ZESCO

Powering the Nation & the Region

Title: Tariff Application to Energy Regulation Board.

Date: September 2022

This document was prepared according to the Energy Regulation Board Electricity Tariff Filing Guidelines of March 2011

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ZESCO LIMITED

TARIFF FILING FOR THE FINANCIAL YEAR 2022

SCHEDULE A: SUMMARY OF FILING

1 INTRODUCTION

The Electricity Act No.11 of 2019 of the Laws of Zambia stipulates that ZESCO Limited should apply to the Energy Regulation Board (ERB) for annual tariff adjustments. ZESCO Limited is hereby taking the opportunity to apply for tariff adjustments for the years 2023 to 2027 that consider the impact of the previous tariff adjustments and changes in the variables that affect the cost of Generation, Transmission, Distribution and Supply of electricity in Zambia. This application for tariff adjustment has been prepared in compliance with the ERB's Tariff Filing Guidelines for Electricity Utilities.

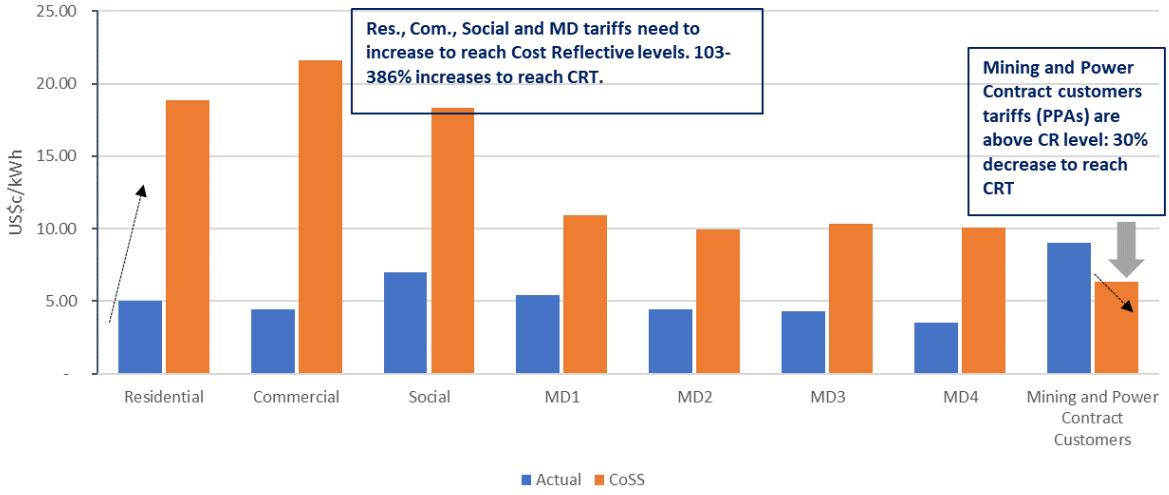
1.1 REASONS FOR APPLICATION

ZESCO Limited is currently financially unsustainable due to price disparity between the cost of electricity purchases from Independent Power Producers (IPPs) which averages US$11 cents and the price at which the end users buy the power from ZESCO Limited which averages US$7cents. This price differential has resulted in the; accumulation of debt to IPPs, rise in the corporation's debt servicing obligations and reduced revenue for investment and operations.

Further, the application is made in line with outcomes of the Cost of Service Study (CoSS) which include determination of economic cost of supply, structure and level of tariffs, glide path in revision of tariffs to cost reflectivity, assessment of reasonableness of ZESCO's costs and variation of certain tariff structures. The CoSS provides a basis for setting consumer electricity tariffs for all customer categories to promote efficiency of electricity supply, and consumption, and to ensure financial viability of the electricity sector, while considering social and equity considerations in the pricing of electricity to poor households.

A comparison of the average cost reflective tariffs from the CoSS, and the current average tariffs is shown in Figure 1 below. It can be observed that CoSS tariff recommendations are significantly higher than the current Residential, Commercial, and Social tariffs while the CoSS Mining and Power Contract Customer tariffs are lower than the tariffs.

Figure 1: Comparison between CoSS tariffs and Actual tariffs.

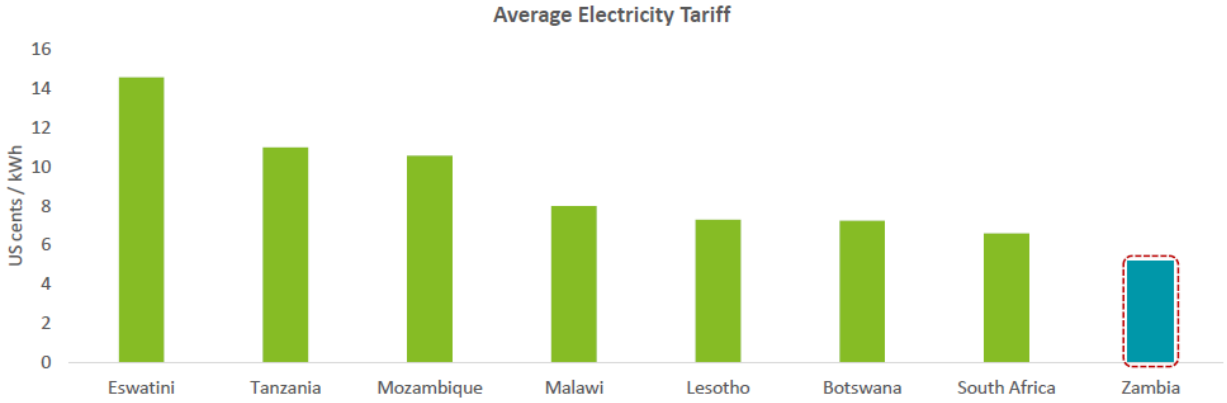


According to the 2019 Southern African Power Pool (SAPP) annual report, ZESCO Limited's tariffs in comparison selected SAPP countries in the region indicated that it had the lowest tariffs. The figure below, shows ZESCO Limited's tariff performance with other utilities in the region.

Figure 2: Average Tariff SAPP

Average Electricity Tariffs in the benchmarked SAPP nations

On the basis of the SAPP Annual report 2019, Zambia has the lowest average electricity tariffs among all the SAPP nations.

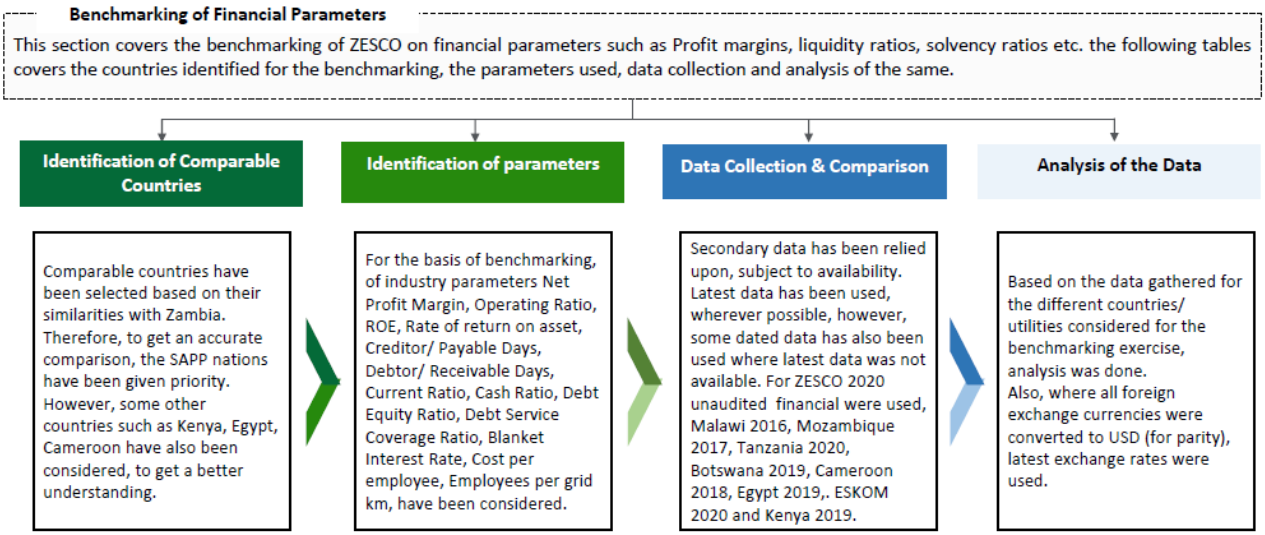


- As per SAPP Annual Report 2019, Zambia's (utilities including ZESCO, CEC and LHPC) average electricity tariff is lowest among the SAPP nations.
- The non cost reflective tariffs is one of the major reasons why Zambia's average electricity tariff is the lowest among the SAPP nations.

1.1.1 Benchmarking of Financial Parameters

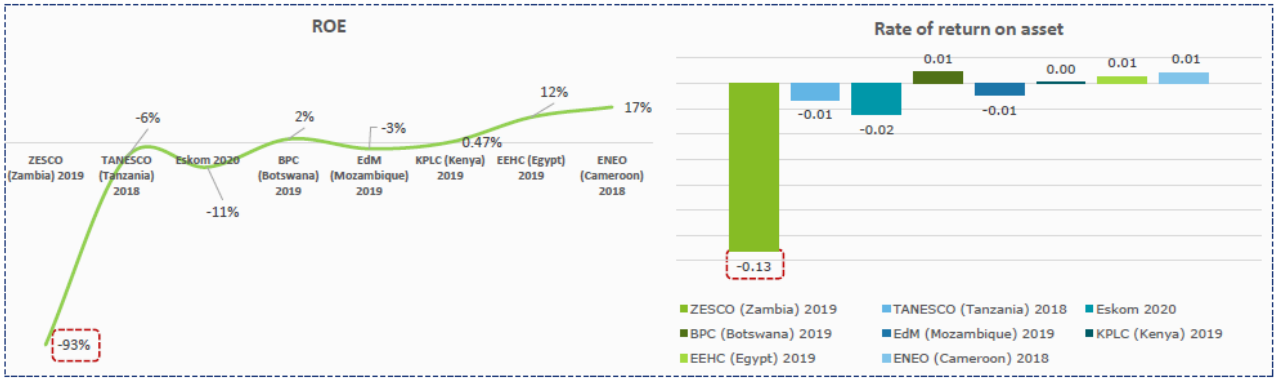
Deloitte Touché Tohmatsu conducted a benchmark on the financial parameters with comparable countries within Africa, the results from the study were as shown in the tables and charts below:

Figure 3: Benchmark [Source: Deloitte Touché Tohmatsu]



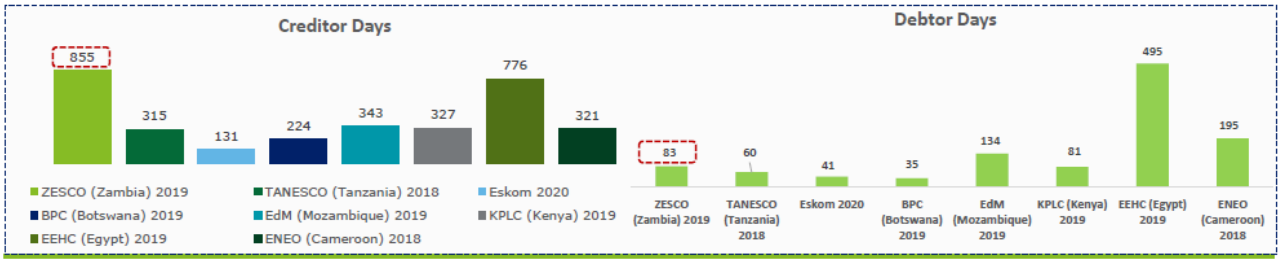
The study observed that ZESCO's return on asset (ROA) was lower than other benchmarked utilities, this firmly supports the reason why ZESCO is applying for tariff adjustments.

Figure 4: Return on Asset [Source: Deloitte Touché Tohmatsu]



The study further found out that ZESCO's payable days were almost three times higher than other benchmarked utilities, indicating the inability to pay off its short-term liabilities.

Figure 5: Working Capital days [Source: Deloitte Touché Tohmatsu]



Additionally, changes in the macroeconomic environment have escalated the cost of electricity Generation, Transmission, Distribution and Supply and ZESCO is thus applying for a weighted average retail tariff adjustment (excluding Mining and Exports) of 37% in the year 2023. This adjustment will enable ZESCO Limited to migrate towards cost reflective tariffs as proposed in the five-year glide path below.

Table 1: Tariff Glidepath 2023- 2027

Description	**2023**	**2024**	**2025**	**2026**	**2027**
Revenue [ZMW000]	21,447,995	24,094,512	27,736,368	31,318,312	35,657,441
ZMW/kWh [Weighted Average Retail]	1.15	1.25	1.44	1.59	1.81
% Change	37	9	15	10	14
Net Profit Margin %	5.2	4.3	7.3	8.0	13.1

Description	**2023**	**2024**	**2025**	**2026**	**2027**
Revenue [US$'000]	1,299,878	1,460,273	1,680,992	1,898,080	2,161,057
US$c/kWh [Weighted Average Retail]	6.98	7.61	8.75	9.64	10.95

The foreign currency Exchange rate used in the Pricing Model is ZMW16.50/USD

1.2 FACTORS CONSIDERED IN TARIFF APPLICATION

In seeking a tariff adjustment, the following factors have been taken into consideration:

- The current unstainable trajectory of ZESCO Limited (the details focusing on the financial challenges including debt)
- The achievement of Strategy Plan 2022 – 2031 objectives.
- Prevailing Economic Conditions.
- Changes in the Cost of Generating, Transmitting, Distributing and Supplying Electricity.
- Rising Cost of Electricity Purchases.
- System and Customer Base Expansion.
- Social impact of the tariff adjustment.

These factors were selected due to the impact that they have on the performance of the company and are discussed in detail below:

1.2.1 PREVAILING ECONOMIC CONDITIONS

1.2.1.1 Overview of Changes in the Global Economy

The IMF in the July 2022 World Economic outlook report indicated a global growth of 6.1 % in 2021 and forecasted a year end growth of 3.2% for 2022 and expects a moderate growth of 2.9 % in 2023. A tentative recovery in 2021 has been followed by increasingly gloomy developments in 2022 as risks begin to materialise. The downside risks include, the downturn in China and Russia, new surgency of Covid -19 outbreaks and lockdowns in China and the further negative cross-border effects from the war in Ukraine.

Global economic output contracted in the second quarter of 2022 due to several shocks that hit a world economy already affected by the pandemic. These included the negative spill overs from the war in Ukraine and higher than expected inflation world- wide which triggered tighter financial conditions and increases in world prices of food and energy.

Further, global economic growth is expected to slow down to 2.9% in 2023 due to weaker prospects for growth in major economies, lingering supply disruptions as a result of the negative effects of the war in Ukraine, higher than expected inflation rates and tighter global financial conditions which could induce distress in the emerging markets and developing countries.

1.2.1.2 Overview of Changes in Sub Saharan Africa

According to the IMF July 2022 economic outlook report, the economic recovery in sub-Saharan Africa surpassed expectations in the second half of 2021, prompting a significant upward revision in the year's estimated growth from 3.7% to 4.5%.

However, the growth momentum for the region weakened to 3.8% for the year 2022. The gained progress in 2021 has been jeopardized by the Russian invasion of Ukraine which has triggered a global economic shock that is hitting the region at a time when countries' policy response is minimal. Most notably, surging oil and food prices are straining the external and fiscal balances of commodity-importing countries and have increased food security concerns in the region.

However, the outlook for 2022 and 2023 looks largely unchanged as IMF predicts that sub-Saharan Africa's growth will only increase by 0.2% to 4.0% over the medium term due to accelerated Covid – 19 vaccinations coupled with decisive policy action governments are undertaking for economic recovery.

The slowdown in the growth rate is attributed to the accelerated pace of climate change, according to the IMF. There has been increased incidences of extreme weather patterns ranging from droughts to cyclones threatening food security, businesses, hydro-electricity generation and affecting livelihoods across the continent.

1.2.1.3 Overview of Changes in the Zambian Economy

The economy grew by 3.6% in 2021 from negative growth of 2.8% in 2020 underpinned by recovery in the mining, tourism, and manufacturing sectors. The economy grew by 2.4 % in the first Quarter of 2022 compared to a growth of 1.8 % in the corresponding quarter of 2021. The recovery in international demand and copper prices have been positive developments, while a reduction in COVID–19 cases has boosted activity both in manufacturing and tourism. However, 2022 started on a slow note with 2.0% growth attributed to the world economic shocks emanating from Russian- Ukraine war and geopolitical tension.

The continuation of the Russia-Ukraine conflict has dimmed the prospects for growth and recovery in 2022 as general commodity prices have risen thereby causing supply disruptions particularly to cross border and international trade.

Additionally, the Zambian government is grappling with debt service obligations that have resulted in substantial amounts of its revenue meant to support social economic activities being dedicated towards debt servicing. This poses additional risks to growth prospects and limits Government's fiscal space. The official figures from the Ministry of Finance show that Zambia's total external debt burden stood at US$31.7 billion at the end of December 2021.

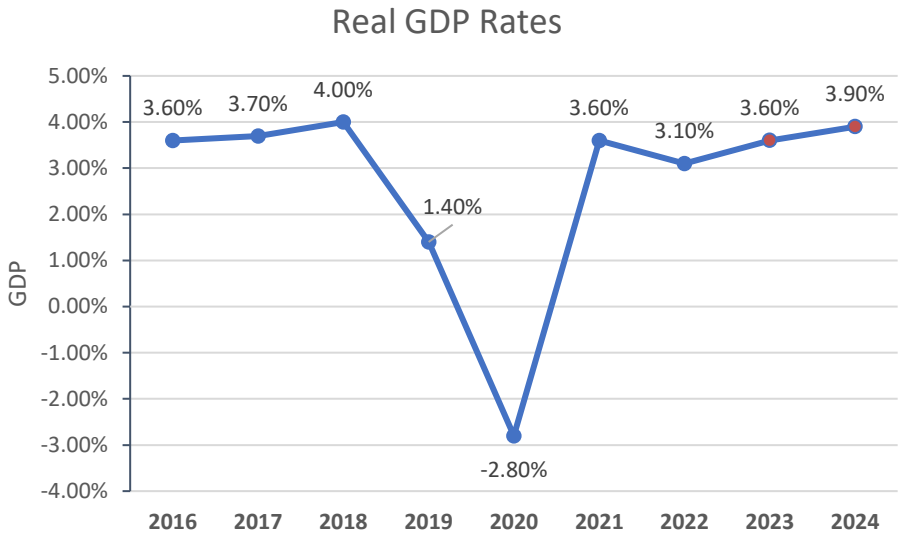
According to the Mid-year Budget and Economic Performance 2022 report, the external debt amounted to US$13.25 billion while the domestic debt position stood at ZMW203.3 billion as at end of June 2022. The Minister of Finance in his 2022 budget address indicated that the current debt levels were unsustainable and without action, would lead to further deterioration of economic conditions. A support programme from the IMF and the signing of the Debt Service Suspension Initiative (DSSI) with the Paris Club and G20 creditor countries and Intesa Sanpaolo is expected to increase Government's fiscal space and provide the much-needed social spending to improve socio-economic conditions and spur economic activity. Following the Staff Level Agreement between Government and the International Monetary Fund (IMF) reached in December 2021, Zambia has since been granted the Extended Credit Facility (ECF) by the IMF board.

1.2.1.3.1 Domestic Economic Performance

I. Gross Domestic Product

The GDP is expected to grow by 3.1% in 2022, 3.6% in 2023, and 3.9% in 2024.The financial and insurance, information and communication, wholesale and retail trade, education as well as mining sectors are expected to drive growth over the period.

