



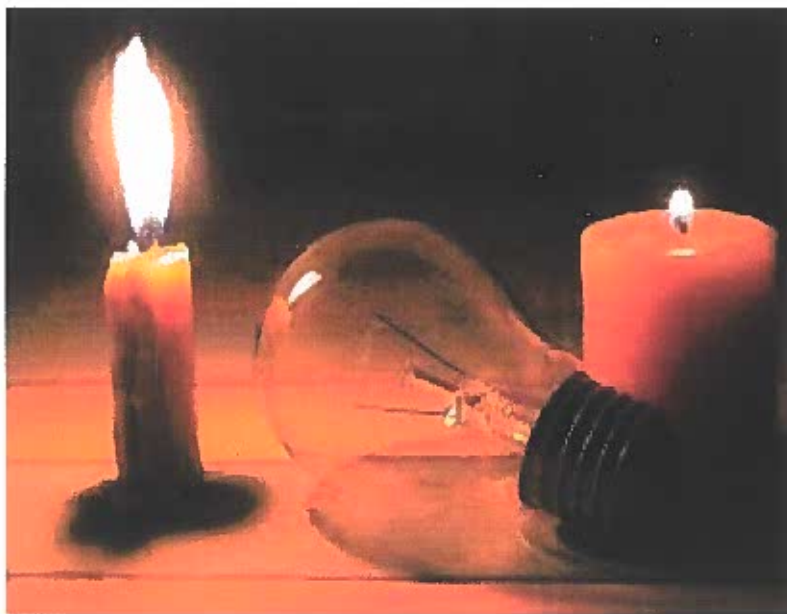
destea
department of
economic, small business development,
tourism and environmental affairs
FREE STATE PROVINCE

Research Document on Various Economic Indicators

An Economic Intelligence Report

“Load shedding a barrier to economic advancement”

March 2023



This issue of the Economic Intelligence Report provides an overview of the impact of load shedding on the economy of Free State. It also provides the results of the Free State Enterprise Load shedding Impact Survey; Enterprises in the province were consulted to share their experience of load shedding interruptions during the day-to-day management of their companies. The report represents an exposition of the feedback received.

DISCLAIMER

This report is compiled using available information from various sources. Any views or opinions expressed in this report are not necessarily those of, nor endorsed by, the Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA). Information disclosed in this report may not be accurate, current or complete and the Department disclaims all liability in this regard.¹ The issue of the Economic Intelligence Report (EIR) focuses mainly on electricity supply disruptions and economic indicators, specifically for the fourth quarter of 2022/23.

Comments and enquiries relating to this report are welcomed and should be addressed to:

Email: jansen@destea.gov.za.

¹ Cover image adapted from <https://www.iol.co.za/mercury/news/call-for-president-to-declare-a-ring-fenced-eskom-state-of-disaster-as-stage-6-loadshedding-is-implemented-d4400abd-3750-4a0a-aba8-08c8f36fe8b4>

The report was compiled by:

Ntswaki Dintlhwane

Economic Research Directorate

Signature: 

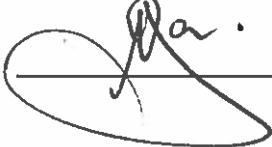
Date: 2023/03/24

Verified by:

Abram Jansen

Deputy Director: Economic Intelligence Sub-Directorate

Economic Research Directorate

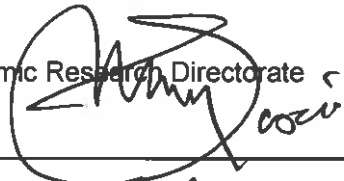
Signature: 

Date: 2023/03/27

Approved by:

Jonas Mosia

Director: Economic Research Directorate

Signature: 

Date: 28/03/2023

Contents

1. INTRODUCTION AND BACKGROUND.....	4
2. THE SOUTH AFRICAN ECONOMY	5
3. THE FREE STATE'S ECONOMY	7
4. ENTERPRISES LOAD SHEDDING IMPACT SURVEY RESULTS	10
4.1 Financial implications	11
4.2 Effect on employment and business processes	15
4.3 Renewable energy as an alternative solution	17
4.4 Additional findings	20
5. CONCLUSION	22

1. INTRODUCTION AND BACKGROUND

South Africa is currently experiencing an electricity crisis. A structural shortage of electricity supply remains one of the country's most critical challenges going forward as legacy infrastructure ages and needs to be replaced.² The sole supplier of electricity in South Africa is established in 1923 as the Electricity Supply Commission (ESKOM). This entity consists of three divisions: Generation, Transmission and Distribution. ESKOM generates about 95% of electricity used in SA. Load shedding was introduced in 2008 (January) by ESKOM, as well as "planned rolling blackouts" based on a pre-determined rotating schedule, in phases where short supply threatens the integrity of the grid³.

The country has experienced sporadic incidents of electricity supply disruptions of varying intensity since it were introduced. Load shedding is used to relieve stress on a primary energy source when demand for electricity is greater than the primary power source can supply. The impact of load shedding on economic activity differs depending on its severity (stages 1 to 4) and duration (number of days).⁴ Literature shows that the contribution of the electricity, gas and water sector to the gross value added (GVA) has been affected. The real GVA by the electricity-intensive mining and manufacturing sectors have been affected the most, followed by the agricultural and transport sectors.

Electricity plays a vital role to everyday life and it contributes towards the growth of the economy, taking into account the ever-changing economic activities and new technological innovations that are electricity driven. During the years as in 2008, the high demand for electricity accelerated. ESKOM was under pressure and forced to take necessary measures to avoid a system-wide blackout.⁵ This entity is faced with the responsibility of ensuring that the demand for electricity is met and that the economic role-players and households have enough power supply. Electricity capacity

² <https://repository.up.ac.za/handle/2263/52398>

³ Coetzee, Drian; Els, Mart-Mari Department of Quantity Surveying and Construction Management, University of the Free State, Bloemfontein, South Africa, 2016: The impact of load shedding on the construction industry in South Africa

⁴ <https://www.resbank.co.za/content/dam/sarb/publications/quarterly-bulletins/boxes/2019/9517/Electricity-load-shedding-and-economic-activity.pdf>

⁵ Adebola, S. S. 2011. Electricity Consumption and Economic Growth: Trivariate investigation in Botswana with Capital Formation. *International Journal of Energy Economics and Policy*, 1(2), pp. 32-46.

by way off the number of power plants and conditions available are key to ensure sufficient electricity supply.

The South African public has adapted to and mitigated the effects of load shedding through changes in behaviour.⁶ It is further stated that in 2022, the country imported solar panels worth more than R5 billion, up from roughly R4 billion in 2021. Predictions are that in 2023, these panels will add 2,000 MW of generating capacity. Based on varying usage patterns, these off-grid solar panels could prevent an additional stage of load shedding at any given time for the rest of the country.

The purpose of this paper is to establish the impact that load shedding has on the provincial economy. The methodology followed was an in depth review of available literature followed by the completion of a questionnaire by Free State based enterprises. The questionnaire consisting of open-ended and close-ended questions to address the objective of the study. The findings of this study indicate that load shedding has a financial effect on the day-to-day operations of enterprises in Free State. All role-players in both the public and private sectors are to ensure that correct measures are taken to mitigate the impact of load shedding.

