GAUTENG DEPARTMENT OF ECONOMIC DEVELOPMENT

SECTOR LANDSCAPE *Brief*

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REPUBLIC OF SOUTH AFRICA

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GROWING GAUTENG TOGETHER

Global outbreak of bird flu adds further strain to elevated food prices

By Mfanelo Radebe

According to Berkhout (2020) the South Africa's Poultry industry is the largest in the domestic agricultural sector, employing over 100 000 individuals throughout its value chain. The industry slaughters approximately three million birds a day and represents more than 60% of the total meat consumption of the country. Its mere scope and size make the poultry industry a critically important contributor to the country's agro-processing and food and beverages industries.

In addition, South Africa's poultry sector is well placed to grow exports and create employment. However, key industry players have higlighted various barriers that are limitting the sector's potential to do so. According to the South African Association of Meat Importers and Exporters (AMIE) the country is unable to capitalise on the big export opportunity because it does not meet the health and safety standards required by trade blocs such as the European Union (EU). South Africa currently exports 26 000 tonnes of chicken per year, with an export value of R622 million. This, according to the sector, is negligible compared to other food exports like citrus which exported 1.5 million tonnes of citrus, fetching R15.9 billion in export value in 2021 (Phillips, 2022).

The country also has duty-free status in the EU, which means it is able to export products without paying any additional duties. However, brining of chicken remains particularly problematic, as it is prohibited in the EU and most of South Africa's potential export partner markets. Local chicken pieces now contains up to 15% brine following the passing legislation in 2016. At the time, domestic chicken pieces contained up to 60% water (Phillips, 2022). Besides brining, there are several other areas that South Africa must consider to realise its export potential, these are summaried below.

Table 1: SA's Poulty export considerations

Gaining access to countries with whom South Africa has preferential trade agreements.
meeting the international health and safety standards and requirements of countries to which South Africa will export.
Re-align operations to extract value from certain poultry cuts in markets that will pay a premium for them – including processing of cuts into cooked/canned goods

Source: Phillips (2022)

The Gauteng province continues to make concerted efforts towards protecting and upgrading key components of the provinces' poultry-related activities. Specifically, an egg aggregation facility is being established to assist Gauteng suppliers and wholesalers in purchasing eggs from a single location. In addition, the facility will provide egg farmers access to well managed storage units to assist them in selling their merchandise. This project aims to create 170 jobs across the value chain by 2030, it also aims to benefit from spin-offs in the informal, retail, wholesale and agro-logistics sectors and unlock R60 million worth of investment within agro-processing and urban agriculture trade.

The recent widespread outbreak of the Avian (bird) flu has reportedly led to fierce culling of stock. According to Funk (2022) the bird flu has led to the death of more than 40 million chickens and turkeys in the U.S., resulting in a notable spike in price of eggs and meat (due to supply and demand mismatches and substitution effects). Domestically, an estimated 145 separate outbreaks of the high risk infectious flu have been reported and 3.7 million birds culled in the last 12 months, with outbreaks primarily affecting the Western Cape, KwaZulu-Natal and Gauteng (Thukwana, 2022). Overall, the flu outbreak will likely deepen the persistent increase in food inflation due supply restrictions. In addition, eggs are a key complementary good across various food value chains, the shortage of which will affect the price and demand of other goods, e.g. cakes, egg noodles and fried chicken.

There are widespread socioeconomic and health costs associated with such outbreaks hence their prevention and effective management should be prioritised. According to Le (2022) there are various precautions that can be taken to protect flock and staff from the viral outbreaks such as the Avian flu - top of which entail the effective and efficient implemention of biosecurity as well as regular maintenance and sanitation of the property, poultry houses, equipment, vehicles and footwear.

The pinch of inflation on Gauteng's Food and Beverage sector

The global inflation outlook remains uncertain as countries continue to battle high fuel and food prices, a consequence of Russia's invasion of Ukraine and subsequent disruptions to global value chains. Developing and emerging countries have been hardest hit because of their dependency on Russia's fuel, oil and wheat products. South Africa has not been left unscathed, with prices of food soaring and affecting producers and consumers from the highest to the lowest income level.

According to Statistics South Africa (2022a) the food and beverage industry generated an annual income increase of 12.7% in April 2022, with its main contributors being the categories "other income" (15.8%) and "food sales" (14.3%). To add, the monthly statistics of the income generated by the industry has been declining since the beginning of the year, sliping by 34.1% between January to May 2022. This comes as no surprise considering the high inflation rate which registered above the upper bound of the South African Reserve Bank's target range of 3%-6% to register at 6.5% in May (Statistics South Africa, 2022b). This increase in prices of food and non-alcoholic beverages (NAB) stems from the continuous rise in fuel prices and the dominant attribute in the oils and fats group. These items are two essential commodities within the food and beverage sector.