Figure 6: Real GDP rates

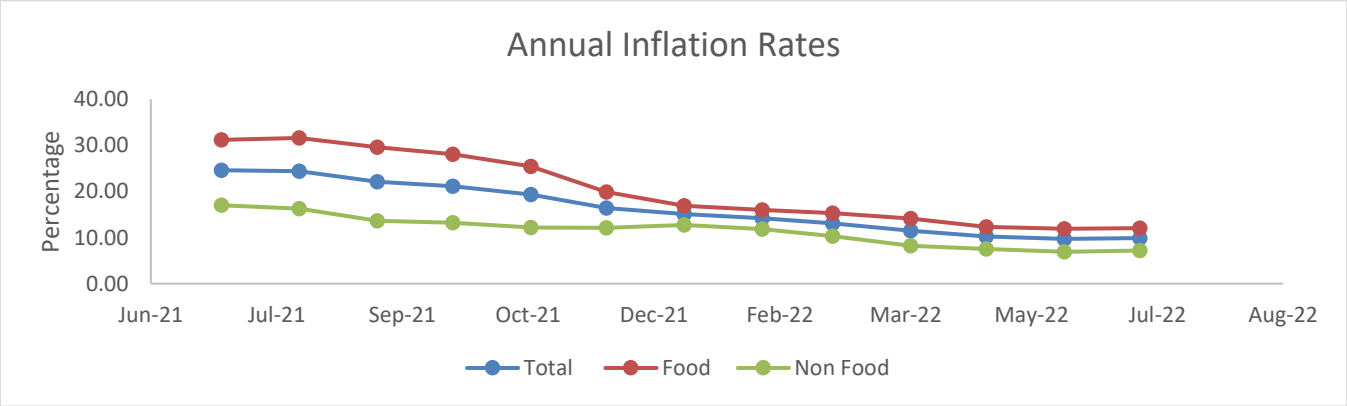


Source: Bank of Zambia

II. Inflation Rate

Annual overall inflation continued to trend downwards in the first quarter of 2022, declining to 14.1 % from 18.9 in the last quarter of 2021. As at August 2022, the inflation rate had reduced to 9.8%. The fall in inflation was mainly due to the slowdown in food and non-food prices. This downward trend is expected to continue with a forecast average of 10.5 % at year end and then a moderate reduction to 8.1 % in 2023 according to the Monetary Policy Committee (MPC) of the Bank of Zambia. Underlying this projection are mainly the catalytic benefits of securing an IMF programme that will facilitate access to budget support, reduction of the external debt burden through restructuring, structural reforms and the Eighth National Development Plan, and the positive impact of higher copper prices that will shore up the exchange rate. The figure below highlights the annual inflation rates from June 2021 and June 2022.

Figure 7: Annual Inflation Rates

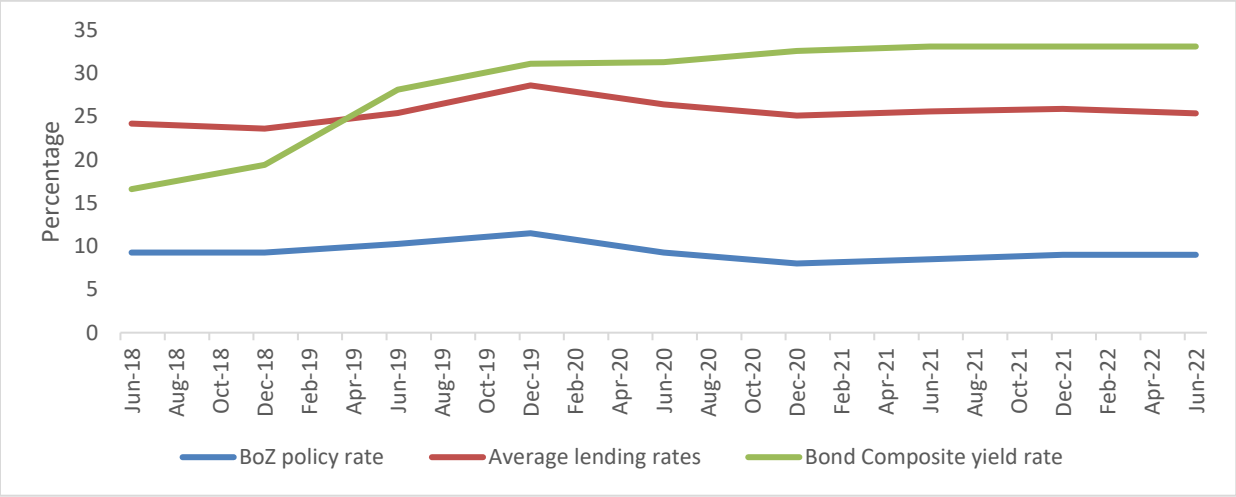


Source: Zambia Statistics Agency

III. Interest Rate

The commercial bank's average nominal lending rates remained broadly unchanged in the second quarter of 2022 settling at an average rate of 25.2% marginally dropping from 25.8% recorded over the same quarter in 2021. The central bank at its 17 August 2022 MPC meeting maintained the monetary policy rate at 9% due to positive efforts in implementing fiscal consolidation measures, tight domestic liquidity conditions, relatively weaker domestic growth prospects over the medium term and lingering risks to the financial sector.

Figure 8: Interest Rates Trend



Source: Bank of Zambia

IV. Money Supply

Year-on-year money supply contracted further by 5.2% in the second quarter of 2022 mainly due to the slowdown in the total domestic credit and valuation effects following the appreciation of the Kwacha against the US dollar.

Domestic credit slowed to 6.8% in June 2022 compared to 11.5% in March 2022 largely due to the slowdown in lending to Government and contraction in private sector credit. Growth in credit to Government decelerated to 12% in June 2022 against 16.8% recorded in March 2022. Furthermore, credit to the private sector contracted by 2.1% relative to 1.3% growth over the same period. This was primarily due to the valuation effects on foreign currency loans, which offset the moderate growth in Kwacha denominated credit.

V. Fiscal Policy

The ongoing fiscal spending pressures were compounded by measures taken to contain the COVID-19 pandemic. However, the preliminary data indicate an improved fiscal performance in the first quarter of 2022, largely because of high revenue collections particularly from the mining sector. For 2022, the fiscal deficit as a percentage of the GDP is projected to narrow to 6.9% from a preliminary outturn of 9% in 2021. Further, the primary balance is expected to improve to a surplus of 3.2% of GDP in 2024. Enhanced revenue mobilization measures and rationalization of expenditure reinforced by debt restructuring underpin this projection.

VI. Foreign Exchange Market

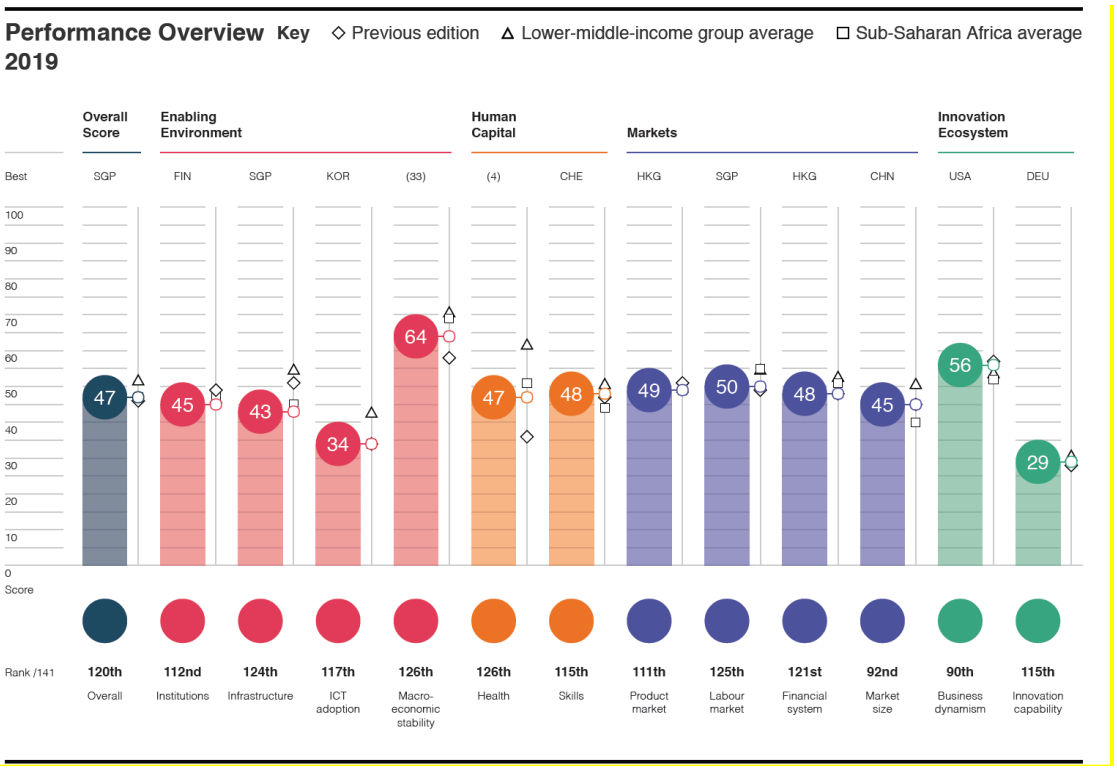
During the second quarter of 2022, the Kwacha appreciated by 3.4% against the United States dollar to an average of K17.15.per US dollar. This was on account of increased supply of foreign exchange. Positive market sentiments arising from stronger prospects of securing an IMF Extended Credit Facility following the meeting of the Official Creditor Committee on external debt restructuring under the G20 Common Framework also contributed to the observed appreciation of Kwacha. However, the kwacha has shown positive gains in the second quarter averaging K16.3 per US dollar.

1.2.1.3.2 Zambia's Competitiveness

According to the 2019 Global Competitiveness Report (GCR) published by the World Economic Forum which ranks countries based on the Global Competitiveness Index (GCI), Zambia had an overall score of 47% and ranked 120 out of 141 countries with a marginal drop from 2018 when the country ranked 118 of 140. Zambia's continued poor performance was mainly driven by deteriorating conditions in; macroeconomic environment, health, labour market, infrastructure and financial system.

The GCR integrates the macroeconomic and the micro/business aspects of competitiveness into a single index. The report assesses the ability of countries to provide high levels of prosperity to their citizens. This in turn depends on how productively a country uses available resources. Therefore, the GCI measures a set of institutions, policies, and factors that set the sustainable current and medium-term levels of economic prosperity. Figure 9 provides a breakdown of Zambia's rank and score across the 12 pillars.

Figure 9: Breakdown of Zambia's GCI Performance.



Source: Global Competitiveness Report

According to figure 9, the country's highest rank was 90 out of 141 under the Business Dynamism pillar while the lowest score was 126 out of 141 under the Macro-Economic Stability pillar. Under the sub theme of Utility Infrastructure in pillar 2 on Infrastructure, Zambia scored 89% on Electricity Supply Quality and ranked 93 out of 141 while electricity access stood at 32.6% with a ranking of 129 out of 141. This demonstrates the dire need to continue making sustainable investments to improve the supply of electricity and expand the network to enable access.

1.2.1.4 THE IMPACT OF PREVAILING ECONOMIC CONDITIONS ON THE OPERATIONS OF ZESCO

ZESCO operations are highly affected by any changes in the global, Sub – Saharan Africa and domestic economic conditions. The following are some of the effects;

- The rising global inflation rates as a result of the negative effects of Covid-19 and spill over effect of the Russia/ Ukraine war has increased the cost of doing business thereby negatively affecting ZESCO's operational costs.

- On the domestic front, if the Government's monetary and fiscal policies are not sustained to support the appreciation of the kwacha to dollar and keep interest rates at bay, as evidenced in the past few years, ZESCO revenues will continue to be eroded as most of its obligations are US dollar denominated. Any deterioration in the performance of the Zambian kwacha will further make power purchases from IPPs unsustainable and raise debt servicing costs.

- High interest rates coupled with tight fiscal conditions by the new government will affect ZESCO's access to cheaper financing thereby affecting system expansion and reinforcement plans that ZESCO has envisaged.

- Expected increase in economic activities following the reduction in Covid-19 cases and relatively normalised supply chain creates market opportunities for corporation. ZESCO is however be mindful of the lingering vulnerabilities in the financial sector which include relatively tight domestic liquidity conditions and weak domestic growth that could increase debt servicing costs and hinder investments in the sector.

1.2.2 RISING COST OF GENERATING, TRANSMITTING AND SUPPLYING ELECTRICITY

The table below shows the movement in operating costs since the last tariff application. This table is an extract from the Cost and income model ('Sum Overall' sheet) and the Management accounts for the quarter ended 31st December 2021. The table further shows a decrease of 6% in the cost of electricity purchases. However, the commissioning of the Kafue Gorge Lower (KGL) power station will push the cost of electricity upwards. KGL tariff is higher than the selling tariff. There are also significant increases in the bad debt provision and other operating costs. The increase in the bad debt provision is due to the ongoing tariff disputes with the bulk customers.

Table 2: Total Operating Expenses from 2019 to 2021

	ZMW' million				Year on Year % Change		
	2018	2019	2020	2021	2018 to 2019	2019 to 2020	2020 to 2021
Cost of Sales							
Electricity Import Costs	327	100	197	32	-69%	97%	-84%
Electricity Purchase Costs	4,691	5,496	8,654	7,913	17%	57%	-9%
Primary Plant Maintenance Costs	1,045	1,158	1,206	1,174	11%	4%	-3%
Auxiliary Plant Maintenance Costs	183	142	137	141	-22%	-3%	3%
Kariba Complex Costs	113	124	194	252	10%	56%	30%
Total Cost of Sales	**6,358.37**	**7,020.86**	**10,387.76**	**9,512.31**	**10%**	**48%**	**-8%**
Other Operating Costs							
Staff Costs	1,308.19	2,227.27	2,253.28	1,413.40	70%	1%	-37%
Depreciation	1,895.85	1,888.07	1,898.37	1,925.79	0%	1%	1%
Plant Operating Costs	17.90	22.48	11.98	7.14	26%	-47%	-40%
Machinery Maintenance Costs	98.46	15.37	13.66	10.08	-84%	-11%	-26%
Building Maintenance Costs	62.11	52.05	81.11	70.88	-16%	56%	-13%
Administration Costs	163.84	141.72	176.26	278.10	-14%	24%	58%
Transport Costs	95.06	110.24	130.00	120.34	16%	18%	-7%
External Services Costs	198.54	245.90	389.32	443.33	24%	58%	14%
Training Costs	18.76	13.77	9.33	2.73	-27%	-32%	-71%
Travel and Accommodation Costs	73.37	71.56	49.73	48.01	-2%	-31%	-3%
Insurance Costs	45.25	52.14	74.57	101.78	15%	43%	36%
Bad Debt Provision	1,067.91	2,214.44	7,696.42	2,096.89	107%	248%	-73%
- Other Operating Costs	0.70	91.31	57.32	0.36	12949%	-37%	-99%
Total Other Operating Costs	**5,045.94**	**7,146.31**	**12,841.34**	**6,518.84**	**42%**	**80%**	**-49%**
Total Operating Costs	**11,404.31**	**14,167.17**	**23,229.10**	**16,031.14**	**24%**	**64%**	**-31%**

1.2.3 SYSTEM AND CUSTOMER BASE EXPANSION

ZESCO has carried out system expansion and reinforcements to enable the company to improve the quality of its service delivery and meet the anticipated increase in demand for electricity from existing and new customers. The company will continue to carry out system expansion plans to meet national development aspirations whilst addressing the impact of climate change. The generation development plans include the rehabilitation and system reinforcement to be carried out in the short to medium term and capacity expansion in the medium to long term.

The transmission expansion plans will place emphasis on ensuring that the transmission paths for new generation are completed, network reinforcements are carried out and new interconnectors to neighbouring countries are developed for the company to achieve its goal of increasing access to new markets.

The distribution expansion plans are focused on network reinforcements and customer base expansion towards the achievement of improved access to electricity rates.

The amounts ZESCO has spent on its asset base in the years 2019 to 2021 (ZMW' 000).

Table 3: ZESCO's expenditure on Asset Base

New Assets	2018	2019	2020	2021
Generation	1,689,103	4,701,099	5,396,088	2,164,367
Transmission	2,433,410	5,577,454	5,471,979	371,880
Distribution	1,156,354	2,047,734	4,945,880	1,759,701
Supply	656	654	653	653
Total	**5,279,523**	**12,326,942**	**15,814,600**	**4,296,601**

The projected investment in Assets for the years 2023 to 2027 are as indicated in the Pricing Model are shown in table below.

Table 4: Projected Investment in Assets by Strategic Business Units (ZMW'000)

New Assets	2023	2024	2025	2026	2027
Generation	4,450,513	12,609,862	12,239,328	9,174,285	9,483,859
Transmission	2,747,996	5,247,803	8,914,707	9,954,382	7,088,595
Distribution	5,748,139	3,210,669	2,550,810	1,876,812	1,099,921
Total	**12,946,648**	**21,068,334**	**23,704,845**	**21,005,479**	**17,672,375**

1.2.4 ELECTRICTY PURCHASES

The increase in demand for electricity requires additional Generation, Transmission and Distribution capacities to be developed by the utility and the private sector. The funding available to private developers from DFIs and Private Equity investors may require high returns on investments that push up the resultant tariffs from Independent Power Producers (IPPs).

The lack of pricing parity between the end user tariff and the cost of power from IPPs and Imports has continued to increase over the years with an average selling price of US$ 7c/kWh compared to the average purchase cost of US$ cents 11/kWh. The price differential is also affected by movements in the USD/kwacha exchange rate as ZESCO's electricity purchase obligations are in US Dollars.

ZESCO's failure to achieve price parity between the end user tariffs and the cost of power has led to the accumulation of debt owed to IPPs as shown in the table below:

Table 5: IPPS debt

IPP debt as at 31st July 2022 (US$ Milion)	
LOCAL PURCHASES	**Outstanding Balance**
MAAMBA COLLIERIES LTD	**660.66**
NDOLA ENERGY COMPANY	**134.72**
ITEZHI TEZHI POWER CORPORATION LIMITED	**380.31**
KARIBA NORTH BANK EXTENSION POWER CORPORATION	**45.26**
LUNSEMFWA HYDRO POWER COMPANY LIMITED	**17.38**
BANGWEULU POWER COMPANY LIMITED	**1.08**
NGONYE POWER COMPANY LIMITED	**0.93**
KAFUE GORGE LOWER POWER DEVELOPMENT CORPORATION LTD	**88.67**
Total	**1,329.02**

2 SUMMARY OF PROJECTED PERFORMANCE

2.1 PROPOSED TARIFFS

The tariff path derived using the pricing model after all the required and necessary adjustments were made (as indicated in schedule B of this document) was as follows;

Table 6: ZESCO proposed tariff path

Average price ZMW/kWh	2022	2023	2024	2025	2026	2027
Mining	1.53	1.68	1.78	1.86	1.92	1.98
% change		10%	6%	4%	3%	3%
Residential	0.88	1.09	1.19	1.47	1.68	1.95
% change		23%	10%	23%	15%	16%
Large power	0.66	1.46	1.58	1.79	1.92	2.13
% change		122%	9%	13%	7%	11%
Small power	0.94	1.05	1.14	1.24	1.35	1.47
% change		11%	9%	9%	9%	9%
Distributor	1.01	0.99	1.01	1.03	1.04	1.07
% change		11%	2%	1%	1%	3%
Commercial	1.82	1.75	1.85	2.02	2.13	2.25
% change		1%	6%	9%	5%	6%
Services	1.09	1.11	1.23	1.36	1.45	1.56
% change		2%	11%	10%	7%	8%
High Voltage Exports	1.34	1.42	1.46	1.48	1.50	1.53
% change		6%	3%	1%	1%	2%
Low Voltage Exports	1.55	1.32	1.47	1.58	1.60	1.61
% change		-14.3%	10.7%	8.0%	1.3%	0.4%
Total	1.20	1.42	1.51	1.64	1.75	1.89
% change		18%	7%	9%	6%	9%

ZMW/kWh WEIGHTED AVERAGE (RETAIL)

Total	0.84	1.15	1.25	1.44	1.59	1.81
% change		37%	9%	15%	10%	14%

According to the pricing model, the approval of the proposed tariffs would enable ZESCO to achieve a net profit margin of 5.2% in 2023,4.3% in 2024, 7.3% in 2025,8% in 2026 and 13.1% in 2027

Table 7: Audited and Proposed Revenue and Net Operating Income (ZMW'000)

Description	Audited Financial Statements for the Year ended 31st December 2021	Estimate December 2022	Proposed December 2023	Proposed December 2024	Proposed December 2025	Proposed December 2026	Proposed December 2027
Revenue	21,897,616	17,144,319	21,447,995	24,094,512	27,736,368	31,318,312	35,657,441
Operating Profit/(Loss)	8,616,350	1,882,365	3,847,392	5,029,399	7,738,236	9,956,478	14,270,392

2.1.1 SCHEDULE OF CURRENT AND PROPOSED RETAIL ELECTRICITY TARIFFS

The table below highlights the proposed energy, monthly fixed and demand charges to the customer categories.