2. SOUTH AFRICAN ECONOMY

Reduced productivity and increased business costs are just two of the ways that load shedding hurts the national economy. This lack of reliable access to electricity has caused businesses to become less efficient as they scramble to maintain a supply of power through expensive alternative sources.⁷ Statistics South Africa (Stats SA) reported South Africa's gross domestic product (GDP) decreased by 1,3% in the fourth quarter of 2022, following an increase of 1,8% in the third quarter of 2022.

Seven industries recorded decreases in Q4 2022. These negative growth were reported in Finance, Real estate and Business services that decreased at a rate of 2,3%, contributing -0,6 of a percentage point to GDP growth; Trade, catering and

⁶ <https://risingsunlenasia.co.za/81621/load-shedding-remains-the-greatest-barrier-to-economic-expansion/>

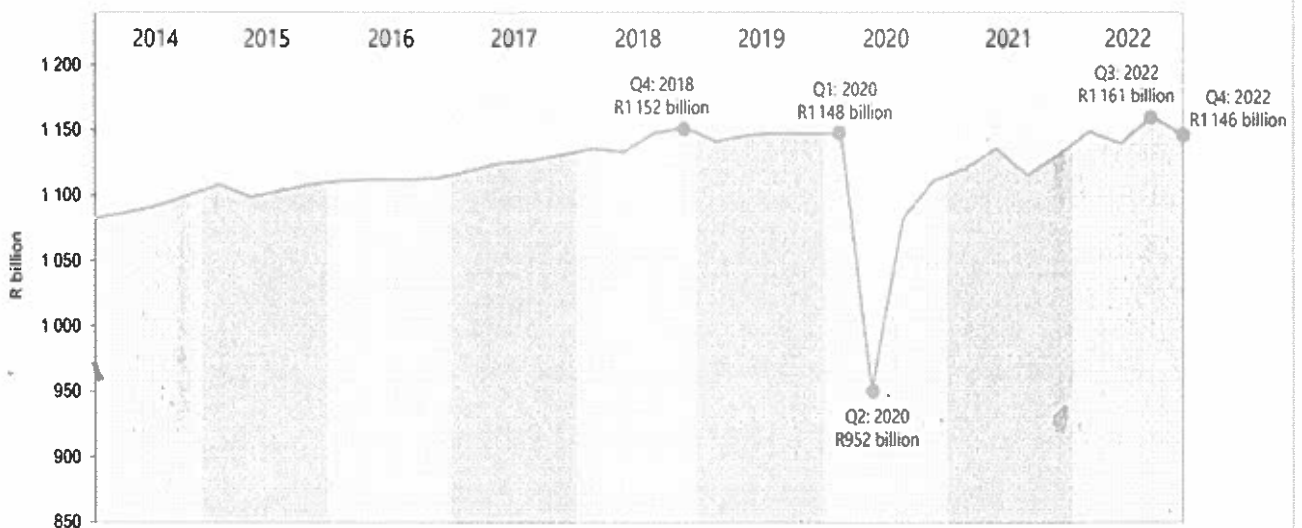
⁷ Ibid.

accommodation decreased by 2,1% contributing -0,3 of a percentage point to GDP growth; Mining and quarrying decreased by 3,2%, contributing -0,1 of a percentage point to GDP growth; Agriculture, forestry and fishing decreased by 3,3 contributing -0,1 of a percentage point to GDP growth; Manufacturing decreased by 0.9% contributing -0.1 of a percentage point to GDP growth; Electricity, gas and water decreased by 1.9% contributing 0.0 of a percentage point to GDP growth and General government services decreased by 0.7% contributing -0.1 of a percentage point to GDP growth.

The most significant positive contributors to growth were Transport, storage and communication, Construction and Personal services. Transport, storage and communication increased by 0.7%, contributing 0.1 of a percentage point to GDP growth. Construction increased by 0.5%, contributing 0.0 of a percentage point to GDP growth. Personal services increased by 0.2%, contributing 0.0 of a percentage point to GDP growth.

Statistics SA furthermore indicated that the GDP fell below pre-pandemic levels in Q4: 2022 in real GDP (constant 2015 prices seasonally adjusted) comparing to Q1: 2020 as depicted below.

Figure 1: Gross Domestic Product (GDP), 2014 - 2022



Source: Statistics SA, Gross Domestic Product (GDP) Q4: 2022

Economic growth in recent quarters is below potential due to electricity load shedding. In 2022, rolling blackouts were implemented on 208 days, or four days per week, for a total of 11 797 gigawatt hours (GWh) of lost electricity. As a result, businesses were unable to operate at capacity, resulting in significantly slower growth.⁸

When looking at employment in the country Statistics South Africa reported that the official unemployment rate decreased by 0.2 percentage points in Q4 2022, from 32.9% to 32.7% quarter-to-quarter. A decrease of 2.6 percentage points was also recorded year-on-year, comparing it with Q4 2021.⁹

The results of the Quarterly Labour Force Survey (QLFS) for Q4: 2022 indicates that 169 000 jobs were gained between the third quarter of 2022 and the fourth quarter of 2022. The total number of persons employed was 15,9 million in the fourth quarter of 2022. The number of unemployed persons increased by 28 000 to 7,8 million in the fourth quarter of 2022.

The following industries recorded the largest job gains, Finance (103 000), Private households (54 000), Trade (52 000) and Transport (43 000). Job losses were recorded in Community and Social Services (122 000), Agriculture (12 000) and Construction (12 000). The formal sector recorded an increase in employment of 143 000 and the Informal sector recorded a loss in employment of 15 000 between the third quarter and fourth quarter of 2022.

3. FREE STATE ECONOMY: GDP AND EMPLOYMENT

It is evident that the provincial economy did not escaped the effects of load shedding. Growth in the quarterly GDP was the lowest in Q3: 2021 at -9.8%. South Africa recorded a quarterly growth of -7.0% for the same quarter. Positive growth in the quarterly GDP was recorded in Q4: 2021 and Q1: 2022, of 5.9% and 5.8% respectively. Growth in the quarterly GDP however declined in Q2: 2022 to -4.5%. A positive rate of 6.8% was recorded in the quarterly GDP in Q3: 2022.¹⁰

⁸ <https://risingsunlenasia.co.za/81621/load-shedding-remains-the-greatest-barrier-to-economic-expansion/>

⁹ Statistics SA, Quarterly Labour Force Survey Q4: 2022

¹⁰ IHS Market Regional eXplorer version 2340 (2.6q)

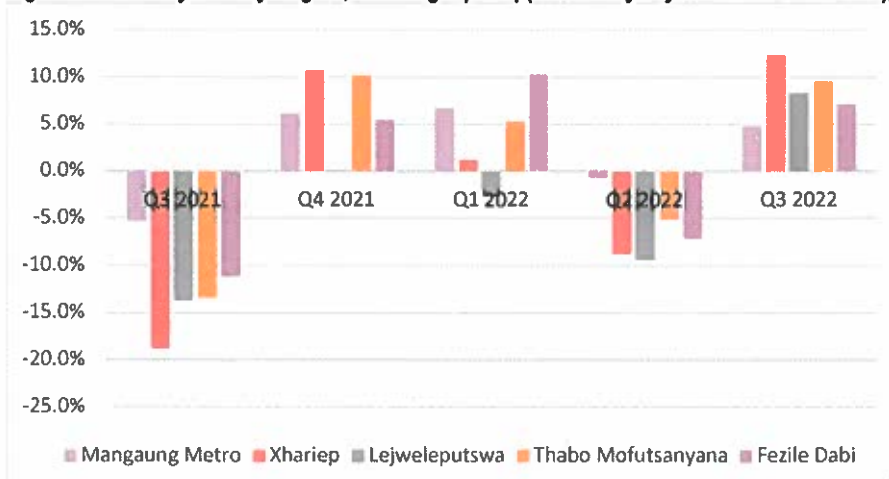
Figure 2: Free State GDP % change quarter-on-quarter (seasonally adjusted and annualised) and contribution to growth in Quarterly GDP from Q3:2021 to Q3:2022



Data Source: IHS Markit Regional eXplorer, 2340 (2.6q)

Economic growth in the five regions of the province were also impacted by load shedding. When looking at the quarterly GDP of the regions from Q3 2021 to Q3 2022 one can see the negative impact load shedding had especially during Q3 2021 and Q2 2022 as depicted in *figure 3*. Xhariep, Lejweleputswa and Thabo Mofutsanyana were mostly affected in Q3 2021 with declines of -18.8%, -13.7% and -13.4% respectively.