Food price inflation is affecting poor households the most because they spend most of their income on food. The government unfortunately has little control over inflated prices due to the power that central banks and commercial sellers have (BusinessTech, 2022). However, issuance of an extension of social grants and a consideration to zero-rate basic products to protect consumers from high food prices, will likely benefit poor households. Also, the government is investing heavily into improving the local agricultural capacity, supporting commercial and small-scale farmers and helping more people grow their own food in order to build sustainable food security (South African Government, 2022).

The generally strong and resilient performance of the domestic agricultural sector, even during the height of the pandemic, continued into the first quarter of the year (Q1:2022). The country's agricultural Gross Domestic Product (GDP) grew by 3.6% year-on-year and 0.8% quarter-on-quarter. However, the Bureau for Food and Agricultural Policy (BFAP) has warned that the sector's performance is likely to decelerate drastically over the course of the year due to increasing production costs and logistical challlenges which are driving down profits (Campbell, 2022). There is thus a need to offer continued support to the sector, especially in buffering exogenous cost-push factors driving higher input and production costs.

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MORE WAYS TO GET HIGH - GLOBAL CANNABIS-INFUSED FOOD & BEVERAGE MARKET IS EXPECTED TO BOOM

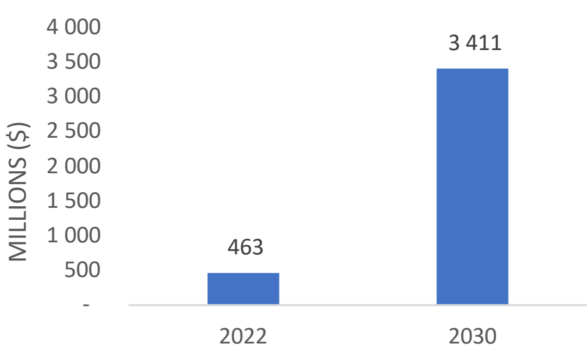
By Khanya Fakude and Jocobeth Masilela

More ways to get high - Global cannabis-infused food & beverage market is expected to boom

By Khanya Fakude and Jocobeth Masilela

The global cannabis industry is experiencing an interesting transition that could potentially enhance growth in the sector, particularly for South African producers. The use of cannabis is shifting from the traditional practices such as smoking pipes, joints, and bongs, to infused edibles and concentrates such as sweets and cannabis-infused alcoholic beverages, creating opportunities for diverse production. In most nations, cannabis is increasingly becoming socially accepted, and the increased demand has led to innovative uses of the herb. The demand for cannabis continues to grow in line with moves towards its legalization for medical and recreational purposes. According to Research and Markets (2022), the global cannabis food and beverages market is estimated to grow from $463 million in 2022 to an estimated $3.4 billion by 2030.

Figure 1: Global cannabis infused food & beverage market



Data source: Research and Markets (2022)

The cannabis food & beverage industry consists of baked products, chocolate, cereal bars, sweets, ice creams and others. Interestingly, the bakery products segment seems to largely contribute to the soaring demand. According to Allied Market Research, this segment accounted for the largest share of the cannabis food market in 2021 primarily due to soaring demand for cannabis-infused baked foods (Kadam, 2020). More recently, the increased penetration of cannabis in the drinks and spirits industries has been a key driver for the growing demand for cannabis-infused drinks in countries like Mexico and Brazil. Furthermore, changing preference toward specific products, such as cannabis alcohol, could further boost opportunities that could lead to the sector's growth, estimated at $ 700 million by 2030 globally.

The South African cannabis food & beverage industry is in its infancy stage. However, changing attitudes towards cannabis should see the industry experience growth. The main development channel is the cannabis tourism industry through the hospitality sector. Other opportunities exist in the medical cannabis industry. According to Tri-Medi Canna (Mochiko, 2022), the legal cannabis market is forecast to reach up to $7.1bn (R113.7 billion) in Africa by 2023, with South Africa potentially accounting for approximately 70% (or R80 billion) of that. Furthermore, Gauteng is uniquely positioned to take full advantage of the cannabis food & beverage industry in South Africa as it is to establish the country's first cannabis hub as part of a R45 billion development in the Vaal River area (BusinessTech, 2022). To add, the acceleration of the industry may be boosted by the Gauteng Cannabis Industrialisation programme aims to create jobs and boost the economy through the production and processing of hemp and cannabis on an industrial scale. Additional opportunities are bound to follow, as the appointment of a new policy head is set to reduce delays and bottlenecks in the cannabis industry (Madia, 2022).