Table 7: SCHEDULE OF CURRENT AND PROPOSED RETAIL ELECTRICITY TARIFFS

CUSTOMER CATEGORY	TARIFF		Proposed Tariffs (ZMW)				
		Current Tariffs (ZMW)	2023	2024	2025	2026	2027
1. METERED RESIDENTIAL TARIFFS [Capacity up to 15kVA]							
R1-Consumption up to 100kWh [Current]	Energy Charge/kWh	0.47					
R2-Consumption above 100 to 300kWh [Current]	Energy Charge/kWh	0.85					
R3-Consumption above 300kWh [Current]	Energy Charge/kWh	1.94					
R1-Consumption up to 75kWh	Energy Charge/kWh		0.4	0.44	0.54	0.63	0.73
R2-Consumption above 75 to 200kWh	Energy Charge/kWh		0.95	1.05	1.28	1.50	1.76
R3-Consumption above >200≤ 500	Energy Charge/kWh		1.54	1.69	2.07	2.42	2.83
R4- Consumption above 500	Energy Charge/kWh		2.22	2.44	3.23	3.45	4.04
Fixed Monthly Charge		-	-	-	-	-	-
2. COMMERCIAL TARIFFS (Capacity up to 15kVA)							
C1-Commercial ≤ 200 [Current]	Energy Charge/kWh	1.07					
C2-Commercial > 200 [Current]	Energy Charge/kWh	1.85					
C1-Commercial ≤100	Energy Charge/kWh		0.67	0.78	0.92	0.98	1.05
C2-Commercial >100≤ 300	Energy Charge/kWh		1.15	1.35	1.58	1.69	1.81
C3-Commercial >300≤ 500	Energy Charge/kWh		1.99	2.19	2.52	2.65	2.78
C4-Commercial >500	Energy Charge/kWh		2.45	2.47	2.59	2.72	2.85
	Fixed Monthly Charge	-	-	-	-	-	-
3. SOCIAL SERVICES TARIFFS (Schools, Hosp)							
S1-Social [>0, Current]	Energy Charge/kWh	1.19					
S1-Social ≤ 100	Energy Charge/kWh		0.62	0.69	0.76	0.81	0.87
S2- Social >100≤ 300	Energy Charge/kWh		0.94	1.04	1.15	1.23	1.32
S3- Social >300	Energy Charge/kWh		1.13	1.25	1.38	1.48	1.59
	Fixed Monthly Charge	83.84	Abolished	-	-	-	-

4. WATER PUMPING STATIONS							
W1- ≤ 12000	Energy Charge/kWh		0.5	0.56	0.60	0.65	0.70
W2 >12000≤ 50000	Energy Charge/kWh		0.57	0.65	0.76	0.81	0.88
W3 >50000≤ 100000	Energy Charge/kWh		1.01	1.13	1.21	1.30	1.41
W4 >100000	Energy Charge/kWh		1.53	1.72	1.84	1.97	2.15
	Fixed Monthly Charge		-	-	-	-	-
5. DISTRIBUTION TARIFFS							
Purchasers of power for distribution to	MD Charge/kVA/Month	218.73	253.9	259.0	262.1	265.3	270.0
Retail customers. (Exchange rate: ZMK16.50/US$)	Energy Charge/kWh	0.54	0.63	0.64	0.65	0.66	0.67
6. MAXIMUM DEMAND TARIFFS							
MD1-Capacity from ≥ 16 ≤ 300KVA	MD Charge/kVA/Month	42.79	51.96	55.23	60.2	65.62	71.53
	Energy Charge/kWh	0.61	0.74	0.81	0.88	0.96	1.05
	Fixed Monthly Charge	419.02	508.82	548	597.32	651.07	709.67
	Off Peak MD Charge/KVA/Month	21.39	25.98	27.62	30.1	32.81	35.76
	Off Peak Energy Charge/kWh	0.46	0.56	0.61	0.66	0.72	0.79
	Peak MD Charge/KVA/Month	53.48	64.95	69.04	75.26	82.03	89.41
	Peak Energy Charge/kWh	0.77	0.93	1.01	1.1	1.2	1.31
MD2-Capacity from 301kVA to 2,000kVA							
	MD Charge/kVA/Month	80.03	97.18	106.22	115.78	126.2	137.56
	Energy Charge/kWh	0.53	0.64	0.7	0.77	0.84	0.91
	Fixed Monthly Charge	837.97	1,017.55	1112.18	1212.28	1312.38	1440.31
	Off Peak MD Charge/KVA/Month	40.01	48.59	53.11	57.89	63.1	68.78
	Off Peak Energy Charge/kWh	0.39	0.48	0.53	0.58	0.63	0.68
	Peak MD Charge/KVA/Month	100.03	121.48	132.77	144.72	157.75	171.95
	Peak Energy Charge/kWh	0.66	0.8	0.88	0.96	1.04	1.14
MD3-Capacity from 2,001kVA to 5000kVA							
	MD Charge/kVA/Month	126.39	295.33	319.84	364.62	390.15	429.16
	Energy Charge/kWh	0.43	1	1.09	1.24	1.33	1.46
	Fixed Monthly Charge	1,755.17	3,397.77	3,815.70	4,349.89	4,654.39	5,119.82

	Off Peak MD Charge/KVA/Month	63.2	147.67	159.92	182.31	195.07	214.58
	Off Peak Energy Charge/kWh	0.32	0.75	0.82	0.93	1	1.1
	Peak MD Charge/KVA/Month	157.99	369.16	399.8	455.78	487.68	536.45
	Peak Energy Charge/kWh	0.54	1.26	1.36	1.55	1.66	1.83
MD4-Capacity >5000kVA							
This category has been migrated to Bulk Consumer	MD Charge/kVA/Month	127.1	Migrate to PPAs	Migrate to PPAs	Migrate to PPAs	Migrate to PPAs	Migrate to PPAs
	Energy Charge/kWh	0.36					
	Fixed Monthly Charge	3,510.39					
	Off Peak MD Charge/KVA/Month	63.55					
	Off Peak Energy Charge/kWh	0.27					
	Peak MD Charge/KVA/Month	158.88					
	Peak Energy Charge/kWh	0.45					
Bulk [PPA]>5000KVA	MD Charge/kVA/Month		329.75	366.02	403.36	416.27	471.21
(Exchange rate: ZMK16.50/US$)	Energy Charge/kWh		0.93	1.04	1.14	1.18	1.33

NOTE:
The above tariffs are:
(a) Exclusive of 3% Government excise duty
(b) Exclusive of 16% Value Added Tax (VAT)

2.1.2 REVISION OF RESIDENTIAL LIFELINE TARIFF

Following the last tariff revision, ZESCO has learnt that the lifeline tariff band intended to benefit indigent residential customers was wider than necessary and was thus benefiting customers outside the intended target demographic to the detriment of ZESCO. Whilst the current inverted block tariff structure bestows the benefit of the lifeline tariff to every residential customer, ZESCO is of the view that the cost of the lifeline tariff to the corporation can be reduced by keeping the band at a size that is truly representative of the consumption of an indigent household. ZESCO thus proposes that the residential tariff bands be adjusted as follows:

Table 8: Residential Tariff Band Proposal

TARIFF BAND	EXISTING UNITS	PROPOSED UNITS
R1	0-100kWh	≤75kwh
R2	101-300kWh	>75≤200kWh
R3	Above 300kWh	>200≤500kWh
R4		Above 500kWh

It is proposed that the life-line tariff band be adjusted from 100kWh to 75kWh per month for residential customers in R1. The proposed bands also reintroduce an intermediary band that will reduce the magnitude of the price differential that lies between the current R1 and R2 tariff bands. ZESCO is hopeful that the proposed tariff bands will improve targeting of the lifeline tariff and provide greater flexibility for cost control to the customer.

The table below shows the computation of the lifeline consumption.

Table 8: Residential Tariff Band Proposal

ELECTRICITY USE	APPLIANCE & USAGE ANALYSIS	kWh
Lighting	2 Bulbs X 11W X 6 Hrs /Night X 30 Days	4
Radio	3W Radio X 10hrs/day X 30 days	1
Cooking	1.17 kW Table Top x 2hrs/day X 30 days	70
TOTAL CONSUMPTION		**75**

2.1.3 REVISION OF COMMERCIAL TARIFF

ZESCO is proposing to increase the number of commercial tariff bands from two (2) to four (4). This will enable a more nuanced targeting of the commercial tariffs to the various kinds of customers in the category from a single roomed shop to a medium enterprise. This will also promote a more efficient use of energy as customers will aspire towards maintaining their power usage within the most affordable band possible.

Table 9: Commercial Tariff Band Proposal

EXISTING		PROPOSED	
TARIFF BAND	**EXISTING BAND**	**TARIFF BAND**	**PROPOSED UNITS**
C1	0-200kWh	C1	≤100kwh
C2	>200kWh	C2	>100≤300kWh
		C3	>300≤500kWh
		C4	Above 500kWh

2.1.4 REVISION OF SOCIAL TARIFF

ZESCO proposes to revise the social tariff bands as follows;

Table 10: Social Tariff Band proposed

EXISTING		PROPOSED	
TARIFF BAND	**EXISTING**	**TARIFF BAND**	**PROPOSED UNITS**
SS	>0kWh	S1	≤100kWh
		S2	>100≤300kWh
		S3	Above 300
Fixed charges	Applicable	Abolished	-

The revisions in the social tariff bands are intended to cater for the varying kinds of customers in the category and promote efficient power usage. The social tariff category shall ***strictly*** be applicable to the customer categories on the table below:

Table 11: Social Tariff Band proposed

S/NO	CATEGORY
1	Government and Community Schools
2	Government Hospitals & Clinics
3	Municipal Street Lighting & Traffic Lights
4	Gazetted Places of Worship
5	Registered Orphanages
6	Registered Old People's Homes

2.1.5 WATER PUMPING STATIONS TARIFF

ZESCO proposes to introduce a new tariff category for water pumping stations which **shall only apply to pumping facilities belonging to licenced water utility companies.** This is to cater for the said pumping stations that were previously billed as Maximum Demand or Social customers. The proposed bands will incentivise the companies to manage their costs by implementing energy saving measures to remain in the most affordable tariff

band possible. For the avoidance of doubt, these tariff bands shall not be applicable to administrative premises of the water utility companies.

Table 12: Water Pumping Station proposal band

TARIFF BAND	PROPOSED
W1	≤12000kWh
W2	>12000≤50,000kWh
W3	>50,000≤100, 000kWh
W4	Above100,000kWh

2.1.6 REVISION OF MAXIMUM DEMAND TARIFF CATEGORIES

ZESCO proposes to make adjustments to the Maximum Demand category as highlighted in the table below.

Table 13: Maximum Demand Tariff Categories

CURRENT BANDS		PROPOSED BANDS	
TARIFF	**CURRENT BAND**	**TARIFF**	**PROPOSED BAND**
MD1	16-300kVA	MD1	≥16≤300kVA
MD2	301-2000kVA	MD2	>300≤2000kVA
MD3	2001- 7500kVA	MD3	>2000≤ 5000kVA
MD4	7501 – 25000kVAkVA	PPA	Above 5000kVA

ZESCO proposes to maintain the MD1 & MD2 tariff band and, adjust the MD3 band from 2001- 7500kVA to 2001- 5000kVA. ZESCO further proposes that the MD4 tariff category be abolished and that all customers consuming above 5000kVA be migrated to Power Purchase Agreements. This adjustment would mitigate the cost of providing dedicated service to customers that require and consume above 5000kVA. ZESCO would further benefit from a greater proportion of predictable income and an increase in the number of customers that have a clear framework for load management. ZESCO further proposes that all Smelting plants be migrated to Power Purchase Agreements.

3 TOTAL NUMBER OF CUSTOMERS SERVED

The current and projected number of customers to be served as extracted from the Pricing Model is as shown in the Table below;

Table 14: Customers to be affected by Change in Tariffs

Customer category	2021	2022	F2023	F2024	F2025	F2026	F2027
Mining	7	7	7	7	7	7	7
Bulk Customers	-	-	127	131	135	139	143
Water Pumping Stations	-	-	372	382	392	403	414
Residential	1,013,971	1,198,490	1,282,384	1,372,151	1,468,202	1,570,976	1,680,944

Large Power (MD4)	23	22	0	0	0	0	0
Small Power (MD1,2 & 3)	9,944	10,441	11,091	11,643	12,222	12,830	13,469
Commercial	91,280	99,213	104,174	109,382	114,851	120,594	126,624
Services	12,612	12,864	13,122	13,384	13,652	13,925	14,203
High Voltage Exports	4	4	4	4	4	4	4
Low Voltage Exports	6	6	6	6	6	6	6
Total	**1,127,847**	**1,321,047**	**1,411,286**	**1,507,090**	**1,609,471**	**1,718,884**	**1,835,814**

The customer base has been growing steadily at 9% Compounded Annual Growth Rate (CAGR) from 2019 to 2027. The projected growth for 2023 is at 10%. This growth projection is attributed to ZESCO's commitment to clear the current customer connection backlog of about 67,000 in 2023.

3.1 EFFECT OF TARIFF CHANGES ON QUALITY OF SERVICE DELIVERY

The proposed tariff adjustment will, if granted, facilitate the completion of the projects and other expansion and reinforcement works that will enable ZESCO to deliver quality service to its customers. The projects and system enhancements shall include among others:

- Increased Generation Capacity
- Security of supply
- Increased Access to Electricity

Additionally, the tariff adjustment will enable ZESCO to adequately maintain its infrastructure across the value chain and meet the capital investment required to ensure reliable supply of electricity.

ZESCOs performance has been compromised due to inability to expand the infrastructure as required to keep up with the growing demand. As can be observed from the 2022 management accounts, expenditure on operations and maintenance has reduced over time in real terms. This translates to a reduction in the materials available for repairs and reinforcements and an increase in the quantum and resolution time of faults. The inability to spend adequately on O&M arises from the continued erosion of ZESCO's revenue due to non-cost reflective tariffs.

4 PRICING MODEL INPUTS

The following table outlines any additional changes and inputs that were made to the pricing model for this year's tariff application.

Table 15: Pricing Model Input Data

INPUT SHEET	ENTRY	CELL ADDRESS
A – Fin	All assumptions updated with actual values up to the Year ended 31ST December 2021	General
	Projections have been extended to 2023	
	Zambian Inflation Rate – 9.2% projected for 2022, 8.2% for 2023, 7.3% for 2024, 7.0% (2025) and 7.0% for 2026 and 2027 [Based on IMF projections].	General
	K/$ Exchange rates of 16.5 projected for the forecast period. This is based on Bank of Zambia Average [Jan + Feb Closing Rates + 15th March rate]	Row – 11
	PPI escalation rates as forecast from current trends with actuals from the US Bureau of Labour Statistics	Rows -15
	Existing loans are as per last audited ZESCO Treasury Department loan schedule.	Row – 19
	Tax rate changed to 30% in the projected years.	Row – 233
A – Tariffs	Base tariffs of all customers have been adjusted to current levels and projections been extended to 2023.	General
	The Lifeline tariff band has been reduced from 100kWh to 75kWh.	General
	The bands have been increased from three to four Note: Data in the years prior has no effect on the revenues as the actual revenues for those years were entered in the revenue sheet.	Rows 131 to 150
	Commercial bands have been increased from two to four.	Rows 420 to 434

INPUT SHEET	ENTRY	CELL ADDRESS
	The social tariff category shall strictly be applicable to registered orphanages, government and community schools, government hospitals and clinics, municipal street lighting and traffic lights registered old people's homes) and gazetted places of worship.	General
	Social Services tariff band increased from one to three.	Rows 444 to 457
	Water pumping stations have been hived off from Social Services category. Water pumping stations shall only apply to licensed water utilities	Rows 460 to 469
	Bulk Customers [PPA] based formerly MD4 and part of MD3, capacity above 5,000 KVA has been migrated to bulk customers category.	Rows 298 to 310
A – Dem	New loads have been added and the projections of the existing loads have been adjusted and extended up to 2027 according to their consumption patterns. Loads with low probability have been switched off while others have had their commencement date delayed.	General
A – Cust Group	Data in the sheet was extended to 2027	General
	Additional metering per annum due to customer base expansion and prepayment roll out considers the expected performance on the metering KPI's	General
	Actual customer numbers and % growth per tariff category up to the Year Ended Year Ended 31st December 2021 was entered	General
A - Capex Detail	The costs and scheduling of all Generation, Transmission and Distribution projects have been updated and extended to 2027.	Rows - 11 to 522

INPUT SHEET	ENTRY	CELL ADDRESS
A - Assets Sum	The asset values for the have been entered for each SBU and the worksheet has been extended to 2020 as that was the date of the last audit.	General
A - Gen & Im	Projections have been extended to 2027 and generation for IPP's included as they came or are currently scheduled to come online.	General
A – Costs	Updated with actual audited values from the Cost & Income Model up to the year ended 31st December 2020 and projections extended to 2027.	General
A – Alloc	Allocation of costs to customer groups according to system utilization done up to 2027.	General
Demand	Updated with actual Energy sold up to the Year Ended 31st December 2020 and extended to 2027. Distributor customer category introduced	General General
Cust Groups	Updated with actual consumption and customer numbers for the years up to Year Ended 31st December 2021 and extended to 2027.	General
Cust Nums	Extended to 2027 Distributor customer category introduced Included Water Pumping and Bulk PPA	General General Rows 105 -138
Gen & Im	Actual Generation was entered for the years and periods up to 31st December 2021 and the projections were extended to the year 2027.	Rows 11 – 19
Assets	Changes due to new projects and schedules in A – Capex and A-Asset Sum	General
Loans	Changes due to new projects and schedules in A-Capex, customer numbers in A-Cust Groups, and the update of the Loan schedule in A- Fin	General
RR	Updated with actual costs from A-Costs for the years ended 31st December 2020	General
Alloc	Distributor customer category maintained	General
RR Alloc	Distributor customer category maintained Variable and fixed allocation costs from row number11 to row 36 are linked to cost_ Gx_Cap sheets (cost apportioned according to generation capacity allocation)	General Row 11 to Row 36

INPUT SHEET	ENTRY	CELL ADDRESS
Revenues	Projected Revenues reduced by portion of unmet demand allocated to each customer and customer group by adjusting their consumption figures.	General
	Actual Revenues entered for the years 2006 to 2021 so as to facilitate a more accurate comparison with actual costs used in the model and a better estimation of over/under recovery in the years gone by.	General
	Included Weighted factor for all ToU Included both Capacity & Energy ratios for all ToU	General
	Introduced consumption splits for Commercial, Social and Water Pumping Stations	Rows 598 – 655
Pricing Trends	Distributor customer category introduced	General
Summary Statistics	Bulk Customers [PPA] and Water Pumping Stations categories introduced	General
Summary Statistics	Bulk Customers [PPA] and Water Pumping Stations categories introduced	General

SCHEDULE B - STUDIES UNDERTAKEN BEFORE APPLICATION

This tariff application is based on ZESCOs actual performance data, data from the draft 2021/22 Cost of Service Study (CoSS) undertaken by the Energy Regulation Board, as well as the draft 2021/22 Integrated Resource Plan (IRP) undertaken by the Ministry of Energy.

ZESCO's financial performance data as shown in the cost and income model, indicates that ZESCO's US dollar'- based costs such as purchases of electricity and maintenance costs have continued to rise significantly. Whereas on the income side, the kwacha invoice receivables have remained relatively unchanged.

SCHEDULE C- GENERAL DESCRIPTION OF ZESCO LIMITED'S OPERATIONS

5 GENERATION DATA

5.1 INSTALLED CAPACITY

The Table below shows the capacity of ZESCO's major generation plants.