Figure 3: Quarterly GDP by Region, % change q-on-q (seasonally adjusted and annualised), Q3 2021 – Q3 2022



Source: IHS Markit Regional eXplorer 2340 (2.6q)

When looking at employment in the province Statistics South Africa reported that the official unemployment rate increased by 0.8 percentage points in Q4 2022, from 33.8% to 34.6% quarter-to-quarter. A decrease of 2.1 percentage points however was recorded year-on-year, comparing it with Q4 2021.

The province recorded the second lowest number of employed persons in Q4 2022 amounting at 794 000 people amongst the nine provinces. The table below shows that Free State recorded employment losses of 3 000 jobs in the fourth quarter (Q3: 2022 to Q4: 2022). Employment gains of 67 000 jobs however were recorded annually (Q4: 2021 to Q4: 2022).

Table 1: Total Employment Q4:2021 to Q4:2022, Free State

	Q4:2021	Q1:2022	Q2:2022	Q3:2022	Q4:2022	Quarter to Quarter	Year on Year	Quarter-to-Quarter (%)	Year on Year (%)
Total	727 000	781 000	806 000	798 000	794 000	-3 000	67 000	-0.4%	9.2%

Source: Statistics SA, Quarterly Labour Force Survey Q4:2022

The majority of the province's workforce in Q4 2022 was employed in Community & Social Services (209 000), followed by Trade (174 000). Private Households experienced the highest gains in employment quarter-to-quarter recording 12 000 more jobs between Q4: 2022 and Q3: 2022, followed by manufacturing with 11 000 more jobs. Trade recorded the highest job losses year-on-year down with 16 000 jobs.¹¹

Free State recorded 805 000 people in quarter 4 2022 who were not in employment, education or training. This figure represents a decrease of 28 000 when comparing Q4 2022 with Q3 2022 and annually a decrease of 8.1% year-on-year.

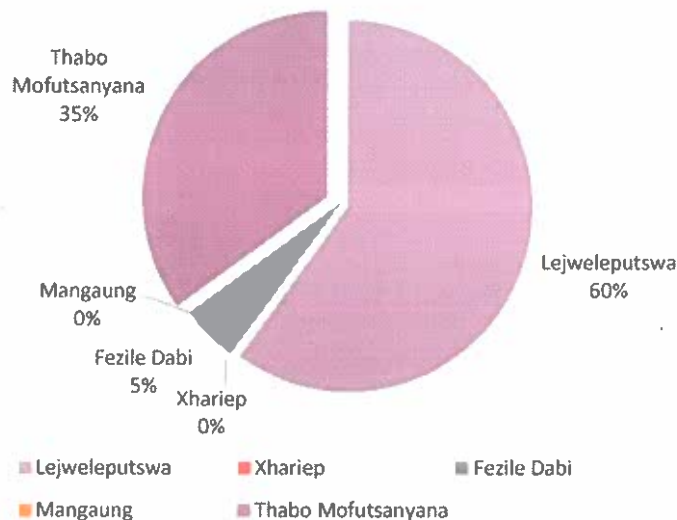
¹¹ Statistics South Africa. 2022. Quarterly Labour Force Survey Q4: 2022

4. FREE STATE ENTERPRISES LOAD SHEDDING IMPACT SURVEY RESULTS

This section of the report presents the results of the Free State Enterprises Load Shedding Impact Survey conducted by Deste. This survey is the first for the department to determine the initial impact of load shedding on the provincial economy. The accuracy of the survey is fully reliant on businesses' willingness to participate and offer accurate information. Two districts were visited in person to obtain inputs from stakeholders across the key sectors driving the provincial economy. Free State enterprises were requested by email to participate in the survey using the Who Owns Whom (WOW) database. Complete questionnaires were tabulated and analysed that resulted in the section to follow.

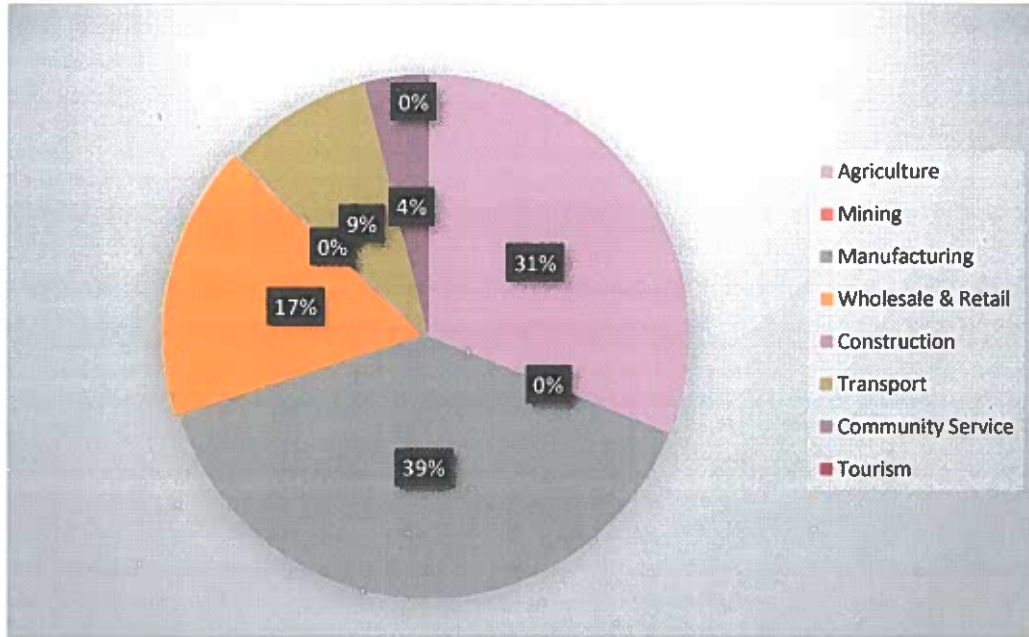
Figure 4 provides an illustration of the geographical spread of the participants. Most notably, 60% of the respondents originated from Lejweleputswa, Thabo Mofutsanyana (35%) and Fezile Dabi District Municipality (5%).

Figure 4: Surveyed Business' Area of Operation



The dominant sectors in the respective districts were Manufacturing (39%), Agriculture (31%), Wholesale and Retail (17%) followed by Transport (9%) and Community Services (4%) as illustrated in figure 5 below.