Despite these developments, concerns particularly regarding legislation and start-up costs continue to plague progress in the domestic cannabis industry and are making it difficult for new entrants. South African Health Products Regulatory Authority (SAHPRA) should diligently address the concerns of local farmers who have noted that high barriers prevent them from entering and competing in the medical cannabis market. This may entail ensuring that small farmers are adequately capacitated with the know-how to cultivate cannabis at the required quality and grade and developing a repository of credible companies offering off-take agreements to create possible market linkages for small farmers to sell their produce. There also exists an opportunity for SAHPRA to drive a process leading to the establishment of a fund which supports small farmers entering the market. (Maposa, 2022)

The government's Cannabis Master Plan intends to bring together business, government, civil society and communities to create a safe, non-discriminatory and prosperous industry. However, barriers to entry and competition (or lack thereof) in the market may invoke the risk of an exclusionary market concentration. The Master plan notes that market concentration may lead to "a situation in which smaller enterprises might be squeezed or even be taken out of the cannabis industry". It is thus likely that unless attended to, South Africa's medical cannabis market may produce monopolies or oligopolies which may hinder the establishment of an equitable market that benefits locals. (Maposa, 2022)

Therefore, it may also be prudent for the province to consider establishing a Cannabis Regulatory Authority (in collaboration with national government) which looks at market-specific factors of cannabis development in the province. A regulator mandated to assess market developments may diligently attend to issues of high barriers to entry, price fixing, the structuring of international joint venture deals with local companies and market competition. For example, the New York Cannabis Control Board recently approved the application process for adult-use cannabis processors, expected to boost the cannabis processing industry (Maposa, 2022).

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GAME ON! GAMING AN INSTRUMENTAL GROWTH DRIVER FOR GAUTENG'S CULTURAL & CREATIVES SECTOR

By Rendani Siwada

Game On! Gaming an instrumental growth driver for Gauteng's cultural & creatives sector

By Rendani Siwada

Gauteng remains committed to ensuring the acceleration of recovery in the cultural and creative services sector despite it being hard hit by COVID-19. The province has the most well-developed creative economy in the country and is home to the largest concentration of cultural enterprises in South Africa. According to the South African Cultural Observatory (2022) the Gauteng Province is ranked as the top province in South Africa in terms of its contribution to the Cultural and Creative economy at 46.5%. The Observatory further highlights that employment in the province is driven by visual arts and crafts which includes fine arts, photography; and the audio-visual & interactive media (film, television, video games, radio). The Gauteng Provincial Government (GPG) has taken the initiative to foster the sector through various initiatives including the development of the Hub Accelerator Network; the deployment of the Retail fashion incubator, and the implementation of the Youth Employment Service (YES) programme to provide support to black-owned and emerging record companies and ensuring that the commercial returns on royalty bearing properties are paid out.

Gaming opportunities could boost Gauteng's creative industry

The global gaming industry is booming and has the potential of being a significant driver of the creative sector's development in South Africa. According to Vbassey (2022), South Africa has the highest saturation of gamers in sub-Saharan Africa, with 24 million gamers. In addition, the country generated $290 million in revenue from consumer spending on gaming in 2021. And almost half (42%) of all South African gamers pay for games through traditional channels compared to 33% of Ghanaians and Ethiopians. The country is regarded as the top game developers and highest revenue generator when compared with other African countries such as, Nigeria generating $185 million, Ghana ($42 million), Kenya ($38 million), and Ethiopia ($35 million). This is a remarkable trend especially for South Africa, which possesses a fast growth and huge potential in the gaming industry in Africa.

One of the Initiatives of the Gauteng Provincial Government is to develop the Gaming Hub Network.

According to IT Web (2022) Tshimologong in partnership with Wits University, will be launching a Video Game Incubation Hub in Gauteng. This comes after the Tshimologong precinct received an investment from France to boost the South African gaming ecosystem. The Hub will:

- support game investors, to develop commercially ready products;
- overcome the barriers of entry for black start-ups;
- provide access to the global gaming market;
- workshops focusing on entrepreneurship skills; and
- provide industry-related skills.

The hub will not only bring opportunities to South Africa, but it will also foster growth and development of creative and cultural industries in Africa. Although the programme will only last for 9 months, it will offer the youth opportunities to launch businesses in the locally untapped gaming industry that will hopefully attract local and international markets.

The cultural and creative industry is considered to be highly transformative because of its capacity to generate income and create jobs. Increased funding over the past year presents several exiting opportunities for aspiring and established developers. A combination of private and public financing options such as the Diverse

Game Developer Fund (by the International Game Developers Association), African Game Developer Prototype Fund and Black Game Developer Fund have continued to offer funding for developers (vbassey, 2022). The influx of capital should see the number of registered gaming companies increase over the years and presents an interesting opportunity for developers in Gauteng.

South Africa has an advantage in creating potential opportunities in the gaming sector such as Unique African stories and cultural diversity; Lower production costs that enable international service work; a significant pool of talent and skills; the high quality of the work produced; and access to advanced production and infrastructure. Therefore, a strong entrepreneurial culture boosted by the huge number of start-up hubs will continue to foster transformation and growth of the gaming industry and contribute positively to the real and transformative growth in the creatives sector.