Table 16: Installed Generation Capacity

Generation Station	Units	2021	2022	2023	2024	2025	2026	2027
Kafue Gorge Upper	MW	990	990	990	990	990	990	990
Kafue Gorge Lower	MW	750	750	750	750	750	750	750
Kariba North	MW	720	720	720	720	720	720	720
Victoria Falls	MW	108	108	108	108	108	108	108
Lusiwasi Upper	MW	15	15	15	15	15	15	15
Lusiwasi Lower	MW	12	12	12	12	12	12	12
Musonda Falls	MW	10	10	10	10	10	10	10
Chishimba Falls	MW	6	6	6	6	6	6	6
Lunzua	MW	14.8	14.8	14.8	14.8	14.8	14.8	14.8
ITPC	MW	120	120	120	120	120	120	120
KNBE	MW	360	360	360	360	360	360	360
SHIWANGANDU	MW	1	1	1	1	1	1	1

5.2 DEPENDABLE CAPACITY

The dependable capacity of ZESCO's major generation plant is shown in the Table below:

Table 17: Dependable Capacity

Generation Station	Units	2021	2022	2023	2024	2025	2026	2027
Kafue Gorge upper	MW	960	930	990	990	990	990	990
Kafue Gorge Lower	MW	300	300	600	750	750	750	750
Kariba North	MW	705	705	705	705	705	705	705
Victoria Falls	MW	105	88	98	98	98	98	98
Lusiwasi Upper and Lower	MW	7.5	17	17	17	17	17	17
Musonda Falls	MW	9.6	10	10	10	10	10	10
Chishimba Falls	MW	4.3	4.6	4.6	4.6	4.6	4.6	4.6
Lunzua	MW	14.8	14.8	14.8	14.8	14.8	14.8	14.8
ITPC	MW	70	70	70	70	70	70	70
KNBE	MW	54	54	54	54	54	54	54
Shiwangandu	MW	1	1	1	1	1	1	1

5.3 PLANT CAPACITY FACTORS

The Table below shows the capacity factor of the major generating plants.

Table 18: Capacity Factors (%)

Generation Station	2021	2022	2023	2024	2025	2026	2027
Kafue Gorge	79.4	81.4	68.7	68.7	68.7	68.7	68.7
Kariba North	74.4	59.4	68.1	74.4	74.4	74.4	74.4
Victoria Falls	86.7	76.6	80	80	80	80	80
Lusiwasi (upper & lower)	60	25	28	28	28	28	28
Musonda Falls	40	56.3	54	54	54	54	54
Chisimba Falls	49.5	21	70	70	70	70	70
Lunzua River	45.7	36.6	50	50	50	50	50
Diesel Stations	30	30	30	30	30	30	30
Shiwangandu	90	8.1	32	32.6	32.6	32.6	32.6

5.4 PLANT OPERATING EXPENDITURE

The total operating expenditure of each station as extracted from the Cost and Income Model is outlined in the Table below:

Table 19: Operations and Maintenance Expenditure by Station

GENERATING STATION	UNITS	2019	2020	2021	2022	2023	2024	2025	2026	2027
Kafue George	ZMW	443,035,534	422,436,169	325,770,283	456,231,063	492,729,548	532,147,911	574,719,744	620,697,324	670,353,110
Kariba North	ZMW	349,540,457	330,846,685	245,648,995	357,314,420	385,899,573	416,771,539	450,113,262	486,122,323	525,012,109
Vic Fall	ZMW	21,502,138	24,591,881	23,463,983	26,559,231	28,683,970	30,978,688	33,456,983	36,133,541	39,024,225
Lunzua	ZMW	21,502,138	24,591,881	23,463,983	26,559,231	28,683,970	30,978,688	33,456,983	36,133,541	39,024,225
Lusiwasi Lower	ZMW	21,502,138	24,591,881	23,463,983	26,559,231	28,683,970	30,978,688	33,456,983	36,133,541	39,024,225
Lusiwasi Upper	ZMW	3,754,526	5,759,337	4,829,087	6,220,084	6,717,691	7,255,106	7,835,514	8,462,356	9,139,344
Musonda falls	ZMW	22,229,943	27,003,735	25,002,641	29,164,034	31,497,157	34,016,929	36,738,283	39,677,346	42,851,534
Chishimba Falls	ZMW	17,951,387	19,937,369	15,851,265	21,532,359	23,254,947	25,115,343	27,124,570	29,294,536	31,638,099
Shiwangandu	ZMW	7,949,146	9,323,802	7,850,300	10,069,706	10,875,283	11,745,305	12,684,930	13,699,724	14,795,702

5.5 SCHEDULED AND UNSCHEDULED OUTAGES

The Scheduled and unscheduled outages lasting over 48 hours that took place during the last three financial years are shown in the tables below:

Table 2: Unplanned Outages for the period January 2021 to December 2021

STATION	EQUIPMENT	OUTAGE TYPE	OUTAGE DATE	OUTAGE TIME	OUTAGE DURATION (HRS)	REMARKS
KAFUE GORGE	G3	Planned	29/01/2021	22:12hrs	124.18	Unit taken out on for generator bearing and turbine guide bearing inspection and air cooler maintenance f

	G2	Planned	03/03/2021	09:21hrs	509.90	Annual maintenance
KARIBA NORTH BANK	G5	Planned	5/01/2021	07:38hrs	599.85	Annual maintenance
	G3	Planned	16/02/2021	08:32hrs	274.57	Unit taken out on for Brush gear maintenance, sealing of oil leaks from governor servo motors and excitation defect resolutions
	G1	Planned	09/05/2021	20:51hrs	336.12	Annual maintenance.
	G4	Planned	19/09/2021	07:19hrs	445.75	Annual maintenance.
ITEZHI TEZHI	G2	Planned	08/02/2021	08:11hrs	340.08	Annual maintenance.
	G1	Planned	24/02/2021	07:18hrs	65.52	Quarterly maintenance for
	G1	Planned	27/05/2021	06:04hrs	59.87	Quarterly maintenance
	G1	Planned	04/09/2021	06:41hrs	281.33	Annual Maintenance.
VFPS	A1	Planned	20/09/2021	07:53hrs	251.42	A/Station Machines taken out for Annual Maintenance
	A2	Planned	20/09/2021	07:53hrs	292.22	A/Station Machines taken out for Annual Maintenance
	A3	Planned	20/09/2021	07:53hrs	237.25	A/Station Machines taken out for Annual Maintenance
	A4	Planned	20/09/2021	07:53hrs	265.97	A/Station Machines taken out for Annual Maintenance
	A1	Planned	11/10/2021	05:00hrs	320.63	A- Station and C-Station taken out for Desilting of head pond

	A2	Planned	11/10/2021	05:00hrs	320.63	A- Station and C-Station taken out for Desilting of head pond
	A3	Planned	11/10/2021	05:00hrs	320.63	A- Station and C-Station taken out for Desilting of head pond
	A4	Planned	11/10/2021	05:00hrs	320.63	A- Station and C-Station taken out for Desilting of head pond
	C7	Planned	11/10/2021	05:00hrs	394.90	A- Station and C-Station taken out for Desilting of head pond
	C8	Planned	11/10/2021	05:00hrs	393.72	A- Station and C-Station taken out for Desilting of head pond
	C10	Planned	11/10/2021	05:00hrs	376.57	A- Station and C-Station taken out for Desilting of head pond
	B3	Planned	01/11/2021	07:00hrs	102.00	Taken out to install, test and commission new electronic governor.
	B6	Planned	11/11/2021	08:50hrs	131.78	Taken out to install, test and commission new electronic governor.
	B6	Planned	29/11/2021	09:21hrs	225.27	Annual Maintenance.
	C8	Planned	01/12/2021	11:00hrs	169.72	Taken out to install, test and commission new electronic governor.
	C9	Planned	09/12/2021	06:06hrs	108.88	Taken out to install, test and commission new electronic governor.
	B1	Planned	09/12/2021	08:05hrs	179.18	Annual Maintenance.
	B2	Planned	09/12/2021	08:05hrs	179.18	Annual Maintenance.
LUSIWASI	G2	Planned	19/02/21	09:50hrs	86.42	Unit taken out for Quarterly maintenance.

	G4	Planned	23/02/2021	09:23hrs	50.78	Unit taken out for Quarterly maintenance.
	G1	Planned	15/04/2021	11:16hrs	48.73	Unit taken out for Quarterly maintenance f
	G4	Planned	07/10/2021	07:00hrs	537.95	Annual maintenance
	G1	Planned	07/10/2021	07:00hrs	821.95	Annual maintenance.
LUSIWASI UPPER	G1	Planned	23/06/2021	11:35hrs	108.42	Quarter maintenance.
LUNZUA	G1	Planned	02/11/2021	09:57hrs	248.50	Annual maintenance
	G2	Planned	06/11/2021	09:57hrs	292.25	Annual maintenance
MCL	G1	Planned	25/08/2021	03:32hrs	1902.68	Unit taken out on for major Maintenance.
SHIWANG'ANDU	G1	Planned	07/09/2021	08:50hrs	119.98	Quarterly maintenance. Found turbine composite bearing are worn out.
CHISHIMBA FALLS	G2	Planned	21/09/2021	08:16hrs	97.73	Quarterly maintenance.
	G1	Planned	05/11/2021	08:00hrs	173.80	Annual maintenance and water ways
	G2	Planned	05/11/2021	08:00hrs	174.67	Annual maintenance and water ways
	G3	Planned	05/11/2021	08:00hrs	169.78	Annual maintenance and water ways
	G4	Planned	05/11/2021	08:00hrs	170.95	Annual maintenance and water ways
MUSONDA FALLS	G3	Planned	20/09/2021	07:40hrs	128.33	Annual maintenance.
	G6	Planned	11/10/2021	07:00hrs	127.67	Annual maintenance.

14.8 MW LUNZUA	G2	Planned	29/01/2021	07:00hrs	57.93	Quarterly maintenance.

Table 21: Unplanned Outages for the period from January 2021 to December 2021

STATION	EQUIPMENT	OUTAGE TYPE	OUTAGE DATE	OUTAGE TIME	OUTAGE DURATION (HRS)	COMMENTS
Shiwangandu	Generator G1	Unplanned	1/10/2021	8:15	147.00	To facilitate works on G2 which has been out due to worn out turbine sleeve since they share the same penstock.
Shiwangandu	Generator G2	Unplanned	1/10/2021	8:15	147.00	Forced outage due to worn out turbine sleeve.
Lusiwasi	Generator G4	Unplanned	4/10/2021	17:10	61.83	Emergency outage due to punctured water-cooling pipes.
Lusiwasi	Generator G4	Unplanned	7/10/2021	12:05	532.87	Unit tripped master shutdown operated.
Kafue Gorge	Generator G3	Unplanned	9/10/2021	3:53	259.65	Unit taken out due to high turbine bearing temperature.
Victoria Falls	Generator B1	Unplanned	16/10/2021	8:19	344.85	Annual Maintenance.
Kafue Gorge	Generator G3	Unplanned	23/10/2021	18:24	917.56	Unit taken out on emergency due to turbine guide bearing failure.
Victoria Falls	Generator B3	Unplanned	1/11/2021	7:00	102.00	Unit taken out for upgrade works: to install, test and commission new electronic governor.
Victoria Falls	Generator B6	Unplanned	11/11/2021	8:00	131.78	Unit taken out for upgrade works: to install, test and commission new electronic governor.

STATION	EQUIPMENT	OUTAGE TYPE	OUTAGE DATE	OUTAGE TIME	OUTAGE DURATION (HRS)	COMMENTS
MCL	Generator G1	Unplanned	27/11/2021	21:27	74.53	Emergency outage due to boiler leakage.
Lusiwasi	Generator G1	Unplanned	27/11/2021	9:30	86.48	Emergency outage due to excessive vibrations and oil leakages.
Lusiwasi	Generator G1	Unplanned	4/12/2021	22:58	649.02	Emergency outage due to oil leak at the drive end bearing.
Musonda Falls	Generator G1	Unplanned	13/12/2021	17:14	119.32	Unit tripped after tripping of 66kV Musonda T-Off – 66kV Chambashitu line but restoration failed due to closed gate at the forebay.

Table 21: Unplanned Outages for the period from January 2022 to December 2022

STATION	EQUIPMENT	OUTAGE TYPE	DATE OF OUTAGE	OUTAGE TIME	DURATION OF OUTAGE (HRS)	COMMENT
Lusiwasi Upper	Generator G3	Unplanned	9/01/2022	15:49	327.82	Emergency outage due to termination failure on yellow phase of armoured cable on the incomer.
Kariba North	Generator G2	Unplanned	26/01/2022	15:30	124.22	Emergency outage due to oil leakages in the combined bearing. Inspections revealed broken bolts on several points in the combined bearing housing.
Lusiwasi Upper	Generator G1	Unplanned	9/02/2022	12:30	454.75	Station shutdown to investigate water leakage from the intake canal. Investigations revealed some cracked panels.
Lusiwasi Upper	Generator G2	Unplanned	9/02/2022	12:30	455.88	Station shutdown to investigate water leakage from the intake canal. Investigations

STATION	EQUIPMENT	OUTAGE TYPE	DATE OF OUTAGE	OUTAGE TIME	DURATION OF OUTAGE (HRS)	COMMENT
						revealed some cracked panels.
Lusiwasi Upper	Generator G3	Unplanned	9/02/2022	12:30	456.75	Station shutdown to investigate water leakage from the intake canal. Investigations revealed some cracked panels.
Victoria Falls	Generator C9	Unplanned	1/04/2022	8:57	387.05	emergency outage due to excessive vibrations on the thrust bearing
Victoria Falls	Generator A3	Unplanned	11/04/2022	12:23	54.23	Forced outage due to low turbine shaft seal pressure.
Kariba North	Generator G1	Unplanned	14/04/2022	8:32	680.83	Taken out for annual maintenance but inspections, discovered a portion of concrete in penstock to have come off. Patching up had to be done.
Lunzua	Generator G1	Unplanned	16/09/2022	8:09	351:50	Unit G1 tripped on negative phase sequence O/C (3MW Generation lost).
Victoria Falls	Generator C9	Unplanned	23/09/2022	18:04	173:55	Tripped on thrust bearing metal temperature high. Investigations revealed premature worn out of crown seal.
Victoria Falls	Generator A3	Unplanned	3/10/2022	11:16	662:53	A1 M/C tripped on governor accumulator pressure too low and Restored after cleaning governor oil pump filter.
Victoria Falls	Generator A1	Unplanned	30/11/2022	00:00	278:22	A1 Station tripped on 3.3kV B/B, Voltage not ok

5.6 SCHEDULE OF PLANNED OUTAGES FOR THE YEAR 2022

The planned outages scheduled for the year 2022 are shown in the table below

Table 3: Planned Outages for the period January 2022 to December 2022

STATION	EQUIPMENT	OUTAGE TYPE	OUTAGE DATE	OUTAGE TIME	OUTAGE DURATION (HRS)	REMARKS
Kafue Gorge	Generator G2	Planned	16/08/2022	8:00	336.00	Annual Maintenance
Kariba North	Generator G4	Planned	5/08/2022	8:00	480.00	Annual Maintenance
Itezhi Tezhi	Generator G2	Planned	24/08/2022	6:00	48.00	Quarterly Maintenance
Kafue Gorge	Generator G3	Planned	1/09/2022	8:00	2505.00	DCS and 330KV cable Replacement (T2)
Kafue Gorge	Generator G4	Planned	1/09/2022	8:00	2505.00	DCS and 330KV cable Replacement (T2)
Kafue Gorge Lower	Generator G2	Planned	5/09/2022	8:00	504.00	Annual Maintenance
Victoria Falls	Generator A1	Planned	12/09/2022	8:00	346.00	A Station Commons Maintenance
Victoria Falls	Generator A2	Planned	12/09/2022	8:00	346.00	A Station Commons Maintenance
Victoria Falls	Generator A3	Planned	12/09/2022	8:00	346.00	A Station Commons Maintenance
Victoria Falls	Generator A4	Planned	12/09/2022	8:00	346.00	A Station Commons Maintenance
Victoria Falls	Generator C7	Planned	27/09/2022	8:00	164.00	C Station Commons Maintenance
Victoria Falls	Generator C8	Planned	27/09/2022	8:00	164.00	C Station Commons Maintenance
Victoria Falls	Generator C9	Planned	27/09/2022	8:00	248.00	C Station Commons Maintenance
Victoria Falls	Generator C10	Planned	27/09/2022	8:00	248.00	C Station Commons Maintenance
Kafue Gorge Lower	Generator G2	Planned	3/10/2022	8:00	504.00	Annual Maintenance
Itezhi Tezhi	Generator G1	Planned	25/10/2022	6:00	1209.12	Five (05) yearly maintenace (Over haul)

STATION	EQUIPMENT	OUTAGE TYPE	OUTAGE DATE	OUTAGE TIME	OUTAGE DURATION (HRS)	REMARKS
Kariba North	Generator G2	Planned	16/11/2022	8:00	720.00	Annual Maintenance
Victoria Falls	Generator B1	Planned	1/11/2022	8:00	416.00	B Station Commons Maintenance
Victoria Falls	Generator B2	Planned	1/11/2022	8:00	416.00	B Station Commons Maintenance
Victoria Falls	Generator B3	Planned	1/11/2022	8:00	416.00	B Station Commons Maintenance
Victoria Falls	Generator B4	Planned	1/11/2022	8:00	416.00	B Station Commons Maintenance
Victoria Falls	Generator B5	Planned	1/11/2022	8:00	416.00	B Station Commons Maintenance
MCL	Generator G1	Planned	24/12/2022	8:00	369.12	Annual Maintenance
Shiwangandu	Generator G1	Planned	12/12/2022	8:00	367.92	Water ways maintenance
Shiwangandu	Generator G2	Planned	12/12/2022	8:00	367.92	Water ways maintenance

5.7 PROJECTION OF CAPACITY ADDITIONS AND RETIREMENTS

ZESCO is expected to increase its generation capacity in 2023 by the addition of the 750MW Kafue Gorge Lower Hydro Power station currently at 96% completion. Other major projects include the uprating of Chishimba power station from 6MW to 15MW and construction of 86MW Lusiwasi Lower and the proposed Renewable Energy Projects in Solar, Wind to diverse the energy portfolio

SCHEDULE D – FINANCIAL STATEMENTS

Table 4: Audited Balance Sheet for the year ended 31st December 2021

ASSETS	**K'000**
Non -current assets	
Property, plant and equipment	50,917,488
Intangible assets	75,301
Right of use assets	14,745
Investments	12,817,156
Total Non- current assets	63,824,690
Current assets	
Inventories	733,982
Trade and other receivables	1,995,373
Amounts due from related parties	3,908,345
Bank and cash balances	2,321,959
Total current assets	8,959,659
TOTAL ASSETS	72,784,349
EQUITY AND RESERVES	
Capital and reserves	
Issued capital	2,825,118
Revaluation reserve	20,244,239
Accumulated losses	(8,557,928)
Total equity	14,511,429
Non- current liabilities	
Borrowings	17,670,900
Retirement benefit obligations	3,066,379
Capital grants and contributions	2,997,100
Deferred tax liability	-
Lease liabilities	14,539
Total Non current liabilities	23,748,918
Current liabilities	
Trade and other payables	20,176,070
Amounts due to related parties	10,564,868
Borrowings	2,157,293
Retirement benefit obligations	176,460
Capital grants and contributions	133,966
Current tax liabilities	1,299,634
Lease liabilities	15,711
Bank overdraft	
Total current liabilities	34,524,002
Total liabilities	58,272,920
TOTAL EQUITY AND LIABILITIES	72,784,349

Table5: Audited Operating Income Statement for the ended 31st December 2021

	K'000
REVENUE	21,897,616
Cost of sales	(9,914,063)
GROSS PROFIT	11,983,553
Other operating income	859,616
Other gains and losses	7,505,883
Marketing expenses	(8,144)
Administration expenses	(4,847,689)
Other expenses	(6,001,898)
Finance costs	(874,971)
PROFIT/(LOSS) BEFORE TAX	8,616,350
Income tax charge	(33,922)
PROFIT/(LOSS) FOR THE YEAR	8,582,428
OTHER COMPREHENSIVE INCOME	
Items that will not be reclassified	
subsequently to profit or loss:	
Change in defined benefit obligation	-
TOTAL COMPREHENSIVE PROFIT /(LOSS) FOR THE YEAR	8,582,428

6 CHANGES IN THE OPERATING OR FINANCIAL CONDITION OF UTILITY

ZESCO's financial condition has not improved over the past few years as liquidity has remained a challenge as shown in the table below:

Table 6: Financial Condition of Utility

Ratio	**2021**	**2020**	**2019**	**2018**	**2017**
Net profit/(loss) margin	14%	-29%	-43%	-14%	-11%
Return on capital employed	1%	-1.29%	-11%	-0.01	0.68
Current ratio	29%	34%	37%	0.56	0.62
Gearing ratio	55%	78%	47%	40%	64%
Debtor days	125	233	78	70	28
Asset turnover	0.08	0.09	0.27	0.02	0.08

ZESCO's performance in the last five years has been impacted by high cost of electricity purchases from IPPs, non-cost reflective tariffs, foreign exchange losses, provision for doubtful debts and general inflationary pressures.