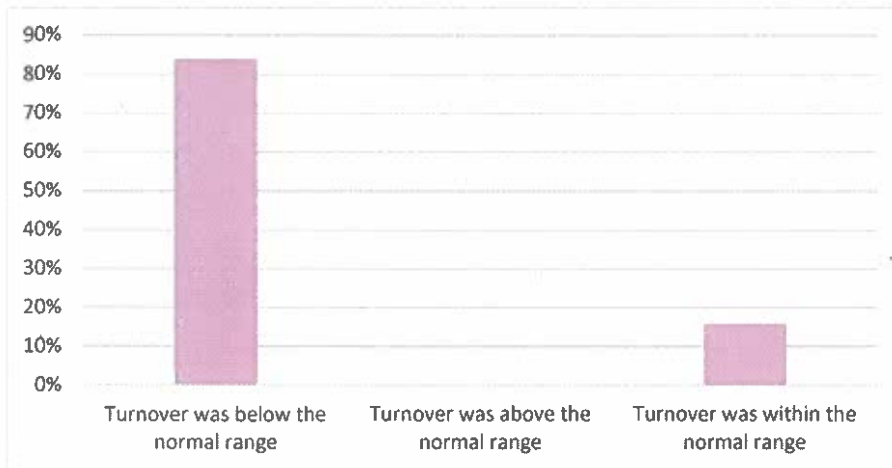
Figure 5: Type of economic sectors



4.1 Financial implications

Turnover relates to the income generated by a business when conducting its core operations within a specified timeframe, and forms a key measure of business performance. As defined by Statistics SA, turnover includes sales of goods, services rendered, leasing and hiring of capital assets, and rental/leasing of land, buildings and other structures.¹² The data obtained through the survey indicate that 84% of the respondents had a turnover that was lower than their normal range as illustrated in the figure 6.

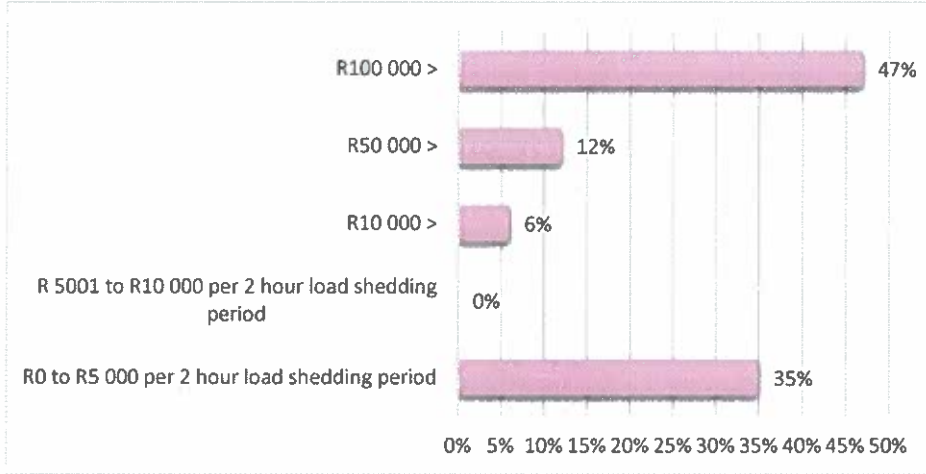
Figure 6: Impact on business turnover



¹² Statistics South Africa. (2020). Annual Financial Statistics Survey

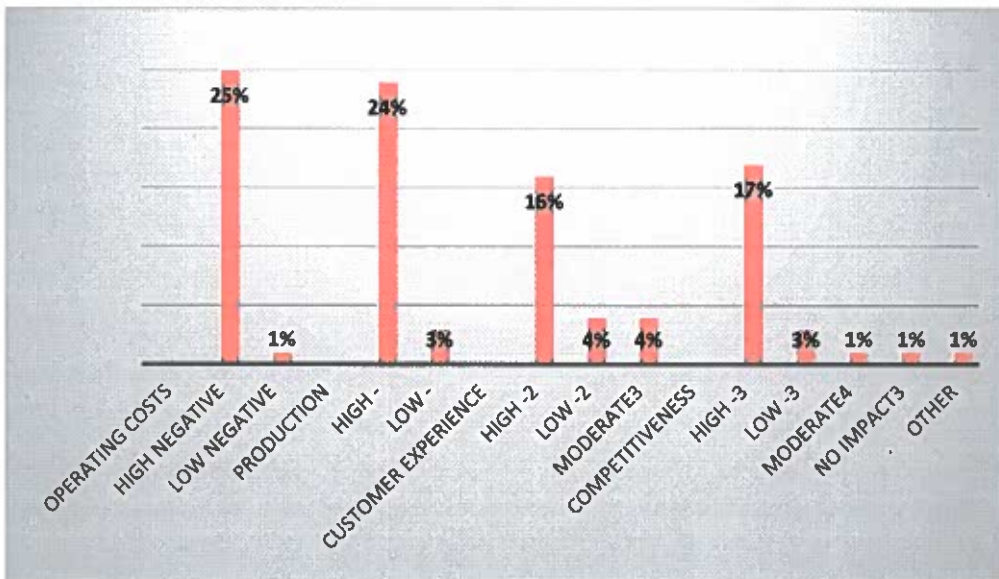
The survey enquired if load shedding had a negative impact on the company's turnover (figure 7) during the period in question, 47% of enterprises reported that they lost more than R100 000 in turnover; while 35% stated that they lost between R0 to R5 000 per 2 hour load shedding period.

Figure 7: Loss in turnover



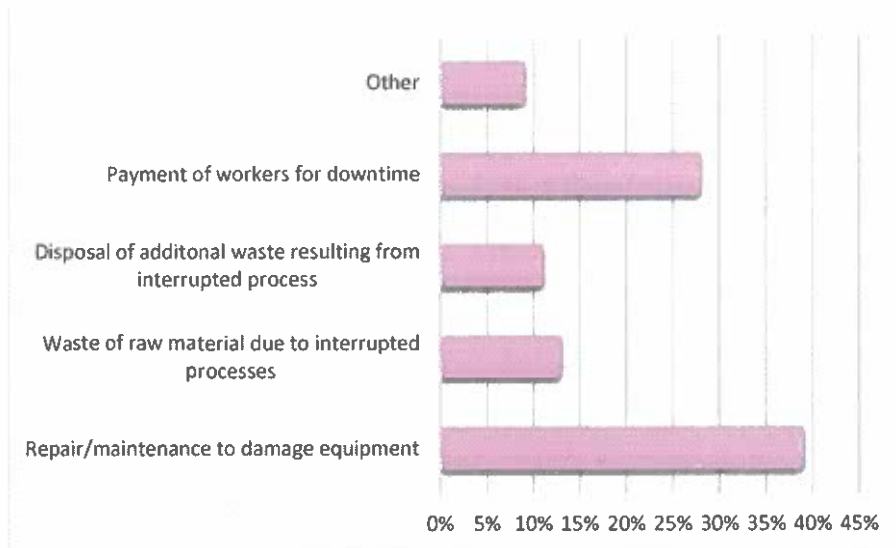
A question was asked how electricity shortages affect the normal day-to-day management of the company's operating costs, production, customer experience and competitiveness within the categories of high negative, low negative, moderate and no impact. As illustrated in figure 8, 25% of the respondents indicated that their operating costs were high negatively affected, 24% indicated that their production was high negatively affected, 16% stated that customer experience was high negatively affected, whilst 17% stated that their competitiveness was high negatively affected.

