

ZIMBABWE ELECTRICITY GENERATION: THE VIEW

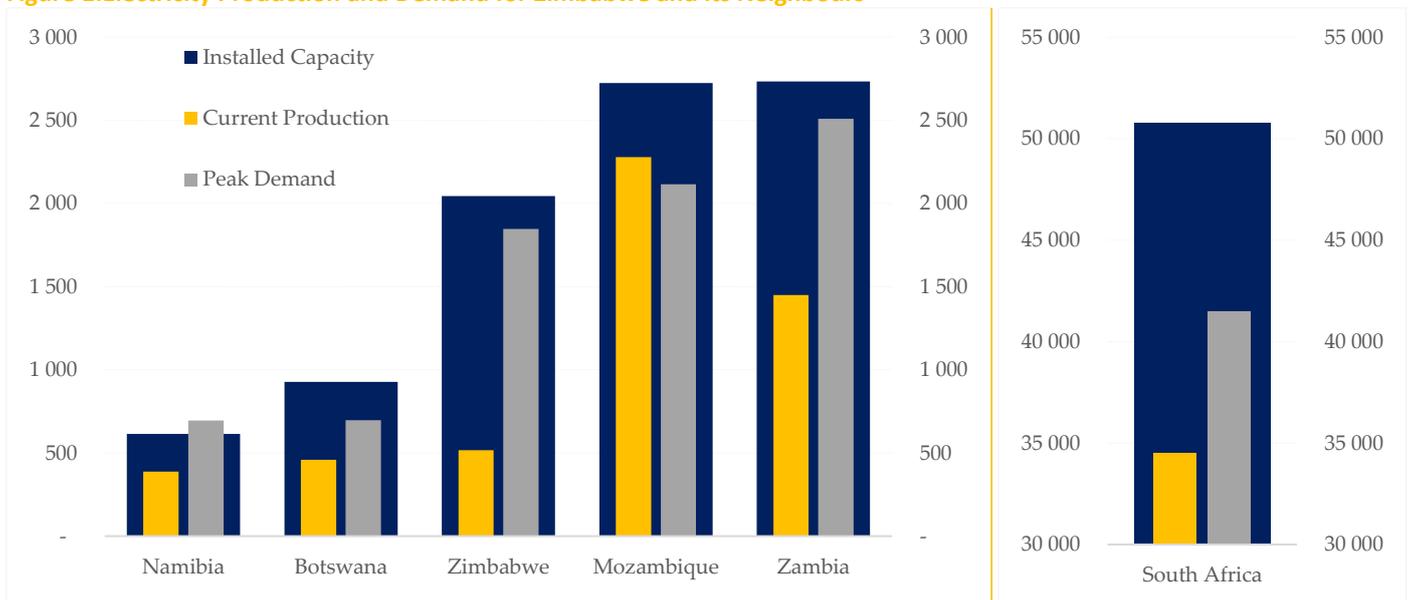
1.0. Introduction

Zimbabwe is grappling with acute electricity shortages which is an albatross to both production and consumption. The reduced generation has been attributed to low dam levels in main supplier Kariba Dam due to drought and dilapidated infrastructure at thermal power plants. The reduced power supplies have forced the power utility, ZESA, to implement a tight load shedding regime that has seen some places going for up to 18 hours without electricity. This has adversely affected businesses and household consumers. Power rationing, unannounced power cuts and fuel shortages have had a huge impact on the economy, with both domestic and commercial users struggling to get used to the new order. This key production enabler has contributed immensely to economic recession with GDP growth for 2019 projected to contract by at least 6.5%. Apart from that, power shortages have seen businesses facing escalating costs arising from use of alternative power sources such as generators and solar.

1.1. Electricity Production - a Peer Comparison

Zimbabwe has a huge electricity deficit when compared to its neighbouring peers. The country has an installed capacity of 2,045MW but just slightly above 600MW is being produced including supplementary production from independent power producers. At peak, the nation demands 1,847MW. Given the low rainfalls and low activity at thermal power stations, chances of the country to produce at maximum capacity are slim. As such, the country is likely to remain a net importer of electricity in the foreseeable future.

