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South Africa's electricity industry is in dire straits. The country, at the start of 2019, suffered one of its worst series of power cuts in a decade, conjuring up memories of the 2008 crisis when the grid nearly collapsed.

The organisation is operationally weak, financially broke and despite being overstaffed, lacks people with critical skills. Its eleventh CEO in a decade – Phakamani Hadebe– has recently resigned and will vacate the job in July.

President Cyril Ramaphosa has made Eskom a top priority, declaring that the organisation, which "holds the fortunes of the country in its hands", is "too big, and too important to fail". National Treasury is propping up the cash-strapped State utility with a R69-billion-a-year bailout over the next three years and plans have been tabled to split Eskom into three units, despite opposition from labour unions.

OPERATIONAL AND FINANCIAL DIFFICULTIES

Eskom is also marked by deteriorating plant performance propelled by a lack of maintenance and old generation infrastructure.

Electricity supply was severely compromised in March this year, when the power supplier was forced to shed 594 GWh of load over ten consecutive days. At the time, unplanned breakdowns increased to more than 12 000 MW, while Cyclone Idai destroyed transmission infrastructure carrying electricity from Mozambique to South Africa, and Eskom ran short of diesel and water reserves at its open-cycle gas turbines and its pumped-hydro schemes respectively. At the height of the March crisis, Stage 4 load-shedding was instituted, resulting in nationwide cuts of between 4 000 MW and 5 000 MW.

To mitigate load-shedding, the organisation has been burning diesel at a great cost and, at times, fuel consumption amounted to R100-million a day. Eskom has since reported an improvement in its plant performance, but COO Jan Oberholzer has warned that the risk of rotational power cuts remain for the next six to 12 months, during which a nine-point recovery plan to improve the energy availability factor of its underperforming coal fleet will be implemented.

Eskom intends to avoid load-shedding during the colder winter months and should cuts be required, it has said that they will be limited to between 1 000 MW and 2 000 MW.

Despite Eskom's pricey investment in new, mega coal-fired power stations, weak operational performance continues. A decade after construction started, the 4 764 MW Medupi power station, in Limpopo, and the 4 800 MW Kusile power station, in Mpumalanga, are still unfinished and the units that are operational are

Eskom's nine-point recovery plan

Eskom is implementing a nine-point recovery plan to return its energy availability factor to 75% by November this year. The key elements are:

- Investing a further R1.50-billion in the new Medupi and Kusile coal-fired power stations, in Limpopo and Mpumalanga respectively, to address design weaknesses.
- Fixing full load losses and trips by improving maintenance planning, speeding up procurement processes and refining spares management.
- Fixing units on long-term forced outages, such as Lethabo Unit 5, Duvha Unit 4, Grootvlei Unit 2 and Kriel Unit 2.
- Addressing partial load losses by investing R11.50-billion during the implementation of 59 outages across the fleet from September 2018 to December 2019.
- Fixing outage duration and slips by improving planning and execution.
- Improving human resource accountability by appointing permanent power station managers and increasing their authority to make procurement and operational decisions.
- Preparing for increased open-cycle gas turbine use.
- Preparing for heavy rainfall during the summer months and the impact of extended periods of wet weather on coal handling.
- Fixing coal stockpiles.

ENERGY

fraught with design flaws and are not performing to design specifications. Initially thought to be teething problems, the poor performance of the operational Medupi and Kusile units have now been put down to more fundamental problems, particularly with regard to the performance of the boilers, the grinding mills and the fabric filters.

However, Eskom has reported encouraging signs for the next boilers coming on line. A new unit at Kusile – Unit 3 – was synchronised to the grid on April 14.

The cost of the new power station projects has risen sharply to more than R300-billion and fixing the defects will add an estimated R2-billion. The cost overruns and delays in completing Medupi and Kusile have left Eskom with ballooning debt, putting the utility under severe financial strain.

The organisation has amassed debt of about R450-billion and this could rise to more than R600-billion, while its sales have flatlined, owing to a combination of weak economic conditions and price elasticity of demand amid a sixfold tariff increase in the past 12 years.