SCHEDULE E – ASSETS

7 FIXED ASSET SUMMARY

The Schedule below shows the Tangible Fixed Asset Summary by plant account as at 31st December 2020

Table 26: Fixed Asset Summary and Depreciation Schedule for the year ended 31st December 2020 – ZMW'000

DETAILS	Civil Works & Buildings	Distribution Systems	Generation Systems	Intangible	Transmission Systems	Vehicles, Furniture and fittings, & Equipment	Capital Works in Progress	Total
	K' 000	K' 000	K' 000	K' 000	K' 000	K' 000	K' 000	K' 000
Cost or Valuation								
At 1st January 2017	289,905	-	1,095,826	143,448	11,594,105		7,573,932	20,697,216
YTD Additions	4,270	-	41,246				3,876,937	3,922,453
Disposals	0	-	(23,673)					(23,673)
Projects Completed	202,277	-	576,045		4,358,719		(5,137,041)	(0)
Revaluation of assets	10,632,005	-	2,182,595	(74,708)	9,056,025			21,795,917
At 31st December 2017	**11,128,457**	-	**3,872,039**	**68,740**	**25,008,849**		**6,313,828**	**46,391,913**
Cost or Valuation								
At 1 January 2018	11,128,457		3,872,039	68,740	25,008,849	-	6,313,828	46,391,913
Realignment	(3,042,757)	12,755,933	(150,867)		(13,634,295)	4,071,987	-	0
YTD Additions	2,999	-	4,216	7,765	-	89,901	3,892,854	**3,997,734**
Disposals						(5,093)		(5,093)
REA Transfers In								-
Transfers from CWIP	1,989	165,101	17,836		144,939	2,871	(332,736)	0
Adjustments on Assets		(156,888)			(109,197)		(2,271,268)	(2,537,353)
At 31st December 2018	8,090,688	12,764,146	3,743,224	76,505	11,410,296	4,159,665	**7,602,677**	**47,847,201**
Cost or Valuation								
At 1 January 2019	8,090,688	12,764,146	3,743,224	76,505	11,410,296	4,159,665	7,602,677	47,847,201
Adjustments						8	(579,005)	(578,997)
Realignment								
YTD Additions	43	58	742	716	49	48,321	3,800,566	**3,850,495**
Disposals						(3,602)		(3,602)
REA Transfers In		47,409						47,409
Transfers from CWIP	198,971	103,921	-	7,191	824,265	104,489	(1,238,836)	0
Adjustments on Assets								
At 31st December 2019	8,289,702	12,915,534	3,743,966	84,412	12,234,610	4,308,882	**9,585,402**	**51,162,507**
Cost or Valuation								
At 1 January 2020	8,289,702	12,915,534	3,743,966	84,412	12,234,610	4,308,882	9,585,402	51,162,507
Adjustments	143	257						401
Realignment								-
YTD Additions	80	-	-	381	-	70,730	4,155,079	4,226,269
Disposals	(1,497)		(245)		(2,551)	(9,768)		(14,062)
REA Transfers In								-
Transfers from CWIP	393,757	272,172	422,395	23,867	1,014,778	728,862	(2,855,831)	0
Adjustments on Assets								
At 31st December 2020	8,682,184	13,187,963	4,166,116	108,659	13,246,836	5,098,706	**10,884,650**	**55,375,114**
Cost	681,671	6,152,023	1,395,134	184,725	6,943,501	5,098,706	10,884,650	31,340,410
Valuation (1996)	51,779	1,281,611	177,987	-	-	-	-	1,511,377
Valuation (2001)	153,854	-	191,640	-	-	-	-	345,494
Valuation (2017)	7,794,881	5,754,329	2,401,355	(76,066)	6,303,335	-	-	22,177,833
	8,682,184	13,187,963	4,166,116	108,659	13,246,836	5,098,706	10,884,650	**51,162,507**
Depreciation								
At 1st January 2020	606,950	1,334,737	338,886	16,520	1,126,303	646,297	-	4,069,693
Adjustments								-
YTD Charge	302,949	678,556	170,145	7,576	580,823	150,908		1,890,955
Retirement	(695)	(110)	(41)		(416)	(7,778)		(9,040)
Reclassification								-
Adjustments						211		211
	909,204	**2,013,183**	**508,990**	**24,096**	**1,706,709**	**789,638**	**-**	**5,951,820**
Net Book Value								
At 31st December 2020	7,772,981	11,174,780	3,657,126	84,562	11,540,127	4,309,068	10,884,650	**49,423,294**
At 1st January 2020	7,682,751.24	11,580,796.64	3,405,080.38	67,891.13	11,108,307.14	3,662,584.98	9,585,402.32	**47,092,814**

8 DEPRECIATION METHODS

ZESCO has continued to use straight line depreciation method. The service life and depreciation rate applicable to each category of assets is shown in the table below.

Table 27: Asset Useful Life and Depreciation Rates

Asset Categories	Service Life	Depreciation Rate p/a
Land and Buildings	50	2%
Vehicles and Aircraft	5.5	18%
Equipment	35	3%
Computer Hardware and Software	5.5	18%
Furniture and Fittings	5.5	18%
Hydro Electric Schemes Civil Works & Machinery	50	2%
Diesel and Thermal Schemes Civil Works & Machinery	50	2%
Transmission Systems	35	3%
Distribution Systems	35	3%

9 CHANGES IN DEPRECIATION METHODS

No change has been made to the method of depreciation and estimated useful lives of assets during the year.

SCHEDULE F – BUDGET

10 BUDGET FOR THE YEAR 2023

In 2021, the Board of Directors and corporate leadership ushered in a new vision for the corporation that will see ZESCO Limited provide efficient and sustainable electricity services to its customers.

ZESCO's investment and operating strategy is guided by:

1) **Mission:** To be an effective provider of reliable and environmentally sustainable electricity services to all our customers by 2031
2) **Vision**: To provide efficient, innovative, and excellent electricity services and energy solutions to our local and international customers.

The 2023 budget has been prepared under the theme: **Steering ZESCO back into a viable power utility focused on efficient, effective, and excellent service delivery.** This builds on achievements recorded during 2022 such as improved own electricity generation and downward renegotiation of power purchase tariff for Maamba resulting in

reduced cost of sales, signing of a new Bulk Supply Agreement with CEC and an increase in exports. The 2023 capital expenditure (CapEx) budget is focused on maintenance of the core infrastructure and expansion of generation, transmission and distribution capacity. Conversely, the operating expenditure (OpeEx) budget is focused on enhancing revenue through enlisting of new local customers on bulk supply contracts.

Electricity generation in 2023 is projected to improve owing to the coming on board of the fifth generator at Kafue Gorge Lower (KGL) power station. However, during the 2023 fiscal year, the company is projected to have a deficit on meeting the electricity demand from customers. Therefore, the 2023 budget has included uptake of all the power generated by Maamba collieries LTD and Lunsemfwa Hydro Power Company (LHPC) as mitigation measures to meet the electricity demand from customers.

Revenue from electricity sales in 2023 is projected at K21.2 billion, up by 7% compared with the 2022 forecast at K19.8 billion.
Total Operating Expenditure (excluding depreciation) is projected at K18.6 billion, representing an increase of 0.1% compared with the 2022 forecast. The company is projected to record a net profit of K764 million in 2023, compared with the 2022 forecast net profit at K548 million.
Debt servicing in 2023 is projected at K1.7 billion, representing a reduction of 24% compared with the 2022 forecast of K2.2 billion. Finance costs are projected at K1.3 billion, representing a 42% increase from forecast of K0.9 billion in 2022 driven by increased loan portfolio.

Capital Expenditure in 2023 is projected at K5.9 billion (2022: K5.8 billion) of which K 2.6 billion is to be funded through internally generated resources and K3.3 billion from grant/capital contribution and borrowings.
Some of the possible risks that may negatively affect the implementation of the 2023 budget include;

i. Poor rainfall resulting in reduced hydro electricity generation,
ii. Lower than planned revenue collections,
iii. Lower than planned uptake of power from Maamba and Lunsemfwa and;
iv. Unstable Kwacha against major convertible currencies such as the US$.

Despite the above stated risks, Management is confident that the company will be able to deliver its 2023 budget objectives.

10.1 AREAS OF FOCUS FOR 2023

10.1.1 Power Generation

During the 2023 financial year, own generation sent out is projected at to 1,824 MW. The budgeted generation is based on the Zambia Meteorological Agency's weather forecast that the country is likely to experience normal to above normal rainfall in the 2022/2023 season.

The Corporation plans to spend a total of K490 million on maintenance capital expenditure in power generation. The focus of the budget activities is on maintenance capital expenditure for the various generating machines and equipment. Below are some key power generation activities planned for 2023

S/N	Project	Power Station
1	SPILLWAY SYSTEM REHABILITATION	Kafue Gorge Upper
2	REPLACEMENT OF CONTROL SYSTEM	Kafue Gorge Upper
3	REPLACEMENT OF CABLES	Kafue Gorge Upper
4	REPLACEMENT OF NEYPIC GOVERNOR	Kariba North Bank
5	REPLACEMENT OF EXCITATION SYSTEM	Kariba North Bank
6	REPLACEMENT OF LIQUID CHILLERS	Kariba North Bank
7	INSTALLATION OF A FLOATING BOOM BARRIER FOR THE INLET AND THE SPILLWAY	ITT
8	REPLACEMENT OF GANTRY CRANE BULKHEAD	ITT
9	INSTALLATION OF ONE TRCM WITH RAKE ON 60MW FOREBAY	VFPS
10	FIRE SUPPRESSION IMPROVEMENT	VFPS
11	RESTORATION OF 3MW GENERATORS	LUSIWASI
12	CCTV INSTALLATION	MUSONDA FALLS

10.1.2 Transmission, Operations and Trade (TOT)

To reduce power supply interruptions in line with the Strategic Plan (10-year rolling), the company has allocated a total of K749 million for transmission maintenance Capex in the 2023 budget. The focus of the budget is on maintenance capital expenditure for the various transmission systems.

The 2023 budget has included funds to increase surveillance on key transmission installations to reduce vandalism and theft. The Directorate through Technical Services has also budgeted for the Integrated Monitoring Systems whose scope includes;

- Transmission SCADA,
- Transmission EMS (Energy Management Systems)
- Substation Automation Systems (SAS) for 78 Transmission Substations
- Access Control, Thermal imaging, and CCTV Systems
- Generation Plants SCADA systems for the power stations in ZESCO

To improve grid security which has degraded over the years, the Corporation has budgeted for a number of automation upgrade projects to restore the system. These projects will ensure full monitoring, control and management of the transmission grid and the power plants. Additionally, the Directorate through Transmission planning has allocated funds for the completion of the technical, economic, and environmental pre -feasibility study of the following strategic projects:

- Upgrading of Msoro-Azele (Katete)-Petauke-Nyimba from 66KV to 132 KV
- Solwezi –Kolwezi interconnector
- Central transmission corridor
- Zambia – Malawi interconnector
- Central reinforcements

10.1.3 Distribution and Customer Services

The Directorate has been allocated a total of 1.4 billion to Capex in the 2023 budget. The focus of the budget is on maintenance capital expenditure and improved customer service in line with the Strategic plan (10-year rolling).

10.1.3.1 Customer Connections

The Corporation plans to connect 30,000 new customers in 2023 as the old backlog would have been dismantled. To reduce the lead time for customer connections in line with the Strategic Plan, the budget has assumed cost reflective charges for all new connection fees and the funds received for new connections will be ring fenced. The new connection backlog stood at 16,699 for non-standard connections and 1,531 for standard connections as at 30th September 2022. The new standard customer connections backlog is expected to be cleared within 2023.

Table 7 Customer connection backlog @ Sept 2022

REGION	Standard connections	Non Standard connections
CENTRAL	145	3,086
CHINGOLA	92	2,261
KITWE	124	781
LUSAKA NORTH	410	3,118
LUSAKA SOUTH	425	1,300
NDOLA	77	1,154
NORTHERN	171	3,163
SOUTHERN	87	1,836
TOTAL	**1,531**	**16,699**

10.1.3.2 Advanced Metering Infrastructure (AMI)

The company has allocated funds in the 2023 Capex budget towards the advanced metering infrastructure project to be implemented across the Regions. This is an Engineering Procurement and Construction (EPC) plus Financing Contract aimed at improving metering accuracy, timely production of bills, cut meter reading costs, prompt notifications of power cuts thus reducing calls to the call center, load limiting, energy efficiency, eliminate theft of electricity, create meter visibility, eliminate costs associated with disconnection/reconnections for defaulters among other things.

The project will deploy Head End System (HES) and Data Concentrator Units (DCUs) in the field and link to FibreCom wireless system to cut mobile provider costs of deployment. The Meter Data Management system (MDM) will store data for use across the corporation's value chain and provide interface with Customer Management System (CMS), SCADA, OMS and customer web portal, for live information utilization. Advanced Metering Infrastructure (AMI) will allow remote meter reading, real time Distribution, Network Monitoring and provide enhanced energy usage information for both the utility and the customer. AMI is a corner stone for Smart Grid System, a desired end for all utilities desiring digital migration.

10.1.3.3 Large power user smart prepayment solution

The company has budgeted to install high current pre-paid meters (above 250 Amps) on Government, Water Utilities and Parastatals to curb the growth of debt and enhance collections for the current usage. The company has already informed the Customers about its plans to install pre-paid meters in 2023.

10.1.3.4 Customer Management System (CMS) Upgrade

The 2023 budget has allocated funds for CMS upgrades. The current version of the Customer Management System has been in use for over ten years. Therefore, need has arisen to upgrade the system to the latest version. The upgraded system includes the following new features which are unavailable in the current version of the system.

i. The new upgraded version of CMS (InCMS) is web based and easy to deploy and access. The web-based version will also allow mobile working which will improve productivity;
ii. Prepaid system – the new InCMS has the prepaid component hence the system can handle both prepaid and postpaid;
iii. Customer Relationship Management (CRM) – the new InCMS system has CRM that can be effectively used to address the many challenges being faced under the ZESCO Call Centre.

10.1.3.5 Revenue protection intelligence system

The company has allocated funds in the 2023 budget towards the implementation of the Revenue Protection Intelligence System. The system will enable the Company to adopt a detect and inspect approach to product security management through analytics and mitigate against the background of manpower challenges. Studies by the Power Institute for East and Southern Africa (PIESA)) on Utilities that have implemented Revenue Protection Intelligence System show that revenue savings of 20% could be made in the first year. The project was first budgeted for in the 2020 budget but could not be undertaken because the

initial public tendering process failed, and the tendering was reopened to the public. Other benefits of the system besides the financial gains includes:

i. Timely resolution of Customer complaints and queries thereby enhancing revenue recovery process;
ii. Remove human involvement to reduce malpractices in detecting electricity theft and other vices;
iii. The number of inspections would increase and in turn high numbers of anomalies such as meter bypasses, illegal lines and defective meters will be discovered and resolved;
iv. With increased efficiency and migration from the inspection to detect modus operandi, to detect to inspect; will improve the distribution losses and thereby enable the corporation to meet the KPI target; and

The Revenue Protection Intelligence System will increase ZESCO Limited's efficiency in detecting illegal activities and thereby act as a deterrent to would be transgressors.

10.1.4 PLANNING AND PROJECTS

To expand the generation, transmission and distribution systems through an integrated resource planning, the Directorate has budgeted to carry out various projects within the value chain amounting to K2.9 billion. The ZESCO funded portion of the budget is K0.44 billion and the loan and grant portion total K2.5 billion.

10.1.4.1 Power generation projects

During the 2023 financial year, the Directorate plans to spend a total of K124 million on Chishimba falls hydro power station whose cost is estimated at EURO 49.5 million and is funded by a grant from the Germany Government through KWF.

In line with the Strategic Plan, the Directorate has budgeted to develop Hydro power facilities from diverse river basins. This is with a view to mitigate hydrological risks associated with the concentration of power stations in the Southern part of the Country which is sometimes affected by drought. In this regards, K53 million has been allocated to the following projects;

- Luapula Hydro Power Project
- Feasibility study of West Lunga II site
- Chishimba Small Hydro Project
- Lusiwasi Lower HPP

10.1.4.2 Transmission projects

To improve quality and access to electricity services, the company has allocated a total of K551 million in the 2023 budget for the completion of the Chipata-Lundazi-Chama

transmission line. The objective of the project is to connect both Lundazi and Chama (currently access power from ESCOM Malawi and diesel generators) to the Zambian national grid. This project was necessitated by frequent and prolonged power interruptions experienced in these areas.
To develop regional power interconnectors, the company has allocated ZMW 576 million towards the Zambia-Tanzania-Kenya Interconnector Line 2 project. This project will increase transmission capacity and access to the East African market.

10.1.4.3 Distribution projects

The 2023 budget includes loans and grants amounting to K479 million for SESSD that will cover works on the distribution lines. The Sustainable Electricity Supply Southern Division (SESSD) project is for rehabilitating and upgrading the distribution and sub-transmission infrastructure in the South – West & Central Eastern Region, which covers Southern, Western, Eastern and Central provinces. The towns covered are Kabwe, Petauke, Nyimba, Sinda, Katete (Azele), Mongu, Mazabuka and Livingstone. The Project involves the construction of new substations and lines (voltage levels of 11 kV to 132 kV) as well as reinforcement of existing substations and lines.