Figure 1: Electricity Production and Demand for Zimbabwe and its Neighbours

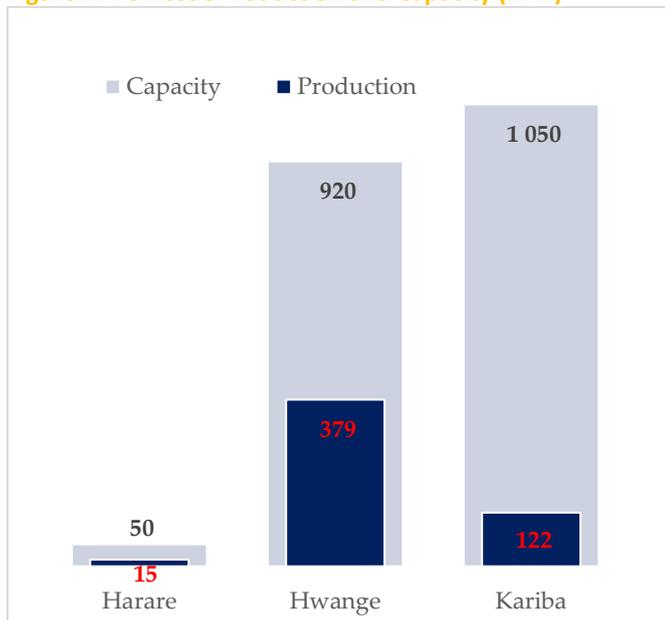


Source: MHMK Capital; SAPP; ZESA; ZESCO; ESKOM; NAMPOWER; BPC

The largest producer, South Africa has an installed capacity of 51,000MW and currently producing 35,000MW. Mozambique and Zambia each have about 2,700MW of installed capacity whilst Botswana and Namibia have 927MW and 624MW, respectively. However, only Mozambique among these countries has an electricity surplus. All other countries are in deficit implying limited source markets for electricity imports for Zimbabwe. Even in SADC as a whole, which is interconnected by the Southern Africa Power Pool (SAPP), only Mozambique has a surplus. According to SAPP, Angola, is producing 2,500MW of electricity against 3,129MW capacity while DRC is producing 1,076 MW yet installed generation capacity stood at 2,457MW. Eswatini is generating 55MW against installed generation capacity of 70MW. Similarly, Lesotho is generating 70MW against installed 74MW capacity while Malawi making it at 270MW against the

447MW installed capacity. Tanzania was producing 1,221MW against the 1,461MW installed capacity. This implies that the whole of SADC has a net electricity deficit. In Zambia for instance, power is being rationed with blackouts as high as 8 hours per day. South Africa seem to be producing just enough to meet its demand but also experienced blackouts in the month of September.

Figure 2: Domestic Production and Capacity (MW)



Source: MHMK Capital, ZPC

In terms of domestic production capacity, Kariba, Hwange and Harare are the only operating plants augmented by