The most recent tariff increase was approved in March, creating revenue for Eskom of R206.38-billion, R221.84-billion and R233.08-billion for the years 2019/20, 2020/21 and 2021/22. This translates to increases of 9.41%, 8.10% and 5.22% for the respective three years. The increase is in addition to the 4.41% already sanctioned during the 2018 regulatory clearing account (RCA) recovery for 2014/15 to 2016/17. On the RCA application for 2017/18, the National Energy Regulator of South Africa (Nersa) in March approved an amount of R3.87-billion.

Eskom had requested allowable revenue of R219-billion for 2019/20, rising to R252-billion in 2020/21 and R291-billion in 2021/22, which, if granted, would have translated to increases of 17.10% for 2019/20, 15.40% for 2020/21 and 15.50% for 2021/22. Together with the 4.41% RCA increase, the increase for 2019/20 would have been 21.50% had Nersa acceded to the full request.

Eskom hiked tariffs for direct clients by 13.82% on April 1, while increases for municipal clients will follow on July 1.

However, neither the recent tariff increase nor the R23-billion-a-year commitment by government is enough to ease Eskom's financial woes. The organisation faces a R250-billion hole in its finances, as it is not generating enough cash to cover its operational expenses and meet its debt-servicing obligations. Eskom's precarious financial position was highlighted by the early cash injection of R5-billion that Finance Minister Tito Mboweni authorised in April. The first tranche of Eskom's bailout was reportedly expected only for August or October this year.

Eskom sought to draw down R7-billion of a R35-billion facility in April that it has with the China Development Bank (CBD), but the funds were not released, leading to speculation that the delay may have been because

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of concern from the Chinese about whether Kusile will, indeed, be completed. The CBD loan agreement stipulates that it can be used only for capital expenditure and not operational expenses. Eskom has stressed that the CBD loan facility remains binding and that the delay was the result of Chinese exchange control requirements.

Under the current scenario, the utility appears to be trapped in a permanent loss-making position. Eskom is forecasting a loss of R20-billion for 2018/19 and about R19.70-billion the following year. The Eskom Sustainability Task Team expects the 2018/19 loss to be a record of R25-billion and is warning that capital and interest payments for new debt will overwhelm cash from operations.

Eskom's debt has become expensive, following credit rating agency downgrades of ten notches over the past decade. The organisation previously had an investment-grade credit rating above the sovereign, but is currently deep in junk territory.
In addition to its high debt levels and servicing costs, Eskom's coal costs have surged fivefold over the past 11 years, and its employee costs have increased substantially, as staff numbers increased from 32 000 to 42 000.

ESKOM INTERVENTIONS

Ramaphosa appointed the Eskom Sustainability Task Team, comprising Anton Eberhard, Tsakani Mthombeni, Grové Steyn, Frans Baleni, Mick Davis and Busisiwe Vilakazi, in December 2018 to advise government on actions to resolve the organisation's challenges. The task team's report helped to inform the announcement in the February State of the Nation address that Eskom will be separated into three independent companies: generation, transmission and distribution.

Trade unions are opposing the plan, which they perceive as a precursor to retrenchments and privatisation, but government insists that it is necessary to stabilise Eskom's finances and operations. Government says the unbundling will also position the electricity sector to embrace clean technology, diversify the mix across

Picture by Creamer Media

a multitude of power producers and provide a platform for contracting least-cost and secure power.

The first step in the separation process will be to transfer a portion of Eskom's assets to a new transmission company, which will invite the participation of strategic equity partners that will provide capital for the business and strengthen oversight. Government insists that the inclusion of a strategic equity partner in the national grid company does not amount to privatisation.

An independent board will be appointed by midyear and the company will remain a subsidiary of Eskom Holdings. A yet-to-be-appointed chief reorganisation officer will work with the board and management to implement the Eskom Sustainability Task Team recommendations.

Ratings agency Moody's says the splitting of Eskom into three entities will help with transparency, but does little to address the utility's financial challenges. Goldman Sachs has warned that the unbundling will take longer than government has to revive the business.

Following the acceptance of its proposal to unbundle the utility, the task team is now working on an updated report for Ramaphosa, which will include a financial recovery plan for the State-owned entity.

