NAVIGATING GLOBAL GEOPOLITICAL CHANGE

IMPLICATIONS FOR SOUTH AFRICA'S LONG-TERM PLANNING, INDUSTRIAL DEVELOPMENT AND JUST ENERGY TRANSITION



POLICY ADVISORY ON INTERVENTIONS AND RESPONSE MEASURES

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TOWARDS A JUST TRANSITION

SOUTH AFRICAN Presidential Economic Advisory Council

TABLE OF **CONTENTS**

LIST OF ACRONYMS 2

PART 1: ABOUT THE ADVISORY NOTE 3
1.1 RATIONALE FOR NPC, PCC AND PEAC JOINT ADVISORY 3
1.2 PURPOSE 4

PART 2: EXECUTIVE SUMMARY 5
2.1 CONTEXT & BACKGROUND 5
2.2 FRAMING OF THE GEOPOLITICAL CRISES 6
2.3 SOUTH AFRICA'S RESPONSE 7

PART 3: NAVIGATING GEOPOLITICAL CHANGE: 9
3.1 CONTEXT - RISKS AND VULNERABILITIES ARISING FROM THE GEOPOLITICAL CRISES 9
3.2 STRATEGIC OPPORTUNITIES FOR SOUTH AFRICA 9
3.3 ACTIONABLE OPTIONS AND CURRENT PRIORITIES 11
3.4 MEDIUM-TERM PRIORITIES 18
3.5 CONSOLIDATED ADVISORY 25

PART 4 CONCLUSION 26

REFERENCES 27

LIST OF ACRONYMS

AfCFTA	African continental Free Trade Agreement
BESS	Battery energy storage systems
BFP	Basic Fuel Price
BRICS	Brazil, Russia, India, China, and South Africa
CBAM	Carbon Border Adjustment Mechanisms
CCDR	Country Climate Development Report
CCUS	Carbon capture, utilisation and storage
CEF	Central Energy Fund
DBSA	Development Bank of South Africa
DEE	Department of Energy and Electricity
DMPR	Department of Mineral and Petroleum Resources,
Dsti	Department of Science, Technology, and Innovation
DTIC	Department of Trade, Industry and Competition,
EV	Electric Vehicle
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
GHG	Green House Gases
$GtCO_2e$	Gigatonne Carbon Dioxide Emission
GW	Gigawatts
IDS	Industrial Development Strategy
IEA	International Energy Agency's
IEP	Integrated Energy Plan
IPPO	Independent Power Producers Office
IRP's	Integrated Resource Plan's
JETP	Just Energy Transition Partnership
NDC	Nationally Determined Contribution (NDC)
NDP	National Development Plan (NDP): Vision 2030
NERSA	National Energy Regulator of South Africa
NPC	National Planning Commission
NTCSA	National Transmission Company of South Africa
PCC	Presidential Climate Commission
PEAC	President's Economic Advisory Council
RE	Renewable Energy
SADC	Southern Africa Development Community
SARB	South African Reserve Bank Monetary policy
SAREM	South African Renewable Energy Masterplan.
SAWEM	South African Wholesale Electricity Market
SETAs	Sectoral and Education Training Authority
TDP	Transmission Development Plan 2025-2034
TSO	Transmission System Operator
TVET	Technical and Vocational Education and Training
UCT	University of Cape Town
UNFCCC	United Nations Framework Convention on Climate Change
US	United States of America
USD	United Sates Dollar
WB	World Bank Group
WITS	University of the Witwatersrand

PART 1:
ABOUT THE ADVISORY NOTE

1.1. RATIONALE FOR NPC, PCC AND PEAC JOINT ADVISORY

The **Presidential Climate Commission (PCC), the National Planning Commission (NPC), and the President's Economic Advisory Council (PEAC)** each play a critical advisory role to the Presidency, bringing distinct but complementary perspectives across climate, planning, and economic domains.

- **The National Planning Commission (NPC)** is a diverse and independent advisory body and think tank – comprising carefully chosen experts in various fields and sectors - appointed by the President. It is the custodian of South Africa's National Development Plan (NDP): Vision 2030. The basic role of the NPC is to advise government, and indeed all of society, on the implementation of the NDP: Vision 2030.
- **The Presidential Climate Commission (PCC)** is a multi-stakeholder body established by the President of South Africa to advise on the country's climate change response and support a just transition to a low-carbon climate-resilient economy and society. The PCC facilitates dialogue between social partners on these issues—defining the type of economy and society we want to achieve, and detailed pathways for how to get there.
- **The President's Economic Advisory Council (PEAC)** is a non-statutory and independent body that advises President on economic policy with the objective of promoting sustained, inclusive economic growth, investment and job creation for South Africa. The Council serves as a forum for in-depth and structured discussions on emerging global and domestic developments, economic and development policies, and to facilitate socialisation and diligent execution thereof.

This document is compiled by Lebogang Mulaisi (PCC), Dr Kenneth Creamer (PEAC) and Prof Mark Swilling (NPC) on behalf of a Joint Working Group established by the PCC, PEAC and –NPC.

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1.2 PURPOSE

The Presidential Climate Commission (PCC), the National Planning Commission (NPC), and the President's Economic Advisory Council (PEAC) each play a critical advisory role to the Presidency, bringing distinct but complementary perspectives across climate, planning, and economic domains.

The purpose of this Advisory Note, developed by the Joint Working Group, is to provide strategic, evidence-based advice on the implications of evolving geopolitical developments and global economic shifts for South Africa's electricity transition and the industrial opportunities it presents.

This structured advisory collaboration between the PCC, NPC, and PEAC seeks to enhance the coherence and strategic advisory inputs to the Presidency.

Rather than providing a comprehensive assessment of all sectors affected by geopolitical change, this advisory focuses on how developments in global energy markets, linked to the ongoing conflict in the Middle East, should inform South Africa's approach to electricity planning, energy planning, industrial policy, including the development of competitive domestic industries linked to the energy transition.

Central to this advisory is the recognition that energy security and the just transition should be pursued as a single national mission—one that simultaneously advances economic growth, industrial development, employment creation, social inclusion and climate resilience.

Reliable, affordable and increasingly clean electricity is presented as the critical enabler of this mission, providing the platform for industrial expansion, greater investment, export competitiveness and long-term economic resilience.

By framing electricity system transformation and industrial development as mutually reinforcing priorities, the Advisory Note seeks to provide a coherent strategic direction across energy, industrial, finance and transport policy, while identifying practical actions that will strengthen South Africa's resilience to global uncertainty and position the country to realise the economic opportunities arising from the global energy transition.

PART 2:
EXECUTIVE SUMMARY

2.1 CONTEXT & BACKGROUND

The current global environment, characterised by intensifying global conflicts and rising geopolitical tensions, is reshaping international trade, energy market volatility and growing uncertainty within the international financial system and investment flows. While triggered by recent events in the Middle East, these developments are reinforcing longer-term structural shifts in the global economy and are creating significant uncertainties.