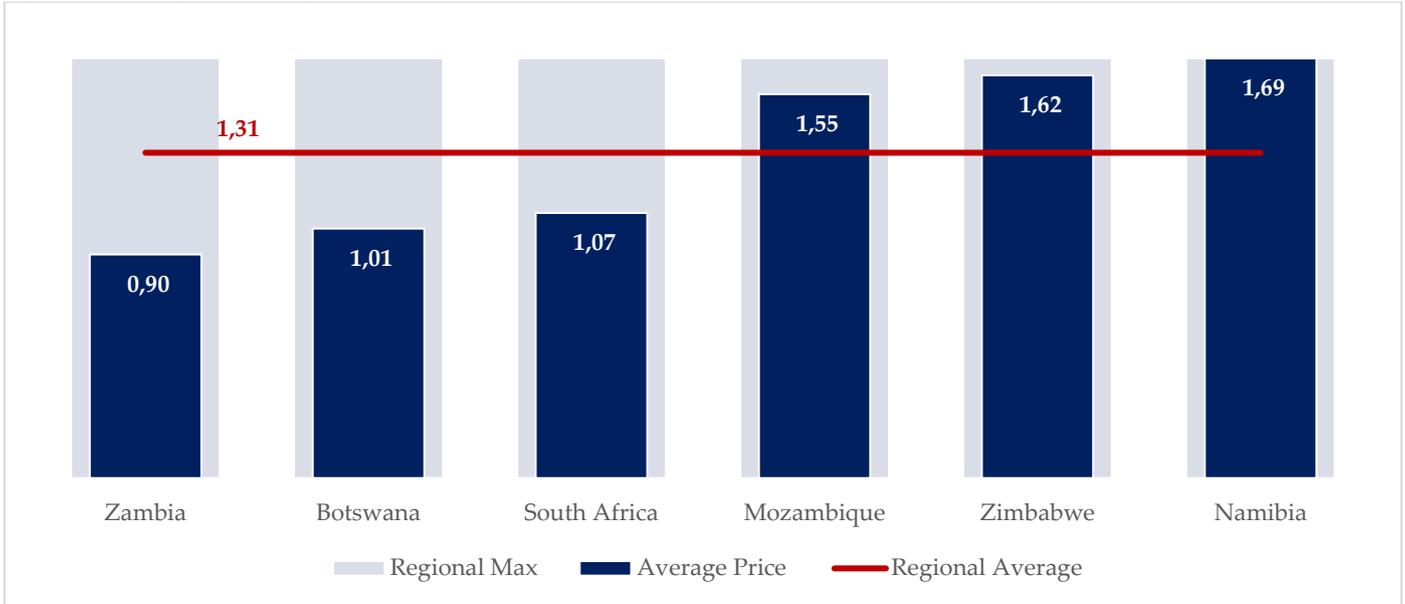
small independent producers. Combined, they are producing about 519MW. Kariba plant which has the highest capacity is the worst affected due to low dam levels. As at the end of September 2019, the Zambezi River Authority's latest reports state that the river's flow is trending in line with 50-year lows. Water levels at Lake Kariba were recorded at 17% capacity and falling, down from 25% three months prior and going into the reservoir's low season (December-March).

MHMK Research expect that the depletion of Kariba's reservoir through 2019 will have a lasting impact. It will take time to regain capacity great enough to reinstate full operations at the Kariba hydropower plant even if normal rainfall conditions return in early 2020. At Hwange, there are serious challenges including managerial issues and dilapidated equipment. Considering these factors, Zimbabwe's overall power generation will remain low through 2020, necessitating electricity imports to supplement the country's power deficit.

1.2. Electricity Pricing

In terms of pricing to the end user, Namibia has the most expensive electricity at R1.69/kwh (rands per kilowatt hour) while Zambia has the cheapest electricity. Namibia relies much on imports and ZPC, a subsidiary of ZESA (the national utility of Zimbabwe) supplies NamPower with 80MW firm power, which is dispatched based on the Load Factor of 50%. This is a source-based supply, stemming from the Kariba Hydro power plant. Namibia also imports most of its electricity from South Africa. A special arrangement between NamPower and Eskom enables Namibia to buy and utilise the surplus energy from South Africa at affordable rates. NamPower and Eskom signed a firm PPA in March 2017, which became effective on 1 April 2017 for a duration of five years. As per the agreement, NamPower gets a firm power supply of 200MW and supplements its requirements by sourcing additional power of up to 300MW on the Day Ahead Market (DAM). For Zambia, electricity is subsidised, but the country has also made strides in increasing its capacity. That is why the country has very low electricity tariff of R0.90/kwh.