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GAUTENG ON TRACK TO BE THE HOME OF START-UP FINANCING IN COMING YEARS

By Khanya Fakude and Jocobeth Masilela

Gauteng on track to be the home of start-up financing in coming years

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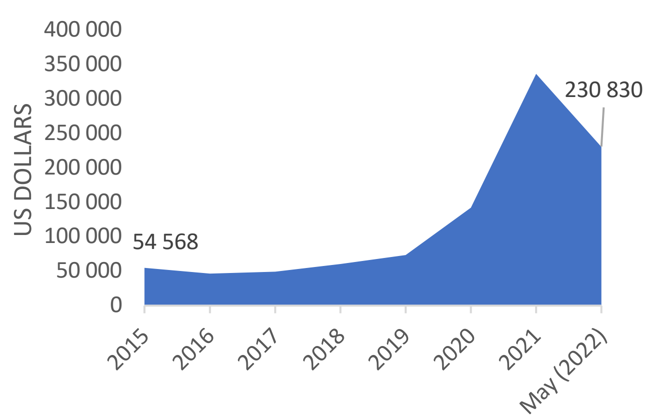
The South African Banking sector continues to be resilient even after the pandemic-induced disruptions. According to the Prudential Authority (PA) 2021/2022 annual report, total banking sector assets grew 5.61% year-on-year (y/y) to R6.82-trillion, largely led by higher loan advances and holdings of investment securities (South African Reserve Bank, 2022). However, the South African banking sector is highly concentrated, with the big five banks holding almost 90% of total assets. On the other hand, operating profit grew by 123% (y/y) to R97 billion at the end of March 2022 driven by a decline in credit losses coupled with increases in net interest and non-interest income (South African Reserve Bank, 2022).

However, the banking sector largely remains reluctant to extend credit to small, medium and micro-enterprises (SMME's). One of the main reasons is non/late payments from these SMME's to the lenders. South Africa is ranked the 43rd most difficult country for debt collection out of 49 countries, according to Allianz Trade Collection Complexity Score (Allianz Trade, 2022). South Africa has a Trade Collection Complexity Score of 67, way above the global average of 49.

Increased complexities with debt collection have come as central banks around the world tighten monetary policy to curb soaring inflation (Allianz Trade, 2022). This has led to an increase in financing costs for companies, contributing to business insolvencies and defaults. According to Allianz Trade (2022), in South Africa most companies take up to 90 days to settle debts, because of financial constraints and in some cases, small to medium enterprises are taking as long as 120 to 180 days to settle debts.

However, a sector that has seen a boom in funding is the start-up sector. The South African Start-up Ecosystem Report 2022, compiled by Disrupt Africa (2022), showed that Gauteng is closing in on being the start-up cornerstone of South Africa. The Western Cape accounted for just over half – 51.2% – of South African start-ups, but Gauteng is making good progress with 45.3%. Of these start-ups, fintech ─ mainly in Johannesburg ─ can be seen as critical as it is the largest employer (Disrupt Africa, 2022). When it comes to funding sources, there has been some success over the last couple of years, as the number of South African start-ups that secured funding doubled by the end of 2021 compared to 2015, to 89 from 45.

Figure 2: Total South Africa start-up funding (US$)



Data Source: Disrupt Africa (2022)

Notwithstanding, the informal township economy still faces some challenges and opportunities remain untapped. The South African informal retail sector represents a substantial portion of the total retail market and a third of the country's FMCG market ─ estimated at R150 billion (Pillay, 2022). The informal retail sector encompasses millions of businesses, from SMME's to large wholesalers, however, it has historically been overlooked by the SA banking sector. Pillay (2022) further adds that the sector's primary difficulties include low bargaining power with suppliers due to the fragmented nature of informal trades, poor access to financial support, as well as aggressive competition due to relatively low barriers of entry.

Despite these obstacles, opportunities remain for SMME's. Recently, Shoprite group introduced a new business division called Shoprite Next Capital, which will allow commercially viable small businesses to be supported. This new division will provide SMMEs with easier entry into the group's retail market, with direct access to buyers that understand their needs, combined with personalised growth plans that will assist suppliers to scale up gradually (Mashego, 2022).

Based on the Shoprite new business division it will be beneficial for the province as it will bring more opportunities for the township economic development as the Township Economy Development Act (TEDA) envisions. The Shoprite Next Capital will assist with marketing, working capital assistance, data sharing and geographic expansion. The initiative by Shoprite could be beneficial as it may open new procurement and market opportunities for small township businesses who may have struggled to get credit.

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CAN SA'S TAXI INDUSTRY GO GREEN? OPPORTUNITIES ABOUND THROUGH GAUTENG'S ELECTRIC VEHICLE PUSH

By Mmalehlohonolo Sekoaila and Botshelo Netshozwi

Can SA's taxi industry go green? Opportunities abound through Gauteng's electric vehicle push

By Mmalehlohonolo Sekoaila and Botshelo Netshozwi

In a country marred by challenges of unemployment, inequality and poverty, only a third of households own a vehicle, with the rest of the population using public transport, predominantly an essential service for the low and lower medium income households.

