



Republic of Zambia

**GOVERNMENT GREEN PAPER ON THE
FINDINGS AND RECOMMENDATIONS OF THE
2021 ELECTRICITY COST OF SERVICE STUDY**

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1. INTRODUCTION AND BACKGROUND

The 2021 Electricity Sector Cost of Service study (COSS) commenced in December 2019 and was undertaken by the Energy Market and Regulatory Consultants (EMRC) of the United Kingdom, an independent consultant, with financing from the African Development Bank (AfDB) at the cost of US \$ 592,000. The study was concluded in December 2021.

The aim of the Study was to determine the Zambian power system's full cost of electricity supply and in turn determine the appropriate tariff levels that would enable the power utility companies improve their service and meet the growing demand. This considered efficient operating costs and prudent investment while providing for an appropriate return on assets.

This paper has two components. The first component highlights the findings of the Cost of Service Study (CoSS) from the consultants and also gives a proposed Government position on each of the findings. The second component highlights the policy considerations and tariff setting principles for migrating towards cost reflective electricity tariffs.

The purpose of this Paper is, therefore, to get comments from stakeholders on:

- (i) Government Position on the 2021 Electricity Cost of Service Study findings and recommendations; and
- (ii) Policy considerations and tariff setting principles.

2. KEY FINDINGS AND RECOMMENDATIONS FROM THE CONSULTANT AND PROPOSED GOVERNMENT POSITION

The following section provides key findings and recommendations of the study as well as Government's position on each of the seven (7) key areas of the COSS relating to load-forecast, least cost investment plans, economic tariffs, lifeline tariffs, financial position of ZESCO and other companies in the sector, the tariff adjustment methodology and the tariff migration plan.

2.1. STUDY FINDING: LOAD FORECAST (2020 – 2040)

The COSS projected that peak electricity demand will increase by 95 percent from 2,143 MW in 2020 to 4,169 MW in 2040. This demand would be largely driven by residential customers, with a projected growth rate of 1.3 percent annually. The Current generation is not sufficient and would require additional

investment in generation and transmission to meet the projected demand over this period.

Government Position

Government accepts the recommendation of the COSS that the projected demand will increase over the period 2020 – 2040. However this load forecast will be updated to account for among other priorities, the New Dawn Government's desire to attain universal access to electricity; stimulate agricultural production; support industrial development; achieve copper production of 3 million tonnes over the next decade and establish Zambia as a hub for electricity trade. With these assumptions, recent projections show that the peak demand is estimated at 8,000 Mega Watts (MW) by 2030 and about 10, 000 MW by 2040. This is a tremendous increase from the projections of the Cost of Service Study.

Therefore, national load forecast demand is envisaged to be driven by the mining and agriculture demand not necessarily residential customers.

2.2. STUDY FINDING: LEAST COST EXPANSION PLANS

The COSS projected that the Country will require a total of US\$ 14.0 billion worth of investment to meet the projected demand by 2040. This investment is broken down as follows:

- 1) Generation (US\$ 9.4 billion);
- 2) Transmission (US\$ 2.7 billion); and
- 3) Distribution (US\$ 1.9 billion).

Government Position

Government accepts the recommendation that additional investment, at as low a cost as possible is required to increase electricity generation, transmission and distribution. The CoSS assumptions on the development of least cost plan have been overtaken by Government's ambitions to implement an ambitious energy investment plan that takes into account effects of climate change and environmental impacts with the view to enhance energy security and increase access to affordable electricity services.

In this regard, Government has developed an Integrated Resource Plan that takes into account the envisaged production of 3 million tonnes of copper in the next 10 years, increased regional demand and enhanced energy mix. The results from the 30-year (2022 – 2052) Integrated Resource Plan (IRP) for the

electricity sector shows that to meet the projected demand of about 8,000MW by 2030, the country requires approximately US\$10.78 billion of investments in generation, transmission and distribution. In addition, Government will promote investments in electrification initiatives, including off-grid systems at an estimated cost of US\$ 2.93 billion to achieve universal access.

Further, Government will endeavour to create an enabling environment to attract investment from private sector and cooperating partners, including climate finance, in expansion of generation, transmission and distribution infrastructure in response to the envisaged growth in energy demand in the medium term.

