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COMMENTARY

Assessing the Economic Cost of South Africa's Energy Crisis

MOSES KOTANE RESEARCH INSTITUTE
RESEARCH SERVICES UNIT

Contents

1. Introduction

For over a decade, energy instability has been the defining constraint on the South African economy. The roots of this crisis trace back to the early 2000s, with delayed investments and inadequate maintenance of ageing coal-fired infrastructure leading to the first widespread load-shedding in 2007-2008. This instability intensified due to corruption, mismanagement, and political interference, with frequent blackouts in 2014-2015 and reached critical levels from 2019 onward, peaking dramatically in the 2024 financial year (FY2024), when the country endured power cuts for 329 days (Eskom Holdings, 2024). This ongoing energy insecurity has not only hampered economic growth but also highlighted the urgent need for diversification toward renewables and improved governance to achieve long-term stability.

While the country has achieved a significant operational turnaround with loadshedding largely eliminated in the second quarter of 2024 (Nedbank Group Economic Unit, 2024; CSIR, 2025), this moment of stability provides a critical, yet fragile, foundation for future planning. The Moses Kotane Research Institute asserts that the profound economic costs accumulated during the crisis continue to shape South Africa's current economic performance and long-term potential. The primary goals set out in the National Development Plan (NDP), promoting economic growth, ensuring social fairness, and achieving environmental sustainability (SANEA, 2025) were severely hampered by years of managing a chronic crisis. This chronic unreliability remains the single greatest barrier to achieving inclusive growth.

This report provides an analysis that moves beyond the immediate operational improvements. Elements highlighted by this commentary remain relevant, because: (1) Energy instability is not fully resolved: The system is still structurally fragile due to an ageing coal fleet, high maintenance backlogs, and critical grid constraints, meaning the risk of future instability persists. (2) The economic damage persists: The substantial financial and social costs accumulated over the past decade continue to affect long-term GDP growth paths, business recovery, and municipal finances, shaping today’s economic performance. (3) Policymakers need evidence: Government and provincial

entities require this documented analysis to quantify historical losses, track the effectiveness of reforms, and safeguard against future volatility. This report first analyses the roots of the crisis, quantify its staggering costs, and demonstrates why the current stability remains fragile.

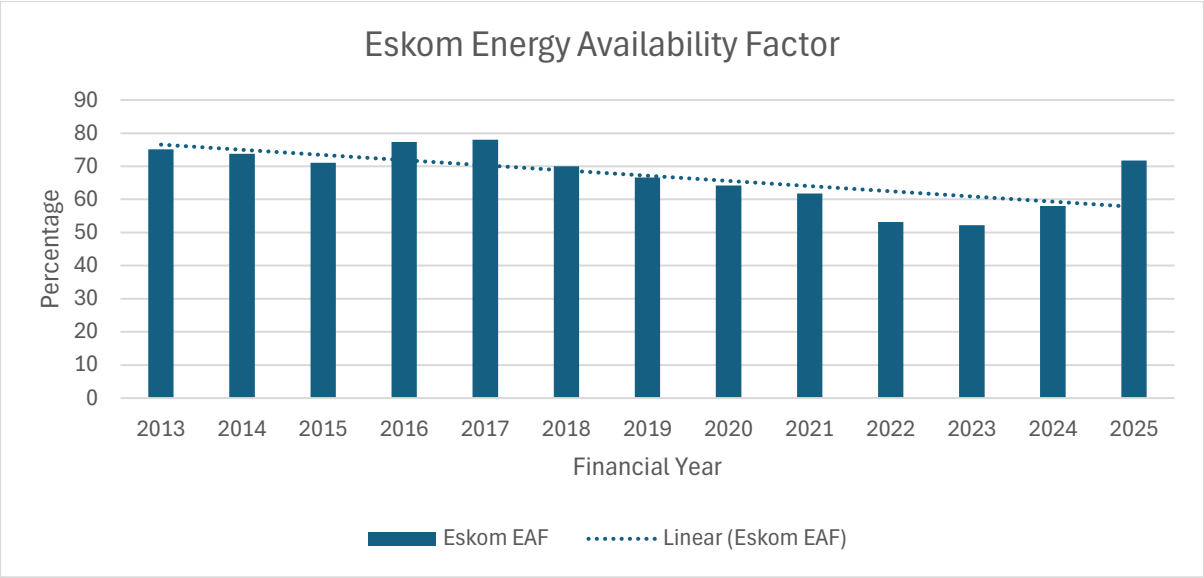
2. Understanding the Roots of South Africa's Energy Instability

South Africa's energy crisis was not a singular event but a complex compounding of operational, institutional, and policy failures. This combination created a structural fragility that persists despite recent improvements in performance.