According to (Statistics South Africa, 2020), South Africa had approximately 14 million households commuting using public transort in 2020, with taxis being the primary mode of tranport. About two thirds (66%) or 11.4 million of households commuted by taxi whilst bus services and trains transported about 9.4% and 2.2% of public commuters respectively. Furthermore, between 2013 and 2020, the number of households using taxis increased whilst those using buses and trains declined. The data highlights the importance of taxis as the most preferred mode of public transport despite a larger number of commuters citing them to be expensive (7.6% vs 1.4% for busses). According to the South African National Taxi Council (SANTACO, 2019), the taxi industry has over 200 000 minibus taxi on the road and transports 15 million commuters daily, generating an estimated R120 billion in fares annually. Furthermore, the association estimates that the average taxi travels 6,500 kilometres per month and the industry employs over 600 000 individuals.

Moreover, the taxi industry has provided opportunities to formal and informal food sellers, car mechanics, spares shops, marketing companies and many more across several of their taxi ranks.

The expansive size and lucrative nature of the taxi industry calls for a re-imagining of the industry as a key player in the country's and the provinces efforts in moving towards green and carbon neutral transport sectors. Specifically, the Gauteng Provincial Government is committed to ensuring the establishment of a full-scale electronic vehicle (EV) production and adoption programme. Questions around the implications this shift would have on the sizeable taxi industry have yet to be effectively considered.

Electric Taxis – are they financially feasible?

Currently, the taxi industry remains mostly unsubsidised by government whilst other forms of public transport are. Furthermore, due to the perceived high-risk profile coupled with the industry being predominantly cash based, it faces higher vehicle prices which are exacerbated by the oligopoly of taxi manufactures, limited access to finance and those who do provide finance, tend to charge premium interest rates. Whilst the long-term maintenance costs of EV are lower relative to their Internal Combustion Engine (ICE) counterparts, EVs cost far more than conventional vehicles. According to TIPS (2022), the average global price differential between EV and its ICE vehicles equivalent is 36% and 52% for Battery Electronic Vehicle. In South Africa, the EV and ICE price difference is 33%. In addition, this price estimate is believed to be much lower because OEMs have reported to be selling their EV's models in SA below cost to stimulate new demand. Because South African consumers in general are price sensitive, industry experts believe that EV's can only be competitive at a lower price premium difference of around 10%.

However, this concern can be overcome by the bigger internal space of EV which could possibly allow for a few more passengers. According to, Walfard (2021), EVs have more space than their ICE counterparts because fewer moving parts such as engines, gas tanks, multi-speed gearboxes, exhaust systems, catalytic converters, and more.

…and are they infrastructurally feasible?

One of the main concerns about EVs - particularly in a country where uptake remains subdued and energy infrastructure challenges exist - is how much distance an EV can travel without requiring recharging. The current driving range of EV varies from 150km to 600km (TIPS, 2022). Meanwhile, as reported by van der Post (2022) the daily millage of a taxi could range between 150 km to more than 500km depending on the route it travels.

This anxiety is further compounded by the concerns of the availability of adequate infrastructure to meet charging demand. Notwithstanding that due to the low uptake of EV in the country, the charging infrastructure is currently adequate (TIPS, 2022). Concerns will arise with a demand surge; however, Gauteng is geared as there are plans well underway to secure charging stations for EVs.

What could be more of a concern though, are charging times. Currently, the global average charging time is 20 minutes. With additional queuing time, this can increase to 30 minutes. This is relative to average of 5 minutes filling time at a petrol station. Furthermore, during peak hours, there is a likelihood of congestion at charging stations, impacting on the queuing time. This is likely to be a huge concern to the taxi industry particularly because of the phenomenon “time is money” as the industry’s revenue is highly dependent on the number of loads a taxi can make in a day. This suggests that investment in infrastructure should be parallel to the marketing of EV uptake.

Overcoming challenges could benefit public transport users and support EV efforts of the province

The lower long-term maintenance costs of the electronic minibus taxis would likely drive demand within the taxi industry. The repair and service are an essential components for the taxi industry and constitute heavily to overall costs. Servicing a vehilce not only increases its life span but enhances their roadworthiness and the passengers safety. However, EV owners are expected to spend about a third of what a conventionally powered vehicle owner would for a regular service. This implies that the GPG would have to model the repair and service centers to be located inside or close to the taxi ranks to have the capacity to transition to the expected lower demand for car servicing needs for the taxi industry transitions to EVs. This will provide opportunity to to facilitate the upskilling, training of local repairs and panel beating.

Furthermore, the manufacturing of the electronic minibus taxi would allow for new entrants into the industry, breaking up the oligopoly that currently exists. Companies like Hala Motors started back in 2019 researching and investing in the production of a prototype electric taxi (Hussain, 2019). The company plans to have a production plant in Soweto. Others include technology companies such as GoMetro, MiX Telematics, HSW, ACDC Dynamics who have partnered with the University of Stellenbosch. The project team plans to have the first electronic minibus taxi by the end of the year with 2023 used for research and data collection (van der Post, 2022).

