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Navigating business through South Africa's changing energy landscape

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The changing **energy** landscape

The South African energy landscape is rapidly changing, giving credence to the energy transition underway. During the 2020 South African State of the Nation (SONA) address, President Ramaphosa announced that the government would be "implementing measures that will fundamentally change the trajectory of energy generation in our country". In June 2021, he further revealed that schedule 2 of the Electricity Regulation Act would be "amended to increase the licensing threshold for embedded generation projects from 1 MW to 100 MW", paving the way for projects up to 100MW to connect to the grid[1].

The energy transition in South Africa is a welcomed development by some, such as the Minerals Council SA, who indicated that a higher licensing threshold could unlock investment from the private sector and supplement, rather than compete with Eskom[2]. In other circles, the energy transition is terrifying, particularly with the fear of expected job losses in the coal sector, as an example. Bloomberg reports that the coal sector could lose 120,000 jobs due to the transition to lower-carbon technologies in the electricity sector[3]. The job loss scenario is one of the aspects that highlight the need for the Energy Transition to be just by considering the socio-economic impact. We outline the fundamental energy challenges business faces and provide a simple, yet practical approach for companies to successfully navigate these uncertain times.

Energy supply forms the foundation of any business because businesses require reliable energy supply to enable operations. Companies are facing three significant energy challenges:

- Energy security, which refers to having sufficient energy for business operations
- Energy cost, which refers to the expenditure expanded on energy
- Energy emissions, which refers to the impact on the environment.

These three energy challenges form the conceptual energy triangle whose dimensions must be successfully orchestrated to navigate the Energy Transition.

Energy security

Load shedding is a consistent feature in our economy and has been with us since 2007. According to Eskom, load shedding will still be around for at least another five years due to a shortfall of 4000MW[4]. Ultimately, load shedding has impacted energy security in South Africa and the broader Southern Africa region, who obtain some of their supply from South Africa.

Over the last decade, the Council for Scientific and Industrial Research (CSIR) conducted research to quantify the magnitude of load shedding in South Africa. The latest study suggested that during the first half of 2021, South Africa has experienced approximately 650 hours (1 284 GWh) of load shedding[5]. The 2021 half-year numbers are significant when compared to previous annual figures of 860 hours (1 798 GWh) in 2020, 530 hours (1 352 GWh) in 2019, and 127 hours (192 GWh) in 2018.

The Energy Availability Factor (EAF) in July 2021 was 67.7%, implying that, on average, Eskom power stations are not available for 32.3% of the time during the month of July 2021[6]. Focussing on the 32.3%, approximately 10 500 MW of the total installed capacity is unavailable due to unplanned breakdowns, whilst another ~3500 MW are in planned maintenance. The EAF trend over the last five years continues to decline from 76.4% in 2016 to 61.3% in 2021 (July), as presented by CSIR.

These numbers are concerning to businesses that depend on Eskom to supply their energy needs. Unfortunately, the impact on trade continues to be severe, with significant repercussions to the economy's future as a whole. Engineering News reports that in 2020 load shedding cost the economy R160 billion[7].

Energy cost

Energy supply to business comes in a variety of forms. South Africa's energy supply consists of coal (69%), Crude Oil (14%), Gas (3%); Nuclear (3%); Renewables and Waste (11%)[8]. For a business to sufficiently supply its demand, the energy cost can make up 30% of the total operating cost. This cost is significant for any business, especially price takers, such as the mining industry. The average price of local bituminous coal has increased by an average of 148% over a ten years period since 2008[9], while electricity prices have increased by 500% over the last decade and a half – average electricity selling price of 17.01 c/kWh[10] in 2006 to 101c/kWh in 2020[10]. Eskom has indicated that the lack of cost-reflective tariffs contributes to their liquidity constraints[10]. The Eskom CEO is reported to have said that Eskom needs a cost-reflective tariff, which implies a high likelihood of tariff hikes soon[11] – continuing with the recent trends of tariff increases.

Moreover, the increases in electricity costs have often been above inflation, placing additional pressure on the business bottom line. Eskom's revenue related to its licensed activities is determined by the National Energy Regulator of South Africa (NERSA). In theory the revenue is set according to a typical cost of service model. This model sets revenue equal to the prudent and efficient costs, which includes operating costs, cost of capital as well as depreciation. Revenue is set in advance for a future period, based on estimates and assumptions. To estimate variable costs (mainly fuel), Eskom estimates the kilowatt hour (kWh) volume of sales for the future year. The regulated revenue is then (theoretically) set to match the total costs, including the variable costs. From the total revenue, the average electricity tariff per kWh is then derived, by dividing the total revenue by the estimated total kWh sales. This then implies that the fixed cost is also recovered per kWh of sales, with the proportion of fixed cost that is recovered per kWh dependent on the estimated sales volume – i.e., the higher the estimated sales volume the lower the rate per kWh for recovery of fixed cost.

