IRR

The IRR's Blueprint for Growth 5:
Reinforcing South Africa's Growth through Infrastructure

October 2024
Anlu Keeve

Table of Contents

October 2024

Published by the South African Institute of Race Relations

222 Smit Street (Virtual office),
Braamfontein Johannesburg, 2000, South Africa
PO Box 291722, Melville, Johannesburg, 2109, South Africa
Telephone: (011) 482–7221

Author: **Anlu Keeve**

Editor: **John Endres and Terence Corrigan**

Contributor: **Carika Middelberg**

Image: **Anlu Keeve**

This publication was made possible with the generous support of the Atlas Network.

Executive summary

South Africa's infrastructure is falling apart. Years of neglect, poor management, and underfunding have left the country's water systems, electricity supply, and transport networks in crisis mode. The issues are rooted in operational, technical and management failings in the state institutions responsible for managing these systems, yet the consequences are felt more widely: as the infrastructure is collapsing, its breakdown is depressing economic growth and discouraging investment. Fixing this demands immediate and decisive action.

High levels of government borrowing, which crowds out private investment by pushing up interest rates, lend additional urgency to this work. High interest rates discourage capital investment in infrastructure, which is the backbone of economic activity.

The declining quality and reliability of the public infrastructure is perhaps most visible in the nation's water systems. Nearly 30% of water supply systems are in critical condition. Rural areas are the worst off, but some urban centres like Johannesburg also face frequent water cuts.

Rolling electricity blackouts (loadshedding) have crippled businesses and households for nearly two decades. Solving the economic crisis caused by the outages represents an enormous challenge owing to Eskom's inefficiencies, corruption, and soaring electricity prices.

Rail and port inefficiencies have shifted freight to road transport, causing more damaged roads, higher transportation costs, and increased safety risks. South Africa's ports, ranked among the worst globally, contributed to R150bn in lost export revenue in 2022 alone.

To reverse decades of decline, South Africa needs practical, immediate action. The following measures can help stabilise these important sectors and pave the way for long-term recovery:

Water infrastructure:

- Create transparent procurement systems with space for public-private partnerships;
- Improve municipal asset management;
- Implement a targeted skills development programme;
- Give local water management teams greater autonomy;
- Streamline communication channels and data capturing mechanisms;
- Stem water losses and manage non-revenue water management;
- And prioritise investment in water infrastructure in rural areas.

Electricity infrastructure:

- Remove bureaucratic regulations that slow down generation expansion and drive up costs;
- Ramp up private power generation;
- Separate Eskom into generation, transmission and distribution entities;
- Remove race-based procurement and hiring policies;
- Prioritise payment collection;
- And secure temporary exemptions from costly green mandates.

Ports, rail and road infrastructure:

- Establish a specialised railway police unit;
- Create transparent procurement systems with space for public-private partnerships;
- Improve communication networks between stakeholders and operators;
- Set up regular meetings that focus on improving container and truck management;
- And digitalise and standardise all management and logistics.

Fixing South Africa's infrastructure will not be quick or easy, but the stakes are too high for half-hearted attempts. By implementing these recommendations, the Government of National Unity can lay the groundwork for recovery of the country's water, electricity, and transport networks.

Introduction

“South Africa is in a state of crisis.” A few months ago, this statement would have been indisputable.

However, recent political developments have introduced a glimmer of hope. The outcome of the elections and the formation of a Government of National Unity (GNU) has introduced a mix of hope and anxiety among the population – hopeful for potential reforms, yet anxious about the new government’s ability to function effectively, produce concrete results, and remain stable through the 2027 local elections.

For the GNU to succeed and transform this hope into tangible progress, it must deal with the economic crisis. Specifically, it needs to address the dyad which government officials frequently invoke: persistently high unemployment and poverty. The question then arises: how can the GNU deal with these issues?

The main goal should be to grow the economy. Over the past 15 years, South Africa’s per capita income has shown minimal growth. In 2008, per capita income stood at $12,628 (measured in purchasing power parity, constant 2017 international dollars). By 2019, it peaked at $13,740. However, by the end of 2023, it had only slightly increased from the 2008 level to approximately $13,280.[1] This modest rise of about 5% over 15 years pales in comparison to other emerging economies, where more robust growth has been fuelled by strategic investments, particularly in infrastructure.

The Institute of Race Relations (IRR) has argued that a series of policy interventions are needed for the economy to grow.[2] First of all, people and businesses need to feel secure that their property and assets are safe, and that they have the liberty to deal with whom they wish, when they want and where they want. This sense of security reduces the perceived risk – people are more likely to commit resources when they believe the environment is safe and stable for reliable returns on their investments.

To offer this security to both South Africans and foreign investors, the country must place the protection of property rights, the removal of race-based policies, and the deregulation of especially the labour market, at the top of its list of priorities.[3]

However, these steps alone will not be sufficient.

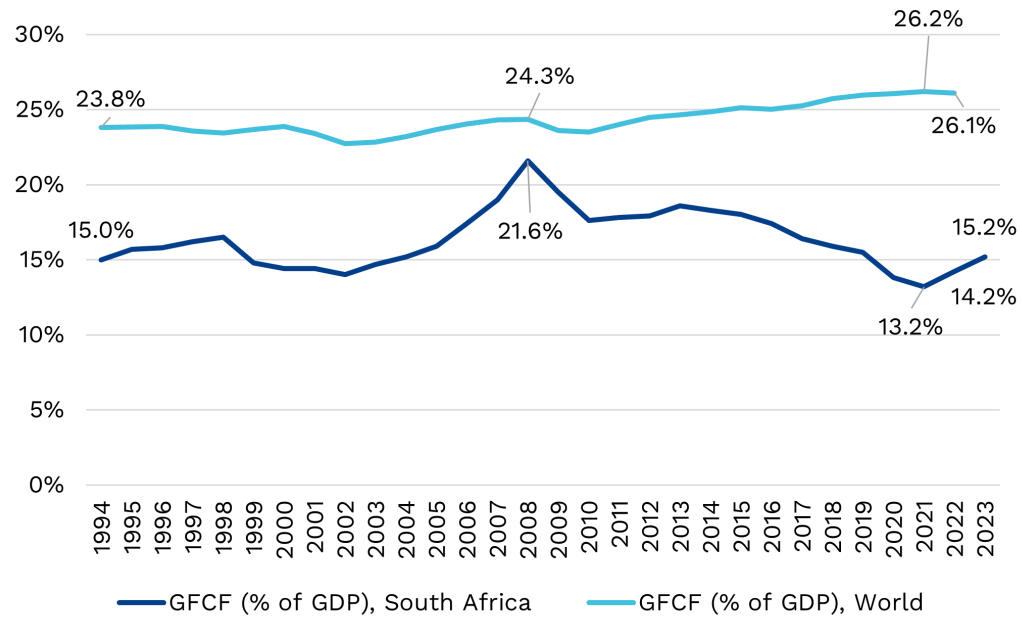
Today, at 74.6% of Gross Domestic Product (GDP), the debt ratio is at its highest point since 1947.[4] The cost of servicing this debt consumes 20c of every Rand collected as revenue.[5] This is restricting economic growth by tying up public finances in servicing debt. Funds that could have been allocated to other important priorities are unavailable for the purpose.

High levels of government borrowing also soak up the economy's lending capacity, pushing up interest rates and discouraging businesses from borrowing money to make capital investments. The state thereby crowds out economic activity in the private sector.

This situation significantly impacts infrastructure, which forms the backbone that sustains economic activities, facilitates trade and multiplies productivity. Without well-maintained roads, rail and ports, and stable energy and water supply networks, achieving and maintaining economic growth will be an uphill battle.

For this reason, any comprehensive reform agenda must include infrastructure as a priority. It is imperative that a fundamental set of infrastructural objectives be achieved for the economy to grow. Gross fixed capital formation (GFCF) is a useful measure here because the higher the level, the more "confidence" in a country's future is made tangible. The South African government's 2012 National Development Plan (NDP) set a total GFCF target, as a percentage of GDP, of 30% by 2030.[6] Since 1994, 20% was achieved only once, in 2008 (21.6%).

Figure 1: Gross fixed capital formation, 1994-2023



Source: World Bank

South Africa's fixed investment ratio is now one of the lowest among emerging markets. Countries that sustain rapid growth tend to boast investment ratios of 25% or higher. To meet the NDP target of 30%, public-sector investment needs to increase from 3.8% of GDP in 2021 to 10% of GDP by 2030, if the traditional 2:1 ratio of private to public investment is maintained. Private-sector investment would accordingly have to grow from 9.3% of GDP in 2021 to 20% of GDP by 2030.[7]

Currently, total public sector infrastructure spending for the 2024/25 – 2026/27 period is projected to be R943.8bn, around 4% of GDP.[8] This spending is divided among state-owned companies (R486.1bn), provincial and national governments (R224.8bn) and municipalities (R213.8bn).[9]

Spending on economic infrastructure makes up 81.4% of the total budget for the medium-term period, most of which is spent – often inefficiently – by state-owned entities to improve water and sanitation (R160.9bn), electricity (R203.8bn), and transport infrastructure (R340bn).

Infrastructure (roads, bridges, ports and railways) do not take shape of its own accord. If these assets are not maintained, they fall into disrepair and decline. The longer this process continues, the more difficult it is to arrest and reverse. The decline of some aspects of South Africa's infrastructure stock is easier to see and experience than others. In small towns, for example, roads are ground to dust by heavy trucks transporting coal and mineral ores, unable to use railway lines that have either been stolen or allowed to fall into disrepair.

Water provision is another critical area where the lack of planning and maintenance are producing more problems which, if unaddressed, will manifest in large-scale harms to health and society. What is taken for granted now is by no means guaranteed to always exist.

Although South Africans have experienced significantly fewer days of loadshedding in 2024, the fact that South Africa has coined a term for the rolling blackouts that have afflicted it since 2008 makes a strong point.

The problems across various areas of infrastructure cannot be solved overnight. But the decline can be understood, taken responsibility for, and investment once more placed on an upward trajectory. Achieving this requires prioritising reforms that stabilise and expand infrastructure so to ultimately drive economic growth towards a target of 7% of GDP annually.[10] This requires both practical policy changes, but arguably more importantly ideological realisations and changes.

But what should those infrastructural reforms be? In this paper, we explore the current state of infrastructure in South Africa. To this end, the paper first examines the theoretical link between infrastructure and economic growth. It then analyses the current state of infrastructure across four key sectors individually – water, electricity, ports, and rail and roads – and recommends targeted solutions for each.