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GO GREEN OR GO HOME – RENEWABLE ENERGY INNOVATIONS SHOULD RESHAPE GAUTENG'S THINKING AROUND ENERGY

By Motshidisi Mokoena

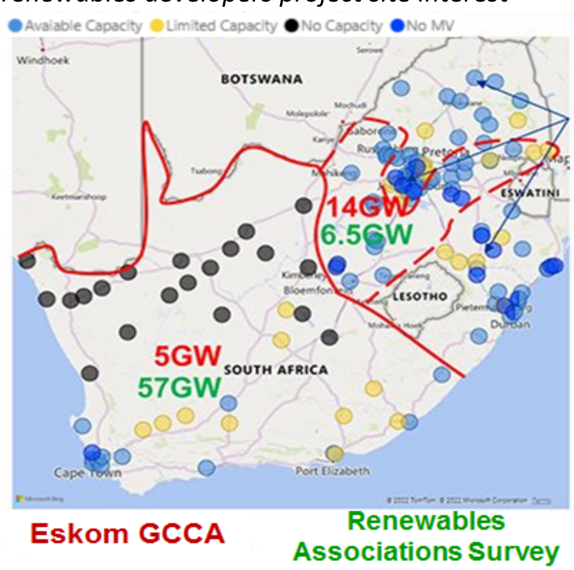
Go green or go home – Renewable energy innovations should reshape Gauteng's thinking around energy

South Africa has continued efforts towards preparing the ground for its clean energy transition and the move towards the broad-based adoption of clean energy sources including green hydrogen, biomass, wind, solar as well as hydro-power, among other renewables. The proposed energy mix will allow for a balance between energy sources to ensure reliable and stable power to meet the country's growing energy needs (South African Government, 2022). With the implementation and rapid expansion of the Gauteng Provincial Government microgrids initiative[1] as the cornerstone of the province's efforts towards accelerating job rich growth in the province's energy sector, the focal shift towards supporting the development of technological innovations in the energy services industry could be key ensuring the success of such initiatives as well as identifying opportunities for development in associated industries and value chains.

Deepening power crisis amplifies the push towards renewables

Developments in the energy sector over the past month have highlighted the growing importance of a much stronger and diversified energy mix. Historical challenges at the national power utility – Eskom – have been compounded by recent strike action, maintenance-related break downs at several aged power stations as well as allegations of sabotage at several power plants, consequently disrupting the utility's ability to ensure a secure and stable power supply. While the power utility targets an energy availability factor (EAF)[2] of 74%, it dropped to just 60% during the last week of June 2022 (BusinessTech, 2022). Towards the end of June 2022, Eskom escalated load-shedding to stage 6 in an effort to prevent a total blackout. Analysis by Bloomberg highlighted that Eskom has already cut 2 276 gigawatt-hours of electricity over the first seven (6) months of 2022, which is 90% of the gigawatt-hours shed for the entire year in 2021 (BusinessTech, 2022). The power utility is focusing its efforts on new energy projects, many of which will take several years to officially be incorporated into the grid. And while power purchase agreements for three projects with a capacity of 150MW were signed in early June, this power will only begin to materialise in 2024.

Figure 3: Current grid capacity compared with renewables developers project site interest



Source: Creamer (2022)

Eskom has acknowledged that transmission constraints remain an obstacle to the rapid introduction of renewables generation. With 32 gigawatts (GW) of grid capacity immediately available to independent power producers (IPPs) willing to build outside the country's prime solar and wind regions[3], the power utility is aiming to attract investments particularly into regions with residual grid capacity such as Mpumalanga.

As illustrated in the figure above, Eskom's latest Generation Connection Capacity Assessment

[1] To create 1 000 MW-plus of off grid green industrial baseload power (including local content and gas utilisation) with a black industrialist bias

[2] EAF is the difference between the maximum electricity availability and unavailability over a given period (excluding renewable energy, Independent Power Producers and energy imports).

[3] In the Northern, Eastern and Western Cape provinces.

shows that Gauteng has a grid capacity of 4.5 GW compared the combined grid capacity of 14 GW in Mpumalanga, Free State and North West have a combined grid capacity of 14GW. The three provinces also have proposed renewables developments of just 6.5 GW. Meanwhile, the Eastern, Northern and Western Cape region has a grid capacity of 5 GW and proposed renewables developments of 57 GW (Creamer, 2022). This highlights the significant mismatch in where investors are willing to invest and where the county has excess grid capacity ready to absorb additional energy.

Load-shedding is becoming too much of a cost and pain to bear

While load-shedding has been highlighted as a need to avoid a complete blackout, it is increasingly becoming too costly to the economy. It is an economic cost that is currently weighing heavily on all aspects of the economy.