2.1. Legacy of Underinvestment and Ageing Infrastructure

The core operational crisis stems directly from decades of deferred maintenance and inadequate investment. This legacy is clearly measurable through the decline in Eskom's generating fleet performance, tracked by the Energy Availability Factor (EAF). The EAF declined sharply over many years, falling to an average of approximately 51% in 2023 (Nedbank Group Economic Unit, 2024). This performance is severely deficient compared to the international benchmark of 78% for comparable coal fleets. This decline is rooted in a history characterised by "artificially low prices, underinvestment and lack of proper maintenance" (SANEA, 2020). Units were consequently run too hard, leading to increased unplanned outages. While the EAF saw a progressive improvement to an average of 60% in 2024 (Nedbank Group Economic Unit, 2024), this level still indicates significant structural fragility and remains far from the reliable performance required.

Diagram 2.1: Eskom Energy Availability Factor (EAF)



Source: NTCSA, 2025

The graph shows Eskom's Energy Availability Factor (EAF) from 2013 to 2025 reveals a stark story of structural decline and tentative recovery. Following a period of relative stability near the 75-78% benchmark until 2017, the EAF entered a steep and consistent decline, plummeting to a catastrophic low of approximately 53% in 2022-2023. This collapse, driven by accumulated maintenance backlogs and operational failures, plunged the country into intense load-shedding. The recent rebound to 71.77% in 2025 marks a significant recovery, largely due to aggressive maintenance and private solar adoption. However, this level merely returns the utility to its pre-crisis 2018 performance and remains below the reliability benchmark, indicating that the system's stability, while improved, remains fragile and not yet secure.

2.2. Governance Failures and Operational Weaknesses

The decline in operational performance is fundamentally a symptom of institutional degradation. Governance failure is consistently identified as a primary driver, encompassing the devastating combination of "state capture, governance failure and corruption" (SANEA, 2020). The Zondo Commission of Inquiry detailed the consequences of this institutional decay, highlighting "wasteful expenditure,

questionable relationships, and leadership failures" (UWC Scholar, 2022). A critical outcome was the "steady outflow of the most competent and experienced personnel" from the utility, particularly accelerating after 2014, leaving the organisation functionally hollowed out (SANEA, 2020). Corruption remains a top uncertainty and a system driver in the energy ecosystem, directly impacting costs and eroding confidence. This failure is seen in high financial losses, such as the estimated R23 billion in revenue lost in FY2024 due to electricity theft (Eskom Holdings, 2024).

2.3. Policy Delays and the Slow Pace of Renewable Energy Integration

The policy landscape has successfully generated strategic plans (such as the Integrated Resource Plan (IRP)), but the critical challenge lies in the execution. The "Implementation capability" has emerged as a significant bottleneck in the system (SANEA, 2025). This gap reflects the failure to translate strategic planning into tangible execution, historically slowing the Renewable Energy Independent Power Producer Procurement Programme (REIPPP) roll-out. This slow pace of execution risks delaying the crucial integration of new capacity and prevents private capital from resolving the national grid deficit.

2.4. Grid Constraints and Spatial Mismatches in New Generation

One of the most profound constraints to the energy transition is the national transmission grid. The grid was historically designed to move power from coal stations in Mpumalanga to the major load centers, generally flowing from the north-east to the south-west. This infrastructure is currently insufficient to incorporate the planned large-scale renewable energy capacity. Eskom confirmed that "no more grid capacity available in key areas for connecting new generation projects" in the Northern Cape, Western Cape, Eastern Cape, and parts of the Free State (Eskom, 2023). Since the best wind and solar resources are found in the Cape provinces, where grid capacity is exhausted, this spatial mismatch requires costly and time-consuming upgrades that must be urgently accelerated to unlock private investment.