Eberhard has revealed that a suite of interventions is under consideration, which will carry "a degree of pain" for all stakeholders, including users and taxpayers. In addition to tariff support and a substantial intervention around debt relief, financial modelling undertaken by the task team shows that it is important to also reduce the cost of Eskom's debt. He says there is an opportunity to bring some climate-related money into Eskom. "We are sitting with the most carbon-intensive electricity sector in the world and the rest of the world wants us to be reducing our greenhouse-gas emissions. If we are committed to even a modest acceleration of carbon reduction below what we have already promised, there could be, in exchange, the opportunity for concessionary climate-related money, blended with development finance and even some institutional money."

The task team has modelled a possible injection of R150-billion from a blended finance facility, which would be the largest deal of its type in the world. Together with an upward revision to the Nersa-approved tariffs for 2020/21 and 2021/22, and financial restructuring to deal with Eskom's debt burden, the task team believes the utility's financial ratios could be turned around and placed on a more sustainable trajectory.

ACCELERATING PRIVATE GENERATION

With Eskom's balance sheet no longer able to fund new power-generation projects, plans are afoot to enable South Africans to contribute towards keeping the lights on by freeing up the market for self-generation and distributed energy resources. In a significant development, former Energy Minister Jeff Radebe has opened the way for businesses to generate their own electricity and feed this into the grid, unblocking the stalled licensing process for small-scale embedded generation (SSEG). Nersa has been given approval to proceed with licensing 500 MW of SSEG projects of between 1 MW and 10 MW, without the developer having to seek permission from the Minister for a deviation from the Integrated Resource Plan (IRP).

The move is expected to unblock hundreds of projects left in limbo since 2017, owing to an absence of a policy framework for projects larger than 1 MW, even when those power plants were for own use. The South African Independent Power Producer Association has estimated that between 2 500 MW to 3 500 MW of SSEG capacity has been constrained by the regulatory problem.

The announcement has been widely praised, as SSEG plants are seen as the quickest and cheapest way for the country to address its electricity supply deficit. The South African Photovoltaic Association reports that an estimated 500 projects are in the pipeline and that it could bring 1 000 MW onto the grid in the next 12 months.

The South African Wind Energy Association (SAWEA) contends that the SSEG market has the potential to support the industrialisation efforts stimulated by the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and contribute to job creation. A SAWEA study estimates that between 40 MW and 75 MW a year could be added from behind-the-meter grid-tied wind energy projects, while 135 MW a year could be added from projects wheeling electricity from remote wind energy sites. The study also estimates the job creation potential for wind energy SSEG projects at 207 jobs during one year of construction and 127 permanent jobs during operations, for wind projects with a combined capacity of 50 MW.

South Africa allows private generators to produce electricity and sell that to Eskom through the REIPPPP, which was introduced in 2011. Under the programme, 6 422 MW of electricity has been procured from 112 renewable-energy independent power producers (IPPs) in several bid rounds. By the end of 2018, 3 876 MW of electricity generation capacity from 63 IPP projects had been connected to the national grid and more than 32 700 GWh of energy has been generated under the REIPPPP.

After a period of rapid growth, renewable-energy additions stalled when Eskom blocked Round 4 of the REIPPPP for three years. Round 5 was expected to have been launched in 2018, but this will progress only once the updated IRP has been promulgated. Radebe said in May that government was still engaging with its social partners at the National Economic Development and Labour Council, but emphasised that Cabinet approval of the IRP update was imminent. The draft IRP 2018 states that the lowest-cost, new-generation scenario for South Africa is one based on solar photovoltaic, wind and gas, or other flexible generation technologies.

Renewable energy has played a key role in mitigating load-shedding during the tight supply periods. Analysis by the Council for Scientific and Industrial Research shows that the fleet of utility-scale variable renewable-energy (VRE) plants contributed to limiting the extent of load-shedding by 46% in the first quarter of the year. Without the 2.30 GW contributions from the VRE fleet during periods when rotational cuts were made, Eskom would have been forced to raise the level of load-shedding instituted from Stage 4 to Stage 5, or even Stage 6. The utility-scale VRE fleet contributed 2 975 GWh, or 5.30% of the power system during the first quarter.

Nevertheless, private producers have become a big political issue, with some stakeholders singling out the REIPPPP as a major financial risk to Eskom.

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