The geopolitical crisis therefore highlights the need to move beyond short-term crisis management towards a long-term development strategy that strengthens economic resilience.

Countries are accelerating efforts to reduce dependence on imported fossil fuels, strengthen energy sovereignty and reposition their industrial economies around increasingly affordable electricity generated from renewable energy. This represents not simply a response to geopolitical instability, but a profound reorganisation of global production, trade and competitiveness.

Recent fuel levy reductions and monetary policy interventions have helped cushion the immediate impacts on households and businesses, but these measures are necessarily temporary and do not address the structural drivers of vulnerability.

For South Africa, these developments expose significant vulnerabilities while simultaneously creating important opportunities. As a net importer of crude oil and refined petroleum products, the country remains highly exposed to global fuel price shocks, exchange-rate volatility and disruptions to international supply chains.

While the changing geopolitical landscape has implications across multiple sectors, this Advisory Note deliberately focuses on the electricity sector and the industrial opportunities associated with its transformation. It examines how the restructuring and decarbonisation of South Africa's electricity system can enhance energy security while supporting industrial competitiveness, localisation, investment and economic resilience.

The focus of this Advisory Note is on structural responses in South Africa's energy sector, but similar analyses should be undertaken for, among others, food and agriculture, fertiliser markets, mining, and minerals processing, automotive, manufacturing, services, and international trade and finance strategies.

This Advisory Note argues that South Africa's response should be centred on a single national mission: building an electricity-intensive economy that advances energy security, industrial development, economic competitiveness and a just transition simultaneously.

2.2 FRAMING OF THE GEOPOLITICAL CRISES

The US-Iran war can be understood within a broader context of longstanding efforts by the United States to maintain strategic influence over the Middle East and global oil supplies resulting in the petro-dollar regime that was in place until the start of the 2026 Iran-USA war. In late February, this year this conflict intensified following US and Israel's military strikes on Iran, followed by Iran's military responses across the region, including the closing of the Strait of Hormuz.

While there is a high degree of uncertainty as to how long the current Middle East crisis will persist and about the medium term and longer-term consequences of the crisis, this conflict has triggered deeper underlying dynamics that are impacting the global financial and energy order.

Two recent headlines on the 25th of April 2026 edition of *The Economist* provide an indication of the kinds of global structural changes that have been impacted by the conflict, namely: *Xi Jinping wants a powerful currency. America's war has helped, and: Renewables are shining. The Iran war amplifies their appeal.*[1]

At the level of the global financial system, the first headline signals the pressures that the war has placed on the petro-dollar system, and the second signals an acceleration of economic forces propelling the energy transition because of the oil and gas price shock. Diesel price rises between February 23rd and May 11th, ranged from 150% (Loas), 90% (Indonesia), 60% (Philippines) and 30% (China). India has during this period spent $150 m a day to prevent price rises and avoid socio-economic disruption and protests.

The conflict has demonstrated how geopolitical instability can accelerate the global energy transition. Sharp increases and volatility in fossil fuel prices have imposed significant economic costs on both energy-importing and energy-exporting countries, reinforcing the value of affordable, domestically produced renewable energy.

At the same time, disruptions to global energy markets have contributed to renewed interest in alternative payment systems and the use of currencies other than the US dollar for international trade. While these developments predate the current conflict, geopolitical tensions have accelerated their pace and increased their strategic significance.

Taken together, these dynamics are increasingly acting as a catalyst for longer-term transformations in both the global energy system and the international financial architecture. Some significant trends in world energy markets are clearly discernible, and it would be important for South Africa to factor these trends into the country's economic planning:

- shocks to oil and gas prices are creating a disincentive for the use of these energy sources as countries seek greater energy security and seek to make their economies less vulnerable to this external limitation to their growth and development.
- the current crisis is resulting in the acceleration of the global energy transition that was already underway before the current crisis, as investment in renewable energy – originally driven by policy, then by price advantages – is now also being driven by geopolitical and energy security considerations.
- the rate of electrification is increasing, as processes that have historically made use of fossil fuel-based energy, are turning to electricity-based solutions, such as, mobility (electric vehicles) and certain industrial processes (electric arc furnaces).
- governments are more actively pursuing industrial policy interventions upstream and downstream along these new energy value chains, this has seen increased investment in grid infrastructure and other electricity equipment, critical minerals, and battery production.

1 Xi Jinping wants a powerful currency. America's war has helped; and Renewables are shining. The Iran war amplifies their appeal. Both articles in The Economist, 25th April, electronic version.

2.3 SOUTH AFRICA'S RESPONSE

Similar to a number of other countries, South Africa's response has been designed to shield households and industry from the effects of fuel price increases. For the months of April and May 2026 the fuel levy was reduced by ZAR 3.00 per litre on petrol and diesel. Thereafter, the fuel levy reduction was extended in a reduced form for June.

The estimated cost of the temporary fuel levy from April to June 2026 is ZAR 17.2 billion in forgone tax revenue (R200 million per day)[2].

Given government's commitment to containing public borrowing and reducing the national debt, the fiscal support, in the form of reduced fuel levies, which has been put into place is necessarily temporary and limited in nature.

Monetary policy, in May 2026, responded to the inflationary pressures resulting from the crisis with the country's first increase in interest rates since 2023. In July 2026, the temporary fuel levy relief measures were removed, and petrol, diesel and other fuel prices came down (but remained elevated) due mainly to Rand strength and lower global oil prices. The situation in the Middle East remains extremely tense with intermittent military clashes, on-off ceasefires and related closures and re-openings of the Strait of Hormuz.

Beyond these macroeconomic policy responses, our planning should consider long term structural responses to better navigate the changes in the world's geopolitical situation.

Countries able to provide reliable, affordable and increasingly clean electricity are improving their industrial competitiveness, attracting investment and reducing exposure to volatile international fossil fuel markets. In this context, energy security is no longer defined solely by securing fuel imports, but by expanding domestic electricity generation and modernising the infrastructure needed to support economic transformation. South Africa enters this transition with considerable advantages.

The country possesses world-class solar and wind resources, an extensive electricity network, significant mineral endowments and established industrial capabilities. These assets provide a strong foundation for developing competitive value chains in renewable energy, electricity infrastructure, battery technologies, electric mobility and other emerging industries.

At the same time, the large-scale expansion of transmission infrastructure required over the coming decade presents one of the country's most significant industrial opportunities since the democratic transition, with the potential to stimulate manufacturing, construction, engineering, services and skills development if accompanied by deliberate industrial policy and localisation measures.

The Advisory Note emphasises that the transformation of the electricity system must be understood as a broader programme of structural economic change. Investment in generation alone will not deliver these benefits.

Equally important are expanded transmission and distribution networks, greater system flexibility through storage and dispatchable generation, effective electricity market reform, integrated energy planning and stronger coordination between energy, industrial, infrastructure and financing policies.

Decisions taken over the next decade regarding electricity infrastructure, petroleum refining, gas investment, transport electrification and industrial development will shape South Africa's competitiveness and resilience for decades to come.