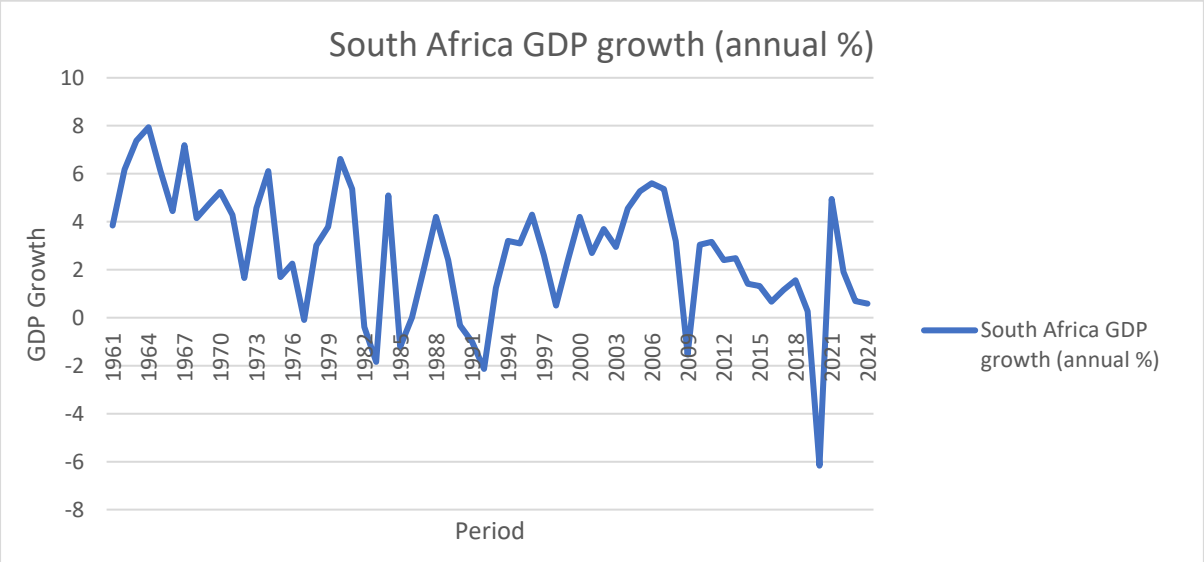
3. The Economic Legacy of Load Shedding: Costs Still Unfolding

The institutional and operational failures have translated directly into profound, lasting financial and social costs. This enduring economic legacy actively restricts South Africa's potential output and continues to affect economic performance today (ISA, 2023).

3.1. Macroeconomic Losses: GDP, Productivity and Output

The Institute's analysis confirms that the scale of the economic drag imposed by loadshedding has been staggering, representing a direct curtailment of national potential. In 2022, the 3,773 hours of power cuts resulted in an estimated Gross Domestic Product (GDP) loss of R366.3 billion (ISA, 2023). This figure equates to approximately R1 billion per day lost in nominal terms (ISA, 2023). The severity of the crisis actively curtailed national growth rates: exceptionally high loadshedding in 2023 is estimated to have reduced GDP growth by 1.5 percentage points, contributing to the sluggish overall growth rate of 0.7% (OECD, 2025). The cumulative GDP loss attributed to power cuts from 2020 to the first quarter of 2023 (Q1 2023) reached R223.94 billion (in 2022 values) (Nova Economics, 2023). The calculated financial impact per unit of lost energy, the Cost of Load-shedding (CoLS), is estimated to be between R10.17/kWh and R12.61/kWh (in 2020 prices) (Nova Economics, 2023).