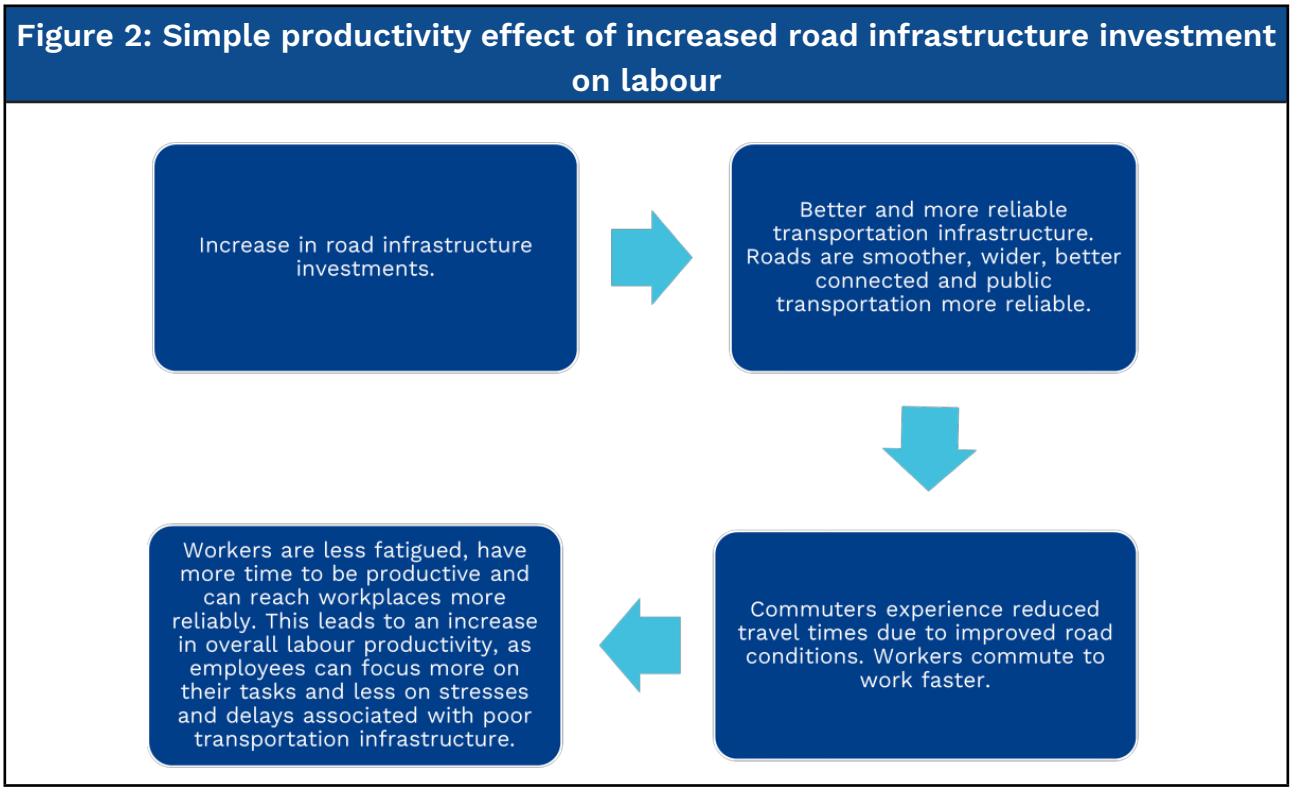
What does the theory say?

Infrastructure – such as ports, roads and rail, and water and electricity services – has a simple productivity effect. Augmenting infrastructural assets (like building more roads or making the electricity supply more reliable) makes other resources, like labour and capital, more productive.[11]

Figure 2 illustrates an example of the anticipated impact investment in infrastructure will have on labour productivity. Specifically, it illustrates how investing in road infrastructure reduces travel time and improves accessibility. These improvements directly benefit labour and businesses on a microeconomic level.

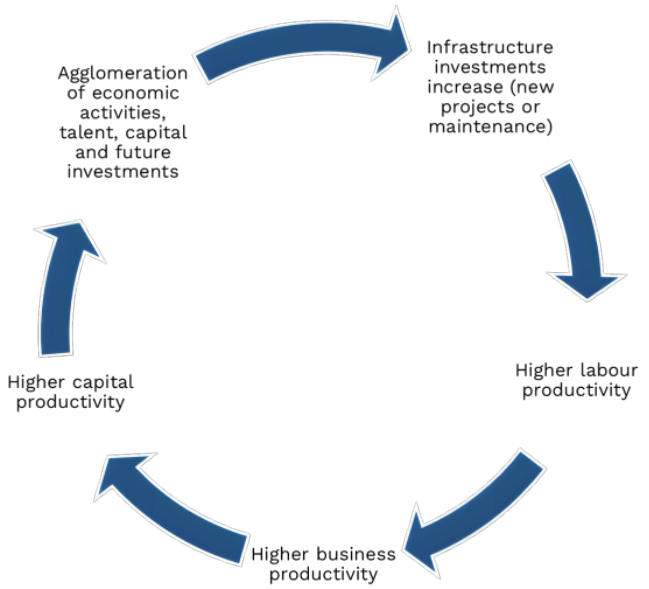
Figure 2: Simple productivity effect of increased road infrastructure investment on labour

Figure 2: Simple productivity effect of increased road infrastructure investment on labour



However, this is only one aspect of the simple productivity effect. Figure 3 illustrates the broader knock-on effect of infrastructure investments on various aspects of the production chain.[12] For instance, good roads reduce travel time, and electricity and communication infrastructure improve the flow of information, which makes workers and businesses more efficient.[13]

Figure 3: Broad impact of infrastructure on labour and capital



The positive effect of infrastructure investments is evident – building infrastructure attracts private businesses to invest in remote or less developed areas. New roads and bridges, as well as reliable electricity and water supply, make a remote area accessible to businesses and make it more attractive for companies to set up operation in such an area. This leads to new stores or factories, services, and more employment opportunities.

The investments from these businesses lead to increased economic activity, which in turn generates higher tax revenues for the government. The government can then reinvest higher tax returns in further infrastructure improvements and stock increases. As infrastructure improves, regions become more interconnected, which facilitates trade and the efficient movement of goods and services, boosting economic growth.[14] Therefore, as businesses invest and expand into newly accessible areas, they stimulate economic growth in these areas.[15]

However, these benefits often concentrate in already thriving areas.[16] This is because new infrastructure fosters the creation of new ideas and products.[17] In turn, innovation attracts further investment which drives technological growth and economic activity. A reinforcing cycle of prosperity is created, where thriving regions continue to grow while underdeveloped areas are left behind.

These patterns of development are observed because economic activities concentrate spatially owing to economies of scale and transportation costs.[18] Businesses benefit from producing on a larger scale because it reduces costs per unit. Furthermore, lower transportation costs make it easier for businesses to serve larger markets from a single location, and therefore encourages agglomeration.

As the number of companies offering different products and services increases, economic complexity rises and creates more economic niches for entrepreneurs to exploit. Regions, for these reasons, develop into "cores" of high economic activity and "peripheries" of less developed areas.[19]

On the labour market, the concentration of multiple firms in a single location offers workers more job opportunities, which reduces unemployment. It also makes it easier for firms to find the workers they need, which reduces the risk of labour shortages. Since firms are located closer to each other, they can share ideas and information more easily. Information spillovers can in this manner lead to better ways of producing goods and services and make these firms more efficient than those that are isolated.[20]

These positive effects in developed areas, as noted earlier, often mean that underdeveloped areas are neglected. This results in widening economic disparities and exacerbates the lag in underdeveloped areas. This does not mean that cities like Cape Town should neglect the maintenance and development of infrastructure in well-established areas like the Atlantic Seaboard. Infrastructure development naturally occurs in these regions due to their existing development and should not be halted. However, it is crucial to invest proactively in infrastructure in underdeveloped regions to stimulate their growth, balance economic development, and promote the natural growth that will result from these initial investments.

The following sections will examine the current state of infrastructure in key sectors and propose solutions to increase investment where it is most needed so as to ensure that all regions and sectors can benefit from improved infrastructure and economic opportunity.

Water Infrastructure – A decade of decline

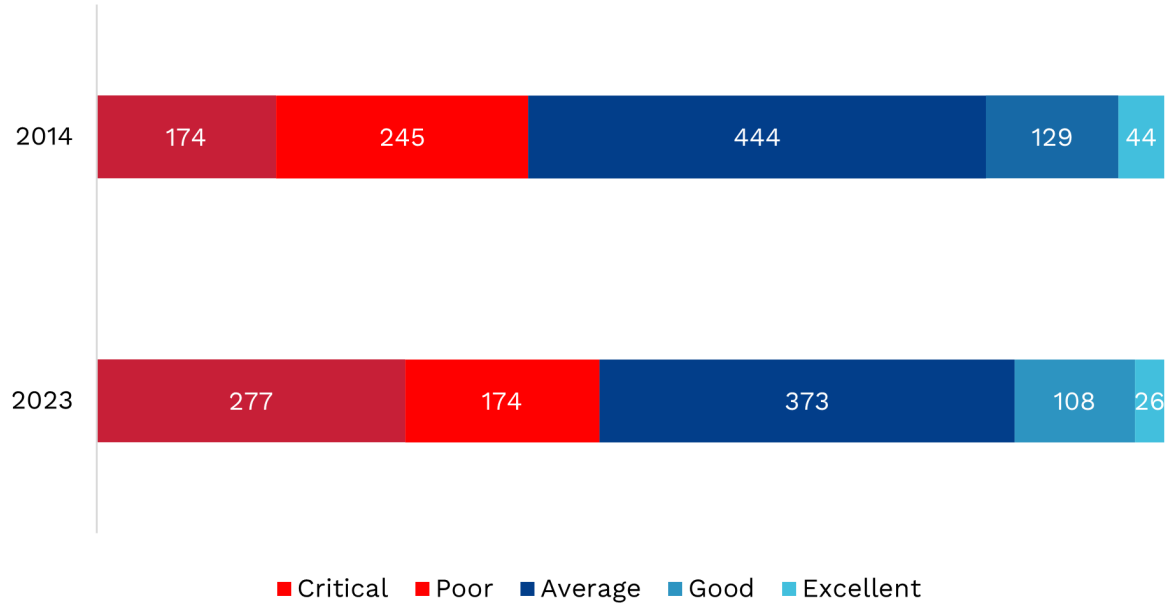
South Africa's water infrastructure faces a growing crisis, as unmaintained systems and supply chains strain water supply systems (WSSs) nationwide. This affects communities and businesses and has substantial implications for public health and economic stability.

Water outages – or "water-shedding" – pose serious risks for business and inhibit the country's growth potential. Water infrastructure failures are no longer confined to smaller towns or more rural areas; some of the richest, most densely populated cities, such as Johannesburg, are encountering more frequent water cuts. With municipalities under increased fiscal pressure – and ratepayers squeezed on all sides – new solutions to sourcing capital and investing it effectively need to be sought. The following section will explore the current state of these systems, the factors contributing to their decline, and the urgent need for sustainable solutions to ensure reliable access to safe drinking water and dependable water supply for all consumption demands.

Reality on the ground

The late Luna Leopold, a prominent American hydrologist and geomorphologist, aptly stated, "The health of our water is the principal measure of how we live on the land."[21] The 2023 *Blue Drop Report*, released by the Department of Water and Sanitation (DWS) offers an in-depth look at the current state of drinking water quality in South Africa.[22]

Figure 4: National Blue Drop scores performance categories, 2014 and 2023



Source: *Blue Drop Report*, 2023; Own illustration

Figure 4 illustrates the decline in drinking water quality over the past ten years. In 2023, nearly 30% of WSSs were classified as being in a critical state, requiring "urgent intervention for all aspects of the water service business".[23] This marks an increase of 103 WSSs, rising from 174 in 2014 to 277 in 2023. The decline in performance is further highlighted by the reduction in systems achieving Blue Drop Certification, with only 26 WSSs meeting the standard in 2023, compared to 44 in 2014.[24]

Figure 5 provides an overview of what it means for a WSS to achieve Blue Drop Certification. WSSs scoring above 95% receive Blue Drop certification – indicating excellent performance – while those scoring below 31% are classified as being in critical condition.

Figure 5: Water supply system performance categories and scores			
Categorisation			
Key	**Condition**	**Score**	**Description**
	Excellent	≥95-100%	Excellent situation, need to maintain via continued improvement.
	Good	≥80-<95%	Good performance, some room for improvement.
	Average	≥50-<80%	Average performance, ample room for improvement.
	Poor	≥31-<50%	Very poor performance, need targeted intervention towards gradual sustainable improvement.
	Critical	0-<31%	Critical state, need urgent intervention for all aspects of the water services business.

In terms of physical water infrastructure stock, on a national scale the country saw a steady increase in the proportion of households with access to piped water inside the dwelling, from 32.2% in 2001 to 59.7% in 2022.

However, this national progress masks substantial regional inequalities where many households are left vulnerable to inconsistent water supply and complete lack of access. For instance, in the Western Cape, 85.5% of households enjoy access to piped water. In stark contrast, Limpopo lags severely, with only one third of households having such access. Even more concerning, 20.5% of Limpopo households and 19.5% of Eastern Cape households have no access to piped water at all.

As South Africa's population grew by about 19.8% in a decade, from 51.7 million in 2011 to 62 million in 2022, the demand for water has naturally increased. However, despite this rising demand, per-capita water consumption has remained relatively constant, fluctuating between 191 and 218 litres per day over the last decade. While this stability in individual water use has mitigated some pressure, the rise in absolute demand due to population growth and increasing formalisation of housing, continues to strain the existing water infrastructure.