Major economies are increasingly using industrial policy, public investment and strategic procurement to develop domestic manufacturing capabilities linked to the energy transition. South Africa therefore faces a dual challenge: responding to immediate external shocks while ensuring that domestic firms, workers and communities capture a meaningful share of the economic opportunities created by the transition.

2 https://www.gov.za/news/media-statements/national-treasury-extension-short-term-relief-measures-address-fuel-price

This requires closer alignment between energy planning and industrial policy, support for strategic sectors such as energy-intensive industries, electric vehicles, battery manufacturing, green hydrogen, transmission equipment and fertiliser production, and the use of public investment and procurement to strengthen domestic productive capacity.

The transition also raises important questions of equity and inclusion. Without deliberate policy intervention, new investment could reinforce existing patterns of concentrated ownership and unequal economic participation. The Advisory Note therefore highlights the importance of a just transition that broadens economic opportunity through diverse ownership models, local enterprise development, worker support, skills development and stronger public institutions capable of ensuring that the benefits of investment are widely shared.

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South Africa's long-term prosperity will depend on whether it uses this moment to accelerate structural transformation, reduce dependence on imported fossil fuels, strengthen domestic industrial capabilities and build an energy system that supports inclusive, competitive and climate-resilient growth.

PART 3:
NAVIGATING GEOPOLITICAL CHANGE

3.1 **CONTEXT** - RISKS AND VULNERABILITIES ARISING FROM THE GEOPOLITICAL CRISES

While the changing geopolitical landscape has implications across multiple sectors, this Advisory Note deliberately focuses on the electricity sector and the industrial opportunities associated with its transformation. It examines how the restructuring and decarbonisation of South Africa's electricity system can enhance energy security while supporting industrial competitiveness, localisation, investment and economic resilience.

The current geopolitical crisis has resulted in significant risks for the South African economy, which is a net-importer of crude oil and refined products. In addition, upward inflationary pressures and rising energy costs further increase the cost of doing business and undermine the competitiveness of energy-intensive sectors, including agriculture, mining and manufacturing. These price rises brought an end to a period of declining food prices.

In parallel, the fragmentation of global trade relations through the erratic use of US tariffs and shifting global alliances presents significant trade uncertainty, which has been a persistent driver of volatility in global financial markets.

The proliferation of bilateral trade agreements and the weakening of multilateralism is shaping global trade and investment flows. These shifts have impacts on asset valuations, especially in equity and bond markets. The convergence of trade uncertainty, geopolitical tensions, and emerging operational risks presents risks for financial stability (Mboweni., Sotwili, and Musasiwa, E, 2026).

3.2 STRATEGIC OPPORTUNITIES FOR SOUTH AFRICA

Beyond the immediate challenges, the evolving geopolitical environment creates possible openings for South Africa to drive industrial diversification and advance a more inclusive and sustainable growth path. The longer-term path for South Africa requires a more fundamental transition toward more locally sourced energy and a more electricity-intensive economy.

Forward looking states globally are those that seek the economic advantages of being electro-states, maximising the use of clean, cost-effective electricity sources, rather than being petro-states mainly dependent on fossil fuels.

ENERGY DIVERSIFICATION

Expanding renewable electricity generation therefore offers several long-term strategic advantages, such as reduced exposure to global oil price shocks; lower long-term energy costs; improved energy sovereignty; reduced import dependence; improved export opportunities into markets that apply Carbon Border Adjustment Mechanisms; lower carbon emissions; and support for upstream and downstream industrial development.

The technologies required for all energy sources are largely imported, and through deliberate industrial policy planning this reliance should be reduced over time by forging linkages with local manufacturing activities. For renewable energy technologies, such a planning process is being facilitated through instruments provided for in the South African Renewable Energy Masterplan.

International evidence increasingly shows that renewable energy combined with battery storage (to mitigate short-term disruptions measured in hours) and gas (to mitigate disruptions measured in days) can provide reliable and dispatchable electricity supply.

Once in place, renewable energy systems supported by backup technologies (batteries, gas and hydro) are to a large extent insulated from global fuel price shocks, shipping disruptions and geopolitical instability.

TRANSPORT AND THE AUTOMATIVE SECTOR

One of the most important long-term strategies for reducing South Africa's dependence on imported petroleum is expanded electrification across transport, industry and households. The transport sector is especially important because imported petroleum products are heavily concentrated in road transport. As electricity generation capacity expands, more economic activities can shift away from direct fossil fuel consumption.

Supporting the local manufacture and adoption of electric vehicles therefore serves multiple strategic objectives, namely reducing fuel imports; supporting industrial localisation; preserving automotive exports; creating new manufacturing opportunities; and lowering long-term transport energy costs. Given that South Africa has limited lithium reserves (due to a lack of exploration) but has significant vanadium reserves, South Africa could develop capabilities linked to vanadium redox flow batteries.

South Africa's automotive industry already plays a major role in manufacturing exports and employment. The global transition toward electric vehicles creates both risks and opportunities with the dominant export markets all transitioning over the next decade to increased use of battery electric vehicles.

Failure to adapt could undermine the sector's international competitiveness, while successful adaptation and related integration into global supply systems could position South Africa as an important producer of electric vehicles and components. Government support for electric vehicle manufacturing, battery technologies and charging infrastructure is therefore not only an environmental policy objective but should also be part of the country's planning for industrial development and energy security.

Public transport investment also plays an important role in reducing national fuel consumption. Expanding reliable and affordable public transport systems can lower dependence on private vehicle use while protecting commuters from fuel price volatility.

The transition toward electric mobility is already beginning within South Africa's public transport sector. For example, a bus services company in Cape Town has deployed battery-electric buses and has also invested in large-scale charging infrastructure supported by solar power generation and is exploring renewable electricity wheeling arrangements with independent power producers. Similarly, the logistics and freight value chain is beginning to invest in electrification of fleets.

The longer-term plan should be to reduce fuel imports over time and to shift to new energy vehicles, including in the public transport system. Wider adoption of battery-electric buses and taxis and electrified public transport systems could significantly reduce fuel consumption, lower urban transport emissions, improve commuter energy efficiency and reduce the country's reliance on imported petroleum products. The expansion of electric public transport also creates opportunities for localisation, battery value chains, charging infrastructure industries and industrial development linked to the broader energy transition.