Diagram 3.1: Macroeconomic Cost of Loadshedding



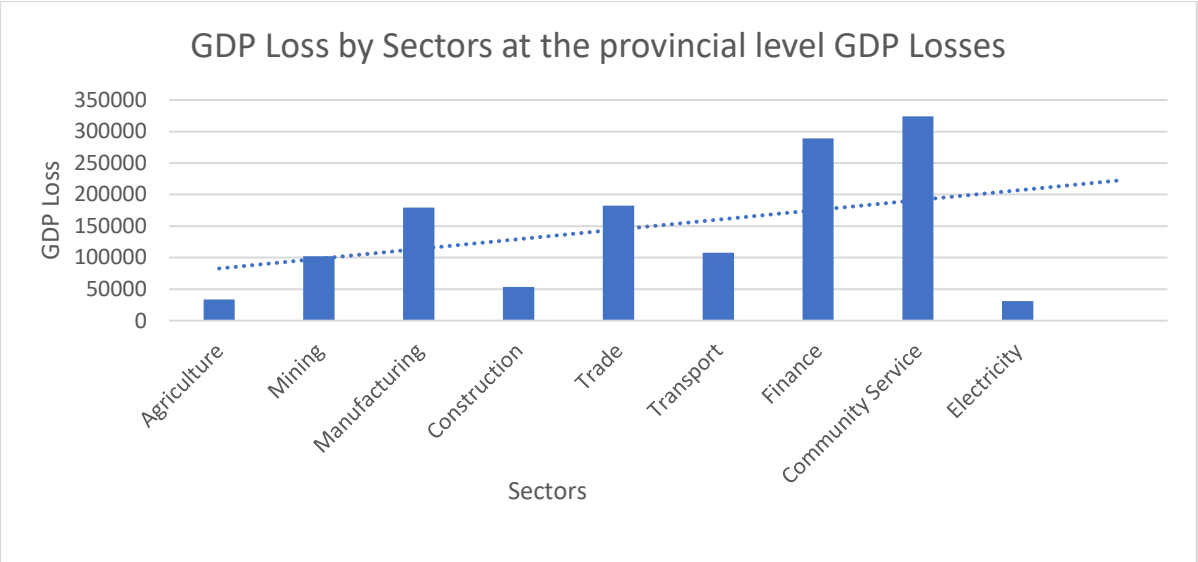
Source: IHS ,2025

3.2. Deindustrialisation and Reduced Competitiveness

The economic burden of loadshedding was not evenly spread; it was highly concentrated in energy-intensive sectors, actively driving deindustrialisation (Nova Economics, 2023). Manufacturing, Transport, Agriculture, and Utilities were identified as the worst-affected primary and secondary industries. Analysis showed that the manufacturing sector bore 41% of the total economic cost of loadshedding, making it the single largest contributor to losses by sector. This forces industrial contraction as companies divert scarce capital to mitigation measures (generators, fuel) instead of focusing on expansion or hiring. Conversely, service-oriented sectors such as Finance and Government were found to be "largely unaffected" or "inherently more resilient" to power cuts.

The provincial GDP loss data reveals that the energy crisis has inflicted deep, structural damage across the economy, with the most severe impacts targeting its fundamental pillars. While the absolute losses are highest in Community Services and Finance indicating a crippling effect on public services and the financial sector the most strategically critical damage lies in the erosion of the productive core. Manufacturing, Trade, and Transport, which collectively form the province's economic backbone, suffered massive losses (over R469 billion combined), directly threatening jobs, supply chains, and long-term industrial capacity. This pattern demonstrates that load-shedding acts as a regressive tax, disproportionately crippling the very sectors including Mining and Agriculture that are essential for inclusive growth, export earnings, and basic sustenance, thereby actively deindustrializing the provincial economy.

Table 3: Sectoral Burden Distribution of Load-shedding Costs



Sources: HIS, 2023

3.3. Erosion of Business and Investor Confidence

The persistent lack of reliable electricity fundamentally undermined long-term investment planning (SANEA, 2025). Energy security and investor confidence are categorised as major "outcomes" in risk analyses, showing they are severely impacted by systemic "drivers" such as corruption and poor policy implementation velocity (SANEA, 2025). This forces firms to allocate scarce capital to mitigation measures (generators, inverters) rather than focusing on expansion, R&D, or hiring, thus eroding future productive capacity. However, private capital has shown robust activity in decentralised energy, with the fixed investment into machinery and equipment driven almost exclusively by imports of solar panels, batteries, and inverters (Nedbank Group Economic Unit, 2024).

3.4. Eskom's Debt and Government Support

The government's decision to provide Eskom with R254 billion in debt relief (ISA, 2023) represents a direct and colossal penalty for years of institutional failure. This financial commitment is a massive opportunity cost: resources utilised to stabilise a failed utility that could otherwise have been injected into labour-intensive sectors or infrastructure

development (ISA, 2023). Beyond debt relief, operational failures translate directly into high state operating costs, most notably the expense of diesel for Open Cycle Gas Turbines (OCGTs), which reached R33.9 billion in FY2024 (Eskom Holdings, 2024). This drain on the national budget is compounded by lost tax revenue, estimated at R61 billion during 2022, resulting from diminished economic activity (ISA, 2023).

3.5. Social and Labour Market Impacts

Load-shedding acted as a devastating catalyst for unemployment and deepening inequality. Input-Output modeling estimated that a total of 668,754 jobs were lost in 2022 due to the combined impacts of power cuts. Projections based on the worsening crisis indicated potential losses could reach 858,518 in 2023 (ISA, 2023). The brunt of this social cost was borne by the small business sector, where 66% of surveyed township small businesses reported shedding jobs due to financial losses induced by power cuts (Nedbank/TEA, 2023). Operationally, 64% of these businesses stop operations entirely when loadshedding hits). This continuous cycle of operational and financial obstacles is severely impacting the mental health and "hustling resilience" of business owners.

4. Case Studies: The Tangible Impact of Instability

The broad national statistics are best understood by examining the tangible, localised impacts of power cuts on core economic actors and essential public services.

4.1. Case Study 1: Production Disruptions in Manufacturing due to Loadshedding

Manufacturing sector bore 41% of the total economic cost of loadshedding

Manufacturing Sector is one of the more energy intensive sectors contributing to the South African Gross Domestic Product (GDP).

South Africa's manufacturing sector suffered the largest share of economic losses caused by loadshedding, primarily because production processes depend on continuous operation of high-consumption equipment such as sewing machines, wood cutters, and heat presses. When power was cut, many small and medium enterprises either switched to slower manual methods or stopped production entirely, leading to delayed orders and reduced turnover (Nedbank and Township Entrepreneurs Alliance, 2023).