Every stage of load-shedding comes with a significant loss in productivity due to halted economic activity as well as idle labour and capital. Economists have warned that escalated stages of load-shedding beyond stage 2 could be catastrophic to the economy; hence we can expect the current stages to be significantly disruptive, despite the spilt into blocks.

The Institute for risk Management South Africa (2022) estimates load-shedding-induced economic output loss to R700million per stage, per day - which translates to a 2% reduction in the annual economic growth. This suggests that escalated stages of load-shedding can easily reduce economic growth by close to 8% -10% (with back of the envelope calculations); hence avoiding stages higher than 6 is pivotal at this stage.

In view of the impact on man hours, Eskom confirmed that 860 hours were lost to load-shedding in 2021, which were later estimated to 29 days overall. This year (2022), Eskom has confirmed that between January and April, 25 days were affected by load-shedding; implying that the country must brace for difficult times ahead.

The latest Quarterly Labour Force Survey findings show that a total of 2517 hours were worked in Gauteng in the first 90 days of 2022. Considering that Gauteng's economic output was R1.6trillion in the same period, it may be estimated - through the below rough metric - that Gauteng's GDP per hour worked was R646million in the first 90 days of 2022.

$$GDP\ per\ hr = \frac{GDP\ for\ period\ (t)}{hours\ worked\ \ (t)}$$

This implies that for every hour of productivity lost, Gauteng is losing R646million.

The most evident repercussions of load-shedding include reduced profits, inadequate or lack of access to resources, damage to equipment and machinery due to abrupt power cuts, ceased business operations and jobs losses that may likely be permanent. Over and above these, crime remains a standing concern and a deterrent to investment in Gauteng, hence load-shedding remains a prominent risk to investors as crime is likely to surge due to compromised security among other things.

Energy services innovations attracting much needed investment

Rising electricity and fuel prices coupled with growing energy insecurity, declining technology costs and increasing incentives have continued to push users to explore alternative and greener energy options. This is driving the growth of the energy services market in South Africa and creating a booming value chain. According to McKinsey & Company (2022), the global energy mix is projected to shift toward power and by 2050, electricity and enabling hydrogen and synfuels could account for 50% of the global energy mix. According to GreenCape's 2022 green economy market intelligence reports, investment opportunities in the energy services sector range from solar installations; behind-the-meter battery storage; smart metering coupled with an energy service model, as well as cooling-as-a-service (Poorun & Radmore, 2022). Furthermore, investments across energy sectors are projected to increase by more than 4% per annum and be increasingly skewed towards nonfossil and decarbonisation technologies (McKinsey & Company, 2022).

Given that most renewable energy systems require some form of energy storage system to mitigate variability and enable the dispatching of power, there is a growing global focus on the manufacturing of long-duration energy storage (LDES) technologies. These technologies are the key to reducing the high costs associated with high levels of clean energy supply and include for example compressed air energy storage (CAES) systems and battery energy storage systems (BESS) which are traditionally used for storing solar energy. For example, Johannesburg based Leaper Innovate Green Energies is already a key player in the production of CAES systems, having developed solutions with 40 kWh to 50 MWH with the potential to be upscaled by adding units (Burger, 2022). Meanwhile, the decentralisation of BESS is being explored domestically to support energy generation infrastructure and to make more efficient use of transmission and distribution infrastructure (Mackay, 2022a). The BESS market is expected to grow from $4.4 billion in 2022 to $15.1 billion by 2027 (Mackay, 2022b). This presents a unique opportunity for the Province to begin to unpack energy storage solutions and contextualise their domestic manufacturing capabilities and/or global value chain linkages.

Similarly, technological advancements in the green fuel industry present further opportunities. Shifts towards biofuels and hydrogen fuel cell development such as those being taken by Greenthermo Energy, a biodiesel manufacturing company located in Ga-Rankuwa in the province's northern corridor, and Mitochondia Energy's hydrogen fuel cell investment plans in the Vaal Special Economic Zone (SEZ) (Slater, 2022).

Hybrid electric hydraulic drivetrain engineering company Miser Technologies, which has regional offices in Parktown Johannesburg, has a developed retrofit hydraulic energy recovery and energy deployment system for heavy-duty trucks (such as those used in mining and construction) that is able to deliver proven fuel savings (of up to 20%) and emissions reductions. The province's shift to New Energy Vehicles could benefit from the adoption and adaptation of such fuel related innovations in supporting its efforts.

All the above-mentioned innovations are promising indicators of the potential to explore energy related innovations across various energy-related sub-sectors. Specifically, as the province continues its efforts towards the development of its micro-grids programme, a parallel consideration of the emerging and innovative energy storage solutions will be invaluable.