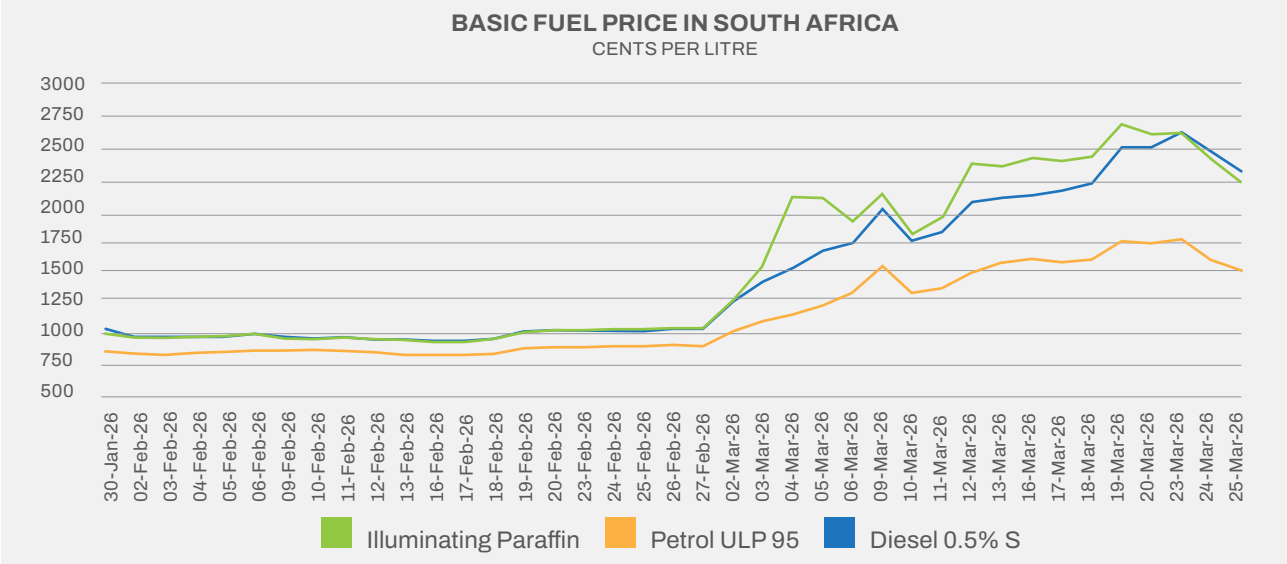
3.3 ACTIONABLE OPTIONS AND CURRENT PRIORITIES

ECONOMIC AND MARKET STABILITY

South Africa faces an urgent need to implement decisive short-term measures to safeguard economic stability and sustain market confidence. Short-term priorities should focus on cushioning the economy from external shocks, stabilising critical supply chains and energy prices.

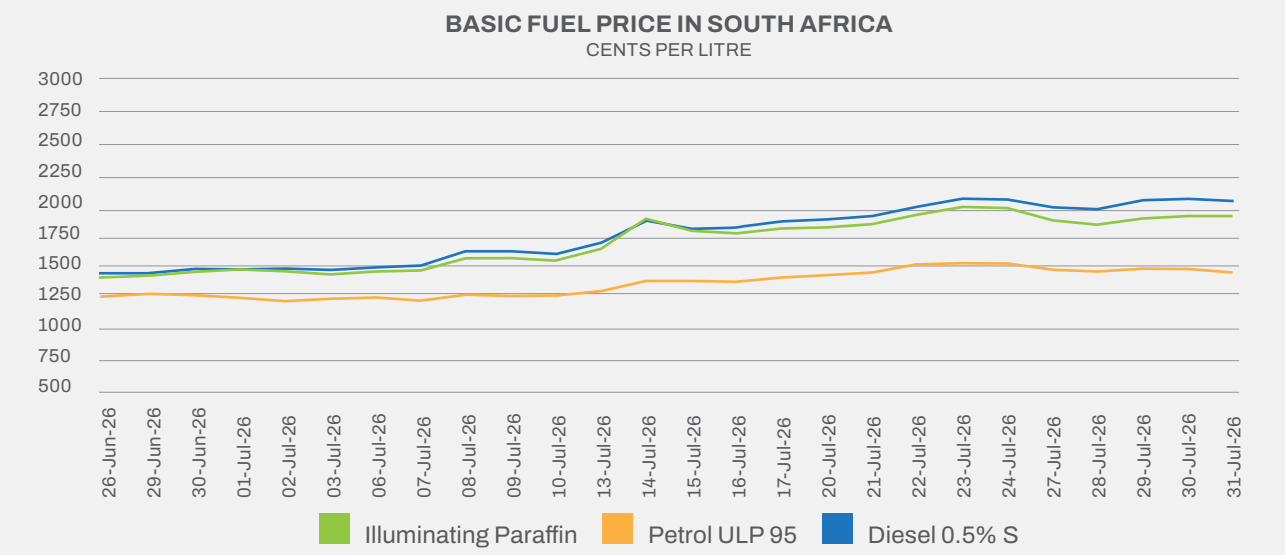
Moving forward the **Ministerial task team** established by the President of the Republic of South Africa, to coordinate the impact of the Middle East conflict[3], **must track the developments in oil and gas prices, exchange rates, rising trade in non-dollar currencies, and monitor its impact on livelihoods.**

Figure 1 Basic Fuel Price in South African cents per litre for Feb and Mar 2026



Source: CEF, 2026

Figure 2: Basic Fuel Price in South African cents per litre for June and July 2026



Source: CEF, 2026

3 https://www.sanews.gov.za/south-africa/ministerial-task-team-appointed-coordinate-impact-middle-east-conflict

As many analysts and commentators have cautioned, the fragility of the ceasefire announced in April 2026 continues to create significant uncertainty regarding the durability of peace and the risk of renewed military escalation. If the ceasefire does not hold and the war is protracted, or if there are to be ongoing clashes and standoffs this will reinforce the region as a geopolitical chokepoint. Such an outcome would have a structural impact on global trade and energy 6markets, and if sufficiently disruptive may yet trigger global recessionary or stagflationary conditions.[4] Even if the Strait of Hormuz is completely opened tomorrow, it could take many months to normalize the global supply chains that have been disrupted.

Over and above the need to provide targeted support to shield vulnerable households, commuters and critical sectors from fuel and logistics shocks, South Africa needs to accelerate measures to shift structural exposure to imported fuel, imported fertilizer and freight disruptions.

Over the past decade South Africa's petroleum sector has become increasingly dependent on imported fuels. Domestic refining capacity has declined following the closure of major refineries. As a result, domestic production now supplies only about one-third of national fuel demand.

In recent years imported fuel products have been sourced mainly from countries in the Middle East. However, ongoing disruptions affecting the Strait of Hormuz have forced South Africa to diversify supply toward the Atlantic Basin, including imports from the United States, Brazil, Mexico and West African producers.

Fuel pricing is governed through the Basic Fuel Price (BFP) mechanism, which reflects import parity pricing based on international oil prices, freight costs and exchange-rate movements. While transparent, this pricing model means local consumers and industries remain highly exposed to global market shocks.

The decline in refining capacity has also increased the urgency of reassessing the country's long-term energy model. Continuing to rely primarily on imported petroleum products leaves the economy exposed to repeated external shocks.

Any new investments in fuel refining capacity would be risky and would require significant investment in new cleaner fuel technologies to be internationally competitive. Energy planning tools are discussed in detail in section 3.4.