Additionally, the 2023 budget includes draw downs on loans amounting to K129 million and K473 million for the Electricity Services Access Project (ESAP) and the Lusaka Transmission and Distribution Reinforcement Project (LTDRP) respectively. The budget has allocated K242 million for the extension of the backbone Distribution Network in targeted rural parts of the country (under the Last Mile project). The project will increase ZESCO's capacity to increase access to electricity to rural parts of the country. Works at Bauleni, Ibex and Woodlands Substations amongst others are scheduled to be completed in 2023. These works will improve supply of power as well as increase customer satisfaction

10.2 KEY ASSUMPTIONS

The 2023 Corporate Budget is based on the following key assumptions;

10.2.1 Macro – Economic Assumptions

		Budget	Actual-2022
i.	Exchange rate (ZMW)	16 /USD	17.3 /USD
ii.	Inflation rate (%)	8	9.7
iii.	GDP growth rate (%)	4	3
iv.	Interest rate on deposits (%)	10	9
v.	BOZ Monetary policy rate (%)	9	9

10.2.2 Borrowing costs

i.	US Dollar		
	SOFR – 3 months (%)	3.474	3.474
	SOFR – 6 months (%)	2.952	2.952
	Average Margin (%)	4.5	4.5
	Arrangement Fee (%)	0.75	0.75
	Facility Fee (%)	1.00	1.00
	Commitment Fee (%)	1.00	1.00
ii.	Kwacha ZMW margin (%)	12	12

10.2.3 System losses (%)

i.	Transmission	5	5
ii.	Distribution	11	12.9

10.2.4 Average Tariffs (US cent)

• Domestic	6.04	6.57
• Mining	8.34	8.34
• Exports	8.88	8.88

Table 28 Budgeted Statement of Comprehensive Income For The Year Ended 31st December 2023

Currency :ZMW	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	%	% of Sales (B)
TURNOVER						
Domestic	7,282m	6,402m	5,968m	879m	14%	34%
Bulk - Others	392m	171m	204m	221m	129%	2%
Bulk - Mining	9,007m	8,749m	11,636m	258m	3%	42%
Bulk - Exports	4,540m	4,442m	4,090m	97m	2%	21%
TOTAL TURNOVER	**21,220m**	**19,765m**	**21,898m**	**1,455m**	**7%**	**100%**
COST OF SALES						
Diesel Generation	28m	19m	7m	-9m	-46%	0.1%
Generation Water Usage	181m	189m	252m	8m	4%	1%
Maintenance of Plant	366m	352m	270m	-14m	-4%	2%
Purchase of electricity	10,202m	10,025m	8,173m	-177m	-2%	48%
Direct Labour	1,300m	1,073m	993m	-228m	-21.2%	6%
TOTAL COST OF SALES	**12,076m**	**11,657m**	**9,695m**	**-419m**	**-4%**	**57%**
GROSS PROFIT	**9,144m**	**8,108m**	**12,203m**	**1,036m**	**13%**	**43%**
OTHER INCOME						
Amortized Grants and Capital Contributions	224m	187m	197m	37m	20%	1%
Interest Income	13m	12m	2m	0m	3%	0%
Revenue Grant	0m	181m	430m	-181m	-100%	0%
Rental Income	3m	2m	2m	0m	18%	0%
Other Income	130m	129m	658m	2m	1%	1%
TOTAL OTHER INCOME	**370m**	**512m**	**1,289m**	**-142m**	**-28%**	**2%**
TOTAL INCOME	**9,514m**	**8,620m**	**13,492m**	**894m**	**10%**	**45%**
OPERATING EXPENSES						
Depreciation	1,918m	1,851m	1,930m	-66m	-4%	9%
Remuneration - Non Represented	820m	690m	601m	-130m	-19%	4%
Remuneration - Represented	654m	508m	504m	-147m	-29%	3%
Pension, gratuity & GLA Provisions	541m	1,515m	260m	974m	64%	3%
Pension Payments (LASF, NAPSA, ZSIC)	107m	105m	100m	-1m	-1%	1%
Wages - Casuals & Temps	17m	18m	12m	1m	3%	0%
Maintenance of buildings/premises	135m	85m	73m	-49m	-58%	1%
Maintenance of tools, mach.& equip.	28m	11m	15m	-17m	-149%	0%
Transport	238m	183m	123m	-54m	-30%	1%
Insurance	123m	111m	108m	-12m	-11%	1%
Administration	328m	264m	262m	-64m	-24%	2%
Training	26m	9m	3m	-17m	-195%	0%
Travel and accommodation	112m	75m	50m	-37m	-50%	1%
External services	464m	378m	375m	-86m	-23%	2%
Directors costs	7m	4m	2m	-2m	-53%	0%
Provision for doubtful debts	1,586m	1,147m	2,273m	-439m	-38%	7%
Stock Adjustments	0m	-25m	-7m	-25m	100%	0%
Other Operating Expenses	34m	918m	1,573m	884m	96%	0%
TOTAL OPERATING EXPENSES	**7,136m**	**7,846m**	**8,259m**	**711m**	**9%**	**34%**
PROFIT/(LOSS) BEFORE INTEREST AND TAXES (EBIT)	**2,378m**	**773m**	**5,233m**	**1,605m**	**208%**	**11%**
Exchange (Gains)/loss	-17m	-699m	-7,520m	-683m	98%	0%
FINANCE COSTS						
Interest on Bank Overdrafts	13m	14m	12m	1m	8%	0%
Interest on Loans	1,290m	911m	866m	-379m	-42%	6%
TOTAL FINANCE COSTS	**1,302m**	**924m**	**878m**	**-378m**	**-41%**	**6%**
Taxation	328m	0m	0m			2%
NET PROFIT	**764m**	**548m**	**11,874m**	**216m**	**-39%**	**4%**

10.3 BUDGETED STATEMENT OF FINANCIAL POSITION FOR THE YEAR ENDED 31ST DECEMBER 2023

Currency:ZMW	2023 Budget	2022 Forecast	2021 Actual
Non - Current Assets			
Property, plant and equipment	55,175 m	51,164 m	50,909 m
Intangible assets	82 m	76 m	75 m
Right of Use	15 m	15 m	15 m
Investments	14,393 m	14,371 m	12,817 m
	69,665 m	**65,625 m**	**63,817 m**
Current Assets			
Inventories	1,013 m	1,059 m	832 m
Trade and other receivables	2,869 m	3,069 m	3,100 m
Amounts due from related parties	4,479 m	4,496 m	3,908 m
Bank and cash balances	2,520 m	2,422 m	2,339 m
	10,882 m	11,045 m	10,179 m
Total Assets	**80,546 m**	**76,671 m**	**73,996 m**
EQUITY AND LIABILITIES			
Capital Reserves			
Share capital	9,342 m	2,825 m	2,825 m
Revaluation reserve	12,377 m	13,051 m	12,091 m
Retained profits	4,071 m	2,305 m	-985 m
	25,789 m	**18,181 m**	**13,930 m**
Non - Current Liabilities			
Borrowings	30,386 m	15,164 m	17,671 m
Retirement benefit obligation	2,537 m	2,155 m	1,687 m
Capital grants and contributions	3,290 m	2,884 m	2,989 m
Deferred tax liability	0 m	0 m	3,814 m
Lease Liability	18 m	18 m	15 m
	36,232 m	**20,221 m**	**26,176 m**
Current Liabilities			
Trade and Other Payables	13,328 m	34,013 m	30,107 m
Borrowings	3,376 m	2,469 m	2,157 m
Current tax liabilities	1,162 m	1,162 m	1,300 m
Retirement benefit obligation	282 m	294 m	176 m
Capital grants and contributions	366 m	320 m	134 m
Lease Liability	12 m	12 m	16 m
	18,525 m	**38,269 m**	**33,889 m**
Total Equity & Liabilities	**80,546 m**	**76,671 m**	**73,996 m**

10.4 BUDGETED STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 31ST DECEMBER 2023

Currency:ZMW	2023 Budget	2022 Forecast	2021 Actual
ACTIVITIES			
(Loss) profit before tax	1,092 m	548 m	-14,841 m
Adjustments for:			
- Interest income	-13 m	-12 m	-10 m
- Finance costs recognised in profit and loss	1,302 m	924 m	741 m
- Net exchange losses recognised on borrowings	0 m	-699 m	8,374 m
- (Gain) loss on disposal of property, plant and equipment	0 m	0 m	2 m
- Depreciation of non current assets	1,918 m	1,851 m	1,884 m
- Amortisation of intangible assets	0 m	0 m	8 m
- Depreciation on right of use assets	0 m	0 m	8 m
- Impairement of investments	0 m	0 m	170 m
- Impairment reversal recognised on amounts due from related parties	0 m	0 m	108 m
- Amortisation of capital grants and contributions	-224 m	-187 m	-187 m
- Unrealised exchange gains	0 m	0 m	-949 m
- Impairment loss recognised on trade receivables	1,586 m	1,147 m	7,882 m
	5,661 m	**3,572 m**	**3,190 m**
Movements in working capital:			
Increase in inventory	46 m	-226 m	-123 m
Increase in trade and other receivables	-1,386 m	-1,116 m	-9,392 m
(Increase) decrease in amounts due from related parties	17 m	-587 m	-1,773 m
Increase in trade and other payables	-20,685 m	3,906 m	9,624 m
Increase in deferred liabilities	371 m	1,652 m	615 m
Increase in amounts due to related parties	0 m	0 m	5,201 m
Increase (decrease) in borrowings due from related party	0 m	0 m	3,970 m
Cash generated from operations	**-15,976 m**	**7,200 m**	**11,312 m**
Interest paid	-1,338 m	-924 m	-736 m
Income tax paid	0 m	-311 m	-162 m
Net cash generated by operating activities	**-17,314 m**	**5,964 m**	**10,414 m**
CASH FLOWS FROM INVESTING ACTIVITIES			
Proceeds from disposal of property, plant and equipment	0 m	0 m	3 m
Payments for property, plant and equipment	-5,900 m	-1,600 m	-4,226 m
Payment to acquire investment	-22 m	-3,391 m	-7,542 m
Payment for intangible asset	0 m	0 m	0 m
Interest received	13 m	12 m	10 m
Net cash used in investing activities	**-5,909 m**	**-4,979 m**	**-11,756 m**
CASH FLOWS FROM FINANCING ACTIVITIES			
Repayment of borrowings	-8,186 m	-2,199 m	-2,517 m
Proceeds from capital grants and contributions	676 m	268 m	240 m
Proceeds from borrowings	24,316 m	295 m	3,422 m
Proceeds from issue of share capital	6,516 m	0 m	0 m
Net cash generated from financing activities	**23,322 m**	**-1,636 m**	**1,133 m**
Net (decrease) increase in cash and cash Equivalents	**99 m**	**-650 m**	**-208 m**
Cash and cash equivalents at the beginning of year	2,422 m	3,072 m	2,331 m
Effect of foreign exchange rate changes	0 m	0 m	949 m
Cash and cash equivalents at the end of the Year	**2,520 m**	**2,422 m**	**3,072 m**

10.5 FIVE YEAR CAPITAL BUDGET PER PRICING MODEL

The table below gives a summary of the major capital expenditure that is planned for in ZESCO over the next five years.

Table 29: Five-year Capital Budget (US$M)

Source of Funding	Purpose	2022	2023	2024	2025	2026
ZESCO/External	Rehabilitation and uprating of Chishimba Power Station	6.225	29.05	4.15	2.075	2.07
ZESCO/External	Increasing generation capacity by developing the Lusiwasi Lower Power Project	-	39.37	98.43	39.37	9.84
ZESCO/External	The development of Kanona Solar Power Project [ZESCO / MASEN PROJECTS]	0	0	0	100.8	11.2
ZESCO/External	Kasama - Nakonde Transmission Project	2.88	75.04	75.04	72.16	-
ZESCO/External	Pensulo - Mansa Transmission Project	2.00	-	74.67	74.67	72.67
ZESCO/External	Sesheke - Mongu Shangombo	1	40.00	40	39	0
ZESCO/External	Increasing the capacitive limit of the Luano SVC to 250Mvar	-	1.00	21.67	21.67	19.67
ZESCO	Upgrade & Establishment of SCADA in Livingstone, Kasama, Chingola, Kabwe, Ndola, Kitwe	7.00	7.00	7.00	7.00	7.00
ZESCO	Migration of Maximum Demand customers (MD) to the advanced metering infrastructure platform (AMI)	9.25	9.25	9.25	9.25	-
ZESCO	Introduction of the Large Power User (LPU)	14.00	14.00	14.00	14.00	-
ZESCO/External	The introduction of TID (Token Identification rollover)	80	80			

10.6 NOTES ON THE BUDGETED STATEMENT OF COMPREHENSIVE INCOME

10.6.1 Turnover

The company's total revenue from electricity sales is projected to increase from the forecast of K19.7 billion in 2022 to K21.2 billion in 2023 driven by increase in volume sales to the domestic, mining and export customer category. Mining is projected to account for 43% of total revenue, followed by domestic at 34% and exports at 21%.

The projected distribution of sales between Mining, Retail and Export customers is depicted in the Table below:

Table 30: 2023 Budgeted Turnover Analysis

Turnover	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	% Change	% Sales
Domestic	7,282	6,402	5,968	879	14%	34%
Bulk - Others	296	307	343	-11	-3%	1%
Bulk - Mining	9,103	8,613	11,497	490	6%	43%
Bulk - Exports	4,540	4,442	4,090	97	2%	21%
	21,220	**19,765**	**21,898**	**1,455**	**7%**	**100%**

The sales projections were carried out using:

- The trends in consumption and connection growth of retail customers over the past few years
- Load projections from existing industrial, mining, and export customers
- Expressions of interest from potential industrial, mining, and export customers

10.6.2 Cost of Sales

The 2023 budgeted total cost of sales at K12.1 billion is projected to increase from the 2022 forecast at K11.7 billion. The increase is attributed to purchases of electricity, direct labour and maintenance of plant.

Table 32: Break down of 2023 Budgeted Cost of Sales

Currency:ZMW	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	% Change	% Sales
Purchase of electricity	10,202 m	10,025 m	8,173 m	-177 m	-2%	48%
Direct Labour	1,300 m	1,073 m	993 m	-228 m	-21%	6%
Maintenance of Plant	366 m	352 m	270 m	-14 m	-4%	2%
Generation Water Usage	181 m	189 m	252 m	8 m	4%	1%
Diesel Generation	28 m	19 m	7 m	-9 m	-46%	0%
Total	**12,076 m**	**11,657 m**	**9,695 m**	**-419 m**	**-4%**	**57%**

Table 33: 2023 Budgeted Purchases of Electricity

Currency:ZMW	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	% Change	% Sales
Kafue gorge Lower	4,069 m	2,313 m	227 m	-1,756 m	-76%	19%
Maamba Collieries	3,484 m	3,395 m	2,988 m	-89 m	-3%	16%
Ndola Energy	0 m	861 m	1,050 m	861 m	100%	0%
ITPC	673 m	1,742 m	1,940 m	1,069 m	61%	3%
KNBE	737 m	615 m	722 m	-122 m	-20%	3%
Lunsemfwa	353 m	0 m	0 m	-353 m	0%	2%
Bangweulu Power	93 m	87 m	105 m	-6 m	-7%	0%
Ngonye Power Company	66 m	78 m	90 m	12 m	16%	0%
CEC Wheeling	710 m	907 m	1,018 m	196 m	22%	3%
Malawi	17 m	25 m	20 m	8 m	30%	0%
Import Purchases-SAPP	0 m	2 m	0 m	2 m	100%	0%
Total	**10,202 m**	**10,025 m**	**8,173 m**	**-177 m**	**-2%**	**48%**

The cost of electricity purchases in 2023 is projected at K10.2 billion, an increase by 2% compared with the 2022 forecast driven by the following;

i. Power purchases from KGL at a higher average tariff compared to the 2022 average tariff coupled with increase in volume purchases.

ii. Increased volume purchases from Maamba at 246 MW from the 2022 volume purchases at 243 MW. The uptake of power from Maamba is currently capped at US$ 16.5 million per month to curtail accumulation of debt.

iii. Purchases of power from Lunsemfwa is budgeted at 33 MW

10.6.3 Other Income

Total other income is projected at K370 million, a decrease over the forecast of 2022 due to the revenue grant received in 2022

Table 34: Breakdown of Other Income in 2023 Budget

Currency:ZMW'Million	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	% Change	% Sales
Amortized Grants and Capital Contributions	224	187	187	37.0	20%	61%
Interest Income	13	12	11	0.4	3%	3%
Revenue Grant	-	181	160	(181.2)	-100%	0%
Rental Income	3	2	2	0.4	18%	1%
Fibrecom Income	-	-	105	-	0%	0%
Other Income	130	129	541	1.7	1%	35%
Total	**370**	**512**	**1,006**	**(142)**	**-28%**	**100%**

10.6.4 Depreciation

In 2018 an Asset Revaluation exercise was carried out resulting in an increase in the book value of ZESCO's assets and driving up the annual depreciation provided for in the income statement. Depreciation for the year 2022 was budgeted at ZMW1, 230 million and is broken down by asset class as follows:

Table 35: Detailed 2022 Budgeted Depreciation Schedule

Description	K'000
Transmission Systems	960,575,016
Distribution Systems	434,256,528
Hydro Electric Schemes Civil Works & Machinery	301,453,033
Equipment	7,884,953
Computer Hardware and Software	4,349,337
Vehicles and Aircraft	1,686,846
Land and Buildings	1,663,816
Furniture and Fittings	694,355
Diesel and Thermal Schemes Civil Works & Machinery	97,304
Total	**1,712,661,188**

10.6.5 Staff Costs

The staff costs (Non-Direct Labour) include the salaries, pension accruals and fringe benefits given to staff. The increase in pension and gratuity from the 2021 forecast of K0.3 million to the projected K0.6 million in 2022 is attributed to a reversal of the actuarial gain recorded in 2020.This has resulted in a reduction in the forecast for provision for retirement benefits in 2021.

Table 36: Breakdown of 2022 Budgeted Staff Costs

Description	K'million
Remuneration - Non -Represented	581
Remuneration - Represented	491
Pension, gratuity & GLA Provisions	558
Pension (LASF, NAPSA, ZSIC)	86
Total	**1,716**

10.6.6 Operations & Maintenance Costs

The cost of Maintenance of plant is projected to increase in the 2023 fiscal year due to the following;

i. Internal and outsourced distribution systems maintenance: The company has allocated a total of K105 million in the 2023 budget year for the maintenance of the distribution network. The expenditure on outsourced jobs in 2022 is forecast to be minimal due to various challenges faced in operationalizing the outsourcing of maintenance activities.
ii. The Power Generation Directorate plans to undertake routine maintenance works at its generating plants at a total of K23 million.
Increase in security costs due to expected increase in rates by the service providers

Table 37: Breakdown of Budgeted Operations and Maintenance Costs for 2023

Currency:ZMW'Million	Distribution	Transmission	Generation	2023 Budget	2022 FORECAST	% Movement
Outsourced Distribution Maintenance Costs	14	-	-	14	6	134%
Water Course Maintenance	-	-	2	2	1	105%
Hydro Power Stations Maintenance	-	-	23	23	23	-2%
Diesel Power Stations Maintenance	0	-	0	0	0.07	325%
Transmission System Maintenance	-	10	-	10	9	16%
Distribution System Maintenance	91	-	-	91	81	12%
SCADA System Maintenance	-	1	-	1	1	-8%
Bush Clearing	20	60	-	80	98	-18%
Lunch and Subsistence - Operations	14	11	3	28	21	32%
Meter Testing, Repairs and Replacements	8	-	-	8	14	-42%
Wages - Operations & Maintenance	27	4	1	32	36	-10%
Security - Installations and Vandalism	60	8	7	76	61	24%
Total	**234**	**95**	**36**	**366**	**352**	**4%**

10.6.7 Operating Expenses

Total Operating expenses are projected at K7.1 billion in the 2023 budget, a reduction from the forecast at K7.8 billion in 2022. The reduction in operating expenses is mainly driven by the reduction in pension and gratuity provision and other operating expenses attributed to penalty on delayed payment.

Table 38: Breakdown of 2023 Budgeted Operating Expenses (Overheads)

	2023 Budget (B)	2022 Forecast (F)	2021 Actual	Movement (B-F)	% Change	% Sales
Depreciation	1,918 m	1,851 m	1,900 m	-66 m	-4%	9%
Remuneration	1,492 m	1,215 m	1,163 m	-276 m	-23%	7%
Pension, gratuity & GLA Provisions	648 m	1,621 m	1,331 m	973 m	60%	3%
Maintenance of buildings/premises	135 m	85 m	77 m	-49 m	-58%	1%
Maintenance of tools, mach.& equip.	28 m	11 m	24 m	-17 m	-149%	0%
Transport	238 m	183 m	133 m	-54 m	-30%	1%
Insurance	123 m	111 m	73 m	-12 m	-11%	1%
Administration	328 m	264 m	271 m	-64 m	-24%	2%
Training	26 m	9 m	12 m	-17 m	-195%	0%
Travel and accommodation	112 m	75 m	52 m	-37 m	-50%	1%
External services	464 m	378 m	320 m	-86 m	-23%	2%
Directors costs	7 m	4 m	5 m	-2 m	-53%	0%
Provision for doubtful debts	1,586 m	1,147 m	7,244 m	-439 m	-38%	7%
Other Operating Expenses	34 m	893 m	1,294 m	859 m	96%	0%
	7,136 m	**7,846 m**	**13,898 m**	**711 m**	**9%**	**34%**

10.6.8 Finance Costs for 2023

The company is projecting to spend a total of K 1.3 billion on finance costs in 2023, compared with the forecast at K 0.9 billion in 2022. The increase is attributed to new debt arising from the balance sheet restructuring that is budgeted for in 2023.

10.6.9 2024 – 2027 Forecast Budget

Some of the possible risks that may negatively affect the implementation of the 2024 - 2027 budget include;

v. Poor rainfall resulting in reduced hydro electricity generation,
vi. Lower than planned revenue collections,
vii. Lower than planned uptake of power from the IPPs and;
viii. Unstable Kwacha against major convertible currencies such as the US$
ix. High interest rates
x. No retail tariff award

Despite the above stated risks, Management is confident that the company will be able to deliver its 2024 to 2027 budget objectives.

10.7 ENERGY BALANCE

According to projections, ZESCO's own generation will account for 55% of the overall generation in 2024 but will decline to 51% by 2027 as a result of growing participation from other stakeholders as shown in the table below.