Compounding this issue is the deteriorating efficiency of the existing water infrastructure. The Infrastructure Leakage Index (ILI) has worsened from 4.0 in 2013 – indicating well-managed physical losses – to 7.0 in 2023 – indicating poorly managed physical losses. Several provinces have water losses exceeding 50%.[25]

Beyond access, the reliability of water supply is another important indicator of aging or inadequate water infrastructure. Nationally, 34.9% of households reported water interruptions .[26] However, the burden of these interruptions is not equally shared. Households in the Western Cape (3.4%) and Gauteng (22.8%) reported the lowest interruption rates, well below the national average. Conversely, rural provinces like Mpumalanga (66.9%), North West (55.9), and the Northern Cape (59.7) suffer from much higher interruption rates. [27]

There is an urgent need for increased investment in water infrastructure in rural areas. Provinces like Limpopo, the Eastern Cape, and Mpumalanga remain severely underserved.

Although access on a national scale has improved, the previously mentioned decline in water system performance, highlighted in the 2023 National Blue Drop report, combined with persistent, largely rural living conditions, exacerbates existing inequalities between rural and urban areas.[28]

Numerous cases throughout South Africa have shown communities battling for regular access to safe drinking water. One stark example is the Mafube Local Municipality, which received the lowest score in the Blue Drop Report, at just 4.3%.[29] In Mpumalanga, the Dipaleseng Local Municipality scored 7%, followed by Kamiesberg Local Municipality with 8%.[30] All three municipalities have attracted media attention due to concerns over access to safe drinking water and issues of corruption and mismanagement of water infrastructure funds.[31]

There are several factors contributing to this decline and the risks that exacerbate it.[32] Among these are non-payment of contractors, laboratories and service providers, which leads to equipment failures, dysfunctional pumping and treatment infrastructure, and disrupts the provision of essential services.[33] Vandalism and theft of electric cables, equipment and civil structures further degrade infrastructure.[34] Several WSSs are operating beyond their design capacity, and numerous WSSs have not undergone necessary infrastructure upgrades, extensions and refurbishments. The situation is compounded by the presence of boreholes that are not operational, and the lack of flow monitoring.[35]

Furthermore, the technical and management capacity, as well as the competency of managers, superintendents, process controllers, engineers, technicians, technologists and scientists vary significantly. This inconsistency often means that institutions do not have access to professionals with the appropriate skills, which exacerbates the challenges in ensuring and maintaining water quality.[36]

As a result, these disparities contribute to drinking water non-compliance and the failure to notify water users of non-compliant water quality, which poses serious health risks.[37]

Currently, 45% of municipalities cannot provide the most basic information, often including monthly consumption figures. If the problems of service delivery and water losses are to be resolved at all, the problem must first be understood – regular and accurate data is key. For this, communication should be more formal and avoid duplication.

Resolving many of these problems involves additional budget, skills and capacity, acutely so in small and rural municipalities where the large number of boreholes and indigent consumer bases make it much more difficult to accurately measure supply and consumption. Given that these municipalities make up around 25.3% of the total water use and 31.9% of the population, the GNU can achieve significant, immediate gains by prioritising improvements in these municipalities.[38]

It is evident that South Africa's water infrastructure is under great pressure.[39] The lack of safe, reliable water poses a great threat to the economy and food security. The escalating water troubles South Africa's largest poultry producer, Astral Foods, has experienced over a number of years at its plant in the Lekwa municipality is a case in point.[40]

After apartheid ended in 1994, South Africa experienced substantial growth in formal housing as part of efforts to improve living conditions, improving from 64% in 1996 to 83.2% in 2022.[41] However, this is in support of the argument made by Katy Eales, an independent consultant and researcher, in 2011 that the South African government has worked hard to ensure everyone has access to water and sanitation; the local government restructuring process has led to rapid infrastructure expansion, but the development of the institutions needed to manage these services has lagged behind.[42]

The government introduced policy changes, restructured institutions and invested heavily in building infrastructure. However, while expanding access to water is relatively easy, maintaining and running these services reliably is much more challenging.[43] The latter requires effective management and operation, maintenance, revenue collection, and building good relationships with communities.

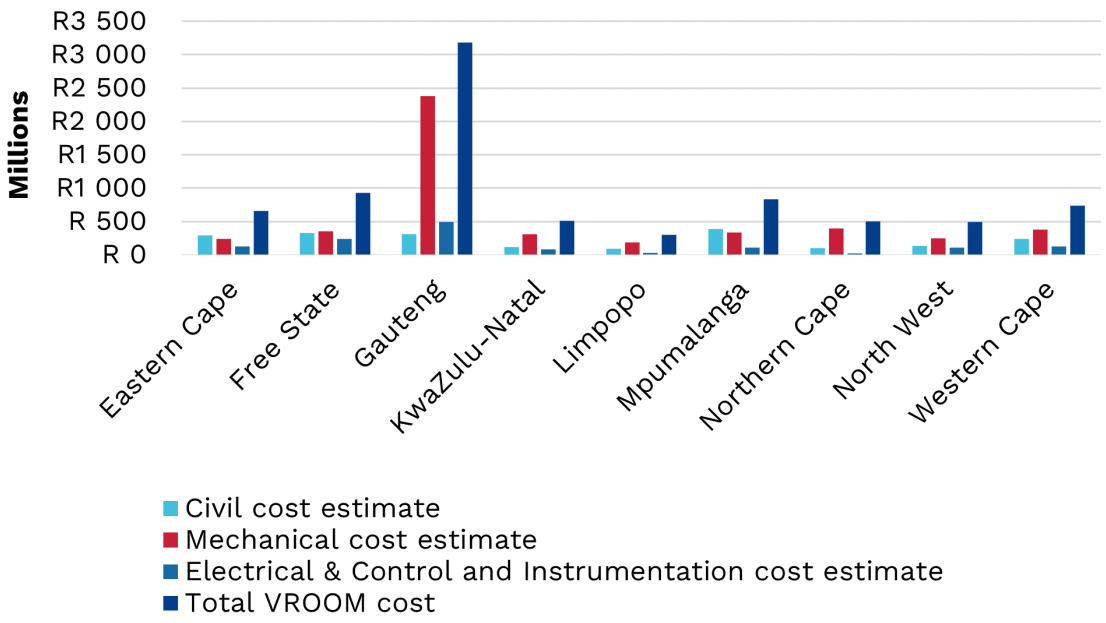
Where to from here?

The 2019 National Water and Sanitation Master Plan estimates that the country faces repair and upgrade backlogs of approximately R25bn for municipal water infrastructure and around R322bn for wastewater infrastructure.[44] The 2022 Green Drop report estimates that restoring the wastewater treatment works (WWTWs) nationwide will require a budget of roughly R8.14bn and that all Water Service Authorities will collectively require R1.55bn annually to maintain their assets.[45]

The restoration of mechanical and civil infrastructure represents a significant portion of the total costs for WWTWs upgrades. Mechanical infrastructure restoration accounts for about 59% of the total estimated costs, while civil infrastructure restoration makes up about 25%.[46]

Figure 6 indicates that Gauteng has the highest restoration cost at about R3.18bn, with the Free State and Mpumalanga needing approximately R929m and R833m, respectively.[47]

Figure 6: Very Rough Order of Measurement (VROOM)[48]



Source: Green Drop Report, 2022; Own illustration

The 2022/23 Medium Term Revenue and Expenditure Framework allocated a capital budget of approximately R23.31bn for the period from 2022 to 2025 to satisfy infrastructure needs, including requirements identified by the VROOM index for upgrading wastewater treatment works.

There are substantial financial demands in getting the country's infrastructure networks back on track. The government alone cannot fund and manage the restoration and expansion of these systems. It faces budget constraints, competing priorities and limited technical expertise, which make it ever more difficult to handle the extensive maintenance and expansion needs of the country's infrastructure effectively.[49] To turn around the deterioration of the infrastructure network, local municipalities and national government need to collaborate proactively with the private sector.

The government needs assistance and the opportunity for collaboration exists. The DWS, for example, recognised this and recently encouraged municipalities to seek partnerships with private sector counterparts.[50]

The director-general of the DWS, Sean Philips, highlighted that metros and municipalities struggle to secure funds for maintenance and repairs. In a July 2024 media briefing, Mr Philips announced the establishment of a water partnership office fund in collaboration with the SA Local Government Association (SALGA) and Development Bank of Southern Africa (DBSA).

This office has the mandate to provide funds to municipalities to facilitate partnerships with the private sector.[51]

As a result of various local and national government entities recognising the need to collaborate with the private sector, at the time of the 2024 national budget, 15 projects were at the inception phase, 19 projects at the feasibility study phase, six have completed the feasibility studies, and 10 projects were starting the procurement process.

In the 2024 budget review, National Treasury noted that an infrastructure finance and implementation support agency would be established over the course of the 2024/25 financial year, to coordinate the planning and preparation of large projects and to engage directly with private financial institutions.[52]

Public-private partnerships (PPPs) open various market opportunities for collaboration between companies and government entities to improve water infrastructure.[53] These partnerships can help resolve critical needs such as repairing, refurbishing, replacing, maintaining and expanding systems.[54] Additionally, in the water sector, there is potential for turning wastewater sludge into useful products like biogas and fertilisers.[55] This process, called wastewater sludge beneficiation, creates opportunities for agreements between the private and public sectors to handle, transport and use these materials as inputs in other production chains.

Furthermore, the implementation of energy-efficient and renewable technologies in WWTWs presents various market opportunities related to the supply, installation and operation of these technologies.[56]

In cases where municipalities or the government need to improve service efficiency without relinquishing control over their assets, the “affermage” or lease agreement model allows the public sector to retain ownership of the infrastructure while outsourcing day-to-day operations to the private sector. Private entities are contracted to manage daily operations, conduct maintenance and protect the water supply system – these entities do not own the infrastructure but are responsible for its efficient management. The public and private counterparts would negotiate a contract outlining the scope of work, duration of the agreement and the performance metrics that will determine the compensation structure. Private entities are compensated based on performance metrics, such as service reliability, water quality and customer satisfaction. This performance-based compensation incentivises the private partner(s) to maintain high standards and deliver quality service.

South African Water Works (SAWW), a private company that manages water concessions in KwaZulu-Natal and Mpumalanga, exemplifies the success of public-private collaboration in a lease agreement model. SAWW manages Siza Water (RF) (Pty) Ltd. and Silulumanzi (RF) (Pty) Ltd., two water service providers, and serves as an example of the potential of collaborative efforts in the water sector.

Both service providers began operation in 1999 under 30-year agreements to service the Ballito (Ilembe District Municipality) and City of Mbombela municipalities, respectively.

Siza Water is involved in construction, maintenance, billing and debt collection, and other operational activities.

One of its standout achievements is the construction and operation of a direct water reuse plant that produces three million litres of potable water daily. This success resulted in Siza Water being rated the third-best water service provider in South Africa in 2023. Silulumanzi, meanwhile, supplies 120m litres of safe drinking water to 400,000 consumers daily and is the only service provider in Mpumalanga to received Blue Drop certification in 2023. These accomplishments underline how PPPs can effectively improve water infrastructure and service delivery to benefit the communities. They set a high standard for public and private sector cooperation.

To alleviate the current burden on the water infrastructure network and reverse the negative effect it has on the quality of drinking water, we recommend:

- Improve municipal asset management. This includes establishing the most suitable PPP model to fulfil the needs of municipalities and the national water infrastructure network.
- Implement a targeted skills development program to address inconsistency in technical and management capacity. Standardise training across all levels of management to ensure that all personnel meet minimum competency standards. Mandate continuous professional development. Academic institutions and private sector experts can fulfil this role. This will ensure personnel stay updated with the latest industry standards, technologies and best practices, and foster a culture of excellence and accountability.
- Give local water management teams greater autonomy, both in terms of decision-making and in hiring. When coupled with targeted training, this will enable personnel to tailor solutions specific to local problems and priorities.
- Streamline communication channels between government departments and municipalities, and simplify data capturing mechanisms.
- Prioritise water loss and Non-Revenue Water management.
- Prioritise investment in water infrastructure in rural areas.