ENERGY SECURITY AND REFORM - ACCELERATE LEAST-COST ENERGY BUILD

The accelerated least cost build of renewables with peaking support from flexible energy sources represents a clear no-regret strategy for South Africa (PCC, 2025). Accelerating the deployment of renewable energy ensures economic, social and environmental benefits that enhance national resilience.

Both China and India are rapidly expanding renewable energy deployment and electrification. These countries are providing the lead as electro-states of the future in contrast to the petro-states that dominate North America and the Middle East. China and India are the global drivers of the unfolding energy transition. Their investments in renewable energy generation are larger than investments in all energy by the rest of the world combined. As oil prices rise, the energy economics is increasingly in their favour.

The International Energy Agency's (IEA) recent World Energy Investment Report recorded that in 2025, for the first time, renewable energy produced more electricity than coal – 34% versus 33% of the global total electricity supply. In Africa, 15 countries reported record high solar imports of more than USD400-million in the first quarter of 2026, compared with USD650-million for the whole of 2025. The IEA report states that the world has entered the "age of electricity", with electricity investments making up nearly 60% of all global energy investments in 2025.

Furthermore, for the first time ever, newly constructed renewables produced more electricity than the increase in demand for electricity. That is why, for the fourth time since 2000, fossil fuels produced less electricity in 2025 than the year before. The driver is not climate change, it is prices. According to the IEA report, the average cost of installing one gigawatt of solar capacity has fallen from USD3-bilion in 2015 to USD700-million in 2025.

4 https://www.businessday.co.za/opinion/2026-04-10-renosi-mokate-kenneth-creamer-fuel-levy-cut-offers-short-term-relief-amid-global-crisis/

Renewables are cheaper in India than coal generation, even if you include the cost of batteries. In China, where the largest grid in the world enables 3000 GW of installed capacity (compared to 254 GW in the whole of Africa), for the first time in 2025 total generation of electricity from renewables exceeded the 50% mark.

Using this asset, China is focused on a strategy to "electrify everything" to reduce its dependence on oil. As the oil price rises, many other countries in the developed and developing world are doing the same.

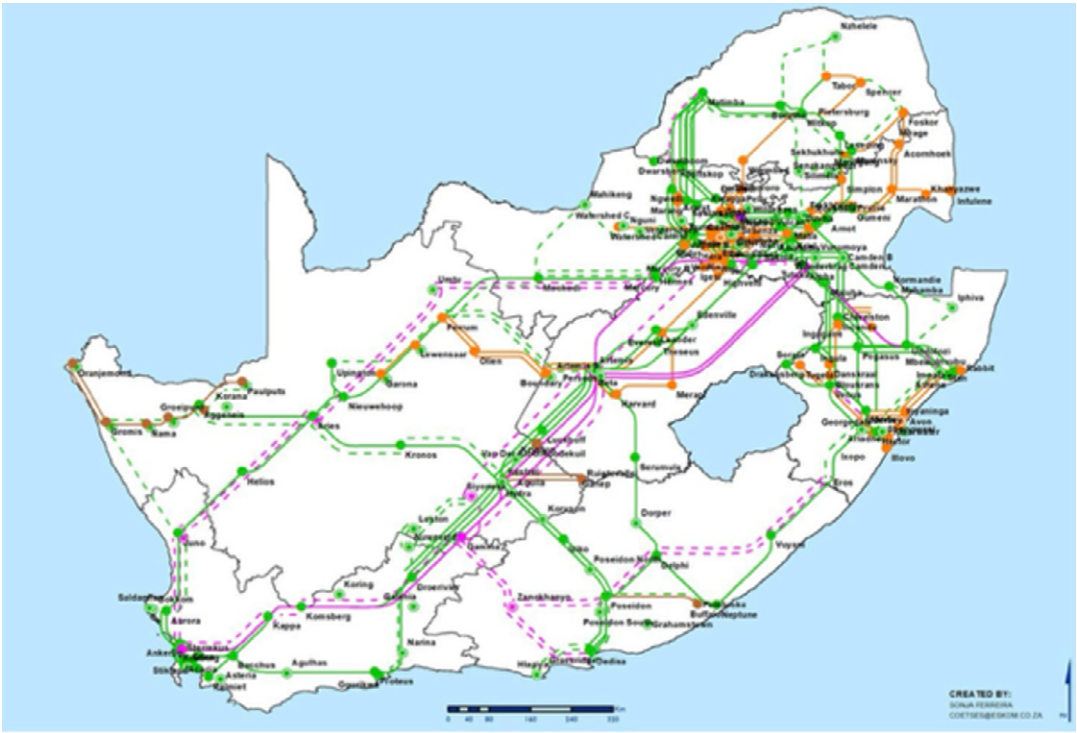
China is now not only the largest generator of renewables, but it is also the largest supplier of the equipment needed to decarbonize the global economy, and it is becoming easier to sell this equipment in yuan (at lower interest rates) to countries who are building up their yuan reserves in order to fund these transactions. As energy markets become less dependent on oil, they will become less dependent on US dollars.

For South Africa, the objective of energy security, affordable electricity and renewable energy deployment increasingly align, rather than compete. Renewable energy offers a strategic pathway to stabilise electricity supply, lessen dependence on imported fossil fuels while simultaneously supporting economic growth and industrial competitiveness.

The Presidential Climate Commission's 2023 Electricity Report recommended that South Africa should invest in 50-60 GW of renewable energy by 2030, and invest in 3-5 GW of peaking support, such as, gas to electricity plants running at low utilizations to support peaking (PCC, 2023).

The transmission grid has moved to the centre of South Africa's electricity system dynamics. More than 14 000km of new transmission lines and 210 transformers will need to be built over the next decade across the country to accommodate the expansion of renewable energy infrastructures[5]. Estimated to cost R400 billion, this is the largest infrastructure project since 1994 and could drive significant demand for a number of supply industries including cement, steel, electricity infrastructure components, and related manufacturing and services sectors.[6]

Figure 3: illustrates the major Transmission Development Plan (TDP) projects.



Source: Transmission Development Plan (TDP) 2025-2034

5 https://www.thepresidency.gov.za/node/8134

6 However, the draft procurement criteria for the Independent Transmission Projects component of the transmission grid expansion, formulated by South Africa's Independent Power Producers Office (IPPO) and the World Bank, have come under criticism by local South African industry.

A significant amount of 765kV power corridors is required in the Northern Cape, Central Cape as well as interconnecting the Eastern Cape to Kwa-Zulu-Natal. This will allow for the evacuation of renewable energy generation to the load centres. In addition, strengthening 400kV networks across the system is required in the form of interconnecting corridors between 765 kV lines and the underlying 400kV networks for local and regional strengthening (NTCSA, 2024).

South Africa's grid was not built to support a vast network of geographically diverse generators that generate variable energy flows dependent on wind and solar resources.