2.3. STUDY FINDING: ECONOMIC TARIFFS

The Cost of Service study has determined the revenue requirement for ZESCO based on marginal revenue for a 5-year period. The Revenue Requirements ranges from US \$1.2 billion to US \$1.4 billion annually. Maintaining the current tariffs will not yield the desired revenue requirements.

Therefore, the COSS determined that economic tariffs should increase by an average of 17 percent over the next five years. The study places a heavier tariff burden on residential customers and subsequently reduces electricity tariffs for Maximum Demand and Power Purchase Agreement (PPA) customers. The study also determined the cost reflective tariffs at each voltage level including generation, transmission and distribution tariffs.

Moreover, the national demand is envisaged to be driven by the mining and agriculture demand not necessarily by residential customers.

Government Position

While Government agrees with the principle of migration to cost reflectivity, Government, however, does not support the study recommendation which places a heavier tariff burden on residential customers and subsequently reduces electricity tariffs for Maximum Demand and Power Purchase Agreement (PPA) customers.

In this regard, Government will ensure that there is a reasonable balance between social and economic considerations in the tariff-cost allocation methodology to support different sectors towards economic recovery. Government will also ensure that cost allocation to various customer categories does not affect ZESCO and other utilities' financial sustainability and that the desired revenue requirements will be attained at all times.

Additionally, Government will take advantage of the positive economic outlook in the medium to long term, and ensure that the benefits of the

resulting macro-economic stability trickles down to the end users, including electricity consumers.

The proposed adjustment in tariffs, if need be, will be determined by the Energy Regulation Board, taking into consideration the prevailing socio-economic fundamentals.

2.4. STUDY FINDING: LIFE-LINE TARIFF

The Study has proposed a reduction in the lifeline tariff band to 0-50 kWh/month from the current 0-100 kWh/month, in line with regional benchmarks. The study further proposed that the difference between the lifeline tariff and the cost reflective residential tariff will be met by the residential customers consuming above the lifeline band.

Government Position

A lifeline tariff is a subsidised electricity tariff intended to provide relief to vulnerable customers with limited means. Therefore, the recommendation to reduce the life line tariff band from 0–100 kWh/month to 0–50 kWh per/month is at variance with Government's desire to cushion vulnerable groups in the economy. The life-line tariff will be reviewed by the Regulator from time to time to respond to changes in socio-economic fundamentals of the country.

The Government's policy on the lifeline tariff will ensure achievement of universal access to affordable and sustainable electricity services for all citizens in line with the 8th National Development Plan. In addition to this, Government will continue to provide a conducive policy environment to attract alternative means of electricity supply, such as investments in renewable energy and off-grid systems.

2.5. STUDY FINDING: FINANCIAL POSITION OF ZESCO AND OTHER COMPANIES IN THE SECTOR

The Study found that ZESCO's financial position needs urgent intervention, while the performance of other companies in the sector was generally favourable as exhibited by their good financial health.

Government position

Government has accepted the recommendation. In this regard, Government will ensure that ZESCO implements its 10-year rolling strategic Plan that covers the period 2022 to 2032.

In this strategy, Government will ensure that the utility company undertakes the following measures:

- i. Debt Management: debt relief to boost liquidity and long-term debt restructuring;
- ii. Enhancement of Revenue Management: including renegotiating Independent Power Producer (IPP) tariffs and improve the debt collection rates;
- iii. Cost optimization: increasing efficiency and reducing operating costs throughout the entire value chain; and
- iv. Operational Stability: improve security of supply and service delivery as well as improve supply chain management.

2.6. STUDY FINDING: TARIFF ADJUSTMENT METHODOLOGY

The study recommended that the tariff adjustment methodology should move from financial based tariffs to an incentive-based regime. Further, it is based on productive efficiency and cost reflectivity.

Further, the COSS recommended that during each tariff period, automatic adjustments are implemented to update tariff charges as a result of changes to non-manageable factors such as: inflation, exchange rate, hydrology (fuel expenses), etc.

Government Position

Government notes the recommendation for adopting an economic approach with an incentive-based regime as well as adoption of a multi-year tariff adjustment framework that will make the tariff framework predictable and responsive to market dynamics. Incentive Based Regulation, which is already provided for in the Electricity Act No.11 of 2019, involves a transition from financial based tariffs to economic based tariffs. It ensures that only prudent and justified costs are carried by the tariff and that consumers only pay for tariffs that are considered efficient.