In the context of a national government under pressure from rising expectations and tight finances, and numerous municipalities under similar pressures, there are ample opportunities for businesses, working with communities and local government, to prioritise and invest in water infrastructure maintenance, expansion, and upgrading. Given the country's water-scarce status, the adequate management of available water resources is crucial for future job creation and growth prospects.

Electricity – Two decades of darkness

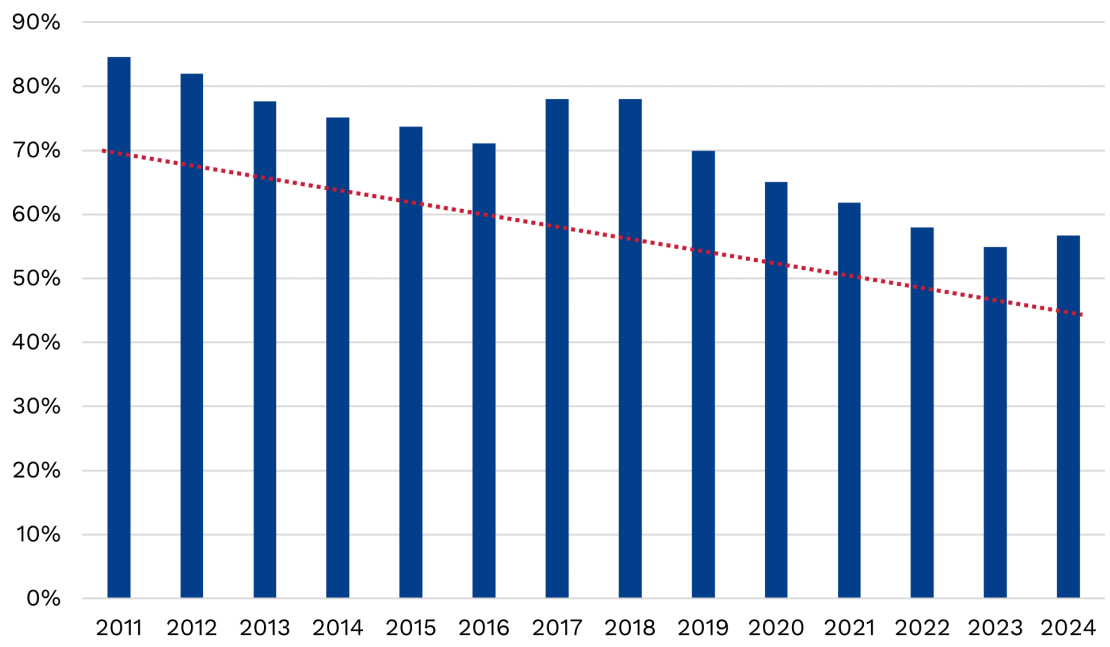
A stable supply of power is essential to the operation of a modern economy. Historically, competitively priced electricity was an important economic advantage of South Africa's. For the past 15 years, the steady supply of electricity has not been guaranteed. In a rare instance of consensus, South Africa's power crisis is acknowledged to impose a hard limit on economic prospects.

Reality on the ground

South Africa has experienced close to two decades of loadshedding (2008 – 2024, with "load limiting" or "load management" implemented in some areas during 2023 and 2024). The origins of this crisis need not be explored here, but it is worth noting that South Africa has singularly failed to deal with it over this prolonged period. Ricardo Hausmann, a development economist at Harvard University and former planning minister of Venezuela, notes that this is exceptional globally: no other country that has experienced power shortages has seen them persist for so long, a situation that speaks to the failure of political mechanisms to drive a solution.[57]

The state of South Africa's electricity supply system is captured in its Energy Availability Factor (EAF), which expresses the share of installed generation capacity available to produce power. It is a measure that takes account of energy losses, both those resulting from planned maintenance and those resulting from equipment failure.

Figure 7: Energy Availability Factor, 2011 – 2024



Source: Eskom Weekly Status System Reports; Own illustration

The decline is apparent from figure 7, though it is important to understand the data behind it. In 1999, the EAF stood at 91%.[58] When the first rounds of the power crisis hit, in 2007/08, the EAF was at a still respectable 84.8%. In 2012/13, it dipped below 80%, and in 2018/19, below 70%. In 2022/23, it sat at a dismal 56%. In other words, over the course of this period, South Africa's EAF has fallen by a staggering 35 percentage points.

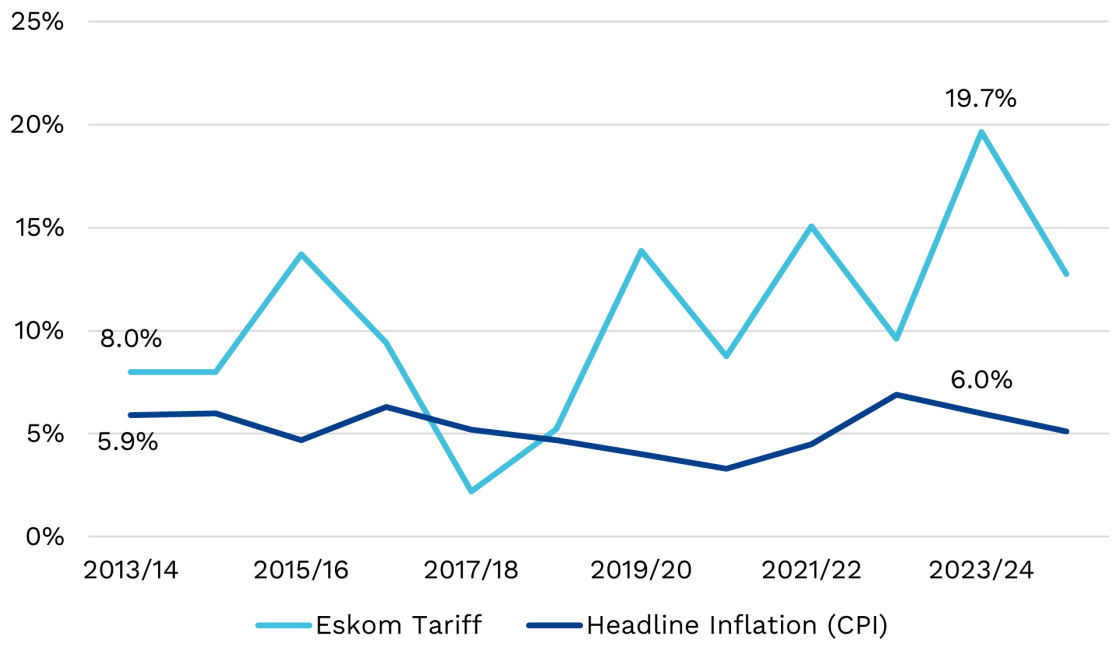
In brief, the decline in the EAF – or the electricity supply system more broadly – can be ascribed to the combined effects of decisions made and paths taken. The initial crisis arose from a failure to invest in generation capacity. By the time new power stations had been commissioned, damaging shortages had become part of life. Over time, failing to conduct necessary maintenance could temporarily delay episodes of loadshedding, but ensured that in the future, plant failures would be more severe. This has now become a recurrent concern.[59]

Eskom was further used to promote goals other than power provision, notably to advance the government's empowerment agenda through procurement – it also became a central site of corrupt extraction. Indeed, the construction of new power stations at Medupi and Kusile was mired in controversy for the benefits accruing to the ruling party and its cronies, and for their design flaws.[60] In addition, there was a longstanding reluctance, probably ideological, to countenance the private provision of electricity. It was only in 2021 that the private sector was permitted to operate generating facilities of up to 100 megawatts (MW), a cap that was scrapped the following year.

On top of this, as figure 8 depicts, electricity tariffs have been rising at a rate far above that of inflation, so not only is power less readily available but it is also more expensive. In 2022, Sean Moolman, chief operating officer at Power Optimal, noted the following on overall average increases:[61]

> In the period from 1988 up to the 2008 electricity crisis, electricity tariff increases did not keep tread with inflation. This was partly due to government policy to keep electricity tariffs as low as possible for poor communities, but also due to Eskom having an oversupply of electricity (in the 1990s) and not investing in new capacity (in the 2000s). Between 1988 and 2007, electricity tariffs increased by 223%, whilst inflation over this period was 335%. From the 2008 electricity crisis onwards, there is a clear and sharp inflection point for electricity tariffs in South Africa. From 2007 to 2022, electricity tariffs increased by 653%, whilst inflation over this period was 129%. Thus, electricity tariffs increased four-fold (or quadrupled) in real money terms in 14 years.

Figure 8: Eskom tariffs vs. headline inflation (Consumer Price Index [CPI]), 2013-2024



Source: Statistics South Africa (Stats SA), CPI Headline (P0141), 2024;[62] Eskom Integrated Report, 2013-2023; Own illustration

The impact of this has been dire. A study by Nova Economics for Eskom Holdings in 2020 attempted to estimate the cost of loadshedding between 2007 and 2019. Their report commented:[63]

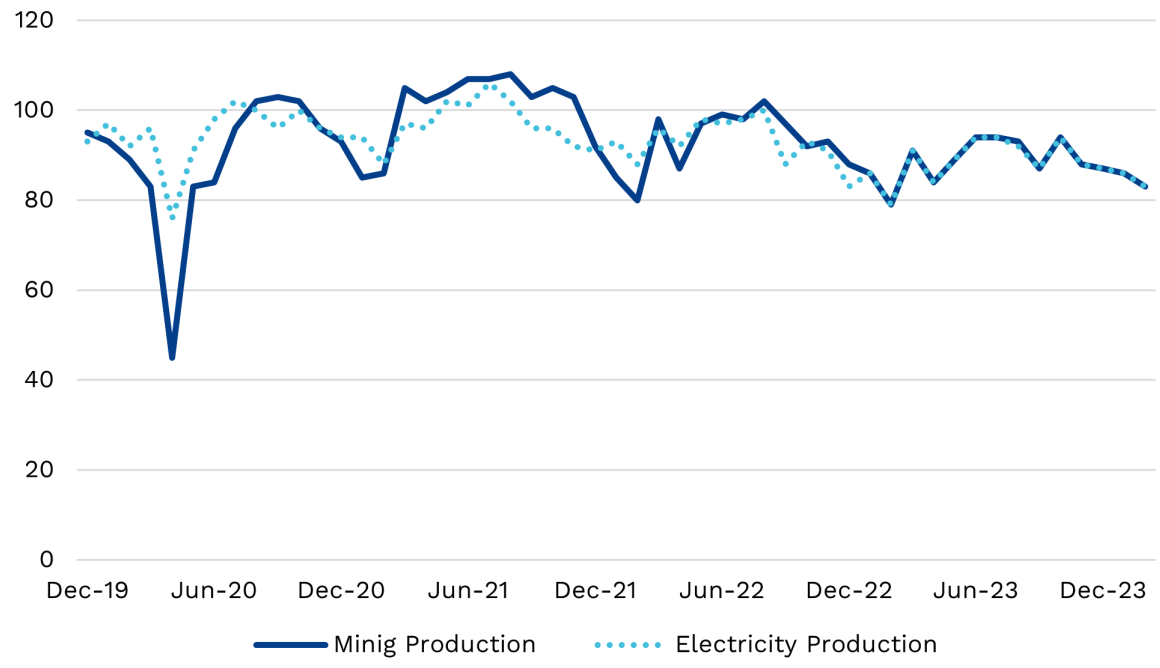
> We have estimated that loadshedding cost the South African economy nearly R35bn in the 12 years between 2007 and 2019. Had all the loadshedding experienced over the period taken place in a single quarter in 2019, it would have resulted in a 5% contraction real q/q GDP growth. To put this into perspective the total cost of loadshedding at R35bn is roughly equivalent to the impact the 2008/09 financial crisis had on GDP growth.