What is needed are massive investments in what is referred to as 'flexibility', i.e. technologies and capabilities that make it possible to respond to and anticipate supply and demand shifts. This includes batteries and gas backup, but also a wide range of new technologies such as modern synchronous condensers and so-called 'grid-forming' systems. South Africa's consumption currently peaks in the morning and in the early evening as people arrive home from work, and the lowest demand is midday. Solar power generation, however, peaks at midday, which means supply can often exceed demand during these hours. Coal-fired power plants can only be ramped up and down within a narrow range of between 22 GW (usually at peak times, supported by gas peakers) and 15GW (usually during the midday hours). If, however, solar energy reduces residual demand (i.e. demand that cannot be met by renewables) for coal-fired electricity below 15 GW, then that results in supply exceeding demand which risks an imbalance in the system. As a result the National Transmission Company of South Africa (the system operator) is forced to implement 'curtailment' measures, which is the term used to refer to switching off renewable energy plants when necessary. This means IPPs will get paid for electricity that is not being used which is, of course, a financial loss for South Africa as a whole.

This problem will be reduced as certain older coal power plants are decommissioned (making it possible to ramp down below 15 GW) and/or introducing large battery storage systems to store surplus energy generated in the midday hours for use at peak times. However, this will depend on the correct price signals being sent to the electricity supply industry, which is currently not the case. Tariff policies are needed that ensure that the correct market signals provide the necessary incentives for producing the grid stabilization technologies that the system operator is able to dispatch at short notice to ensure grid stability. Furthermore, the current time-of-use tariff regime could be used to lower tariffs in the midday hours to incentivise higher levels of consumption during these times thus reducing curtailment costs.

Furthermore, there is an additional 31 GW of renewable energy in the pipeline that will become available by 2030, adding to the existing 15.2 GW (both utility scale and 8.3 GW of rooftop solar). I.e. 46.2 GW. This means the Integrated Resource Plan's (IRP's) 2030 target of 27 GW of renewable energy plus 4 GW of BESS will most definitely be exceeded by 2030. Without far more battery storage and gas backup, the curtailment problem will get worse.

Effective energy planning over the next few years will require decommissioning of end-of-life coal-fired power stations, plus investments in peaking and backup gas capacity, battery storage and transmission and distribution systems.

The planning must be guided by the objective of achieving the lowest cost electricity pathway that also delivers reliable and secure electricity supply. If a system-wide view (guided by the objective of achieving reliability at the lowest cost) is not taken, then uneconomic end of life coal plants may remain in service, and more cost-competitive renewable plants will be built but will not be used optimally. In addition, there is a risk that the gas-to-power plants will for commercial reasons need to be run at high capacity factors on the assumption that they will be needed for 'baseload' when this may not be needed. This will create upward pressures on the cost and pricing of electricity. An equally serious challenge will arise if gas for peaking and backup for variable renewable energy does not get procured in the short term.

PROMOTING COMPETITION IN THE ELECTRICITY SECTOR

The expansion and modernisation of South Africa's transmission grid is inseparable from the unbundling of Eskom in a manner that does not leave Eskom financially worse off. This is primarily because a fully independent and capable Transmission System Operator (TSO) that owns the transmission assets is essential to unlock investment, accelerate renewable energy integration and ensure the non-discriminatory access to the electricity market.

The independence of the TSO requires significant support to ensure financial independence and a balance sheet that can enable investment towards grid infrastructure (PCC, 2024). For decades, the vertically integrated model constrained grid planning and investment, which has contributed to transmission bottlenecks that are now limiting the connection of much needed generation capacity.

The National Energy Regulator of South Africa (NERSA) draft Trading Rules for bilateral agreements and the Market Code for the South African Wholesale Electricity Market (SAWEM) were released for public commentary until August 2026[7]. The draft trading rules govern how independent generators, licensed traders and consumers participate in an evolving competitive electricity market. While the rules are intended to deepen market participation, there are growing concerns that unequal access to transmission infrastructure can result in market containment, which essentially limits participation to established players.

The implementation of the draft NERSA trading rules must be carefully calibrated to prevent the emergence of market containment dynamics that entrench existing market power, constrain new entrants, and limit equitable access to electricity trading opportunities.

A transparent, competitive and publicly accountable market framework will be essential for ensuring that electricity sector reform advances both energy security and a competitive electricity price path in the years ahead.

An insight by economist Dani Rodrik on the state's role in providing the public inputs required to advance structural transformation is apposite: "Successful programmes of structural change go beyond subsidies and often are better conducted without relying on subsidies. Public private collaboration, investment coordination and provision of specific public inputs [such as an electricity transmission grid operator and market rules that promote competition – authors' own insertion] are often much more effective at achieving structural transformation than cash incentives.

Evidence around the world suggests this requires a new type of policy making that is problem driven, experimental and iterative rather than top down and technocratic." (Rodrik, 2025)

Some mis-characterize ongoing structural transformation of the country's electricity sector as a process of privatization. It is more correct to describe the process as a state-led restructuring of the electricity sector where, among other interventions, a state-owned transmission grid owner and operator, governed by the necessary market rules, will play a strategic role in creating a competitive electricity market which will include participation by both public and private operators. In leading this restructuring process, **the South African state is operating as a developmental state, rather than a neo-liberal state paving the way for the exit of the state from the energy sector.**

Developmental states have been most effective when they operate in a manner that is *autonomous* as well as *embedded*. Autonomous, in that the state itself is the repository for developing the country's economic plans, in a manner that is not captured by vested interests but is in the interests of national economic development. Yet, for development programmes to be carried out effectively, they also have to be well embedded, in the sense that the design and implementation of programmes have to be firmly rooted in the political, social, and economic realities of the societies that they seek to grow and transform.

7 https://www.nersa.org.za/files/files/2026/05/MediaStatement-NERSAextendsdeadlineforcommentsonMarketCodeandMarketRules.pdf

In her 2026 book, *The Common Good Economy: A new compass*, economist Mariana Mazzucato has articulated a theoretical framework for such an approach to market shaping that is informed by the need "to build more symbiotic (rather than parasitic) eco-systems, with pre-distribution rather than redistribution so that we get all the relationships right...Common good economics is meant to move away from [market] corrections and toward objectives, and the manner in which organizations - public and private, capital and labour, citizens and state – interact as much as they can together." (Mazzucato, 2026)