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THE LONG RAIL ROAD TO INFRASTRUCTURE REFORM - NATIONAL RAIL POLICY LAYS FOUNDATION FOR PUBLIC-PRIVATE COLLABORATION

By Motshidisi Mokoena

The long rail road to infrastructure reform - National Rail Policy lays foundation for public-private collaboration

The establishment of an Interim Rail Economic Regulatory Capacity (IRERC) has been put forward by the Department of Transport to regulate the practical implementation of third-party access to the rail-freight network. This will eventually be replaced by the Rail Economic Regulator (RER). Despite these efforts, the relationship between operators on the network will need to be managed efficiently to promote further investment in the local rail industry, especially when the infrastructure owner and operator are the same entity, such as is the case with Transnet. Effective management will likely create more work opportunities in the domestic rail industry and for rolling stock manufacturers, which are large employers, as well as increase South Africa's global competitiveness by decreasing logistics costs (Jardim, 2022).

The National Rail Policy provides an important opportunity to build and strengthen local manufacturing capacity in South Africa. The localisation strategy will be used to develop the industrial base for an active export strategy, particularly for exports to other African countries, and will also support the Steel Master Plan (Burger, 2022).

Some of the key challenges affecting the country's commuter transport, freight and logistics sectors include a considerable backlog, substantial security challenges – particularly in relation to locomotives being vandalised, the costly impact of the pandemic and civil unrest, as well as macroeconomic factors such as the Russia-Ukraine war and supply chain disruptions (Bulbulia, 2022). Key to addressing these challenges is the role of domestic and international private sector players in contributing towards infrastructure development, specifically as the country moves towards third-party access to the network. Ensuring a collaborative approach to policies governing both manufacturing and transport corridors would also be critical in ensuring that the rail-freight infrastructure network is able to effectively and efficiently manage industrial loads.

Furthermore, issues around competitiveness would need to be closely examined as the transition to third party access to the rail network is likely to attract international participation. Due to the capital-intensive nature of locomotives and wagons - which are estimated to cost around R600 million for use of one of the 16 return slots that Transnet has issued for advertisements - players who already have access to rolling stock are likely to be dominant. According to Jardim (2022), it would thus be important to ensure that the sale of slots along the network be centred around the local production of locomotives and wagons as much as possible. The province's efforts towards establishing such a manufacturing and maintenance cluster in its eastern region would be critical in this regard.

Rail networks should support first- and middle-mile logistics as backbone of Gauteng's last-mile interventions

Although the province has placed particular focus on developing a one-stop shop/troubleshooting desk that will enable and support last mile delivery improvement services centred on road infrastructure, the rail freight network has an equally important role to play in supporting these efforts along the logistics value chain. According to SAP, last mile solutions can only be as strong as their supply chain planning infrastructure and the ability to deliver across all three 'miles' of the logistics chain.

The recent uptick in parcel delivery volumes has added severe pressure and scurtiny to the speed and efficiency at which customer orders are met. Implying that efficiencies should be maximised at the first (from production facility to primary distribution wharehouse), middle (from the primary distribution wharehouse to regional distribution hubs, closer to the final consumer) and the last mile logistics stages.

Ultimately, the upgrading of the outdated and poorly maintained rail infrastructure across the country and province will be instrumental in ensuring that the freight rail network is able to meet the need for an efficient and cost-effect alternative to road transport options.

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GAUTENG'S FOCAL POINTS FOR INDUSTRY GROWTH ACCELERATION

ICT

- Gauteng is in pursuit of partnerships with Telkom and Vumatel for deployment of cloud zones in townships.
- Plans are well in place to channel the investor pipeline into a High-Tech SEZ

ENERGY

- Microgrids initiative including RFI to identify microgrid demand and supply pools
- Activate Joint funding facility with DBSA and IDC
- Green H2 investor pipeline deployment

CREATIVE INDUSTRIES

- Deployment of Hub Accelerator Network and associated funding pipeline linked to existing and new distribution platforms
- Deployment of Film industry support desk network
- expansion of specialist large-scale Studio capacity in Gauteng

AUTOMOTIVE, DEFENCE AND AEROSPACE

- Implementation of NEV production across industrial network, including electric scooters and battery production at SEZs and industrial parks
- Implementation of the charging grid rollout
- Ramping up of software embedded vehicles capability
- Implementation of the Public Sector Drone Programme to create 100,000 jobs

CONSTRUCTION

- Deployment of enterprise and supplier development pipeline of suppliers to the sector,
- Deployment of consolidated offtake systems and financing pools for supply to government
- Integration of IRM approach into all GPG construction projects

INDUSTRIALL CANNABIS

- Deployment of funding and capitalization mechanisms for cannabis/hemp cultivation, processing, and distribution
- Deployment of exchange, trading, and aggregation platforms for both domestic, export markets including certification and quality assurance partnership proposals.

TRANSPORTATION AND LOGISTICS

- Deployment of a 3rd party access framework for rail freight moving through Gauteng using the Gauteng-Eastern Cape High Capacity rail corridor as a demonstration initiative.
- Establish a one stop shop / troubleshooting desk for last mile delivery enabling in Gauteng

FINANCIAL SERVICES

- Massive expansion of last mile credit access for viable growth SMMES in townships by expanding the township economy partnership fund