Figure 3: Average Electricity Tariff (R/kwh)



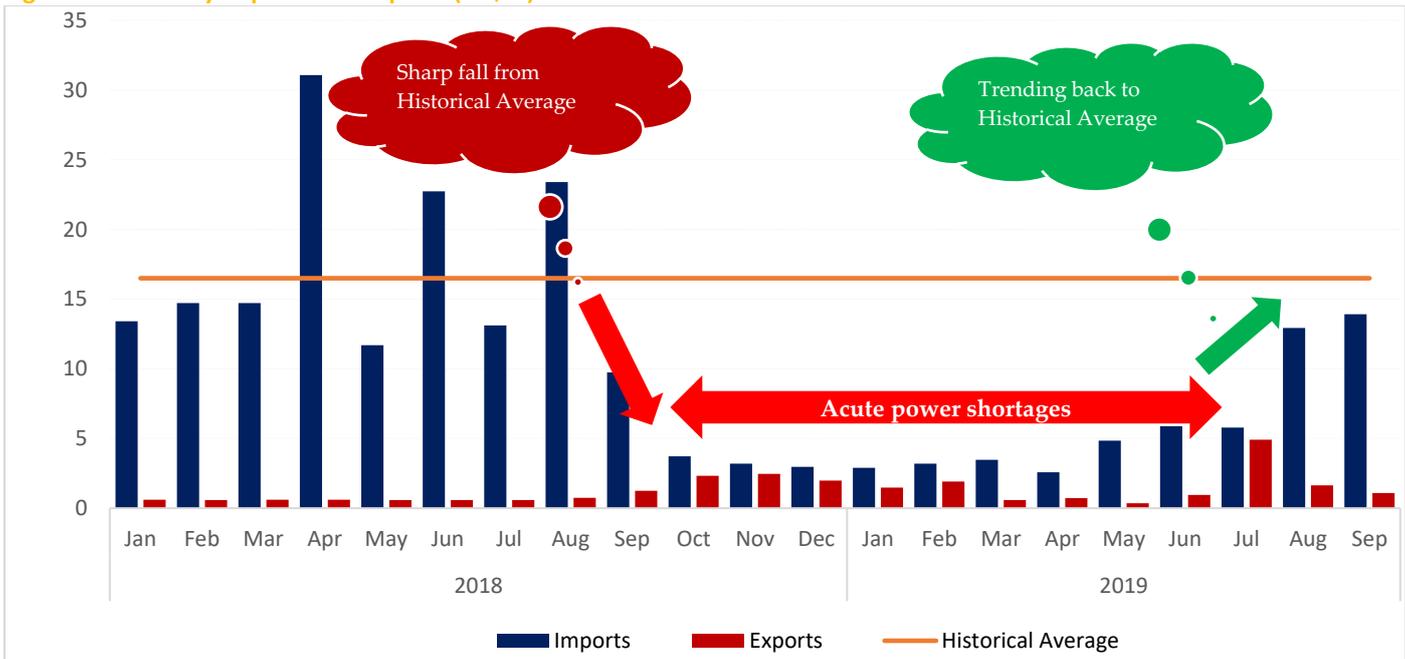
Source: MHMK Capital; SAPP; ZESA; ZESCO; ESKOM; NAMPOWER; BPC

Zimbabwe electricity costs on average R1.62/kwh which is high when compared to the region as a result of its reliance on imports from South Africa and Mozambique. Since the domestic currency (ZWL\$) exchange rate has stabilised at 1:1 with the rand, electricity prices are expected to stay put or track those of South Africa. The 51% price differential between Zimbabwe and South Africa is however high but in line with other commodities such as basics. However, this is a serious price distortion which can only be corrected if there is currency stability or clear signal that Zimbabwe has unofficially pegged its currency to the rand. A clear signal may result in prices stabilising or coming down as they self-correct.