STRUCTURAL INEQUALITY AND CONCENTRATION OF OWNERSHIP

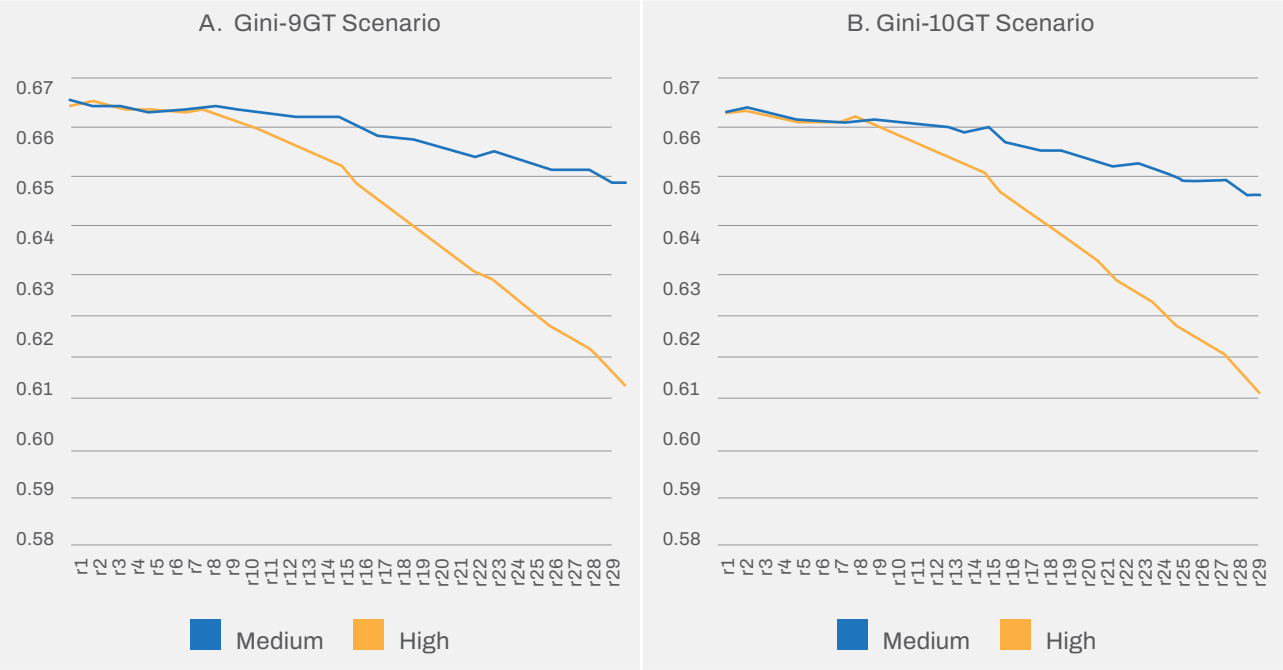
A purely private renewable energy transition risks deepening South Africa's structural inequality by concentrating ownership. Much public discourse assumes that private investment should dominate renewable energy generation and transmission expansion, reinforced by the failures of many state-owned enterprises.

Yet the question is not whether public ownership is inherently good or bad, but whether it creates public value. **Where mandates, governance and capabilities are strong, public, municipal and community-owned energy institutions can drive investment, retain economic benefits locally and support broader development objectives.** South Africa's energy transition should therefore be built on a diverse ownership model that harnesses private capital while expanding forms of ownership that deliver long-term public value.

The recent launch of Eskom Green is a step in this direction. In the South African context, a balanced energy transition that includes strong public participation in renewable energy generation and transmission infrastructure will be necessary to avoid the concentration of ownership and wealth, while advancing a more inclusive and just energy system.

In an effort to understand the impact carbon constraints have on household indicators such as employment and inequality, the PCC conducted a micro-simulation and distributional analysis.

Figure 4: Gini coefficients under the medium and high growth assumptions (9 and 10GT scenarios)



Source: Calculations from the 2019 pooled Quarterly Labour Force Survey (QLFS) using the PEP microsimulation package.

Figure 4 shows a decline in the Gini coefficient as a result of higher economic growth. This decline occurs despite placing carbon constraint on the economy of 9 Gigatonnes or of 10 Gigatonnes of greenhouse gases. The decline in the Gini coefficient is marginal, even at higher levels of economic growth.

Distributional policies that go beyond addressing wage inequality will be necessary to reduce inequality more effectively – including interventions to achieve greater equality in access to services such as education and health, as well as access to land and other asset ownership.

Wider ownership of renewable energy assets has been achieved in a number of European countries like Switzerland, Germany and Denmark, as well as in Global South countries, where thousands of renewable energy cooperatives operate successfully. **This is driven by deliberate policies to drive the uptake of community cooperative ownership models.**[8]

The most immediate and significant contribution to employment creation that the energy transition can make will be to reverse the decline of the steel industry and boost the growth of South African-owned BEE companies in the grid transmission sector. Over the past century, Eskom built the grid by sub-contracting South African companies (the so-called Engineering, Procurement and Construction (EPC) contractors) who employed South Africans and bought steel from South African producers. The result was the largest transmission build and steel manufacturing sector in Africa.

The shift from a state-owned Eskom-plus-EPC build model to Independent Transmission Projects built by the private sector on a BOOT basis could have massively boosted the South African EPC and steel sectors. However, the draft procurement criteria formulated by the IPPO (supported by the World Bank) are such that only international EPC contractors qualify for the R10 billion worth of projects in Phase 1. Furthermore, the 49% local equity partners are not required to demonstrate they have the requisite technical expertise and experience.

These international companies will bring in their own skilled staff, sub-contract components from their own trusted suppliers and bring in much of the capital. This will undermine South African industry, diminish investment opportunities for the finance sector and contradict the logic of the SAREM. This is a missed opportunity that local industry is vigorously contesting. The final outcome of these negotiations will be known by the third quarter of 2026. An ideal outcome would be to ensure that the soon to be released Request for Proposals aligns with the SAREM and the recently released industrial policy framework. By simply requiring the 49% equity partner to have proven experience in building transmission assets would be a game changer, including reinforcing the local value chains local EPC contractors depend on. It is incorrect to assume that local companies do not have the capacity to be part of the ITP programme.

Public spending and procurement must be designed to build domestic capabilities, by attaching conditions on local content, knowledge transfer and reinvestment, rather than defaulting to lowest-cost international contracting.

8 https://www.dailymaverick.co.za/opinionista/2026-05-13-renewable-energy-transition-in-sa-needs-the-embrace-of-both-public-and-private-ownership/

3.4 MEDIUM-TERM PRIORITIES

INDUSTRIAL POLICY AND COMPETITIVENESS

The outcomes of the April 2025 Trilateral (NPC, PCC, PEAC) meeting laid out the groundwork for integrated action on South Africa's development agenda. These are strategic interventions that support an economy-wide approach, particularly in green hydrogen, battery storage, EVs, transmission build programme and circular economy sectors. Strategic frameworks like SAREM and the IRP exist, but require accelerated implementation and alignment with industrial policy, trade diplomacy, and regional integration (AfCFTA).

There should be clear linkages developed between industrial policy and the R400 billion transmission build programme to drive a massive expansion of South Africa's manufacturing capacity and capabilities.

The Steel Masterplan Steering Committee and the industry associations affiliated to it have outlined various scenarios where coordination would be beneficial. For example, upstream producers that benefit from various support measures – including import protection, electricity discounts, incentives or even development finance – still sell their products at two prices: a lower export parity price for export markets; and a higher import parity price for local purchasers. Because of this, it often costs more to make steel or aluminium cables or other downstream fabricated metal products in South Africa than to import the finished product. As a result, local capacity is mothballed and jobs lost. For producers that receive electricity discounts, trade support or other incentives, consideration should be given to ensuring that they price on an export parity basis, or some other form of developmental price, to domestic manufacturers of cable or other metal fabricated components for the electricity transmission network.