		2024B	2025B	2026B	2027B
Generation sent out					
Kafue George	GWh	5,956.8	5,956.8	5,956.8	5,956.8
Kariba North	GWh	4,292.4	4,292.4	4,292.4	4,292.4
Victoria Falls	GWh	756.9	756.9	756.9	756.9
Small Hydros & Diesel	GWh	603.5	603.5	603.5	603.5
		11,609.5	**11,609.5**	**11,609.5**	**11,609.5**
Purchases					
KNBE	GWh	607.5	473.0	473.0	473.0
ITPC	GWh	817.1	609.7	609.7	609.7
Kafue Gorge Lower	GWh	2,627.2	2,627.2	2,627.2	2,627.2
Maamba Coal	GWh	2,014.8	2,363.3	2,363.3	2,363.3
Others	GWh	1,768.6	4,395.6	5,700.8	7,715.6
		9,502.7	**9,962.6**	**10,732.6**	**11,189.0**
Sales	GWh	16,536.6	17,467.8	18,529.2	19,709.4

10.8 REVENUE AND COLLECTIONS

Average annual revenue from electricity sales for the period under review (2024-2027) is forecasted at K29.7 billion, in 2024 the total revenue is projected at K24.1 billion and increasing at 14% compounded annual Growth (CAGR) to K35.7 billion in 2027.

Revenue from Bulk Mining and Other bulk customers is forecasted at K11.5 billion (circa US$ 698 million) in 2024 and CAGR of 5% to 2027.

Retail revenue is based on a 100% multiyear tariff award by the Regulator in the first quarter of 2023. Retail revenue expected to grow at 23% CAGR, from K11.4 billion in 2024 to K21 billion in 2027 as shown in the table below.

		2024B	2025B	2026B	2027B	CAGR
Mines	K'million	11,519.1	12,238.8	12,923.9	13,393.1	*5%*
Retail	K'million	11,396.3	14,267.7	17,124.8	20,973.6	*23%*
Exports	K'million	1,179.2	1,229.9	1,269.6	1,290.8	*3%*
		24,094.5	27,736.4	31,318.3	35,657.4	*14%*

Revenue from Export customers is modestly forecasted to grow at a CAGR of 3% in the period under review.

10.9 OPERATING EXPENDITURE (OPEX)

10.9.1 Cost of sales

Cost of sales is projected to average K18 billion annually from 2024 to 2027, it will grow from K16.5 billion in the first period under review to K19.7 billion in 2027.

Electricity purchases account for 77% of the total direct costs, in 2024 it is projected that K12.7 billion will be spent on electricity purchases as shown in the table below

		2024B	2025B	2026B	2027B	CAGR
- Electricity Purchases	K'million	12,704.6	13,328.0	14,361.5	14,981.9	*6%*
- Primary Plant Maintenance	K'million	158.6	169.7	181.6	194.3	*7%*
- Auxillary Plant Maintenance	K'million	231.8	248.0	265.4	284.0	*7%*
- Machinery Maintenance	K'million	156.4	167.3	179.0	191.5	*7%*
- Buildings Maintenance	K'million	76.3	81.6	87.3	93.4	*7%*
- Fuel and Lubricants	K'million	22.8	24.4	26.1	27.9	*7%*
- Staff Costs	K'million	3,167.4	3,389.1	3,626.4	3,880.2	*7%*
		16,517.8	17,408.1	18,727.3	19,653.3	*6%*

The maintenance of primary and auxiliary plant is budgeted at K390 million in 2024 and grow at 7% annually to K478 million in 2027.

10.9.2 Other Costs

The other expenses are projected to grow at 7% (CAGR) from K944 million in 2024 to K1.1 billion in 2027 as highlighted in the table below.

		2024B	2025B	2026B	2027B	CAGR
- Administration	K'million	214.0	229.0	245.0	262.1	*7%*
- Insurance	K'million	63.2	67.6	72.3	77.4	*7%*
- Directors Costs	K'million	4.3	4.6	5.0	5.3	*7%*
- External Services	K'million	260.5	278.7	298.2	319.1	*7%*
- Small Equipment	K'million	22.4	24.0	25.7	27.5	*7%*
- Training	K'million	23.1	24.7	26.4	28.3	*7%*
- Transport	K'million	120.1	128.5	137.5	147.2	*7%*
- Travel and Accomodation	K'million	93.8	100.4	107.4	114.9	*7%*
- Water Costs	K'million	142.8	152.8	163.5	174.9	*7%*
		944.2	1,010.3	1,081.0	1,156.7	*7%*

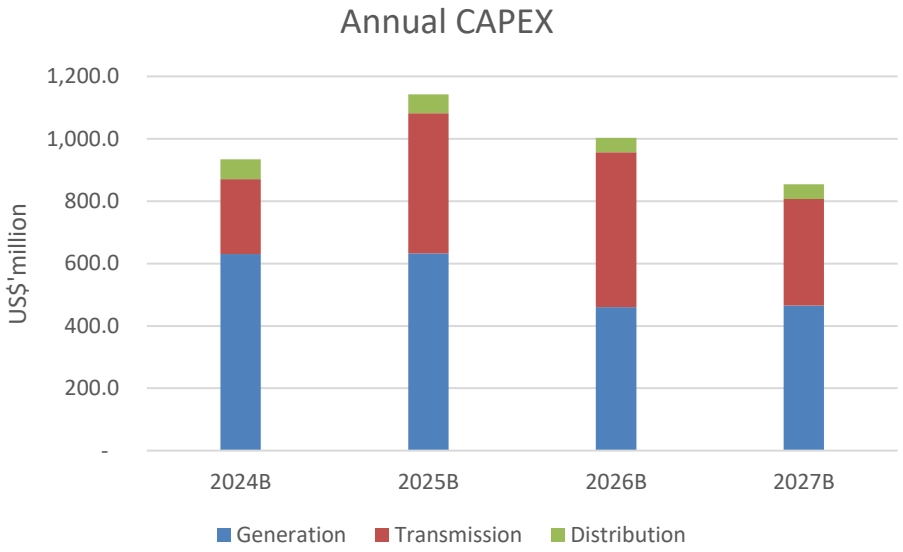
10.9.3 Financing Charges

The financing charges are projected to grow at 29% (CAGR) due to growth in project financed Capital Expenditure (CAPEX) meant to expand and strengthen Generation, Transmission and Distribution infrastructure as shown in the table below.

		2024B	2025B	2026B	2027B	CAGR
- Bank Charges and Overdraft	K'million	41.1	43.9	47.0	50.3	*7%*
- Financing Costs	K'million	2,923.5	4,143.3	5,442.1	6,354.3	*30%*
		2,964.6	4,187.3	5,489.1	6,404.6	*29%*

10.10 CAPITAL EXPENDITURE (CAPEX)

In the period 2024 -2027 the corporation plans to spend about $4 billion in capital expenditure as highlighted in the table below.



Generation CAPEX

		2024B	2025B	2026B	2027B
Chishimba Rehabilitation and Uprating	US$'million	17.5	17.5	-	-
Lusiwasi Lower 86 MW	US$'million	65.3	65.3	-	-
West Lungall 44 MW	US$'million	45.1	45.1	-	-
Kundabwika	US$'million	56.5	56.5	56.5	56.5
Kabwelume	US$'million	35.0	35.0	35.0	35.0
Luapula- Mambilima Y	US$'million	125.0	125.0	125.0	125.0
Luapula- Mumbotuta CX	US$'million	102.6	102.6	102.6	102.6
Luapula- Mambilima Vb	US$'million	135.5	135.5	135.5	135.5
ZESCO / MASEN PROJECTS (Kanona Solar power project)	US$'million	37.0	37.0	-	-
KNBPS - Procurement Of Liquid Chiller	US$'million	2.0	-	-	-
V/FALLS - Unit cooling system improvement	US$'million	0.3	0.3	0.3	-
V/FALLS - Rehabilitation	US$'million	2.0	0.8	-	-
Kafue Gorge - Rehabilitation	US$'million	4.3	11.6	5.4	11.0
Kariba North Bank - Rehabilitation	US$'million	2.2	0.3	-	-
		630.2	**632.4**	**460.2**	**465.6**

Transmission CAPEX

		2024B	2025B	2026B	2027B
Establishment of the following 330kV connected Dynamic Voltage Support Devices (DVSDs); Luano Substation: 250MVAr capacitive and 360MVAr inductive, Kalumbila Substation: ±220MVAr.	US$'million	25.0	25.0	-	-
Central Transmission Corridor (Lusaka West - Kabwe Stepdown 330kV)	US$'million	-	40.0	40.0	-
Luano-Kansanshi 2 Transmission Project (330kV)	US$'million	40.0	40.0	-	-
Kabwe Step Down – Pensulo line 2 (330kV)	US$'million	-	-	-	-
Kabwe-Luanshya-Kitwe/Luano 330kV Transmission Line	US$'million	-	2.0	69.0	69.0
Chipata-Lundazi-Chama Transmission (132kV) Project	US$'million	26.0	-	-	-
Reinforcement of power supply to Mkushi and Kapiri Mponshi	US$'million	-	10.0	65.0	65.0
Reinforcement of power supply to Luswishi Farm block in Lufwanyama	US$'million	2.0	19.0	19.0	-
Establishment of a 330/132kV substation at Luano substation	US$'million	20.0	20.0	10.0	-
Msoro-Azele-Petauke-Nyimba 132kV Overhead Line, and 132/33kV Substations	US$'million	-	-	24.0	24.0
Reinforcement of power supply to Luapula Province	US$'million	3.0	100.0	100.0	-
Choma-Kalomo 132kV Overhead Line; Kalomo 132/33kV Substation.	US$'million	-	1.0	19.0	-
Mazabuka-Monze 132kV Overhead Line; Monze 132/33kV Substation	US$'million	1.0	11.0	11.0	-
Reinforcement of power supply to New Kitwe	US$'million	-	-	4.0	4.0
Reinforcement of power supply to Kasempa and Mujimanzovu	US$'million	-	14.0	14.0	-
Reinforcement of power supply to Western Province	US$'million	-	-	4.0	88.0
Reinforcement of power supply to Kariba Lakeshore areas	US$'million	-	-	14.0	14.0
Kansanshi-Lumwana Transmission Project (330kV)	US$'million	-	-	2.0	14.0
Lumwana-Kalumbila Transmission Project (330kV)	US$'million	-	-	2.0	13.0
Zambia-Tanzania-Kenya Interconnector (ZTK phase 2) - 330kV	US$'million	101.0	101.0	-	-
Kolwesi-Solwezi Interconnector 330kV	US$'million	-	10.0	15.0	-
Mozambique - Zambia Interconnector 400kV	US$'million	-	37.0	50.0	50.0
Zimbabwe-Zambia-Botswana-Namibia Interconnector (ZIZABONA) (330kV)	US$'million	20.0	20.0	34.0	-
Reinforcement of Pensulo Substation with two 120MVA Transformers.	US$'million	2.1	-	-	-
	US$'million	**240.1**	**450.0**	**496.0**	**341.0**

Distribution CAPEX

		2024B	2025B	2026B	2027B
Expedite Implementation of GIS	US$'million	0.80	-	-	-
Implementation of SCADA/DMS/Faults Crew Management systems	US$'million	0.30	-	-	-
Implementation of SCADA/DMS system for Southern Division	US$'million	3.00	-	-	-
Connection of 30,000 new customers	US$'million	47.00	47.00	47.00	47.00
Mechanization of Operation works	US$'million	12.67	12.67	-	-
	US$'million	**63.77**	**59.67**	**47.00**	**47.00**

10.11 2024 - 2027 KEY BUDGET OBJECTIVES

During the period under review, the company will implement initiatives aimed at stabilizing the business, attaining financial sustainability and improved service delivery in line with its Strategic Plan (10-year rolling).

10.12 KEY BUDGET ASSUMPTIONS

The 2024 to 2027 Corporate Budget is based on the following key assumptions;

		2024B	2025B	2026B	2027B
Zambian Inflation	%	7.3%	7.0%	7.0%	7.0%
Producer Price Inflation	%	5.0%	3.2%	3.2%	3.2%
Exchange Rate	ZMW/US$	16.5	16.5	16.5	16.5
Overide Post Tax Nominal WACC	%	6.0%	6.0%	6.0%	6.0%
% CWIP Transferred to Fixed Assets	%	30.0%	30.0%	30.0%	30.0%
Corporate Tax	%	30%	30%	30%	30%
Distribution Losses	%	11%	11%	11%	11%
Transmission Losses	%	6%	6%	6%	6%
New Loan Proportions					
% Capital Expenditure	%	100%	100%	100%	100%
% Domestic	%	15%	15%	15%	15%
% Foreign (US$)	%	85%	85%	85%	85%
New Loans - Domestic					
Period	Years	10	10	10	10
Interest Rate	%	20%	20%	20%	20%
New Loans - Foreign	Years	15	15	15	15
Period	%	6%	6%	6%	6%
Interest Rate					

Residential Tariff Assumption

kWh	2023	2024	2025	2026	2027
	K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
≤ 75	0.40	0.44	0.54	0.63	0.73
>75≤ 200	0.95	1.05	1.28	1.50	1.76
>200≤ 500	1.54	1.69	2.07	2.42	2.83
>500	2.22	2.44	3.23	3.45	4.04
	-	-	-	-	-

Commercial Tariff Assumption

kWh	2023	2024	2025	2026	2027
	K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
≤ 100	0.67	0.78	0.92	0.98	1.05
>100≤ 300	1.15	1.35	1.58	1.69	1.81
>300≤ 500	1.99	2.19	2.52	2.65	2.78
>500	2.26	2.28	2.39	2.51	2.63
	-	-	-	-	-

Social Tariff Assumption

kWh	2023	2024	2025	2026	2027
		K/kWh	K/kWh	K/kWh	K/kWh
≤ 100	0.62	0.69	0.76	0.81	0.87
>100≤ 300	0.94	1.04	1.15	1.23	1.32
>300	1.13	1.25	1.38	1.48	1.59

Water Pumping Tariff Assumption

kWh	2023	2024	2025	2026	2027
		K/kWh	K/kWh	K/kWh	K/kWh
≤ 12000	0.50	0.56	0.60	0.65	0.70
>12000≤ 50000	0.57	0.65	0.76	0.81	0.88
>50000≤ 100000	1.01	1.13	1.21	1.30	1.41
>100000	1.53	1.72	1.84	1.97	2.15

MD1 Tariff Assumption

	2023	2024	2025	2026	2027
	K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
Peak	0.93	1.01	1.10	1.20	1.31
Standard	0.74	0.81	0.88	0.96	1.05
Off_Peak	0.56	0.61	0.66	0.72	0.79

	2023	2024	2025	2026	2027
	K/KVA	K/KVA	K/KVA	K/KVA	K/KVA
Peak	64.95	69.04	75.26	82.03	89.41
Standard	51.96	55.23	60.20	65.62	71.53
Off_Peak	25.98	27.62	30.10	32.81	35.76

	2023	2024	2025	2026	2027
	K	K	K	K	K
Fixed Charge	508.82	548.00	597.32	651.07	709.67

MD2 Tariff Assumption

	2023	2024	2025	2026	2027
	K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
Peak	0.80	0.88	0.96	1.04	1.14
Standard	0.64	0.70	0.77	0.84	0.91
Off_Peak	0.48	0.53	0.58	0.63	0.68

	2023	2024	2025	2026	2027
	K/KVA	K/KVA	K/KVA	K/KVA	K/KVA
Peak	121.48	132.77	144.72	157.75	171.95
Standard	97.18	106.22	115.78	126.20	137.56
Off_Peak	48.59	53.11	57.89	63.10	68.78

	2023	2024	2025	2026	2027
	K	K	K	K	K
Fixed Charge	1017.55	1112.18	1212.28	1321.38	1440.31

MD3 Tariff Assumption

	2023	2024	2025	2026	2027
	K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
Peak	1.26	1.36	1.55	1.66	1.83
Standard	1.00	1.09	1.24	1.33	1.46
Off_Peak	0.75	0.82	0.93	1.00	1.10

	2023	2024	2025	2026	2027
	K/KVA	K/KVA	K/KVA	K/KVA	K/KVA
Peak	369.16	399.80	455.78	487.68	536.45
Standard	295.33	319.84	364.62	390.15	429.16
Off_Peak	147.67	159.92	182.31	195.07	214.58

	2023	2024	2025	2026	2027
	K	K	K	K	K
Fixed Charge	3,397.77	3,815.70	4,349.89	4,654.39	5,119.82

Bulk Demand Tariff Assumption

Customers drawing above 5000 KVA will be migrated to Bulk demand tariff category.

Table 8: Bulk Demand Tariff Assumption

2023	2024	2025	2026	2027
K/kWh	K/kWh	K/kWh	K/kWh	K/kWh
0.93	1.04	1.14	1.18	1.33

2023	2024	2025	2026	2027
K/KVA	K/KVA	K/KVA	K/KVA	K/KVA
329.75	366.02	403.36	416.27	471.21

10.13 INCOME STATEMENT

Abridged Income Statement

		2024B	2025B	2026B	2027B
Revenue	K'million	24,094.5	27,736.4	31,318.3	35,657.4
Other Income	K'million	1,073.2	1,181.0	1,299.8	1,430.7
Direct Costs	K'million	16,517.8	17,408.1	18,727.3	19,653.3
Other Costs	K'million	3,523.1	3,663.9	3,816.4	3,034.6
Financing Costs	K'million	3,392.0	4,481.7	5,685.7	6,534.0
Taxation	K'million	520.4	1,009.1	1,316.6	2,359.9
Retained Profit	K'million	**1,214.33**	**2,354.55**	**3,072.09**	**5,506.34**
Net Profit Margin	%	5.0%	8.5%	9.8%	15.4%

10.14 INVESTMENTS

The company has allocated funds for Kalungwishi power corporation limited as part of equity to cover initial costs for consultancy services, ESIA study, capacity building, project office rent and various operational costs. This investment involves the development of the 151 MW Kundabwika Falls and 96 MW Kabwelume Falls hydropower projects on the Kalungwishi River.

10.15 CASHFLOW STATEMENT

In the period under review, the corporation intends to restructure debt, renegotiate IPP tariffs and refinancing trade payables. This cash flow is based on the "As is" scenario. The table below highlights the statement

		2024B	2025B	2026B	2027B
Profit Before Taxation	K'million	1,489.3	2,885.8	3,583.6	6,670.8
Add back depreciation	K'million	1,471.3	1,468.7	1,467.6	521.3
Increase/Decrease in Trade Receivables	K'million	648.3	196.5	335.2	143.4
Increase/Decrease in Trade Payables	K'million	1,354.9	2,845.2	4,694.6	4,319.0
Increase/Decrease in Stock	K'million	166.4	66.6	59.9	27.0
Net Cash Inflow	K'million	5,130.2	7,462.8	10,140.8	11,681.5
Interest Received	K'million	2.3	2.3	2.3	2.3
Interest Paid	K'million	(2,546.8)	(3,789.6)	(5,235.7)	(6,382.8)
Net Cash Outflow From Servicing Finance	K'million	(2,544.5)	(3,787.3)	(5,233.4)	(6,380.5)
Capital Expenditure	K'million	(18,170.5)	(21,712.2)	(19,734.2)	(17,394.1)
Loans Received	K'million	18,170.5	21,712.2	19,734.2	17,394.1
Loans Repaid	K'million	(2,932.1)	(4,168.3)	(5,724.4)	(7,138.6)
Dividends Paid	K'million	---	---	---	---
Net Cash Outflow From Investing Activities	K'million	(2,932.1)	(4,168.3)	(5,724.4)	(7,138.6)
Income Tax Paid	K'million	(446.8)	(865.7)	(1,075.1)	(2,001.2)
Increase/Decrease in Cash	K'million	**100.4**	**372.9**	**258.2**	**163.5**

10.16 RATIOS

		2024B	2025B	2026B	2027B
Operating Margin/Sales Margin	%	20%	27%	31%	39%
Margin after Finance Costs	%	6%	10%	11%	18%
Margin after Taxation	%	4%	7%	8%	13%
Margin after Dividends	%	4%	7%	8%	13%
Fixed Asset Performance					
Return on Fixed Assets	%	6%	7%	8%	10%
Fixed Asset Turnover	%	29%	27%	26%	26%
Working Capital Performance					
Debtor Days	Days	29	22	16	13
Creditor Days	Days	518	542	583	649
Stock Days	Days	12	10	9	8
Liquidity and Solvency					
Tax Cover	X-times	11.3	8.9	9.3	7.1
Interest Cover	X-times	2.0	2.0	1.9	2.2

10.17 KEY BUDGET SUCCESS FACTORS

The following assumptions and interventions are key to the successful implementation of the 2024- 2027 budget year.