1.3. Electricity Imports

Zimbabwe imports much of its power from South Africa and Mozambique and spends on average US\$16.5m monthly on import. However, arrears and debt accumulation resulted in electricity imports falling sharply in the period Oct-18 to Jul-19. During that period, the country experienced some of its worst blackouts.

Figure 4: Electricity Imports and Exports (US\$m)



Source: MHMK Capital; ZimStat

The situation, however, is improving following negotiations between utility provider (ZESA) and its regional sister utilities. In terms of exports, ZESA has a contractual obligation with NamPower where it supplies 80MW. Exports are low given low production averaging \$1m monthly.

1.4. Renewables Energy Potential

The country has potential for renewable energy given its good sunlight and potential for mini-hydros. The country now has a clear renewables policy which should help attract investment in the sector. In September 2019, the Infrastructure Development Bank of Zimbabwe released a request for proposals to construct the 3.6MW Odzani and 1.7MW Osborne mini-hydropower projects. The Bank also issued a request for proposal to seek partners for the development and construction of seven solar parks, with a combined generation capacity of 235 MW, plus two mini-hydro power projects.

Harava Solar is developing a 20MW solar farm being constructed in Bwoni Village, Seke rural, at a cost of almost US\$25 million. The project which is the first phase of its overall 80MW solar farms is 70% complete and is expected to be connected on the grid before the second quarter of 2020. This is positive since solar farms are low cost when compared to other sources such as thermal.

Another solar farm in Nyabira by Centragrid was connected on grid adding 2.5MW. Generally, there is activity in this space with Zimbabwe Energy Regulatory Authority (ZERA) having processed 39 solar power project proposals that have capacity to generate up 1,151.87MW, as the country moves towards renewable energy to increase capacity.

1.5. Non-renewables Energy Potential

In October 2019, the energy ministry reported that the Government had initiated a process to review and restructure coal prices in an effort to maintain profitability at the country's coal mines. The tariff revision comes in response to pressure from coal mining majors such as Makomo Resources, who the Zimbabwe Power Corporation (ZPC) relies on to supply feedstock for thermal power production. The revised tariff structure is expected to be made public before the end of 2019.

Zimbabwe Zinghoxon Electrical Energy (ZZEE), a joint venture between Zimbabwe and China, has begun construction on its 150MW ZZEE Coal Power Plant project in Hwange. The project will be constructed in two phases, with the first installing two 25MW generators while the second boosts capacity with two 50MW units. The plant is expected to reach full capacity in 2022.

Chinese firm Sinosteel reportedly completed preliminary works on two of its three special grants near Gwayi, Matabeleland North, and is continuing to conduct resource viability studies to determine the commercial and practical viability of coal-bed methane (CBM) resources for power and petrochemical production. The company plans to construct a 400MW gas power plant in the area by 2025, fed entirely by its CBM extractive facility.

Zimbabwe Energy Regulatory Authority has granted a licence to the ZPC to construct, own, operate and maintain the 150MW Mutare Peaking Power Plant. ZPC plans to complete construction of the oil-fired plant by the end of 2022. This is positive for the nation and will help increase the supply of power once these projects come on board.

1.6. Conclusion

The country's power generation falls well-below normal levels, necessitating high-volume imports from neighbouring South Africa and Mozambique. Import dependent will decline from 2020 as hydropower generation picks up with increased flow in the Zambezi River. With increased generation from the Kariba Dam and new capacity coming online from solar farms. Zimbabwe is likely to generate a net oversupply of electricity which may be exported through the Southern Africa Power Pool (SAPP). Risks to outlook emanate from the damage done to Kariba as a result of low dam levels. Prevailing droughts are likely to have a lasting impact, taking time to regain capacity great enough to reinstate full operations at the Kariba hydropower plant even if normal rainfall conditions return in early 2020. MHMK Research notes that currency instability is stalling investment projects progress. Pegging to the rand or using the rand as reference currency will help bring confidence and progress in power projects that naturally have long gestation period.

February 2020

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