The challenge with this model is that if the estimated electricity sales volumes are not reached, as was the case over the last couple of years due to various reasons (e.g., more customers transition to off-grid solutions, load shedding, etc.), it implies that the total fixed cost will not be recovered through the kWh of sales. The revenue model has made provision for Eskom to claw back the under recovered fixed cost (or revenue) through the Regulatory Clearing Account (RCA) mechanism. The RCA allows Eskom to increase future revenues through tariffs by a percentage that can generate additional income equivalent to the amount of fixed cost under-recovered in previous years due to the over-estimation of future years' sales volumes. Given

the current context, the revenue model also contributes to the challenges business faces with regards to electricity prices, as long-term tariff certainty is difficult to achieve.

While the tariff directly influences the cost of electricity, the lack of energy security introduces losses due to lost production, even more so for businesses, such as the mining industry, with a high fixed cost, which is still incurred when energy is not available for operations. The lack of energy security will also erode asset intensive business's Return on Assets (ROA), hampering returns for shareholders.

Energy emissions

South Africa has made advances to align with commitments made to the Paris Agreement by legislating the Carbon Tax Act, seeing Greenhouse Gas (GHG) emissions levied. South Africa's National Treasury has forecasted R1.8 billion in revenue[12]. Phase 1 of the carbon tax implementation applies to scope 1 emissions originating from business-owned or controlled sources. Some of the decarbonisation solutions addressing scope 1 emissions deal with scope 2 emissions that are indirect and originate from an external utility provider. The most significant challenge will be the reduction of scope 3, which occur along a company's value chain and often represent a company's most significant greenhouse gas impact[13]. While reducing these emissions can have a significant impact, they could lie outside a company's operation[14].

Adding to the tax burden, investors are increasingly seeking to fund more sustainable projects. A recent Blackrock study showed that investors plan to double investments in ESG in the next five years in the United States[15]. This trend is also expected to reach the African shores as prominent investment bankers such as FirstRand Ltd and Nedbank Group stopped financing new coal-fired power stations[16]. We expect investors to put a higher cost to financing projects that show lower environmental sustainability and will ultimately cease to finance such projects.

As businesses seek to reduce the cost of capital brought by these new investor expectations and continue to generate returns to their shareholders, tackling emissions becomes top of mind. Scope 1 and 2 emissions have received significant business focus in recent years, where some Energy Resources and Industrial companies have taken advantage of the 12L incentive, and others have embarked on renewable energy projects.

To achieve these reductions across scope 1, 2 and 3, businesses require focus on both demand and supply-side initiatives. If we consider scope 2 emissions for a company that depends on Eskom for electricity supply, approximately 80% of the supply is generated using carbon-intensive fossil fuel sources, significantly contributing to a business's emissions. These businesses will either have to wait until the energy landscape transitions towards cleaner energy and take the penalties from investors and the taxman or generate their clean energy from renewable energy sources as provided by the changes in legislation. Additional financial penalties may be imposed on exportation of goods, through the implementation of the Carbon Border Adjustment Mechanism (Border Tax), which has been under consideration for a number of years. The European Union have now tabled this for fast-tracked implementation.

The **journey**

All three dimensions within the energy triangle play a significant role in the business moving forward, and all three are significant challenges for business to solve if they seek to transition successfully towards a new sustainable energy landscape. Therefore, considering the context of the energy landscape and the energy challenges businesses face, any energy solution formulated needs to take all three dimensions of the energy triangle into consideration. The question then becomes: How can companies practically develop an energy solution? We suggest a simple, yet practical three-step process to promote future energy availability and sustainability.

Move beyond the vision

The challenges that we highlight in the energy triangle have driven business leaders towards action to remain operationally sustainable. Energy security challenges have led to business considering alternative energy supply sources to meet operational demand, whilst various energy cost-saving initiatives are high on the agenda to reduce overall energy cost. Moreover, business leaders have also made commitments to decarbonise their operations by a specific date. Commitments to decarbonise are mainly covered in the organisation's vision, and in some cases, decarbonisation is implied under the broader ESG agenda. Even though various initiatives might be executed or planned, the overall business strategy is not explicit on how the organisation will ensure energy security, reduce energy cost and reduce its environmental footprint. In some instances, there is a sentence in the broader company strategy but often insufficient to provide direction in organisations with competing priorities, especially when other priorities are better articulated.