I. Conclusion of tariff renegotiations with ITPC
II. Electricity generation should be as projected
III. Domestic and Mining collection rates to be at 95% and 87% respectively
IV. Debt refinancing & restructuring to be concluded for debt sustainability
V. Stable kwacha against major convertible currencies
VI. Conclude negotiations with GRZ on Ndola Energy capacity payments
VII. Conversion of on lent loans into equity
VIII. 100% Retail Tariff award by the Regulator

Strict adherence to both OPEX and CAPEX budgets coupled with swift implementation of corrective measures when necessary.

SCHEDULE G – RATE OF RETURN

The rate of return on assets that has been used in the derivation of ZESCO's revenue requirement is 6% in the generation, transmission, distribution and supply business units. This rate does not have a financial calculation as its base.

SCHEDULE H – CUSTOMER SERVICE

11 PROGRESS REPORT ON THE KEY PERFORMANCE INDICATORS

ZESCO has been subjected to a Key Performance Indicator Regime that is reviewed every three years. ZESCO's performance with regards to the Key Performance indicators during the period from January 2022 to June 2022 was as indicated in the table below:

Table 40: KPI Summary

KPI	TARGET	JANUARY 2022	JUNE 2022	COMMENT
New Customer Connections				
1. New Connections	Maintain ration of paid quotations to new connections at 1:2	0	0	Adverse
2. Connection Time	All new standard applications to be connected within 20 days upon payment	221 days	243 days	Adverse
3. Connections Times (days)	All new nonstandard residential connection to supply must be done within 60 days upon payment	486 days	779 days	Adverse

KPI	TARGET	JANUARY 2022	JUNE 2022	COMMENT
4. Issuance of Quotations	Issue quotations for new applications of all connection types within 15 days from the date of application	22 days	25 days	Adverse
Metering Customers				
1. Replacement of faulty meters	All faulty meters to be replaced within 3 days after complaint is lodged in	0 days	0 days	Favourable
2. Bill dispatch	Maintain a time lag of 14 days between meter reading and bill dispatch	0 day	3 day	Favourable
Financials				
1. Liquidity	Maintain Current Ratio of 1 and above	0.35	0.31	Adverse
	Maintain quick ratio of 0.5 or above	0.33	0.29	Adverse
1. Solvency	Maintain Debt to Equity ratio of 2 or above	-694	3.61	Favourable
	Maintain Debt Ratio of 1 or less	1	0.78	Favourable
	Maintain Interest Coverage Ratio of 1 or above	5.6	3.24	Adverse
2. Sustainability	Maintain Total O$M Cost to Revenue ratio of 60%	130 %	84 %	Adverse
Efficiency				
1. Asset Reliability	Maintain Replacement of distribution transformers as % of installed transformers at 0.1% of total number of transformers in operation	0 %	0%	Favourable
2. Meter Replacement	Maintain replacement of meters as a % of installed meters at 0.25% of the total number of meters	0%	0%	Favourable
3. Mining Debtor Days	Maintain mining Debtor days of 60 days or better	526 days	437 days	Adverse
4. Export Debtor Days	Maintain Export Debtor days of 60 or better	98 days	107 days	Adverse
5. GRZ Debtor Days	Maintain GRZ Debtor days 0f 90 or better	735 days	813 days	Adverse
6. Domestic Customer Debtor	Maintain Domestic Customer Debtor days of 60 or better	32 days	28 days	Favourable
System Losses				

KPI	TARGET	JANUARY 2022	JUNE 2022	COMMENT
1. Transmission Losses	Maintain Transmission losses of 5% or better	5%	5 %	Favourable
2. Distribution Losses	Maintain Distribution loses of 11% or better	14%	14 %	Adverse
Staff Productivity				
1.	Maintain 1 Technical Transmission staff per 7km of Transmission Line	1:10	1:15	Favourable
2.	Maintain 1 Technical Distribution staff per 10km of Distribution Line	1:6	1:7	Adverse
3.	Maintain 1 Distribution staff per 120 customers	1:227	1:234	Favourable
4.	Maintain 30% staff costs as proportion of O&M costs	15%	32 %	Favourable
Quality of Service				
1. SAIDI	Maintain SAIDI at 36 Hours	54 Hours	28 Hours	Adverse
2. SAIFI	Maintain SAIFI at 5.5 Times	5.2 Times	3.2 Times	Favourable
3. CAIDI	Maintain CAIDI at 7 Hours	10.4 Hours	8.4 Hours	Adverse
4. ASAI	Maintain ASAI at 90% or better	92%	96%	Favourable
Power Generation				
1. UCF Large Power Plants	Maintain UCF for larger hydro plants at 80% or better per quarter	92%	91%	Favourable
2. UCF Small Power Plants	Maintain UCF for Mini hydro plants at 60% or better per quarter	79%	87%	Favourable
Safety				
1. Fatality Free	Achieve Zero Fatality per quarter	1	0	Favourable
2. LTI Free	Achieve Zero Life Threatening Injuries per quarter	12	4	Adverse
Customer Service				
1. Outage complaint Resolution Rate	Maintain outage complaint resolution rate at 90%	88%	87%	Adverse
2. Non-outage complaint resolution rate	Maintain non-outage complaint resolution rate at 90%	71%	63%	Adverse

KPI	TARGET	JANUARY 2022	JUNE 2022	COMMENT
3. Complaint resolution rate	Maintain complaint resolution rate at 80%	21%	7%	Adverse
4. Outage complaint resolution duration	Resolve outage complaints within 24hours from the date the complaint is lodged	94 Hours	94 Hours	Adverse
5. Non-outage complaint resolution duration	Resolve non-outage complaints within 30days from the date the complaint is lodged	0.8 Hours	0 Hours	Favourable
Power Quality				
1. PQM installation	Install 123 power quality meters by 2021	4	8	Adverse
2. Power Quality Factor	Maintain power quality at a minimum of 75% in 2021	79%	75%	Favourable

During the period under review, January 2022 to June 2022, ZESCO's overall performance recorded some improvement from 50.7% in 2021 to 54% on average for quarter 1 and 2 of 2022. The performance on new connections KPI was adverse due to delayed service connections as a result of lack of connection material attributed to non-cost reflective connection fees. ZESCO has however, made a commitment to mobilise finances and ensure that the connection backlog is dismantled before the end of 2022. As a result of non-cost reflective connection fees, ZESCO has suspended the issuance of quotations in areas that attract standard connection fees which adversely affected the quotation time KPI.

Under Cash Management, the targets for the Mining, Export and GRZ debtor days proved to be more of a challenge to be attained.

In the case of Mining, the tariff that was awarded by ERB in 2014 was disputed and the matter is still outstanding in the courts of Law. As a result of the dispute, debt accumulated over the years.

The Export debtor days accumulated beyond the KPI set target of 60 days mainly due to outstanding debts from SNEL and TANESCO. The SNEL debt would be recovered through a repayment plan that has been agreed between ZESCO and SNEL.

The adverse GRZ debtor days that accrued during the review period were due to lack of payments by Government Ministries and other GRZ Spending Agents (Security Wings, Water Utilities, Councils, Government assured Projects and defunct Parastatals). ZESCO and the Ministry of Finance have agreed on a debt swap arrangement for the debt owed by GRZ and other spending agencies which will be implemented before the end of September 2022.

The favourable domestic debtor days recorded in the period under review was attributed to debt recovery efforts that ZESCO has put in place in all Regions

The targets for SAIFI and ASAI under the Quality of service indices were met, but the SAIDI and CAIDI targets proved to be more of a challenge to achieve which can mainly be attributed to ZESCOs current financial situation that has had an effect on our ability to adequately maintaining our aged distribution infrastructure. The uneconomic tariffs also create challenges in ZESCO generating sufficient resources to meet its O&M budgeted costs.

During the period under review, there was only one fatality and 16 Life Threatening Injuries recorded. Despite, these occurrences, the Company has made a lot of effort to curb fatalities and LTIs. However, the Regulator penalizes ZESCO for any fatality and LTI occurrences, whether or not such incidences are due to ZESCO's negligence. It has been ZESCO's position that the company should not be penalised for fatality and LTI occurrences beyond ZESCO's control. The company has expressed this concern to the Regulator but there has not been any consideration to date from the Regulator

Table 41: KPI Performance (Qtr1 & Qtr2 ,2022)

S/N	**Indicator**	**Assigned Weight**	**Score**	
			Qtr. ended 31 March 2022	**Qtr. Ended 30 June 2022**
1	New Customer Connections	10%	0%	0%
2	Customer Metering	5%	5%	5%
3	Financials	10%	5%	3.5%
4	Efficiency	15%	5%	7.5%
5	System Losses	7.5%	2.5%	2.5%
6	Staff Productivity	10%	8%	4%
7	Quality of Service	20%	20%	20%
8	Power Generation	5%	5%	5%
9	Safety	10%	0%	4%
10	Customer Service	5%	1%	1%
11	Power Quality	2.5%	1.25%	1.25%
	TOTAL	**100%**	**53%**	**55%**

12 PROGRESS REPORT ON METERING

Over the past few years ZESCO Limited has been working towards ensuring that whilst growing the customer base, no connection is done without a meter, a position that has been sustained. As at 30th June 2022 no unmetered connection has been recorded as shown in the table below;

Table 42: Metered and Unmetered Customer Base as at 31st December 2022 by sector

TARIFF CATERGORY	COUNT AS AT 31 DECEMBER 2022	METERED	UN-METERED
RESIDENTIAL	1,076,807	1,076,807	0
MAXIMUM DEMAND	9,657	9,657	0
COMMERCIAL	102,393	102,393	0
AGRICULTURE	921	921	0
SOCIAL	13,205	13,205	0
TOTAL	**1,202,983**	**1,202,983**	**0**

Table 43: Metered and Unmetered Customer Base as at 31st December 2022 by region

		INSTALLATION TYPE	
REGION	**CUSTOMER BASE**	**METERED**	**UN-METERED**
CENTRAL	130,412	130,412	0
CHINGOLA	101,682	101,682	0
KITWE	123,983	123,983	0
LUSAKA NORTH	245,882	245,882	0
LUSAKA SOUTH	224,320	224,320	0
NDOLA	121,171	121,171	0
NORTHERN	118,569	118,569	0
SOUTHERN	136,964	136,964	0
TOTAL	**1,202,983**	**1,202,983**	0

13 PROGRESS REPORT ON DEMAND SIDE MANAGEMENT

In the period under review, DSM activities were focused on promoting energy savings through LED bulb distribution across residential and selected institutional customers sitting on heavily loaded feeders, LED tubular retrofits in ZESCO offices and substations, energy efficiency sensitization, energy surveys/audits, low power factor surcharge sensitization, Power Quality Management System (PQMS) set and implementation of the Smart Metering Project across the country

13.1 CFL and LED Distribution

ZESCO has retrofitted 564, 580 LED bulbs between January and July 2022, bringing a cumulative total to 1, 529, 950.00 of the initial 4, 000, 000 lamps procured during the period 2020 – 2021.

An additional 426, 000 LED bulbs is scheduled for distribution on selected feeders in Western, Eastern, Luapula and Northern provinces starting from August to December 2022. This massive rollout of LED lighting follows the ban of inefficient lighting (e.g. incandescent bulbs) as per SADC directives (Statutory Instrument, SI 74 issued in 2016). Total savings expected to be realised from installation of 4, 000, 000 LED bulbs is 250MW.

Furthermore, ZESCO procured 30,000 Tubular LEDs and has since installed. These have been used to retrofit all 4- and 2-feet fluorescent tubes across ZESCO infrastructure, ZESCO offices and substations, So far a total number of LED tubes installed is **29, 567** which translates into **1.450MW** savings. Besides being lower rated at 18W compared to 36W rating of the fluorescent tubes, elimination of both electronic and mechanical ballasts has significantly reduced consumption and resulted into savings of about 1.4MW.

13.2 Energy Audits

The DSM team continued with random and requested walk through energy surveys/audits on industrial/Maximum Demand (MD) customers. During this period a total of 17 walk through energy surveys were carried out and customers advised on possible energy saving opportunities identified in their premises.

13.3 Time of Use

The DSM team has continued to encourage grid connected customers to embrace other sources of supply such as Solar PV, wind, Biogas/Biomass and other renewable technologies. Clean cooking has also been on the agenda of the DSM activities. Customers have been encouraged to use clean energy sources such as LPG, Biogas, pellets, Briquettes and Gel. The use of efficient Cook Stoves and other appliances such as Pressure cookers, slow cookers, refrigerators have also been encouraged.

13.4 Power Quality Monitoring

Power Quality is one of the main attributes that define the quality of service ZESCO is offering its customers. DSM has procured and successfully commissioned a Power Quality Management System (PQMS) for regulatory obligation and for creating database for power quality parameters to enable decision making on network expansion and reinforcements. The system is linked via fibre to permanently connected Power Quality Meters on the network bringing relevant information to the main server for analysis. Of the total 205 Power Quality recorders procured, 226 have been installed across the network close to the load end, with the balance 89 scheduled for installation in the third and fourth quarter of 2022.

13.5 Energy Efficiency and Low Power Factor Surcharge

Despite non implementation of the Low Power Factor surcharge, energy efficiency and low power surcharge sensitisations to a total of 213 accounts for MD customers were carried out to help them understand the implications of operating on a Power Factor (PF) of less than 0.92 Lagging. Furthermore, billing system data clean-up in CMS for all Maximum Demand customers with consumption above 100kVA were carried out following the directive by the regulator to cap the surcharge to customers whose consumption is above 100KVA. Currently, final configurations of the Billing system are underway in readiness for implementation on 1st September 2022.

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13.6 Smart Metering Pilot Project

A pilot project on Smart Metering with Iskraemeco Energy Management of Slovenia has been implemented on selected 500 sites throughout the Distribution network. The Smart meters were installed in series with existing billing meters for purposes of comparison of billing data captured. Monitoring and evaluation of the pilot Project has been completed and roll out is under way with all procurement having been completed.

Full deployment of Advanced Metering Infrastructure (AMI); i.e. Smart Meters, HES, Meter Data Management System (MDMS) and integration of Back-End Systems (BES) to MDMS is currently underway. This will improve overall customer satisfaction and increase operational efficiency

SCHEDULE I – DEBT MANAGEMENT

14 TRADE RECEIVABLES AGE ANALYSIS

The debt Age Analysis as at 31st December 2021 is shown in the table below;

Table 44: Receivables aged analysis for the year ended 31st December 2021

Type of Receivables K'000	0-30 Past Due	31-60 days	61-90 days	Above 90 days	Total
Total trade Receivables	1,523,627	1,037,994	760,021	13,934,782	17,256,424
Impaired Receivables	805,605	308,139	13,252	2,248,216	3,375,212

15 REPORT ON MANAGEMENT OF TRADE RECEIVABLES

ZESCO's working capital position deteriorated during the financial years ended 31st December 2020 and 31st December 2021. Although the tariff was revised upwards during

2019, the following are some of the outcomes on performance and challenges being faced by the corporation.

- Net Profit margin at 19 % was attributed to reduced bad debts provisions for mining receivables, coupled with favourable exchange rate movements and lower cost of sales due to the suspension of imports from SAPP-DAM and low purchases from Kafue Gorge Lower as the plant is not yet fully operational.
- Return on capital employed deteriorated to 0.45% due to the lower than budgeted revenues from mining and export sales and penalties on late payments and interest costs. The Return on Capital Employed is below the required level of Return by the Shareholder of 15%.
- Current ratio has continued below 1, mainly due to increase in payables arising from power purchases.
- Gearing ratio stood at 58% driven by borrowings to finance various capital projects that the company is undertaking to increase generation, transmission and distribution network capacity infrastructure.
- Debtor days increased to 84, due to accumulation of Government and some mining debt.
- Asset turnover stood at 0.03, due to reduced revenue arising from non-cost reflective tariffs, while the fixed asset base increased by 15%. This implies that core assets are not efficiently being utilised to generate the required sales per US$ due to low tariffs and disputed tariffs.

During the period from 31st December 2021 to 30 June 2022, the movement in retail active debtors' figure was as shown in the table below;

Table 45: Changes in Retail Active Debt

TARIFF CATEGORY	DEBT AS AT 31/12/2021 (ZMW'000)	DEBT AS AT 30/06/2022 (ZMW'000)	INCREASE/ DECREASE (K'000)	% INCREASE / DECREASE
MAXIMUM DEMAND	367,841	368,964	1,123	0.3%
COMMERCIAL	56,753	55,951	(802)	-1.4%
RESIDENTIAL	992	1,091	99	9.9%
SOCIAL SERVICES	659,478	839,566	180,088	27.3%
PRE-PAID	64,692	61,164	(3,528)	-5.5%
DISTRIBUTION	2,449	1,293	(1,156)	-47.2%
TOTAL CORPORATE ACTIVE DEBT	**1,152,205**	**1,328,029**	**175,824**	**15.3%**

The table above shows an increase in debt mainly from post-paid Social Services tariff which is predominantly Government and pumping stations for water utilities. Engagement with Government for a debt swap has reached an advanced stage which when executed will

reduce the debt significantly. ZESCO has also continued to lobby for Government support in its collection efforts by allowing the installation of prepaid meters on government installation to stem the accumulation of receivables.

The Water Utility Companies have been engaged and ZESCO has procured high current meters which will be installed at pumping stations in a bid to halt the debt growth on the social services tariff.

Further reduction in the trade debtor figures is expected as the Customer Service department is supported by the continued investment in the fleet of their operations vehicles, and the revival of the quick response programme.

16 TRADE AND OTHER PAYABLES

The trade and other payables amount of ZMW 32,984m in the balance sheet of the financial year ended 31st December 2021 is broadly composed of three components as shown in the extract from note 18 of the financial statements below:

Table 46: Breakdown of Trade and Other Payables as at 31st December 2021

Description	ZMW' 000
Trade Payables	18,620,668
Sundry payables and accrued expenses	973,066
Employee related accruals	155,265
Total	19,748,999

The last audited Payables Age Analysis as at 31st December 2020 is shown in the table below;

Table 47: Payables age analysis for the year ended 31st December 2020

Description	0 to 30 Days	31 to 60 Days	61 to 90 Days	Above 90 days	Total
Trade Payables K 'million	993.24	575.5	329.49	17,851.23	**19,749.00**

SCHEDULE J – LOAN MANAGEMENT

17 DEBT REPAYMENT SCHEDULES

A summary of the projected debt principal and interest repayment schedule as detailed in the Pricing Model is shown in the tables below. A detailed schedule of existing loans has been submitted along with this document.

Table 48: Projected Principal Repayment Schedule (ZMW' 000)

LOAN TYPE	2022	2023	2024	2025	2026	2027
Domestic	38,830	139,956	209,948	192,508	172,060	151,613
Foreign	1,650,388	1,441,311	1,429,184	1,396,302	925,846	925,846
Total	**1,689,218**	**1,581,266**	**1,639,133**	**1,588,810**	**1,097,906**	**1,077,459**

Table 49: Projected Interest Repayment Schedule (ZMW'000)

LOAN TYPE	2022	2023	2024	2025	2026	2027
Domestic	211,227	215,533	195,524	179,822	165,060	154,387
Foreign	458,349	350,668	301,814	236,405	201,687	133,946
Total	**669,576**	**566,201**	**497,338**	**416,227**	**366,746**	**288,333**

18 ANALYSIS OF FINANCE CHARGES

ZESCO Limited's finance charges are made up of two components, namely charges on overdrafts and finance charges on loans. The finance charges for the period ended 31st December 2020, the year ended 31st December 2021 and the year ended 31st December 2022 are as shown in the table below;

Table 50: Finance Charges (ZMW'000)

Description	Year Ended 31st December 2020	Year Ended 31st December 2021	Year Ended 31st December 2022
Interest paid on long-term loans	730,000	1,100,000	879,146
Interest paid on overdraft	3,776	5,612	9,360
Total	**733,776**	**1,105,612**	**888,506**

SCHEDULE K – SYSTEM LOSSES

19 BREAK DOWN OF ANNUAL SYSTEM LOSSES

System losses for the period ended December 2021 to December 2022, and the projection for the years 2023 to 2027 are as follows;

Table 51: System Losses

	Year ended December 2021	**Year ended December 2022**	**Projection 2023**	**Projection 2024**	**Projection 2025**	**Projection 2026**	**Projection 2027**	
Total System Losses	10%	10.9%	8.5%	8.5%	8.5%	8.5%	8.5%	
Transmission Technical Losses	5.5%	5.4%	6.0%	6.0%	6.0%	6.0%	6.0%	
Distribution Technical Losses	11.2%	12.8%	11%	11%	11		11%	11 %