A 2023 survey of more than 200 township-based SMEs conducted by Nedbank and the Township Entrepreneurs Alliance found that manufacturing businesses were among the hardest hit. Eighty-three per cent of manufacturers reported laying off workers, typically between two and five employees per firm. The majority of respondents in rented premises chose not to invest in backup power, with setup costs quoted between R50,000 and R500,000. Running diesel generators was often judged uneconomical, as fuel and maintenance expenses frequently exceeded the revenue that could be earned during the limited operating hours available (Nedbank and Township Entrepreneurs Alliance, 2023).

A practical example is provided by a plastics injection-moulding company in Ekurhuleni. During Stage 4 and Stage 6 loadshedding in early 2023, daily outages of 2–4 hours reduced output by approximately 25 per cent. To keep the production line running, the firm installed a 100 kVA diesel generator at a capital cost of R350,000. Operating the generator for four hours a day consumed around 50 litres of diesel per shift; at prevailing fuel prices of R22–R25 per litre, this added roughly R150,000 a year in fuel and maintenance costs, only partially offsetting the lost production and the additional expense of repairing equipment damaged by power surges when the grid returned (GreenCape, 2023).

4.2. Case Study 2: Loadshedding and South Africa Electricity Tariff Increase 2025

KwaZulu Natal Case Study

Electricity Tariff Increase per Province:

KwaZulu-Natal Tariffs went up by 12.5% for both urban and rural consumers.

South Africa experienced its most severe electricity crisis to date, peaking in 2022 with over 300 days of loadshedding and Stage 6 interruptions that reduced national GDP by up to 2.3%, followed by partial stabilisation in 2024–2025 yet punctuated by renewed Stage 3 outages in January 2025, highlighting ongoing vulnerabilities (National Treasury, 2025). South African households faced significantly higher costs for electricity, which compounded the financial pressures left by years of power cuts. This rise in tariffs occurred concurrently with a landmark court ruling that challenged the very process used to approve these increases.

Eskom's latest tariff hike approved by the National Energy Regulator of South Africa (NERSA) included an average increase of 12.74% for direct Eskom customers (from 15 August 2025) and 11.32% for municipal customers (from 1 July 2025) (Daily Maverick, 2025). For KwaZulu-Natal (KZN) citizens, this translated to estimated per-unit costs of approximately 282 cents per kilowatt-hour (c/kWh) for prepaid users and 295 c/kWh for postpaid users, representing an approximate 8.1% hike from previous rates (Daily Maverick, 2025).

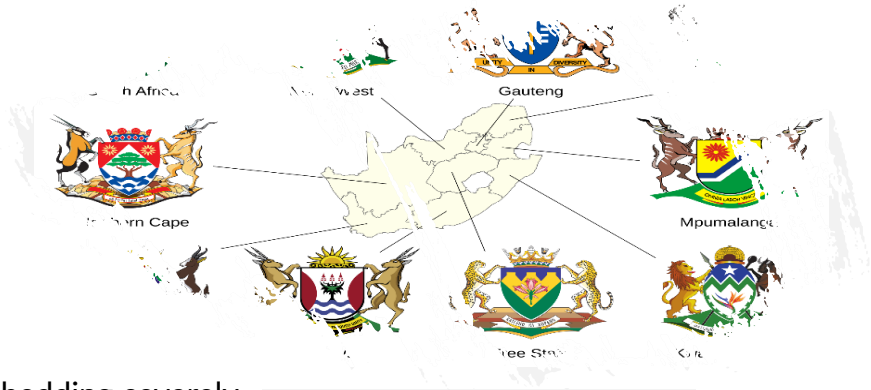
In October 2025[1], the Pretoria High Court ruled that NERSA's process for approving municipal electricity tariffs was unconstitutional (AfriForum, 2025). The ruling found that NERSA consistently failed to use proper cost studies and did not allow for sufficient

[1] Labuschagne J. (2025). *Gauteng Division of the High Court in Pretoria ruling on NERSA's process for approving municipal electricity tariffs*. Available at: https://www.saflii.org/za/cases/ZAGPPHC/2025/1176.html

public participation when setting these yearly price hikes. Critically, the court decision did not set aside the tariff approvals for 2025/26, meaning KZN residents still faced the higher bills (Labuschagne, 2025). The ruling mandates future transparency and accountability. Future tariff hikes affecting KZN municipalities (such as eThekwini) will compel NERSA to justify price increases by publishing the key financial documents used to calculate them (AfriForum, 2025). The ruling imposes strict new deadlines on NERSA for future processes (e.g., announcing Eskom's tariffs by 31 January 2026, and finalising municipal tariffs by 5 May 2026), ensuring KZN citizens have adequate time to scrutinise and provide input on proposed electricity costs.