Figure 8: Effect on daily operations



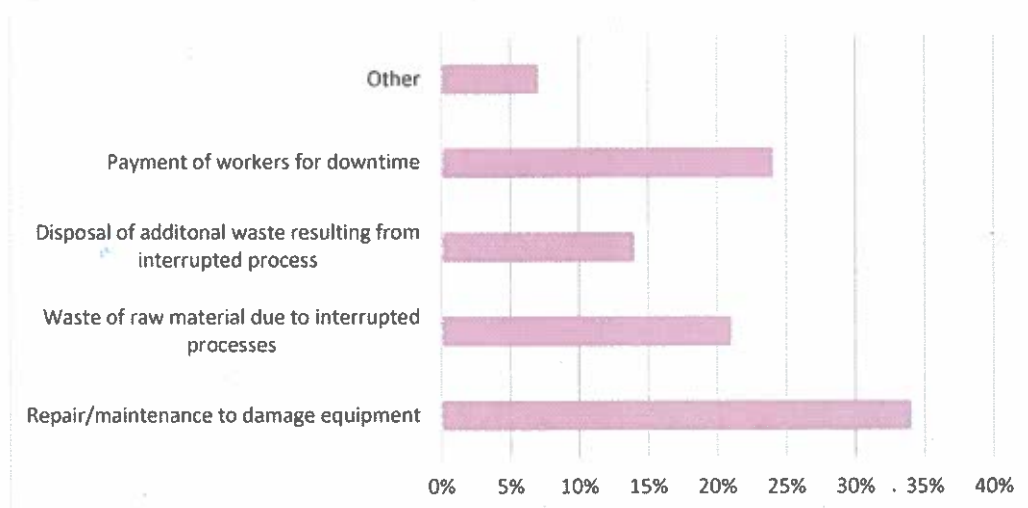
Respondents were also asked what costs did they faced besides the loss of production during unplanned rolling blackouts. Figure 9 reflects that 39% of enterprises have to repair damage equipment, whilst 11% have to dispose of additional waste resulting from interrupted processes.

Figure 9: Additional costs besides loss of production



A follow-up question was asked if any of the additional costs as describe above could be reduced with proper and timeous notice of rolling black outs. Figure 10 pointed out that 24% of respondents indicated that payment of workers for downtime could be reduced, whilst 21% stated that waste of raw material due to interrupted processes could be reduced.

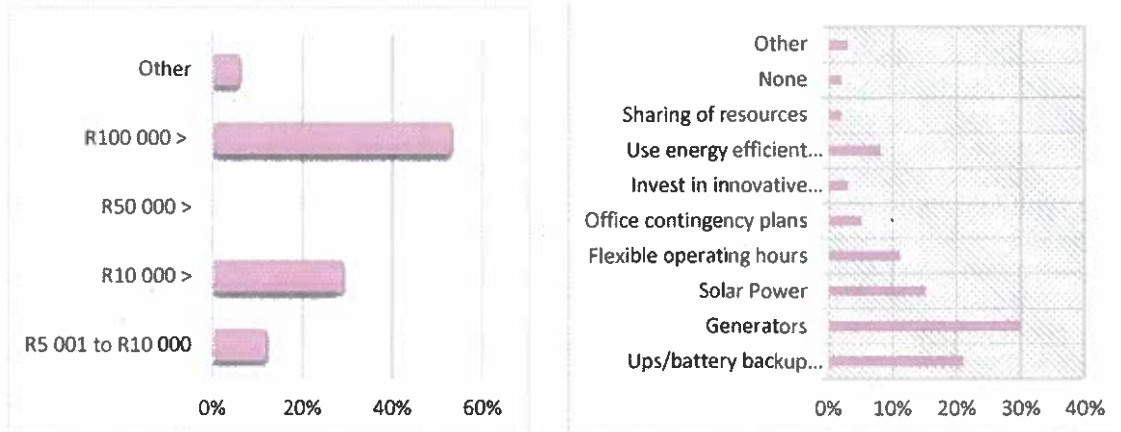
Figure 10: Costs reduced due to notice of rolling black outs



Small businesses in the country, as well as in the province are heavily impacted by load shedding and typically cannot afford backup generators or the solar system installations that bigger businesses can install to mitigate the impact of power outages.¹³ Load shedding thus carries a huge cost for SME - cost of downtime, the cost of business disruption, high risk with their equipment as maintenance costs could escalate.

Enterprises were also asked if they applied mitigating mechanisms and the cost thereof. Yes, mitigating mechanisms were applied and 53% of the respondents indicated that it cost them more than R100 000 per month. One enterprises in the agriculture and manufacturing sectors reported that they have procured a generator at a cost R2.2m, solar at R1.3m, UPS at R675k and the cost for diesel at R5000/hour to run the generator. Another company operating in the Maluti-a-Phofung SEZ (agriculture and wholesale & retail sectors) spent R2 077 320.14 for the period 2021/22 and R357 873.88 for Feb 2023.

Figure 11: Mechanisms to mitigate load shedding (cost and type)



A third of the respondents (30%) indicated that they have procured generators, whilst 21% has Uninterruptible Power Supply (UPS)/battery backup. The use of solar power (15%), flexible operating hours (11%) and other mechanisms were also applied to mitigate the impact of electricity shortages.

Small businesses, non-governmental organizations (NGOs), and the majority of households are unable to afford off-grid alternatives. It was also pointed out that small businesses have a negligible impact on GDP but a substantial impact on employment, food security, and community stability.¹⁴

¹³ <https://businesstech.co.za/news/business/627280/how-load-shedding-is-tearing-through-south-africas-economy/>

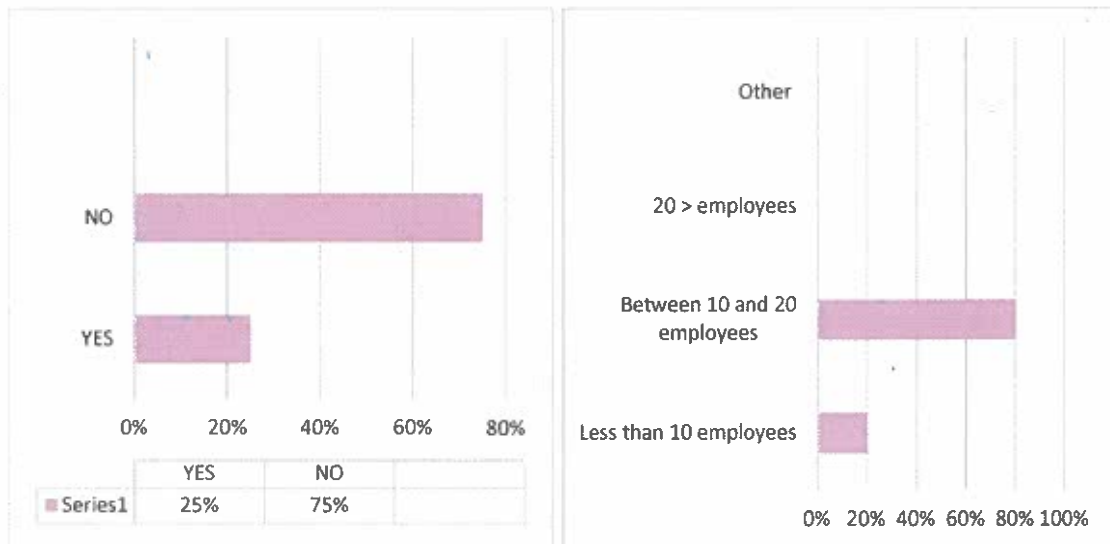
¹⁴ <https://risingsunlenasia.co.za/81621/load-shedding-remains-the-greatest-barrier-to-economic-expansion/>