A 2023 review by the South African Reserve Bank (SARB) estimated that the effect of loadshedding the previous year had reduced GDP growth by between 0.7 and 3.2 percentage points, and noted that other institutions had put this at between 0.4 and 4.2 percentage points.[64] Earlier in the year, the SARB has estimated the daily cost of the power crisis — at the time, cutting power for between six and twelve hours a day — was costing the economy between R204 million and R899 million a day.[65]

This has been felt on individual sectors. In mining, an analysis by Nedbank put forward a basic equation of a 2% decrease in annual mining output for every 1,000 gigawatt hours (GWh) of loadshedding. Escalating electricity costs were altering the cost structure of the industry and now accounted for 10% to 15% of the costs of mining operations.[66]

The 2023 annual overview of the Minerals Council South Africa, an association representing the interests of the mining industry, repeatedly highlights the constraint to the industry that the electricity crisis represents.[67] Hugo Pienaar, chief economist at the Minerals Council, has explained this visually with a graph (figure 9) linking mining output to that of electricity. The trends line up closely.[68]

Figure 9: How electricity production is affecting mining production



Source: Minerals Council, Facts and Figures Pocketbook 2023; Own illustration

For the agricultural sector, the electricity crisis strikes at on-farm production — crops and livestock — as well as on the broader population. Electricity is essential to power modern agriculture. For example, in South Africa's often dry conditions, irrigation is necessary — some 20% of maize, 34% of sugarcane and around half of wheat is produced under irrigation.[69] Irrigation systems require power. Indeed, there are darkly amusing anecdotes of farmers having to drive out to their fields in the dead of night to switch pivots back on.[70] In the livestock economy, power is necessary to run chicken breeding and dairy operations, for example. Where power fails, farming of this nature cannot be done, as chickens literally die, and cows cannot be milked, and the milk cannot be stored.

As Agri SA argued in 2022:[71]

> Electricity is central to modern farming practices and the recent increase in load-shedding has seriously disrupted farming operations. Pumping stations, irrigation, cooling and other systems all depend on power supply. While some farmers have the means to move away from the power grid, most are unable to do so. This is especially true for the most vulnerable small-scale farmers. Farmers forfeit their water quotas for irrigation purposes when the power is off — an irrecoverable loss that paralyses farms.

Downstream activities are also vulnerable. These include such activities as milling and baking, and the cold storage facilities that are required for moving perishable products from farm to market.

This is imposing considerable costs on the agricultural sector, most notably by requiring expensive investments in generators to complement the compromised electricity system, and sizeable outlays for diesel to power them. This comes at the expense of investment in expansion and innovation.[72]

Associated with the economic costs of loadshedding has been the destruction of employment. Towards the end of 2023, Kgosientsho Ramokgopa, the electricity minister, said in an address to power station employees that 640,000 people had lost their jobs in 2022 as a result of loadshedding and that a further 800,000 could be lost in that year.[73]

The challenges posed by loadshedding also impacts specific sectors such as food production. RCL Foods, a prominent player in the food industry, witnessed a substantial 19% increase in diesel usage between the 2022 and 2023 financial years directly attributed to loadshedding. This surge in diesel consumption has led to higher operational costs, which retailers have passed on to consumers.

Tiger Brands, another major player, highlighted in its 2023 Annual Report the staggering impact of loadshedding costs, amounting to a hefty R126 million. This financial strain notably affected its bakery business, particularly in the production of staple items like bread. Similarly, Libstar, another significant food manufacturer, reported that the expenditure on diesel in the first six months of 2023 surpassed the total expenditure for the entire 2022 financial year.[74]

The South Africa Institute of Chartered Accountants compiled data on diesel costs incurred by leading retailers during their 2023 financial year due to loadshedding. The Shoprite Group incurred costs amounting to R1.3bn, the Spar Group faced R1bn in costs, Pick n Pay spent R522 million and Woolworth Foods incurred R300 million.[75]

Notably, Shoprite, Africa's largest retailer, emerged with the highest diesel expense among its peers. This observation underscores the significant financial burden that loadshedding imposes on retailers, especially those with extensive operational footprints. Given the scale of these expenses, retailers cannot absorb them entirely. Consequently, the costs are passed on to consumers in some form or another. Such a scenario manifests through price adjustments across various products and services offered by these retailers.

However, it is noteworthy that, at the time of writing, South Africa has experienced 170 consecutive days without loadshedding.[76]

Although this is mostly due to improved management of the coal fleet and fewer equipment breakdowns, other factors also play an important role. The overall weak state of the economy has reduced the demand for electricity.[77] Additionally, the rising cost of electricity has further supressed demand, as both businesses and households have been cutting back on electricity usage to manage their expenses.[78]

Another, perhaps more obvious factor, is the growing urgency among South Africans to become self-sufficient in their energy needs.[79] This includes the widespread installation of rooftop solar panels and switching to using gas for cooking, solar-powered hot water geysers, and investing in energy-efficient appliances. All these measures have collectively reduced the demand for electricity from the national grid.

However, it is very important to recognise that many of the trends outlined above portend Eskom's descent into a "death spiral."[80] The decline in sales volumes Eskom experiences as electricity prices increase and reliance on the grid decreases forces the utility to raise prices even further to cover its fixed costs and compensate the decline in revenue from lower sales volumes.

To keep the lights on and extend the run of the loadshedding-free period, electricity infrastructure investments must be made a priority. The current improvement in Eskom's capacity to generate electricity should not give rise to complacency. Instead, it is important to acknowledge the birth of the electricity market as a catalyst for the restructuring of the electricity sector in South Africa.

Where to from here?

The GNU should take decisive action to provide South Africans with affordable, reliable electricity.[81] The first step is to remove bureaucratic regulations that slow down the generation process and increase the cost of producing electricity through either Eskom or independent power producers.

The GNU must use an unbiased approach to energy sources that selects the most practical and suitable options based on the specific needs and circumstances. Renewable sources like solar and wind can be deployed quickly and in smaller, decentralised batches. However, to work at scale they require costly investments in grid expansion and electricity storage, as well as grid backup. Similarly, nuclear power is promising but currently too expensive and time-consuming to implement. Small modular reactors could be a future option but are still about a decade away.

For this reason, the current focus should be on using the existing coal fleet capacity, supplemented with natural gas. If the plants are properly maintained and operated, they can produce large quantities of dispatchable power at a low cost.

After over a decade of economic stagnation, the South African government must focus on supplying the economy with sufficient affordable electricity to support economic growth. This is also imperative to support democratic consolidation in the medium term, which is in jeopardy if the economy does not grow. Rather than getting caught up in debates over specific energy sources and the ideological convictions that support each, priority should be given to quickly cutting costs and guaranteeing uninterrupted electricity.

To this end:

- Remove bureaucratic regulations that slow down generation and drive up cost.
- Ramp up private power generation quickly. Allow private producers to sell electricity to the grid.
- Separate Eskom into three parts: generation, transmission and distribution. Privatise generation – the goal is to create competition between Eskom's generation assets and independent power producers. Keep the transmission section state-owned and let it manage the grid to balance national supply and demand, control grid access, and create a level playing field for power producers. Distribution should be handled by a mix of municipal and private entities, depending on the area. This will allow for flexibility to ensure that the most suitable option is chosen based on local circumstances.
- Allow all power producers, whether private or public, the freedom to hire staff and handle procurement independently, free from race targets and political interference. Producing affordable, reliable power must be their primary priority.
- Prioritise payment collection. Expand the use of prepaid electricity meters to allow for consumers to pay in advance and manage their consumption better. Crack down on illegal connections and bypassed meters.
- Seek exemptions from strict green mandates to avoid the high costs involved in transitioning prematurely from coal to renewables.

Restructuring the electricity sector is by no means a silver bullet. But being able to switch on the light with confidence will at the very least prevent us from sitting in the dark with a ticking timebomb.

Rail, Road, and Ports

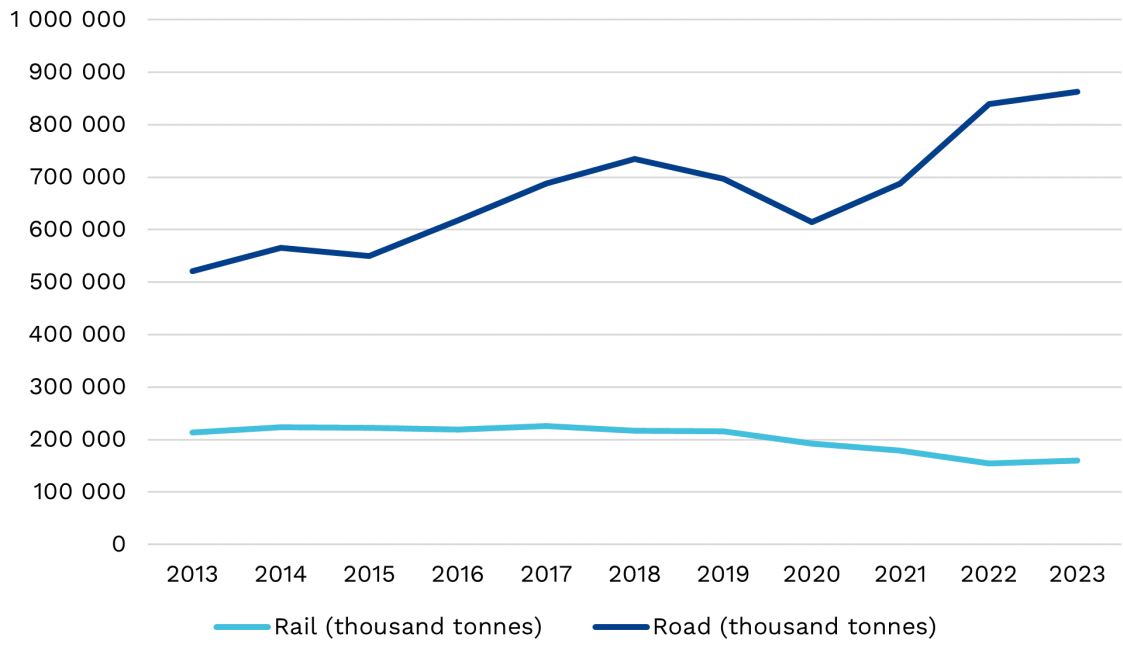
Successful economies depend on the ability to move goods, people and information quickly and efficiently. Transport forms the groundwork for development and is a fundamental component in the equation of economic growth.

Reality on road and rail

Without effective and reliable transportation and logistics networks, the economy stutters, trade falters, and economic activities can grind to a halt. This risk was evident in the estimated R50bn in potential revenue from ore exports lost in 2022 as a result of Transnet's rail issues.[82] As detailed in *SA's Transport Blues,* published in September 2023 by the Centre For Risk Analysis (CRA), Transnet shipped 226 million tonnes of goods by train in 2017.[83] By 2022, the total had declined to 154 million tonnes, a drop of over 30% in the volume of goods shipped by train over a five-year period.

Although road freight has benefitted massively from Transnet's decline, it comes at the cost of damaged roads, more traffic accidents, and higher CO2 emissions. A freight train requires less than a third of the energy to move a tonne of cargo than a truck does over the same distance.[84] Transport Blues found the road-to-rail ratio in the country at 8:1 by tonnage in 2023.[85]

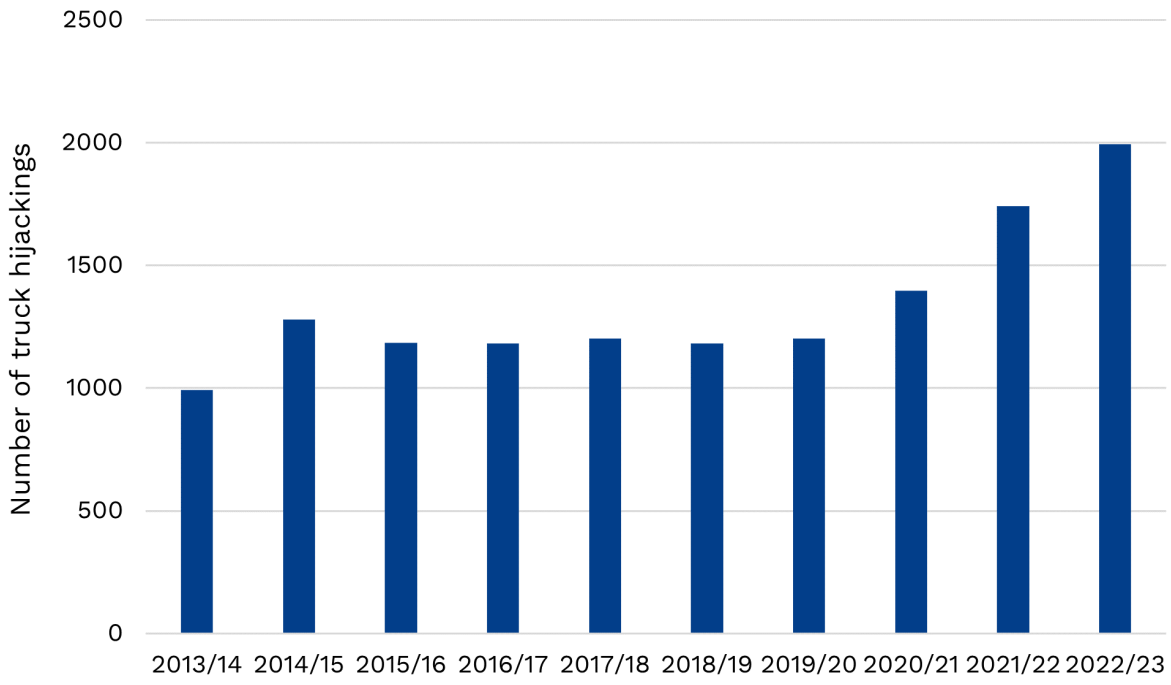
Figure 10: Rail's decline is road's gain, 2013 - 2023



Source: Stats SA, Land Transport (P7162), 2024; Own illustration

More freight being moved on the country's roads has created additional risks and costs related to fuel, equipment breakdowns and maintenance, and the safety of truck drivers, who have been exposed to repeated blockades of the vital N3 corridor between Gauteng and KwaZulu-Natal. All these factors filter into higher operating costs in logistics, influencing the future investment decisions of farmers, miners, manufacturers, and businesses across various supply chains, as well as fuelling inflation. Many of the safety-related risks become clear when examining the steadily increasing trend shown in figure 11.