4.3. Case Study 3: South African Municipalities

Fiscal Toll of Loadshedding on South African Municipalities



Between 2022 and early 2025, loadshedding severely undermined the financial sustainability of South Africa's 257 municipalities by simultaneously slashing own-revenue generation and triggering massive unbudgeted expenditure, thereby jeopardising basic service delivery. Electricity sales, which had historically generated surpluses that cross-subsidised roads, refuse removal and other services, became loss-making as consumption dropped 20–30% during Stage 4–6 outages and prepaid metering systems repeatedly failed, resulting in a combined revenue shortfall that exceeded R21 billion per year across 79 municipalities (31% of the total) (South African Local Government Association, 2023).

South African municipalities have suffered severe economic losses due to load-shedding, primarily through two channels:

plummeting electricity sales revenue and rampant infrastructure damage.

At the same time, municipalities incurred substantial daily repair costs: City Power in Johannesburg estimated R3.6 million per day, KwaZulu-Natal districts reported up to R180,000 daily plus R150,000–R250,000 per cable fault incident, and Rand West City

Local Municipality expended R53 million in January 2023 alone on two vandalised substations damaged by post-outage surges (City Power, 2022; KwaZulu-Natal Department of Cooperative Governance and Traditional Affairs, 2025). Nationwide, diesel and generator costs for water and wastewater services added R4–6 billion annually (Bureau for Food and Agricultural Policy, 2023), while Eskom recorded R16.8 billion in vandalism and theft losses between 2022 and 2024 that cascaded onto municipal networks (Eskom Holdings SOC Ltd, 2024). With only 16% of municipalities achieving clean audits and no dedicated national or provincial rescue package beyond enforced budget reprioritisation (Auditor-General of South Africa, 2024), the crisis pushed numerous local authorities to the brink of operational collapse until the marked improvement in grid stability from mid-2025 onward.

5. South Africa's Turnaround

The period following the peak crisis year of FY2024 has seen a significant operational turnaround. This success was driven by a confluence of improved generation management, enabling regulatory reforms, and robust private-sector adaptation.

5.1. Operational Stabilisation Efforts and Plant Maintenance Strategies

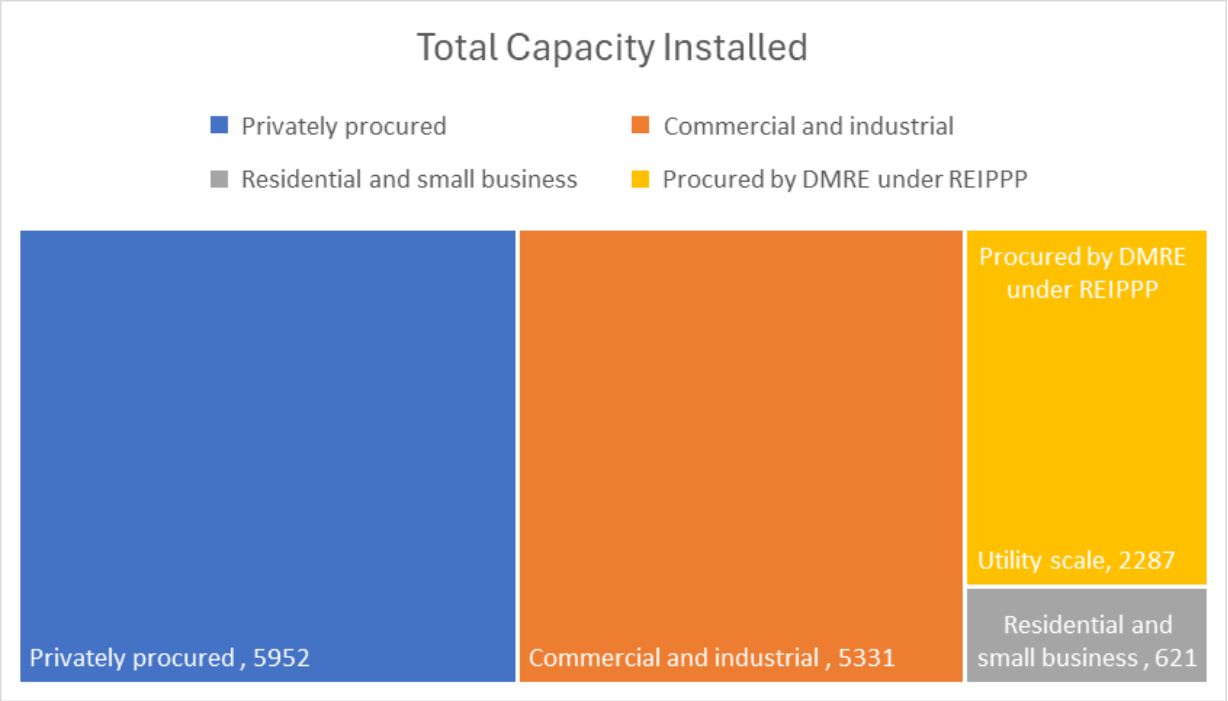
Eskom's operational performance improved in 2024, largely due to enhanced planned maintenance strategies. The yearly average Energy Availability Factor (EAF) progressively improved to 60% in 2024 (Nedbank Group Economic Unit, 2024). This improvement, combined with reduced energy demand, resulted in the elimination of loadshedding starting in April 2024 (Nedbank Group Economic Unit, 2024; Eskom Holdings, 2024) and a significant reduction in the use of expensive Open Cycle Gas Turbines (OCGTs) (Nedbank Group Economic Unit, 2024). Diesel usage was reduced by R11.9 billion year-on-year in the first six months of FY2025 (Eskom Holdings, 2024). A key factor was the early return of three units at the Kusile Power Station (Nedbank Group Economic Unit, 2024). However, operational stability remains fragile, as the 60% EAF is still well below the 78% target (Nedbank Group Economic Unit, 2024).