Therefore, a critical first step is for business to move beyond the vision setting and develop a detailed energy strategy. The strategy needs to outline how the business will practically consider the dimensions of the energy triangle and provide detail on the company's position concerning energy security, energy cost, and energy emissions. Furthermore, the strategy should articulate its future ambitions and make the necessary strategic choices to bridge the gap identified. The strategy development process could result into a significant number of projects, across multiple operations, in various regions, having to fit into a capital budget that is already stretched. These projects will have varying complexity and feasibility, financing options and scheduling to be considered – and these are not all the criteria that are to be considered. Making trade-offs based on a multicriteria against short-term goals and the long-term needs of the business can be an increasingly complex exercise. It is therefore critical that the strategy formulation process should consider all these competing criteria and determine the emission pathways, abatement gaps and science-based targets. However, performing such analysis manually might be cumbersome and give way to the "who shouts the loudest" adage where priority is not given to the most viable projects. Businesses must consider the use of artificial intelligence and analytics powered technology tools for data-driven modelling to empower decision making.

Establish an Energy Value Office

Establishing a decision, governance and execution authority that can direct and implement the energy strategy is paramount to the success of the business's energy transition. The Energy Value Office (EVO) is a vehicle to be used in implementing the energy strategy towards the chosen decarbonisation pathway.

At its core, the EVO should be well equipped with the critical skills and capabilities required to drive the energy strategy forward. Three essential skill and capability areas are needed. Firstly, the EVO should have the ability to identifying various energy initiatives that will allow the business to close the gap between the status quo and the envisaged energy strategy end state. The identified initiatives should be prioritised considering the context (e.g., resources available, risk appetite, capital availability) of the business, and the EVO needs to focus on both demand and supply-side initiatives. Demand-side initiatives, which range from relatively simple initiatives, such as replacing old equipment for more efficient equipment, to more complex initiatives, such as changing equipment time of use, can unlock value in the short to medium term. Supply-side initiatives, which include the diversification of energy sources, such as renewables and hydrogen, can benefit in the medium to long term. Secondly, the required governance, value realisation and project and programme management capabilities must be embedded in the EVO to enable the office to manage the implementation of initiatives throughout its

lifecycle. This allows the EVO to ultimately be accountable to the company's governance structures and track implementation against the expected value. Finally, core capabilities required by the initiatives must also be present within the EVO. A key consideration within the design of the EVO is whether or not these required capabilities sit within the EVO, get seconded from the rest of the business, or are contracted from an external service provider. These capabilities include finance, procurement, human resource, and information technology, which are critical in enabling the energy strategy.

Energy initiative execution

Once the strategy has been set and the EVO has been established, the business should be geared to move into execution mode. We suggest starting small, mobilising quickly and scaling rapidly if a company is to embark on this journey alone. There are some obvious benefits of starting small at the onset of the initiative, and these benefits can quickly compound into significant value for the business. Another benefit of starting small is that it promotes a more agile approach and allows the business to pivot should new game-changing technology come to the fore or if the business context changes. In the event that the business embarks on this journey with the support of external partners, a more ambitious approach can be targeted.

During execution, the EVO needs to monitor the progress made on each initiative to ensure adequate benefits tracking. Providing business leaders with real-time feedback allows for quicker and better decision making, which ultimately improves the success rate of initiatives, leading to greater value unlock in the business. Moreover, as initiatives get executed, it is vital for the EVO to be the link between the strategy developed and the execution of initiatives to achieve the strategy. We live in an increasingly complex world where the operating conditions and context constantly change. Therefore, it is important for business to continuously review the execution of initiatives to determine if these initiatives are achieving the envisaged value. Using the EVO to provide constant feedback from the implementation and performance of initiatives, the strategy must be continuously reviewed and updated to reflect the business objectives and context.

Conclusion

Businesses will experience increased pressure to undergo an energy transition. In response to this increased pressure, businesses need to consider all three dimensions of the energy triangle (that is, energy security, energy cost and energy emissions) and orchestrate a comprehensive solution. Using a simple yet practical process to transform energy in business is critical, and to this end, business should first focus on developing a detailed energy strategy, set up an EVO to implement the strategy, and subsequently move towards initiative execution.

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