Figure 11: Number of truck hijackings, 2013/14 – 2022/23



Source: South African Police Force Annual Crime Stats, 2022/2023; Own illustration

An additional factor to consider when assessing whether the country's trade infrastructure is geared towards facilitating the easier and cheaper movement of goods, materials, and services, is the fuel price — and especially, fuel levies. Since 2008, the general fuel levy has increased by 225% (to September 2023); the Road Accident Fund levy rose by 425%. While international oil prices are not within the government's power to control or dictate, what does fall within the government's ambit is how its policy, legislative, and governance decisions contribute to the strengthening or weakening of the Rand. As Makone Maja, a CRA analyst at the time, wrote in *Transport Blues*: "According to the Central Energy Fund, 80% of the rise in fuel prices in general, and 86% of diesel price increases in particular, are due to crude oil price fluctuations."

Reality at the port

South Africa's immediate attractiveness to investors is largely explained by its abundance of natural resources. However, the country's inadequate port infrastructure severely limits the ability to export these commodities, thereby inhibiting the scale and growth of industries. The economy cannot be expected to grow if the mechanisms for trade fall short – effective trade relies heavily on the efficiency of port operations and the ability to manage the complex trade requirements.[86]

Figure 12 makes a compelling case that South African ports are performing poorly, both in managing the complex trade environment and in operating efficiently. Of the 405 total international ports and facilities ranked on the World Bank and S&P Global's *2022 Container Port Performance Index (CPPI),* the Port of Gqeberha (Port Elizabeth) ranked 391st, Durban 398th and Cape Town 405th – taking the dismal last place.

Figure 12: Container Port Performance Index (CPPI)

Container Port Performance Index (CPPI)				
Year	Cape Town	Durban	Porth Elizabeth	Walvis Bay
2020 (351 ports ranked)[87]	347	351	348	336
2021 (370 ports ranked)[88]	365	364	312	328
2022 (348 ports ranked)[89]	334	341	291	293
2023 (405 ports ranked)[90]	405	398	391	380

Source: World Bank CPPI, 2020 – 2023; Own illustration

South Africa's neighbours performed better, with Mozambique's Maputo ranked 317th and Beira ranked 347th. Namibia's Walvis Bay managed 380th position.

The top two ports on the CPPI, which is "based on available empirical objective data pertaining exclusively to time expended in a vessel stay in a port", were China's Yangshan Port, followed by the Port of Salalah in Oman.

In the 2021 edition of the CPPI, which ranked 370 facilities, Cape Town was 365th and Durban 364th, with Gqeberha the highest in South Africa at 312th. That the country's ports continued to perform so poorly two years later, without shifting much in terms of improving efficiency, indicates that not much substance is yet being seen, despite the talk of reform.

However, the South African Association of Freight Forwarders (SAAFF) argues that while vessel dwell time are indeed high, the World Bank's ranking was overly punitive. According to SAAFF the index fails to account for differences in shipping pressure and cargo-handling rates. For example, the Port of Maputo (317th) had only 87 ships visit in 2023, and the Port of Sudan (388th) only 26, with none of the vessels of a capacity greater than 5,000 Twenty-foot Equivalent Units (TEU).[91] Cape Town and Durban had 196 and 499 visits respectively, by vessels with a capacity of 8,501 TEU to 13,500 TEU. This is a valid argument – direct comparison would be unfair.[92]

However, more importantly, regardless of whether the ranking was overly harsh, it highlights that the country is falling far short of its capacity. In May 2023, the Western Cape government published its final report, prepared by Econogistics, on transporter congestion within the Port of Cape Town's logistics chain. The report concluded that "the single biggest constraint of the supply chain is the status of the RTGs [rubber tyred gantry cranes] and other operating equipment. Only 4 of the 23 RTGs are fully operational."[93]

As of March 2024, daily operations had improved somewhat (following massive disruptions at the Cape Town and Durban ports towards the end of 2023). But the ports are nowhere near where they ought to be operationally.

The report identified several easy-to-fix issues. For example, new truck drivers at the Transnet Port Terminal sometimes do not know where to drop off containers, which causes traffic jams. Operators do not make use of written handover documents at shift changes, which cause obvious inefficiencies, and the Transnet National Ports Authority (TNPA) does not have access to the list of truckers with appointments, so they let trucks into the port haphazardly.

These issues are not unique to the Port of Cape Town. Similar problems are observed at various other ports. It is therefore not surprising that, according to Fruit SA, an industry association, claims of bad quality produce have doubled to 37% of fruit exports over seven years.[94] The main cause of this has been delays in moving South African fruit through and out of the ports to global markets.

The mining sector has been perhaps hardest hit. Provisional corporate tax collections from mining companies were down by R39.2bn (50.4%) for the first 10 months of 2023/24.[95] While lower international demand for commodities has no doubt played a role, South Africa has done remarkably well to score own goal after own goal, as inefficient railways and ports make it more difficult to move raw materials and commodities out of the country.

These ongoing delays at the ports also substantially weaken South Africa's trade position. On average, each additional day a product is delayed before shipping reduces trade by at least 1%.[96] The impact is more pronounced for time-sensitive agricultural goods, where each additional day of delay reduces a country's relative exports of such products by 7% on average.

As a point of reference, vessel dwell times at the Port of Durban average 83.2 hours at Pier 2 and 67.4 hours at Pier 1 compared to a global average of 40.5 hours.[97] Dwell time figures are a major commercial instrument used to attract and generate revenues.

Extended dwell times exacerbate congestion and lead to more idle time. Additionally, high occupancy rates reduce efficiency because increased storage density and stacking heights cause delivery delays. As dwell times lengthen, the productivity of rehandling significantly declines, especially because containers at the bottom of stacks are often scheduled for delivery first. This challenge is compounded in scenarios involving perishable goods, such as fresh meat, where regulations require veterinary inspections. Measuring the cost of congestion is notably complex.

From December 2023, companies that use South Africa's ports to move their goods and commodities out of and into the country were forced to contend with additional costs, as both the Mediterranean Shipping Company (MSC) and Maersk announced that they would charge a fee for congested vessels.[98]

MSC stated:[99]

> Due to congestion in the South African ports generating difficult conditions to operate, MSC will [as of 3 December 2023] apply a CGS [congestion surcharge] for cargo to all South African ports to maintain our services provided.

In terms of concrete amounts, this means an estimated R3,850 per shipping container due to congestion. The continued delays at the country's ports manifest negative effects time after time, increasing businesses' operating costs, raising the costs of goods and services, and limiting South Africa's international trade appeal.

Lower export volumes depress government revenue, compromising the scope for spending and creating added pressure, for example, on public sector wage negotiations and social welfare programmes.

Congestion at the ports, coupled with the inordinately long time taken to resolve at least some of the relevant pain points, impacts negatively across various supply and value chains throughout the economy.

The Minerals Council estimated that R150bn worth of exports were lost in 2022. It arrived at the figure by comparing the actual shipments transported to what could have been transported had the rail lines and ports been operating at full capacity.

Unless these inefficiencies are addressed, costs will remain higher than they should be, in turn reducing South Africa's competitiveness. All the revenue lost due to port issues could have been invested back into various sectors — with agriculture arguably losing out the most in terms of lost revenue, and fewer job opportunities created.

Where to from here?

Reducing trading time by just one day has the same effect as physically moving trading partners 85 kilometres closer.[100] Improving operational efficiency can thus be just as valuable as building additional infrastructure. Given its low trade efficiency, South Africa should focus on accelerating processing times, rather than just adding more rail, road and port infrastructure.

The initial step in restoring the transportation infrastructure (rail, road, and ports) involves identifying the appropriate provider. It is generally more effective to rely on public entities for the provision of so-called "public goods". These are goods and services that are non-rivalrous – if one person uses the good, it doesn't reduce how much others can use it – and non-excludable – it's difficult or impossible to stop people from using the good even if they don't pay for it. Such goods are made available to all members of a society, are typically managed by governments and funded through taxes. Examples include an urban road, national defence, a park or law enforcement. However, there is often disagreement over what should be a public good and what should be a private good, which is used only by the people who can pay for it.

Private actors face inherent limitations in supplying public goods. Given that there is incentive for potential users to understate their demand, and still benefit from others paying for the service – so-called free riders – it becomes difficult to determine accurate equilibrium market prices. As a result of this limitation, private providers tend to either over- or undersupply public goods.

Coming to South Africa's rail infrastructure, ideally Transnet should be responsible for managing and improving it. This is because port authorities and container terminal operators generally have an incentive to improve efficiency to attract more cargo while many private actors involved in ports have contrary incentives. For instance, customs brokers, owners of container depots, and shippers may not want to reduce dwell times because they benefit financially from using the ports as a storage facility. Delays primarily burden the consumer, not the operators, and reducing dwell times could actually increase costs for these private actors by requiring additional resources to increase efficiency. Therefore, rather than minimising costs for the consumer, they tend to focus on maximising profits through storage fees and customs brokerage charges. Understanding this dynamic might help explain why cargo dwell times are often not being addressed.

However, Transnet is plagued by corruption and inefficiency, which makes it unlikely that it will be able to resolve the shortages in the short term. This is likely to disincentivise private sector participation because it fundamentally undermines any serious attempt at a return on investment.

For this reason, a build-own-transfer public-private partnership agreement should be implemented. Under this approach, private companies build the needed infrastructure, they secure the necessary financing and assume the financial risk associated with construction. This includes all planning, procurement and hiring of contactors. The goal is to complete the project on schedule and within budget. By involving the private sector in this manner, the public sector can reduce construction delays and cost overruns while the private partner is not burdened with concerns over long-term returns on investment beyond the construction phase. The private company owns the infrastructure only during the construction phase and for a predefined operational period, if applicable – its ownership is temporary and part of a transfer agreement. Once completed, the infrastructure is handed over to the state at a predetermined price.

However, private entities are aware that maximising long-term profits hinges on moving more cargo efficiently, rather than relying solely on temporary gains from storage fees. Therefore, an *affermage* agreement also has potential. Under this arrangement the private operator is responsible for operating and maintaining the utility but not for financing the investment. In cases where the TNPA, for example, needs to improve port efficiency without relinquishing control over its assets, this lease agreement model allows them to retain ownership while outsourcing day-to-day operations to the private sector.