4.2 Effect on employment and business processes

The full impact of load shedding on employment will be determined over time, as employment tends to be a lagging economic indicator. As explained in section 3 in the report, the province unemployment rate increased by 0.8 percentage points quarter-to-quarter (Q3: 2022 to Q4: 2022) leaving 3000 more people without jobs

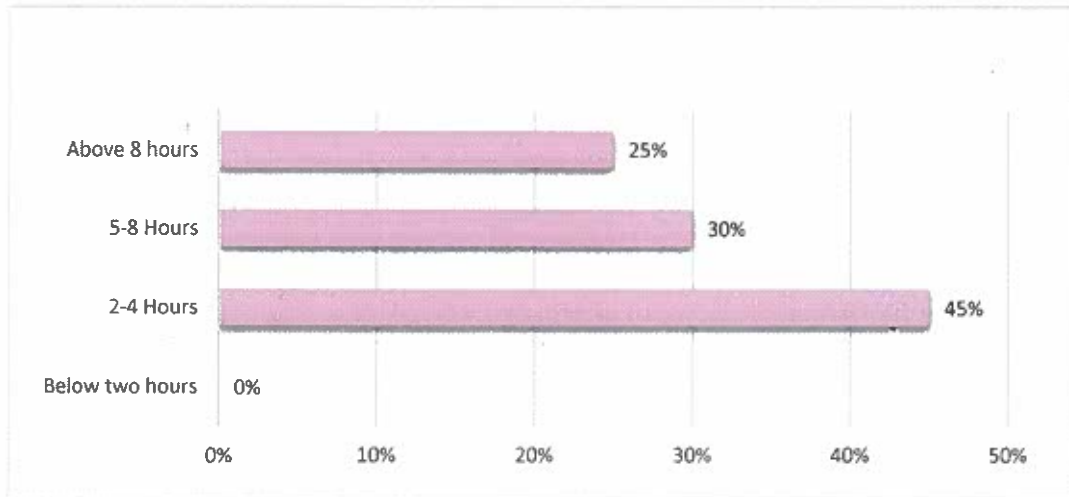
Enterprises were requested to indicate how their workforce changed in size due to load shedding. A quarter (25%) of the respondents indicates that their workforce size decreased in size as due of load shedding. In terms of the percentage of jobs losses 80% of enterprises lost between 10 and 20 employees, whilst 20% lost less than 10 employees.

Figure 12: Job losses to date because of load shedding



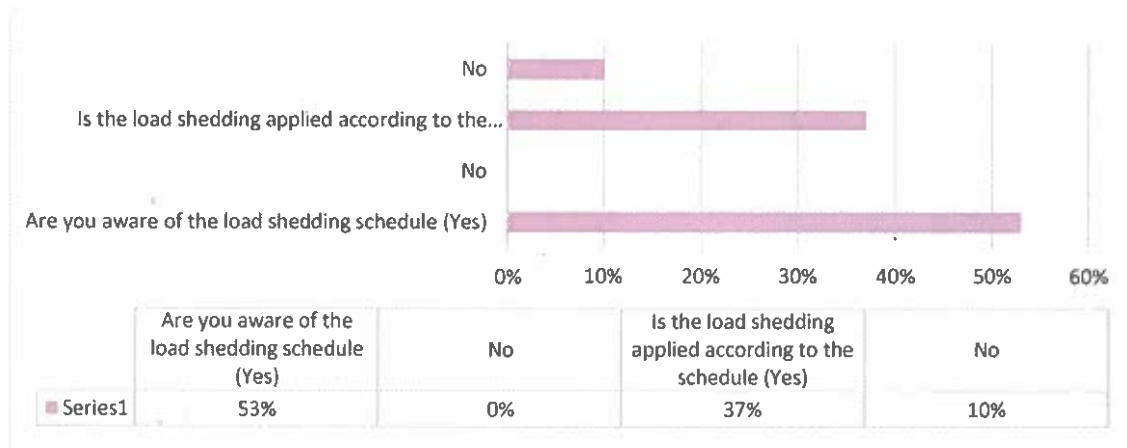
The survey also requested enterprises to rate their experience of load shedding interruptions during the day-to-day management of their companies during the period in question. All respondents reported that they experienced load shedding on a daily basis. The average period of load shedding is 2-4 hours as indicated by 45% of the respondents, whilst 25% indicated that they experience load shedding more than 8 hours a day (as illustrated in figure 13).

Figure 13: Average period of load shedding



As illustrated in figure 14, 53% of respondents indicated that they were aware of the load shedding schedule. It is however, a matter of concern that 37 % of the respondents illustrated that this electricity interruption was not applied according to the schedule, which poses a big threat especially in manufacturing and its sub-sectors.

Figure 14: Official load shedding schedule

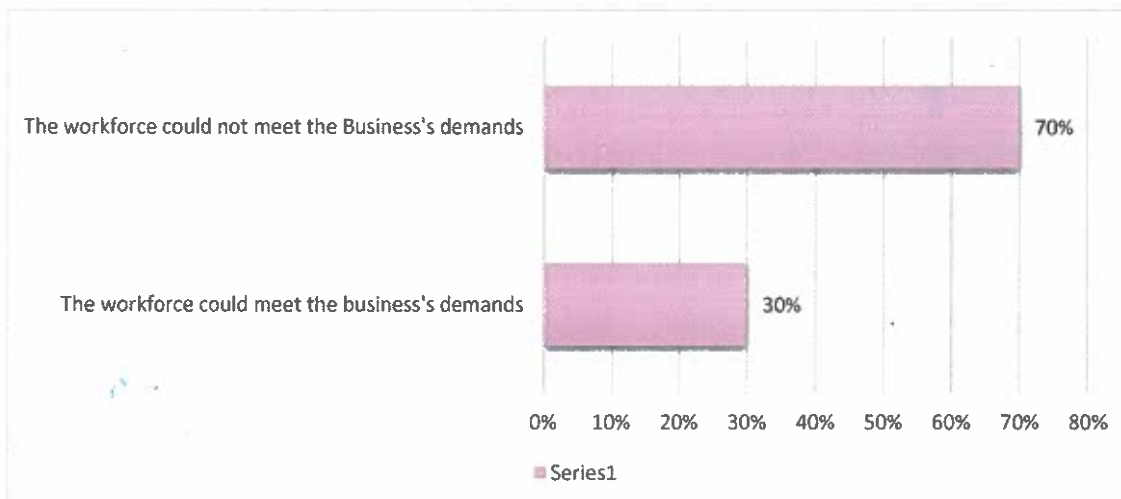


Another question focuses on the ability of the workforce to meet business demands during the load shedding period. What is alarming is that 70% of the workforce could not meet the business demands (figure 15).

