease in electricity use, which may lead to decreased economic activities as electricity use plays a role in one of input factors. It is therefore imperative that the implementation of cost reflective tariffs is phased to minimize the shocks to the economy. The small enterprises are the most affected mainly due to their lack of resilience and limited capacity to invest in alternative energy sources**¹⁵.

Implementation of cost reflective tariffs is also hindered by the competing expectations between low income consumers afford-ability and utility companies' desire to recover costs. Consumers expect to receive electricity at an affordable price, while utilities' argument is that "to provide a good reliable electricity, supply tariffs must be matched with costs". The rational approach, is for **Government to implement gradual movement towards cost-reflective tariffs in order to minimize the impact on poor households**¹⁶.

Rural Zambian Population still has less than 5 percent Electricity Access

Cost reflective tariffs risk derailing the goal of achieving 100 percent access to especially for the poor mainly in rural areas where access of rural population has only ranged between 2-5 percent since 1990 as indicated in Figure 5 on the next page. **National access to electricity averages at 27 percent with 62 percent of the urban and 3 percent of the rural population having access to power as of 2016**¹⁷. ZESCO on 22nd March 2019 issued notices to its consumers of its intention to adjust electricity connection fees with a weighted average rate of 213%. If this proposal is approved by ERB, access to electricity would be made worse for the rural population. Rural connections are costly compared to connecting a poor household in an urban area. There seems to be an inverse relationship between providing services to all and afford-ability at least in the short term. One **way of providing affordable services to the poor rural population could be through the provision of cross subsidies given the constrained fiscal space**¹⁸.