To get South Africa's transportation network back-on-track, the following must be done:

- Establish a specialised railway police unit to protect rail infrastructure from theft and vandalism. Align regulations for the creation and capacitation of the police force in compliance with the Police Act.
- Set up consultation networks between key users of rail, road and port infrastructure to establish specific areas of the infrastructure that will benefit most from repairs, and which should be prioritised.
- Explore PPP opportunities that best suit local needs and priorities. The shortage of RTGs and long wait times for spare parts offer a valuable opportunity for the private sector to accelerate procurement.
- Open a transparent process to grant ownership of specific sections of the transportation networks to interested parties who will then carry out repairs and/or expansions and/or management, e.g. on a concession model. Establish a time frame and terms for the agreement, such as a 15-year period after which the government has the option to reassume ownership.[101] (The success of these recommendations depends on the transparency of the tender process.)
- Improve communication networks between stakeholders and operators. Better communication and transparency can help mitigate the impact of unplanned events such as severe weather. Other aspects of communication, including handwritten handover documents between shifts and readily available lists of delivery/collection schedules, will further improve dwell times.
- Set up regular meetings with trucker associations, freight forwarders and industry representatives that focus on improving container and truck management. This will ensure that issues are continuously identified and quickly resolved.

- Digitalise (and standardise) all management of containers between the port and packing houses. This will help track containers and limit traffic bottlenecks.

The government is already taking steps to implement some of these recommendations. On September 6th, 2023, the then Minister of Home Affairs, Aaron Motsoaledi, announced a Request for Proposals for the redevelopment of six priority land ports of entry: Beitbridge, Lebombo, Maseru Bridge, Kopfontein, Ficksburg, and Oshoek. Potential bidders conducted site visits to assess the infrastructure and to establish how to improve the movement of people and goods through these ports. The six Priority Ports of Entry project, if implemented, will involve full infrastructure development, carried out in phases, including building and upgrading facilities, and providing services to support the operations of the Border Management Authority and affiliated organisations.[102] This PPP initiative will ensure projects are affordable and that they provide value for money.

Additionally, the National Logistics Crisis Committee, established in June 2023 in response to the ongoing poor performance of the ports, has made progress in reducing average queue length at border posts. The queue length at the Lebombo border post in Mpumalanga decreased from 16km in October and November 2023, to 7km in February 2024 and 3km in April 2024.[103]

A more capable and trade-friendly infrastructure network benefits all South Africans by creating a positive cycle of growth. It means that people can reliably get to work, trucks and trains can run without delays, exports increase as port efficiency improves, and industries can grow. Every South African, from workers to businesses and government, can then reap the reward of economic growth.

Conclusion

The importance of infrastructure cannot be overstated. South Africa aspires to higher levels of economic growth, job creation, and quality of life for all its people. Getting the basics right is the first step to achieving that.

What are these basics? When it comes to infrastructure, the required outcomes are easy enough to describe. Turning on a tap and having clean water; flicking a switch and knowing the lights will come on; driving on well-maintained roads; transporting goods on rail or road and finding both options available; encountering quick and seamless import and export processes; or simply sitting at a fully charged laptop, writing about the water, electricity, rail and road, and port reforms South Africa needs. These things are not particularly remarkable, and it is only when they fail that they become the centre of attention.

That South Africa's infrastructure stock has declined is clear to see. It affects businesses across the board, especially those that are smaller and lacking the resources to "state-proof" themselves as larger corporates might be able to do.

When the avenues available for the movement of goods and people become more expensive, the economic growth potential of the country is inhibited. Over time, the average quality of life declines.

For this reason, we must understand which aspect of the country's infrastructure demand immediate attention. To resolve these issues and rehabilitate the economy, we urge that the following recommendations be adopted and set in motion:

Water infrastructure:

- Open transparent PPP procurement systems;
- Improve municipal asset management;
- Implement a targeted skills development program;
- Give local water management teams greater autonomy;
- Streamline communication channels and data capturing mechanisms;
- Prioritise water loss and Non-Revenue Water management;
- And prioritise investment in water infrastructure in rural areas.

Electricity infrastructure:

- Remove bureaucratic regulations that slow down generation and drive up costs;
- Ramp up private power generation;
- Separate Eskom into generation, transmission and distribution entities;
- Remove race-based procurement and hiring policies;
- Prioritise payment collection;
- And secure exemptions from costly green mandates.

Ports, rail and road infrastructure:

- Establish a specialised railway police unit;
- Set up consultation networks;
- Open transparent PPP procurement systems;
- Improve communication networks between stakeholders and operators;
- Set up regular meetings that focus on improving container and truck management;
- And digitalise and standardise all management and logistics.

If the GNU is serious about getting the economy growing and improving the quality of life of all South Africans, it must address the infrastructure problems described throughout this paper. By following some of the recommendations listed above, South Africa's infrastructure networks can be rehabilitated. The entire country will shift onto a higher growth track, with incalculable benefits for the people of South Africa and the broader region – it's time to build the future, not just talk about it.

Endnotes

Elements of this paper draws from previous work done by the Institute of Race Relations (IRR) and Centre for Risk Analysis (CRA); Hattingh, C., Corrigan, T., Keeve, A., Lorimer, N. & Middelberg, C. (2024). Perfecting the Own Goal: South Africa's trade infrastructure and policy space in 2024. Available at: https://amiesa.co.za/wp-content/uploads/2024/04/Trade_paper.pdf

1. World Economics. Available at: https://www.worldeconomics.com/GrossDomesticProduct/Real-GDP-Per-Capita-PPP/South%20Africa.aspx
2. Endres, J. (2023). Institute of Race Relations (IRR) growth strategy. IRR. Available at: https://irr.org.za/reports/occasional-reports/files/irr-growth-strategy-2023.pdf
3. Ibid., 1
4. Bisseker, C. (2024). "South Africa at 30: An exercise in wasted potential." BusinessLive. Available at: businesslive.co.za/2024-04-25-south-africa-at-30-an-exercise-in-wasted-potential
5. Jacobs, S. (2024). 20% of your tax is used to pay government tax. Daily Investor. Available at: dailyinvestor.com/20-of-your-tax-is-used-to-pay-government-debt
6. National Development Plan 2030. (2012). Available at: https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf
7. National Treasury. (2023). Public-sector infrastructure and Public-private partnerships update. Budget Review, Annexure D. Available at: https://www.treasury.gov.za/documents/national%20budget/2023/review/Annexure%20D.pdf
8. 2024/25: 3.99%; 2025/26: 4.07%; 2026/27: 3.85%; National Treasury. (2024). 2024 Budget Review. National Treasury, Annexure D, Table D.1, p147. Available at: https://www.treasury.gov.za/documents/national%20budget/2024/review/FullBR.pdf; Own calculations.
9. Ibid., 155
10. Endres, J. (2023). IRR growth strategy. IRR. Available at: https://irr.org.za/reports/occasional-reports/files/irr-growth-strategy-2023.pdf
11. Straub, S. (2008). Infrastructure and growth in developing countries: Recent advances and research challenges. The World Bank, Policy Research Working Paper No. 4460. Available at: https://documents1.worldbank.org/curated/en/349701468138569134/pdf/wps4460.pdf
12. In a standard production function where factors complement each other, an increase in the stock of infrastructure will increase the productivity of the other factors. However, it is important to note that the source of finance for new infrastructure projects or maintenance of the existing stock, along with various exogenous factors, can lead to adverse effects. Diagram 1 illustrates the expected effects for a standard production function under the condition of ceteris paribus (all other things remaining equal).
13. Straub, S. (2008). Infrastructure and growth in developing countries: Recent advances and research challenges. The World Bank, Policy Research Working Paper No. 4460. Available at: World Bank Policy Research Working Paper 4460
14. Van Greunen, C. and Ebrahim. Y. (2020). "Transportation Economics." In Engelbrecht, W. and Ramgovind, P. (eds), Transportation Management: A Southern African Perspective, pp205-226. Pretoria: Van Schaik Publishers.
15. Krugman, P. (1991). Increasing returns and economic geography. Journal of Political Economy, 99(31): 483-499. Available at: https://pr.princeton.edu/pictures/g-k/krugman/krugman-increasing_returns_1991.pdf
16. Baldwin, R. and Martin, P. (2003). Agglomeration and Regional Growth. Handbook of regional and urban economics, 4(3,960): 2,671-2,711. DOI: 10.1016/S1574-0080(04)80017-8
17. This is based on the principle that encouraging innovative activities boosts the creation of new ideas and products, which in turn attracts investment and drives further economic and technological growth; Kychko, I. and Panchenko, M. (2022). Innovative infrastructure management in the context of stimulating the development of innovation and investment potential in Ukraine. Economic scope. DOI: 10.32782/2224-6282/177-7
18. Krugman, P. (1991). Increasing returns and economic geography. Journal of Political Economy, 99(31): 483-499. Available at: https://pr.princeton.edu/pictures/g-k/krugman/krugman-increasing_returns_1991.pdf
19. Ibid., 487
20. Ibid., 484,485
21. Meine, C. (2004). Correction Lines: Essays on Land, Leopold, and Conservation. Washington DC: Island Press.
22. Blue Drop Report. (2023). Department of Water and Sanitation (DWS). Available at: https://ws.dws.gov.za/IRIS/releases/BDN_2023_Report.pdf

23. Ibid., 20
24. Ibid.
25. Department of Water and Sanitation (DWS). (2023). The Status of Water Losses, Non-revenue Water & Water Use Efficiency in South African Municipalities. DWS, viii. Available at: https://ws.dws.gov.za/IRIS/releases/NDBM_2023_Report.pdf
26. Interruptions lasting at least 2 days; Stats SA. (2023). GHS, 2023, Statistical Release P0318, Figure 9.5, p34
27. Ibid.
28. Mnisi, N. (2020). Water scarcity in South Africa: A result of physical or economic factors? Helen Suzman Foundation. Available at: hsf.org.za/publications/water-scarcity-in-south-africa-a-result-of-physical-or-economic-factors
29. Blue Drop Report. (2023). DWS. Available at: https://ws.dws.gov.za/IRIS/releases/BDN_2023_Report.pdf
30. Ibid., 22
31. Democratic Alliance (DA). (2023). No effort to keep water running in Mafube despite the electricity solution. DA, Press Statement. Available at: https://fs.da.org.za/2023/02/no-effort-to-keep-water-running-in-mafube-despite-the-electricity-solution; Yende, S. S. (2022). ANC to investigate Dipaleseng municipality cover-up. News24. Available at: https://www.news24.com/citypress/politics/anc-to-investigate-dipaleseng-municipality-cover-up-20220307; DA. (2022). DA reports concerns that Kamiesberg water crisis is political sabotage. DA, Press Statement. Available at: https://nc.da.org.za/2022/02/da-reports-concerns-that-kamiesberg-water-crisis-is-political-sabotage
32. Ibid., ix
33. Ibid.
34. Ibid.
35. Ibid.
36. Ibid.
37. Ibid.
38. DWS. (2023). The Status of Water Losses, Non-revenue Water & Water Use Efficiency in South African Municipalities. DWS, pviii. Available at: https://ws.dws.gov.za/IRIS/releases/NDBM_2023_Report.pdf
39. Ibid., viii
40. Wilson, N. (2023). Water is SA's next crisis, warns poultry producer Astral as it gets direct supply from Vaal. News24. Available at: https://www.news24.com/fin24/companies/water-is-sas-next-crisis-warns-poultry-producer-astral-as-it-gets-direct-supply-from-vaal-20231121; Keyter, M. (2019). Astral secures emergency arrangement with the Lekwa Municipality in the modst of an ongoing water supply crisis. Astral, Press Release. Available at: https://www.astralfoods.com/assets/Documents/News/News/2019/Astral%20Press%20Release%20%20-%20General%20update%20on%20Lekwa%20Water%20Supply%20Crisis%20-%2024%20June%202019.pdf
41. CRA. (2022). Survey on Living Conditions, p3.
42. Eales, K. (2011). "Water Services in South Africa 1994 – 2009." In Schreiner, B. and Hassan R. (eds.), Transforming Water Management in South Africa, Designing and Implementing a New Policy Framework, 3:33-71. Pretoria: Springer.
43. Ibid., 34
44. DWS. (2019). National Water and Sanitation Master Plan: Ready for the Future and Ahead of the Curve. DWS, Volume 2(Version 4.2). Available at: https://www.dws.gov.za/National%20Water%20and%20Sanitation%20Master%20Plan/Documents/Volume2%20(Printed%20version%20).pdf
45. This maintenance estimate is derived from the WATCOST-SALGA20 model, which assumes annual maintenance costs at 2.14% of the asset value; Friedrich Naumann Foundation and GreenCape. (2023). 2023 Water Market Intelligence Report. GreenCape. Available at: https://greencape.co.za/wp-content/uploads/2023/04/WATER_MIR_2023_DIGITAL_SINGLES-1.pdf; Department of Public Works (DPW). (2022). Green Drop. DPW. Available at: https://ws.dws.gov.za/iris/releases/Report_DPW_Rev02_29Mar22_MN%20web.pdf
46. Ibid.
47. Ibid.
48. The Very Rough Order of Measurement (VROOM) index identifies areas needing upgrades in WWTWSs nationwide and provides cost estimates for civil, mechanical and electrical improvements.
49. National Treasury. (2024). Budget Review 2024. National Treasury. Available at: https://www.treasury.gov.za/documents/National%20Budget/2024/review/FullBR.pdf