This framework for implementing the multi-year tariff setting has built in incentives to improve efficiency of regulated utilities and gives greater transparency and predictability for both customers and suppliers of power. The regulator, Energy Regulation Board, will provide guidance on the implementation of the application of the multi-year tariff framework by end of December 2022.

2.7. STUDY FINDING: TARIFF MIGRATION PLAN

The Study recommended two (2) migration paths for implementation of the tariff migration:

- i. Front-load the tariff increase to the extent of 70 percent in the first year (2022) and spread the balance of 30 percent over four years (2023 to 2026); or
- ii. Evenly spread the tariff over the five-year period.

Government Position

Government accepts the recommendation and in particular option (ii) is preferred, that is, to evenly spread the upward tariff adjustment over a period of five (5) years. The implementation modalities will be guided by the Energy Regulation Board (ERB).

3. POLICY CONSIDERATIONS AND TARIFF SETTING PRINCIPLES FOR MIGRATING TOWARDS COST REFLECTIVE TARIFFS

Government recognises and appreciates the thoroughness and rigour with which the cost of service study was conducted. The study report may be used as a basis on which tariff review and setting in the Zambian electricity supply industry can be based. However, the recommendations will be applied by taking into consideration the following policy considerations and tariff setting principles highlighted in section 3.1 and 3.2 below.

3.1. POLICY CONSIDERATIONS

Government will ensure that Tariff design is aligned to government's vision and policy aspirations as follows:

- a. Gradual migration to Cost Reflective Tariffs and improve Sector/ZESCO's financial sustainability;
- b. Attract private investment into energy infrastructure development to meet future demand using least cost approaches;
- c. Attain universal access to clean, affordable and reliable energy and support socio-economic development; and

- d. Enhance energy security and position the Country as a net-exporter/Regional trading hub.

3.2. TARIFF SETTING PRINCIPLES

Government will ensure that the following principles are considered in the tariff setting methodology by the Energy Regulation Board:

- a. Ensure that cost-reflective tariff rates are achieved while ensuring that affordability and social equity policies are taken into account;
- b. Ensure protection of the vulnerable through the continued provision of a lifeline tariff band at an affordable level;
- c. The pricing of the tariffs should be flexible enough to support different sectors of the economy;
- d. Ensure transparency and full disclosure of the tariff-setting methodology applied, including public consultations where necessary;
- e. Assess and, as needed, revise the Allowed Revenue Requirement (ARR) at the beginning of each tariff period to recover ZESCO costs of efficient operations in each regulated segment of the electricity supply chain, debt service costs, and external costs to factor for recent and expected changes;
- f. Provide for adjustment of tariffs on a periodic basis to allow for pass-through of significant non-controllable changes in fuel prices, inflation, and exchange rates. Changes to costs associated with Power Purchase Agreements (PPA) or power bought on the open market from a competitive generation company should be fully passed through to consumers;
- g. In consideration of ZESCO's needs to meet operating expenses and debt service obligations, consider temporarily zero-rating the return on assets in the computation of Allowed Revenue Requirement until tariff shortfalls are eliminated and ZESCO is no longer dependent on support from Government to fund such costs;

- h. Maximize concessional financing for network (transmission and distribution) rehabilitation and extension, as well as electrification to reduce the cost of capital in the computation of the Allowed Revenue Return. This will be implemented as part of the Company's 10-year strategic rolling plan with the view to promote its contribution to economic growth, increase access to sustainable electricity services and contribute to reducing Zambia's carbon footprint by reducing dependency on wood fuel;
- i. Ensure recovery of the Allowed Revenue Return as per forecast demand (energy consumption, peak demand, and the number of consumers) over the whole tariff setting period;
- j. Implement uniform tariffs for all non-PPA consumers in the same tariff category throughout the service area countrywide; and
- k. Determine a trajectory towards application of cost-reflective tariff rates to all consumers able to pay them that is as gradual as possible within the specified timeframe.

4. CONCLUSION

Attaining cost reflectivity in the electricity subsector remains a major priority for Government of attracting investment and to achieve universal access to affordable and sustainable electricity services for all citizens in line with the 8th National Development Plan. This will be done through a multi-year migration plan taking into account socio-economic factors. The adjustments to be effected will be communicated to the public by the Energy Regulation Board, in line with the Electricity Act No. 11 of 2019, and following the outcome of these consultations.