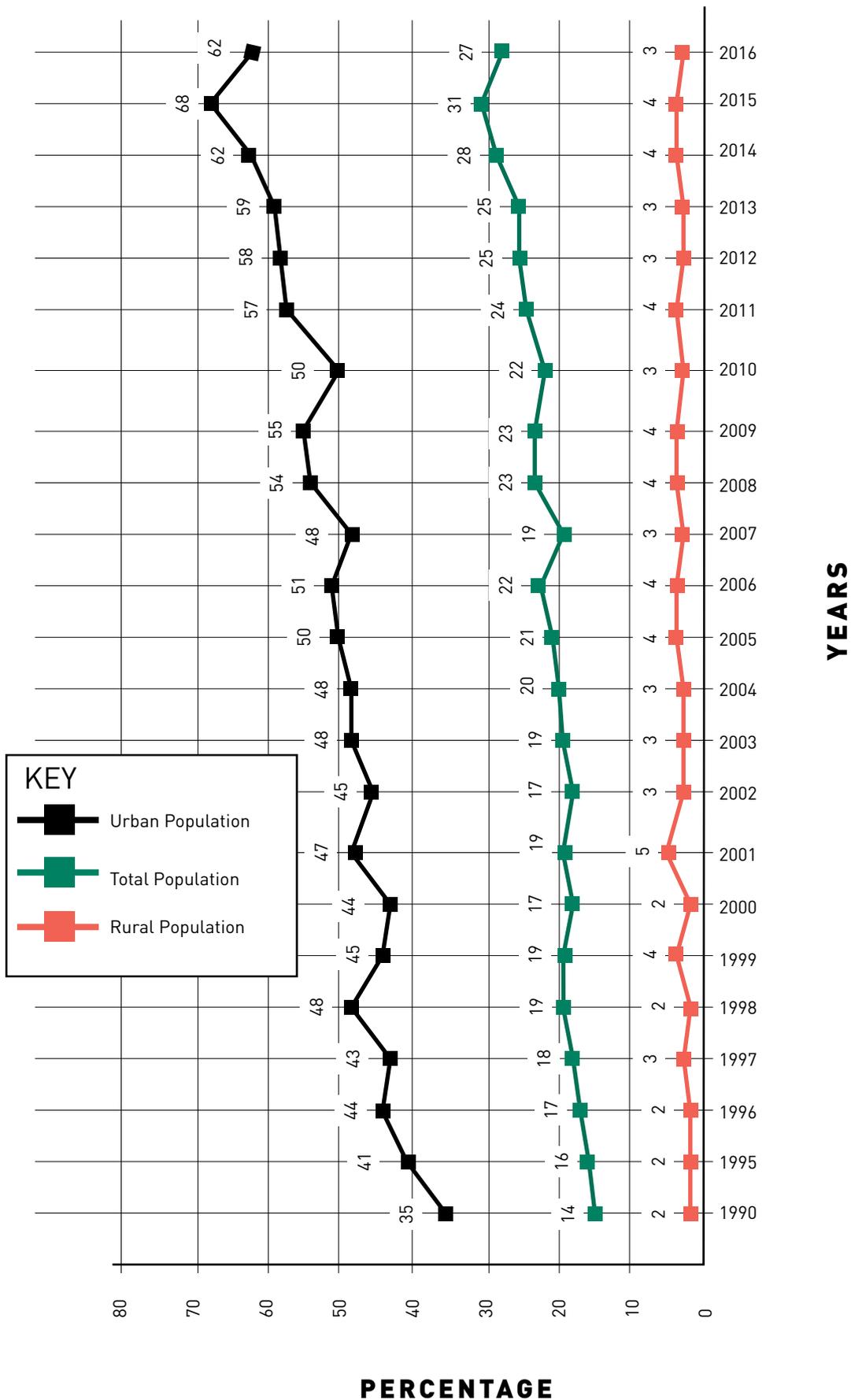
Politics and Public Resistance

In 2015, ZESCO also applied to increase tariffs by an average of 187 percent which was granted by ERB but later on reversed by the Government after public dissatisfaction. The trend has been the same in African countries such as Ghana, Tanzania and Nigeria with similar energy sectors structures.

15. Mwila and others.

16. Michael Maphosa and Patrick Mabuza, 'The Trade-Offs Between Pro-Poor and Cost-Reflective Tariffs in South Africa: A Regulatory Perspective', Journal of Economics and Behavioral Studies, 8.6 (2016), 206-15.

Figure 5: Access to electricity in Zambia (Total, Urban and Rural populations)



Source: Author's compilation from World Development indicators, 2019

CONCLUSION

The argument for the implementation of cost reflective tariffs are strong given the constrained Government resources owing to sluggish domestic and international economic activities. The Government cannot therefore afford to continue subsidizing electricity consumption especially to commercial and industrial entities that have the means to pay.

Even with the implementation of cost reflective tariffs, the **Government should ensure that the welfare of the poor citizen people is always taken care of by retaining the lifeline tariffs as well as the provision of cross subsidies regarding connection fees for the poor households if the universal access to electricity should be achieved in Zambia.** Government should also be wary of challenges that come with implementation of cost reflective tariffs in reversing efforts of ensuring universal access to electricity by all Zambians especially **in rural areas were less than 5 percent of the population has access to electricity.** The Government should be wary of possible public resistance to hiked tariffs as witnessed in neighboring countries. To avert this, timing of implementing such crucial policy decisions is key; preferably, way before elections when most decisions are made on the basis of appeasing the electorate.

Key Government policy documents, including Vision 2030, Seventh National Development Plans and National Energy Policy allude to the importance of harnessing other renewable energy resources to meet the country's growing energy needs. **PMRC further urges Government to formulate a "renewable energy policy" to provide for strategies and targets that would develop the renewable energy sub sector. The implementation of cost reflective tariffs should be done in a phased manner to ensure minimal distortions to the economic activities. Consequently, citizens and commercial enterprises will be willing to pay stated tariff price.**

17. World Bank Group, World Development Indicators, 2019.

18. Maphosa and Mabuza.

KEY RECOMMENDATIONS

1. An industry-wide Cost of Service study which was commissioned in 2017 but has since been suspended after the contract with the consultant was terminated due to poor performance. Without a CoSS, electricity tariff adjustment suspension by the Government is a welcome move and provides an opportunity for all stakeholders to resolve the concerns raised. However, Government through ERB needs to expedite the process of selecting a new consultant to embark on the cost of service as soon as possible.
2. Government should ensure that capacity is built among the locals in carrying out CoSS so that subsequent Cost of Service studies are done by Zambians. Besides ERB staff, additional personnel from key relevant stakeholders should be recruited in the study technical team to work with the consultant.
3. ZESCO needs to periodically publish its costs for public and stakeholder scrutiny to enhance appreciation of its cost structure and operations. ZESCO's increased revenue translates into significant increase in generation, transmission and distribution expansions visible to all stakeholders.
4. Government should continue exploring measures to restructure the vertically integrated ZESCO's business model if the utility company is to be sustainable by possibly unbundling it into separate business units namely; generation, transmission and distribution.
5. There is need to enhance planning, research and development (R&D) units at both Ministry of Energy and ZESCO to continue exploring least cost electricity expansion plans and integrated resource planning for the country.
6. Government needs to consider that cross subsidies for connection fees for low income groups are borne by other customers (industrial or commercial customers) to ensure that access to electricity by the poor is guaranteed to minimize the economic shocks of cost reflective tariffs. Government should also consider implementation of cost reflective tariffs in a phased manner.
7. Government must formulate a "renewable energy policy" to provide for strategies and targets that would develop the renewable energy sub sector and implementation of Renewable Energy Feed-in Tariff (REFIT). REFIT refers to schemes designed to provide certainty to renewable electricity generators by providing them with a minimum price for each unit of electricity exported to the grid over a 15-year period.

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Unlocking Zambia's Potential

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