50. Seleka, N. (2024). Partner with private sector, government tells municipalities battling with water supply issues. News24. Available at: https://www.news24.com/news24/southafrica/news/partner-with-private-sector-government-tells-municipalities-battling-with-water-supply-issues-20240701
51. Ibid.
52. Ibid., 158
53. Ibid., 145; National Treasury defines PPPs as "a contract between a public-sector institution and a private party, where the private party performs a function that is usually provided by the public sector and/or uses state property by agreement."
54. Friedrich Naumann Foundation and GreenCape. (2023). 2023 Water Market Intelligence Report. GreenCape. Available at: https://greencape.co.za/wp-content/uploads/2023/04/WATER_MIR_2023_DIGITAL_SINGLES-1.pdf
55. Ibid., 37
56. Ibid.
57. Hausmann, R. (2024). Why is South Africa doing so badly? (Interviewed by Ann Bernstein). PoliticsWeb. Available at: https://www.politicsweb.co.za/opinion/ricardo-hausmann-in-conversation-with-ann-bernstei (Accessed on: 23 March 2024)
58. System Status Reports. Eskom. Available at: https://www.ntcsa.co.za/system-status-reports/
59. Jacobs, S. (2024). Government avoiding Eskom's real Problem. Daily Investor. Available at: government-avoiding-eskoms-real-problem
60. Brederode, W. (2024). Corrupt Kusile and Medupi Tender to blame for Load-Shedding Severity – De Ruyter. Daily Investor. Available at: https://dailyinvestor.com/south-africa/10193/corrupt-kusile-and-medupi-tender-to-blame-for-load-shedding-severity-de-ruyter/
61. Moolman, S. (2022). 2022 update: Eskom tariff increases vs inflation since 1988 (with projections to 2024). PowerOptimal. Available at: https://poweroptimal.com/2021-update-eskom-tariff-increases-vs-inflation-since-1988/
62. The 2024/25 CPI figure is YTD, covering the period from March to August.
63. Walsh, K., Theron, R., Seedat A. & Reeders, C. (2020). Estimating the Economic Cost of Load Shedding in South Africa: A Report for Eskom Holdings (SOC) Ltd. Stellenbosch: Nova Economics, p.viii.
64. Janse van Rensburg, T. & Morema, K. (2023). Reflections on Load-Shedding and potential GDP. South African Reserve Bank (SARB), Occasional Bulletin of Economic Notes (OBEN/23/01). Available at: occasional-bulletin-of-economic-notes/reflections-on-load-shedding-and-potential-gdp-june-2023.pdf
65. Bloomberg. (2023). Load Shedding costs SA R900m a Day, says Reserve Bank. News24. Available at: https://www.news24.com/fin24/economy/load-shedding-costs-sa-r900m-a-day-says-reserve-bank-20230206
66. Van Graan, A. (2023). Electricity Crisis: Measuring the Impact in the Precious Metals Sector. Nedbank Insights. Available at: https://cib.nedbank.co.za/insights/investor-research/Precious-metals-sector.html
67. Minerals Council South Africa (Minerals Council). (2024). Facts and Figures Pocketbook 2023. Minerals Council South Africa. Available at: https://www.mineralscouncil.org.za/industry-news/publications/facts-and-figures
68. Neethling, B. (2024). Direct Relation between Load-Shedding and Mining Production. Daily Investor. Available at: direct-relation-between-load-shedding-and-mining-production
69. Sihlobo, W. (2023). Loadshedding is disrupting SA Agriculture and Agribusiness Activities. Agricultural Economics Today. Available at: https://wandilesihlobo.com/2023/01/18/loadshedding-isdisrupting-sa-agriculture-and-agribusiness-activities/
70. Corrigan, T. (2023). How Load-Shedding hits your Food. IRR. Available at: https://irr.org.za/media/how-load-shedding-hits-your-food-farming-portal
71. AgriSA. (2022). Disruptive Load Shedding poses long-term Risks to the Agricultural Sector and Economy. AgriSA, Media Release. Available at: https://agrisa.co.za/media/disruptive-load-shedding-poses-longterm-risks-to-the-agricultural-sector-and-economy
72. Zondo, B. & Smith, R. (2023). Impact of the ongoing Load Shedding on South Africa's Agricultural Sector Agriculture Presented at the Energy Summit, Western Cape Department of Agriculture, 22-23 June. Available at: https://www.namc.co.za/wp-content/uploads/2023/08/Agriculture-Energy-Summit-NAMC22-24-June-2023-WC-FINAL.pdf
73. Staff writer. (2023). Lights out for almost 1.5 million jobs in South Africa. BusinessTech. Available at: https://businesstech.co.za/news/trending/736537/lights-out-for-almost-1-5-million-jobs-in-south-africa-thanks-to-load-shedding/

74. South African Institute of Chartered Accountants (SAICA). (2024). How loadshedding affects food prices – through diesel. SAICA. Available at: https://www.saica.org.za/news/how-load-shedding-affects-food-prices-through-diesel#_ftn4
75. Ibid.
76. Days without loadshedding since 26 March 2024; Own calculations.
77. Yelland, C. (2024). Why is there less load shedding? There's a fundamental change taking place in SA's electricity sector. Daily Maverick. Available at: https://www.dailymaverick.co.za/article/2024-04-08-less-load-shedding-and-sas-changing-electricity-sector/
78. Ibid.
79. Ibid.
80. Ibid.
81. This is a compilation of work previously done by the IRR; Pretorius, H. (2024). #WhatSACanBe: 100 days to get SA back on track, Energy: Fix delivery, boost jobs. (2024). IRR, Publications. Available at: https://irr.org.za/reports/whatsacanbe/energy-fix-delivery-boost-jobs
82. Venter, L. (2024). Transnet Freight Rail's cost to the country laid bare. Southern Africa's Freight News. Available at: transnet-freight-rails-cost-country-laid-bare. (Accessed on: 19 March 2024)
83. Maja, M. & Van Heerden, G. (2023). SA's Transport Blues. CRA, Macro Review.
84. DHL Freight. (2023). Road Transport vs Rail Transport – Head-to-head Comparison. DHL, Solutions. Available at: https://dhl-freight-connections.com/en/solutions/road-transport-vs-rail-transport-head-to-head-comparison
85. Ibid., 4
86. The complexity of trade includes regulatory elements, such as the ease of obtaining permits and complying with national regulations. Port dwell times, on the other hand, are influenced by three specific factors: the efficiency of container handling operations, the complexity involved in transactions for border control and intermodal exchanges, and the requirements set by consignees for storing cargo at the port.
87. World Bank Group and IHS Markit. (2020). Transport Global Practice, The Container Port Performance Index 2020: A Comparable Assessment of Container Port Performance. World Bank. Available at: https://sectormaritimo.es/wp-content/uploads/2021/08/Container-Port-Performance_Index-WB-2021.pdf
88. World Bank Group and S&P Global. (2021). Transport Global Practice, The Container Port Performance Index 2021: A Comparable Assessment of Container Port Performance. World Bank. Available at: https://thedocs.worldbank.org/en/doc/66e3aa5c3be4647addd01845ce353992-0190062022/original/Container-Port-Performance-Index-2021.pdf
89. World Bank Group and S&P Global. (2022). Transport Global Practice, The Container Port Performance Index 2022: A Comparable Assessment of Container Port Performance. World Bank. Available at: https://documents1.worldbank.org/curated/en/099051723134019182/pdf/P1758330d05f3607f09690076fedcf4e71a.pdf
90. World Bank Group and S&P Global. (2023). Transport Global Practice, The Container Port Performance Index 2023: A Comparable Assessment of Container Port Performance. World Bank. Available at: https://documents1.worldbank.org/curated/en/099060324114539683/pdf/P1758331389230087 1be641a5ea7b90e0e6.pdf
91. Nominal capacity/vessel size is described in twenty-foot equivalent units (TEU's), which is "a standard metric for container throughput, and the physical capacity of a container terminal." 20-foot container = 1 TEU. 40-foot/45- foot container = 2 TEUs; World Bank Group and S&P Global. (2023). Transport Global Practice, The Container Port Performance Index 2023: A Comparable Assessment of Container Port Performance. World Bank. Available at: https://documents1.worldbank.org/container_port_performance_index.pdf; Van der Merwe, J. (2024). World Bank port ranking blind to dwell times. Southern Africa's Freight News, Logistics. Available at: https://www.freightnews.co.za/article/world-bank-port-ranking-blind-dwell-times
92. Ibid.
93. Econogistics. (2023). Conducting specific diagnostics on transporter congestion in the port of cape town logistics chain and make recommendations to reduce congestion. Western Cape Government. Available at: https://www.westerncape.gov.za/sites/www.westerncape.gov.za/files/assets/departments/economic-development-tourism/econogistics_wc_congestion_study_final_report_25_may_2023.pdf
94. Barron, C. (2023). "Port chaos puts fruit exports at risk." Business Times. Available at: https://www.businesslive.co.za/bt/business-and-economy/2023-11-12-port-chaos-puts-fruit-exports-at-risk/
95. National Treasury. (2024). Budget Review. Available at: https://www.treasury.gov.za/documents/National%20Budget/2024/review/Chapter%204.pdf

96. Due to limited newer research, the findings of the 2006 research paper remain applicable as it continues to represent the most comprehensive insights available on the topic. Apart from more recent data, the findings from this study have not been contradicted, thereby validating the ongoing relevance of the paper; Djankov, S., Freund, C. & Pham, C.S. (2010). Trading on time. The Review of Economics and Statistics. 92(1): 166-173. Available at: https://www.jstor.org/stable/25651397
97. Van der Merwe, J. (2024). World Bank port ranking blind to dwell times. Southern Africa's Freight News, Logistics. Available at: https://www.freightnews.co.za/article/world-bank-port-ranking-blind-dwell-times
98. Mediterranean Shipping Company (MSC). (2023). Price Announcement – Port Congestion Surcharge to South Africa. MSC, Media Announcement. Available at: www.msc.com/en/newsroom/port-congestion-surcharge-to-south-africa.
99. Ibid.
100. Djankov, S., Freund, C. & Pham, C.S. (2010). Trading on time. The Review of Economics and Statistics. 92(1): 166-173. Available at: https://www.jstor.org/stable/25651397
101. Pretorius, H. 2024. #WhatSACanBe: 100 days to get SA back on track, Infrastructure: Connect communities, create wealth. (2024). IRR, Publications. Available at: https://irr.org.za/reports/whatsacanbe/infrastructure-connect-communities-create-wealth
102. Department of Home Affairs. (2024). Border Management Authority on extension of submission fate for bids for redevelopment of six ports of entry. Department of Home Affairs. Available at: https://www.gov.za/news/media-statements/border-management-authority-extension-submission-date-bids-redevelopment-six
103. Road Freight Association. (2024). RFA Truck Talk, Newsletter. Available at: https://rfa.co.za/SA/wp-content/uploads/2024/05/Newsletter_RFA_May_2024.pdf

IRR

South African Institute of Race Relations

www.irr.org.za

info@irr.org.za

(011) 482 7221