5.2. Surge in Rooftop Solar and Private-Sector Generation

The most dramatic shift is the surge in private-sector generation, driven by businesses and households seeking independent energy security (Nedbank Group Economic Unit, 2024). The installed capacity of rooftop solar (Small-Scale Embedded Generation, SSEG) has more than doubled to over 5,000 megawatts (MW) (Nedbank Group Economic Unit, 2024). By August 2025, the capacity of "behind-the-meter" rooftop solar power reached 7,345 MW, surpassing the combined output of all Eskom's utility-scale renewable power stations (7,172 MW) for the first time (NTCSA, 2025). This rapid private capital injection actively mitigated national supply pressure, especially during the day (Nedbank Group Economic Unit, 2024).

By July 2024, South Africa’s installed solar PV capacity reached approximately 9 GW, of which 66% (5.95 GW) was privately procured predominantly by commercial and industrial users (5.3 GW), with residential and small-business installations contributing only 621 MW. In contrast, government procured utility-scale solar under the REIPPP programme accounted for just 25.5% (2.3 GW), demonstrating that private initiative, driven by the need to mitigate loadshedding and high tariffs, had become the primary driver of solar deployment in the country.

Figure 1: solar PV capacity installed in South Africa as of July 2024



Source: SAPVIA, 2023

5.3. Regulatory Reforms Allowing Embedded and Distributed Generation

Stability was enabled by critical regulatory shifts aimed at liberalising the electricity market:

- Licensing Exemption: The capacity threshold for embedded power generation was extended to 100 MW in August 2021 (Pinsent Masons, 2021), a change that greatly incentivised private investment and reduced project lead times.
- Transmission Reform: The National Transmission Company of South Africa (NTCSA) is now nearly operational (SANEA, 2025), charting a course to become Africa's most trusted Transmission System Operator by 2035 (NTCSA, 2024).
- Market Structure: The Electricity Regulation Amendment Bill (ERA) has been passed by the National Assembly (SANEA, 2025), aiming to establish a competitive market. Furthermore, the National Wheeling Framework has been finalised, standardising access and charges for electricity transfer (SANEA, 2025).

6. Conclusion and Recommendations

For a decade, load-shedding has been a historic constraint on South Africa's economy, and its structural drivers the constrained transmission grid, low EAF, and institutional risks—remain potent threats to ongoing stability. While the recent operational turnaround is commendable, it underscores that sustainable energy security requires transforming private sector momentum into a resilient, decentralised national asset.

The immediate priority is to unlock the grid and convert the lessons from this crisis into a foundation for growth. For the KwaZulu-Natal province, this presents a critical opportunity to proactively cushion against current and future challenges. To this end, the following measures are recommended:

Recommendations for the KZN Provincial Government:

- Accelerate Approval of Private Power Projects: Fast-track environmental and planning approvals for Independent Power Producers (IPPs), establishing a dedicated "Energy Project One-Stop Shop" to cut red tape and provide investor certainty.
- Incentivise Commercial and Industrial Solar Rooftops: Launch a provincial rebate or tax incentive program for businesses that install rooftop solar systems, immediately reducing grid demand and stimulating the local green economy.
- Pilot a Provincial Battery Energy Storage System (BESS) Fund: Co-invest with municipalities to deploy medium-scale battery storage at critical grid points, stabilizing the network and providing backup power for essential services.
- Formalise an Energy Resilience Task Team: Create a public-private partnership (PPP) forum involving Eskom, municipalities, and major businesses to collaboratively manage crisis response and plan for long-term grid stability.