Literature also shows that load shedding has been increasingly implemented outside of normal business hours and on weekends, reducing the impact of power outages on the production sector of the economy. Many of the nation's largest businesses, for instance, have made substantial investments in energy storage and backup systems,

such as diesel generators and large battery packs, so they can continue to operate uninterrupted during power outages. Businesses have been able to acquire off-grid energy solutions, such as solar power and diesel generators.¹⁵

Figure 15: Ability of workforce to meet business demands



4.3 Renewable energy as an alternative solution

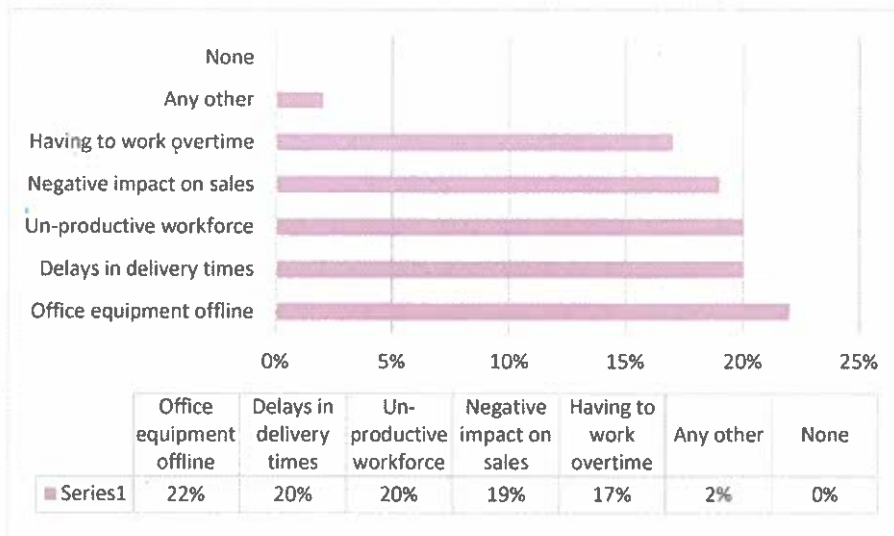
Enterprises experiencing various challenges due to the power outage, such as production downtime, increased supply chain costs, reduced operating hours, and increased security risks. Diverse negative effects were manifested during load shedding, including weaker consumer confidence, which weighed on retail spending, lower business confidence, which affected investment decisions, and tainted international perceptions. This hampers the appetite for foreign investment. Society also faces an increase in crime risk due to offline security systems, longer journeys due to transport delays and unreliable communication due to slow mobile telecommunication services.¹⁶

Respondents were also asked to share their experience with regard to the above. Of the enterprises surveyed 22% indicated that their office equipment was offline during load shedding. Others (20%) indicated that they experienced delays in delivery times, whilst 20% reported un-productive workforce during these power outages. Working overtime (17%) is also a factor that resulted in additional financial implications.

¹⁵ <https://risingsunlenasia.co.za/81621/load-shedding-remains-the-greatest-barrier-to-economic-expansion/>

¹⁶ Ibid.

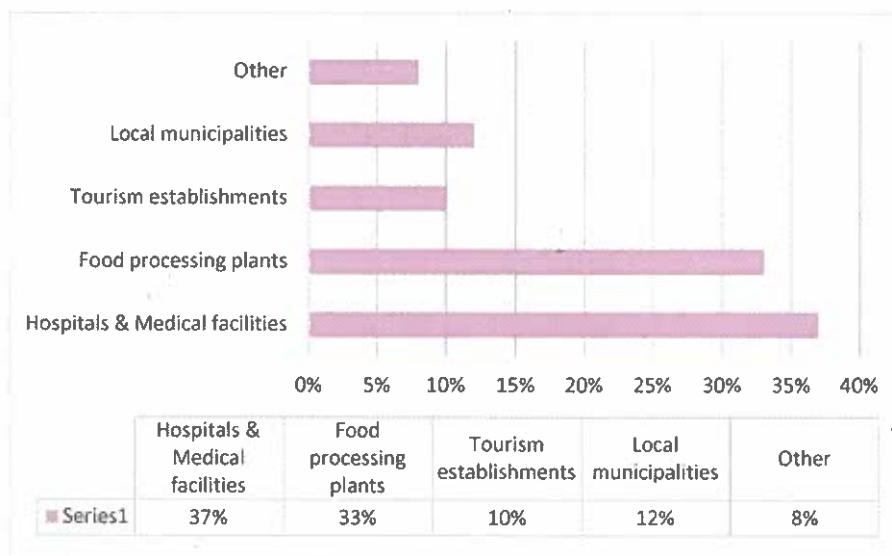
Figure 16: Negative effects on day-to-day management of enterprises



An overwhelming response (100%) from the respondents underlined the fact that the uncertainty around electricity supply impact negatively on investment, both local foreign.

Respondents were asked if they would support the idea that selected companies/institutions be exempted from Eskom's load shedding schedule if such an agreement is in place. Of the respondents 37% reported that hospitals & medical facilities be excluded, whilst 33% voted for food processing plants. Only 10% voted in favour of tourism establishments.

Figure 17: Companies/institutions to be exempted from load shedding



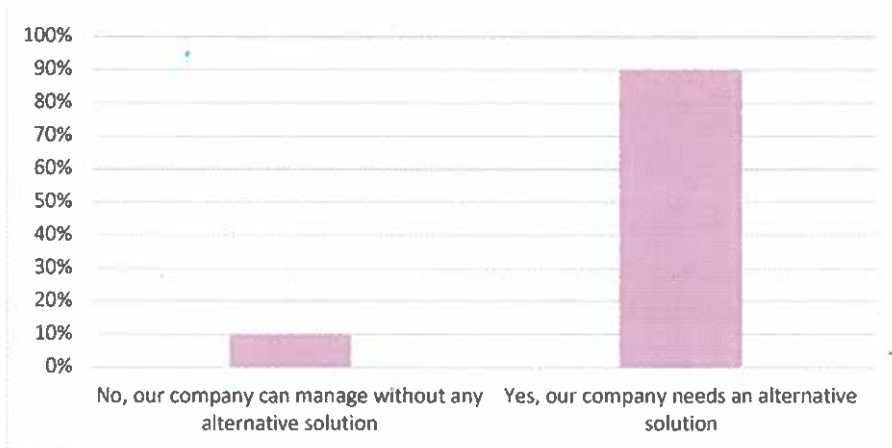
Investments in the renewable energy sector can bring about significant changes in the economy of the Free State. Alternative resources for renewable energy are needed desperately to provide in the rising energy demands nationally as well as provincially. It is thus imperative for the Free State to invest resources in renewable energy. Enterprises in this regard were asked if they would consider renewable energy as a viable option for the future. Of the enterprises approached, 84% indicated their interest in renewable energy as a game changer for the future.

The electricity crisis coincides with the disruptions of climate change in Africa*, which is driving the need for renewable energy.¹⁷ Role-players in the energy sector need to identify energy gaps and deliver electricity to help drive sustainable economic growth, but at the same time reduce their greenhouse gas (GHG) emissions. Extreme weather events, including tropical cyclones, severe droughts, wildfires, and floods are continuously changing the environmental landscape, hence the quest for alternative energy sources.

Greener energy has become far more affordable option to consider. Solar photovoltaic (PV) installations are viable options for both commercial and domestic use. A combination of PV systems and a UPS could deliver the most efficient green backup system.

The survey in this regard seek the opinion of enterprises to comment on the need for investing in alternative solutions to cope with electricity shortages. The majority of the survey's respondents (90%) indicated the need for increased investment in alternative solutions to deal with the current energy crisis.