7. References

AfriForum. (2025). *AfriForum court victory: Nersa's process for approving electricity tariffs unconstitutional*. Available at: https://www.artikels.afriforum.co.za/en/afriforum-court-victory-nersas-process-for-approving-electricity-tariffs-unconstitutional/

Council for Scientific and Industrial Research (CSIR). (2025). *Statistics of Utility-scale power generation in South Africa*. Available at: uploaded: Energy Tracker June 2024 (1).pdf

D'Hernoncourt, J., Cordier, M., & Hadley, D. (2011). *Input-Output Multipliers – Specification sheet and supporting material*. Université Libre de Bruxelles – CEESE, Brussels. Available at: uploaded: Macroeconomic-Impact-of-Loadshedding-on-GDP_April-2023.pdf

Daily Maverick. (2025). *Nersa approves 12.7% tariff increase for Eskom — one-third of its original ask*. Available at: https://www.dailymaverick.co.za/article/2025-11-02-nersas-process-for-approving-municipal-electricity-tariff-hikes-is-unconstitutional-high-court-rules/

eThekwini Municipality. (2023). *Interruption of Water Supply from The Northdene System Due To Load Shedding*. Available at: https://www.durban.gov.za/press-statement/Interruption+Of+Water+Supply+from+The+Northdene+System+Due+To+Load+Shedding

Eskom Holdings (SOC) Ltd. (2024). *Loss before tax for the 2024 financial year improves by R9 billion to R25.5 billion*. Available at: https://www.eskom.co.za/loss-before-tax-for-the-2024-financial-year-improves-by-r9-billion-to-r25-5-billion-ntcsa-separation-triggers-once-off-accounting-adjustment-leading-to-loss-after-tax-of-r55-billion-profit-forecast/

Eskom. (2023). *Eskom generation connection capacity report*. Available at: https://greencape.co.za/market-intelligence/large-scale-renewable-energy/

Govender, T., Barnes, J. M., & Pieper, C. H. (2011). *Contribution of water pollution from inadequate sanitation and housing quality to diarrheal disease in low-cost housing settlements of Cape Town*. Available at: https://ehp.niehs.nih.gov/doi/10.1289/JHP1090

Infrastructure South Africa (ISA). (2023). *The Macroeconomic Impact of Loadshedding: A 2022 and 2023 Perspective*. Available at: uploaded: Macroeconomic-Impact-of-Loadshedding-on-GDP_April-2023.pdf

Labuschagne J. (2025). *Gauteng Division of the High Court in Pretoria ruling on Nersa's process for approving municipal electricity tariffs*. Available at: https://www.saflii.org/za/cases/ZAGPPHC/2025/1176.html

Nedbank/Township Entrepreneurs Alliance (TEA). (2023). *Impact of load-shedding on small businesses in the Township Economy 2023*.

Nova Economics. (2023). *Re-estimating the Economic Cost of Load Shedding in South Africa*. Submission for the Biennial Conference of the Economic Society of South Africa (ESSA). Available at: uploaded: Updated_Eskom_CoLS_ESSA_presentation_2024.pdf

NTCSA. (2024). *NTCSA: Charting a course to become Africa's most trusted Transmission System Operator by 2035*. Available at: https://www.ntcsa.co.za/

NTCSA. (2025). *Rooftop solar power capacity surpassed the combined output of all of Eskom's utility-scale renewable power stations for the first time*. Available at: https://mybroadband.co.za/news/energy/610916-south-africans-with-rooftop-solar-power-outgunning-eskom.html

OECD. (2025). *OECD Economic Surveys: South Africa 2025, Reforming South Africa's Electricity Sector*. Available at: https://www.oecd.org/en/publications/oecd-economic-surveys-south-africa-2025_7e6a132a-en/full-report/reforming-south-africa-s-electricity-sector_05fdccb6.html

Pinsent Masons. (2021). *South Africa embedded generation changes to boost energy security*. Available at: https://www.pinsentmasons.com/out-law/news/south-africa-embedded-generation-changes-to-boost-energy-security

Presidential Climate Commission. (2022). *Just Energy Transition Investment Plan (JET IP)*. Available at: https://www.cif.org/sites/cif_enc/files/meeting-documents/cif_fy22_supplemental_budget_presentation_january_2022.pdf

SANEA. (2020). *Decline and fall of Eskom*. Available at: https://www.thegwpf.org/content/uploads/2020/06/Decline-Fall-Eskom.pdf

UWC Scholar. (2022). *Effectiveness of the Zondo Commission inquiry of Eskom*. Available at: https://uwcscholar.uwc.ac.za/items/6d941be9-665c-450b-93a9-017a06ade4dc

Water. (2024). *Load-shedding and disruption of scheduled water delivery services in Limpopo*. Available at: https://www.mdpi.com/2073-4441/16/14/2033

World Nuclear News. (2025). *South Africa's Integrated Resource Plan (IRP) 2025*. Available at: uploaded: 2024-South-African-Energy-Trade-Report.pdf

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