Figure 18: Investing in an alternative solution to counteract load shedding



¹⁷ <https://personal.nedbank.co.za/learn/blog/tackle-energy-and-climate-emergencies.html>

4.4 Additional Findings

The survey requested enterprises to elaborate on measures applied by them to recover what has been lost during load shedding. Enterprises surveyed commented as follows:

“Overtime work. Sunday work, bigger shifts & hours. Expensive installation of Generator (R2.2m, Solar (R1.3m), UPS (R625k).”

“Staff attends to other less productive work, which can create challenges for a skilled person going forward.”

“Worked extra hours, promotions, specials.”

A respondent in the manufacturing sector indicated that they were forced to resort to insurance claims.

An industrial enterprise in MAP-SEZ indicated that they have not apply any measures. “We have simply absorbed the damages sustained so far, but cannot do so in future.”

Another industrialist in the MAP-SEZ referred to “the cost incurred due to direct outages not related to load shedding, but specifically poor infrastructure within the park”.

An opportunity was also granted to respondents to provide suggestions or recommendations to reduce demand on the national grid. An enterprise in Lejweleputswa (based in Bothaville) was very passionate about their undertaking to establish a solar power plant and already interacted with ESKOM in this regard. They however commented as follows:

“Cut off non-paying electricity users. More tax rebates for alternative electricity generation for electricity saving. Subsidised renewable electricity. Production factory cannot operate with electricity on-and-off for short periods, e.g. 2 hours off, 4 hours on, 2 hours off. It take too long to start up the factory after electricity is restored and it takes too long to stop the plant before load shedding. Blockages, damage to machinery and damage products is also a result of unannounced stoppages. Rather ask me to save an x amount of electricity per day/week and I will install the necessary equipment/renewable power to achieve the necessary electricity savings. Can also stop and schedule days for service and maintenance as electricity saving is needed.

Our electricity is not restored when it is supposed to be after load shedding and always only switch on 1 hour to 2 hours after load shedding was supposed to end."

An enterprise in the agriculture sector stated that, "Everyone must be equally treated on load shedding, like we were on holiday for 8 days in Natal and had only experienced 3 load shedding interruptions for the whole week while in Free State 3 times a day". An enterprise in the transport industry echoed this statement, "Load shedding in every town to be the same. Johannesburg only have 2 hours a day where other towns have 8 hours load shedding".

Some of the recommendations by respondents were around planning, maintenance of infrastructure and illegal practices:

- "Eskom must do pre-maintenance"
- "Maintenance and Planning"
- "Appoint qualified individuals to attend to the electricity problem/crisis"
- "In Qwa Qwa we do not just experience load shedding according to Eskom's schedule, we often have extra load shedding and also no electricity due to mismanagement and cable damage, cable theft"
- "Fight corruption. Change by-laws at municipalities to feed power back in the grid"
- "Sort out illegal connections in the area"

Recommendations by respondents furthermore referred to support interventions by government:

- "Government should help business with money to supply fuel for generators"
- "Electricity grants - where government gives factories and business money to install power systems".

Other recommendations from enterprises to reduce demand on the national grid:

- Solar Power
- "Eskom exempt our companies (in manufacturing) from load shedding"
- "Solar through Power Purchase Agreements (PPA)"

5. CONCLUSION

The high-level rolling blackouts in South Africa, which is also affecting Free State, are taking its toll on various fundamental sectors of the economy, such as the agriculture sector. Agriculture is one of the key sectors driving the provincial economy. Load shedding not only impacting food security, but also business sectors and industries at large. Electricity is central to modern farming practices and a shortage thereof disrupt farming operations. Pumping stations, irrigation, cooling and other systems all depend on power supply.

A study conducted by the University of the Free State on the impact of load shedding on the construction industry in South Africa detailed that one of the most common factor that contributes to load shedding, is historical bad assessments made by ESKOM. The study stated that the reserve margin in electricity will continue to go on a downward trend for the next few years until there is a substantial power plant that can accommodate the demand of this new age. ESKOM admitted that with the reserve margin being low, they do not have enough capacity to meet demand, necessitating planned, controlled and rotational load shedding, to protect the power system from a total country-wide blackout.¹⁸

The provincial economy, as reflected in section 3, is under tremendous additional pressure due to the impact of load shedding as well as announced electricity outages. This, in turn, led to the reduction in GDP and employment. Global consultancy firm, PwC pointed out that the country will continue to underperform in 2023 due to the expected regular implementation of rolling blackouts.¹⁹

Some of the key results of the Enterprise Impact Survey, over the period in question, revealed that:

¹⁸ Coetzee, Drian; Els, Mart-Mari Department of Quantity Surveying and Construction Management, University of the Free State, Bloemfontein, South Africa, 2016: The impact of load shedding on the construction industry in South Africa

¹⁹ <https://www.capetalk.co.za/articles/465702/sa-economy-could-have-grown-by-7-in-2022-if-not-for-curse-of-loadshedding>

- 25% of enterprises reported job losses - 80% thereof lost between 10 and 20 employees, whilst 20% lost less than 10 employees;
- All respondents (100%) reported that they experienced load shedding on a daily basis - 25% indicated that they experience load shedding more than 8 hours a day;
- 70% of the workforce could not meet the business demands;
- 84% of the respondents had a turnover that was lower than their normal range;
- 53% of enterprises applied mitigating mechanisms which cost them more than R100 000 per month;
- All (100%) respondents agreed that the uncertainty around electricity supply impact negatively on investment;
- 37% of respondents agreed that hospitals & medical facilities be excluded, whilst 33% voted for food processing plants;
- Majority of respondents (90%) indicated the need for increased investment in alternative solutions to deal with the current energy crisis.

Based on the feedback provided by the participants, and literature review²⁰ the following could reduce demand on the national grid:

- The government to financially support (subsidise) solar energy installation.
- Government support in terms of discounts and/or rebate system on diesel.
- Skills, planning and maintenance to be reprioritised by Eskom.
- Cut the power of the non-payers, power stealers, residential communities, keep all the businesses running to prevent collapse of economy.
- Load shedding needs to be consistent from day to day for planning and management of daily operations.
- Businesses to be informed long in advance of planned load shedding in order to reschedule i.e. working shifts, running of machinery
- Put systems in place that would sound a warning when there is any unauthorised tampering with transformers.
- Start producing affordable wind generators and solar panels locally.
- Eskom and Municipalities to strive in honouring the respective time-schedules of planned load shedding as per each area/region – and to keep within these boundaries.
- Approve and fast track on applications of individuals/enterprises who would like to generate electricity for themselves and to add excess electricity to the grid.

²⁰ Agri-SA: impact of load shedding on the economy: Questions for business

- Introducing other forms of electricity generation, like green energy which involves solar energy that converts energy from sunlight into electricity by use of solar power or photovoltaic;
- South Africa to limit its electricity export to neighbouring countries.²¹

The growing utilization of technologies and digitalization such as artificial intelligence, cloud computing, robotics, 3D printing, and advanced wireless technologies, amongst others has ushered in a new area which require a reliable supply of electricity that is critical for economic growth and job creation.

This study revealed that the relationship between electricity consumption and economic growth is significant and that the impact of load shedding is negative towards the economic growth of the province. Provincial government and the private sector, including Eskom, will have to join hands to accelerate production of electricity to minimise its effect on the economy.

²¹ Lenoke, M. (2017). The impact of load shedding on the economic growth of South Africa, North-West University (South Africa).