Supporting energy intensive industries is central to South Africa's industrial development agenda. Industries such as steel, mining, chemicals, cement and metals provide critical inputs to traditional sectors and the emerging new green economy. The Industrial Development Strategy (IDS) identifies the cost of production, in particular the electricity prices, as a the most significant constraints to industrial competitiveness and argues that affordable, secure and reliable energy supply is a prerequisite for rebuilding productive capacity, attracting investment and enabling long-term industrial growth.

Rather than viewing energy-intensive industries as legacy sectors, the strategy positions them as strategic assets that must be modernised and strengthened to support economic transformation and industrial resilience.

The challenge is therefore how to support energy-intensive industries in a manner that reinforces South Africa's decarbonisation objectives while preserving industrial competitiveness. In the near term, significant emissions reductions can be achieved through improvements in energy and resource efficiency, optimisation of existing production processes, electrification where feasible, and the substitution of lower-carbon feedstocks.

Over the medium to longer term, deeper decarbonisation will depend on the commercial deployment of transformative technologies such as green hydrogen and carbon capture, utilisation and storage (CCUS). Public policy should therefore not only support the adoption of commercially available low-carbon technologies but also enable companies to begin laying the foundations for future investment through research, demonstration projects, enabling infrastructure, skills development and targeted financing.

This phased approach will allow energy-intensive industries to remain globally competitive while positioning them to achieve deep emissions reductions as new technologies mature.

The same principle applies to agriculture and fertiliser production which are both strategically important for food security. Investments in green ammonia, green hydrogen and low-carbon production pathways are essential to decarbonise fertiliser manufacturing and strengthen the resilience of the agriculture value chain.

INTEGRATED ENERGY PLANNING

The current geopolitical crisis shows that energy planning cannot be limited to electricity supply alone. South Africa requires a credible, regularly updated and institutionally anchored Integrated Energy Plan to guide investment decisions across the full energy system. It must consider the interactions between liquid fuels, electricity, gas, transport, industrial energy use, transmission and distribution infrastructure, and South Africa's climate and industrial policy commitments.

Integrated energy planning should provide a transparent basis for comparing the long-term costs, risks and benefits of different pathways, including petroleum refining, gas infrastructure, renewable energy, storage, transmission, transport electrification, green hydrogen and industrial decarbonisation. It should be guided by the objective of secure, affordable and reliable energy supply at least cost, while reducing exposure to imported fossil fuels and supporting domestic industrial capability.

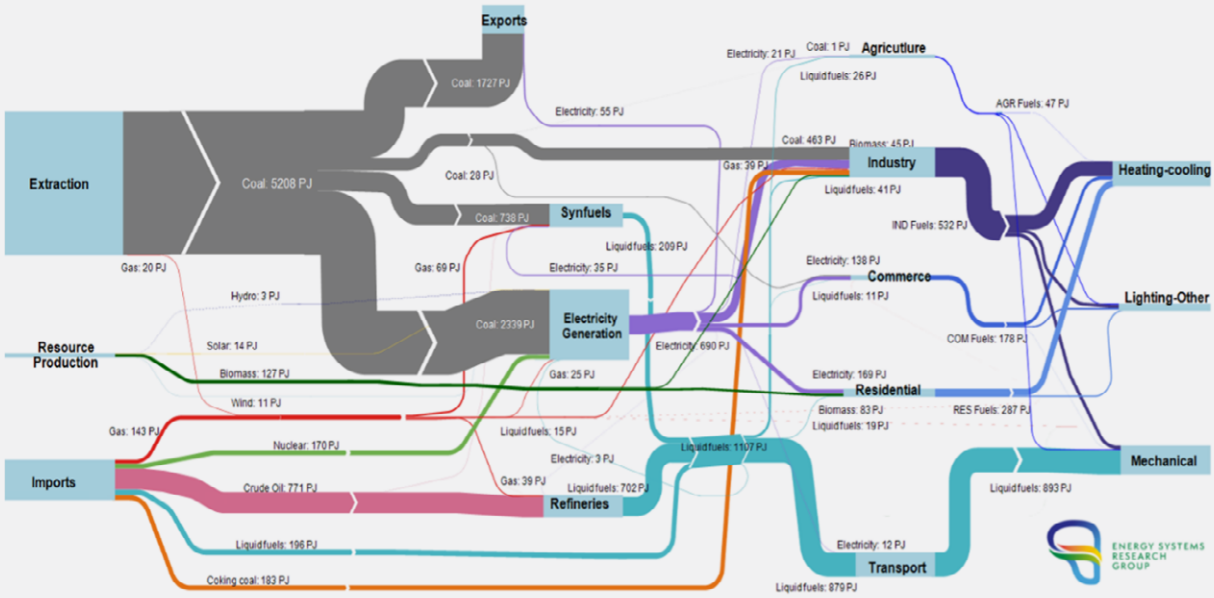
A central risk is stranded assets. Large, long-lived investments in fossil fuel infrastructure, including refining, pipelines, import terminals and gas-to-power plants, may appear to strengthen short-term energy security but could become uneconomic as demand shifts toward electrification, renewable energy and low-carbon production, but most importantly if local production is not cost-competitive against international commodities. These risks are heightened by volatile oil and gas prices, changing technology costs, climate-related trade measures and South Africa's net-zero commitment.

The risk is not only that assets may become underused, but that consumers, taxpayers or the fiscus may be locked into paying for infrastructure that is no longer least-cost or strategically aligned. Over-investment could also divert scarce capital from investments that are likely to remain more robust under different future scenarios, such as transmission, storage, flexible generation, public transport electrification and domestic manufacturing opportunities.

Integrated energy planning should therefore prioritise flexibility, modularity and optionality. Gas, where required, should be planned primarily as a flexible peaking and balancing resource rather than as a baseload substitute. Public investment and guarantees should be directed only toward assets that remain robust under a range of demand, price, technology and climate-policy scenarios.

An effective Integrated Energy Plan would help South Africa avoid costly lock-in, reduce exposure to external shocks, and direct scarce capital toward infrastructure that strengthens energy security, industrial competitiveness and a just transition.

Figure 5: South Africa Energy Balance Sankey Diagram



Source: University of Cape Town- Energy Systems Research Group, units in Petajoules

CLIMATE CHANGE AND EMISSIONS REDUCTION[9]

Southern Africa is a region with a warm and dry climate, which under low mitigation climate change futures is projected to become drastically warmer, and likely also drier. Such a change, of an already warm and water-stressed region becoming even warmer and drier, implies that the options for adaptation are limited.

It is for this reason that southern Africa has been classified as one of the world's climate change hotspots. Hot temperature extremes such as heat-waves and high fire-danger days are projected to occur more frequently and at greater intensity in southern Africa in a warmer world, in association with the increases in average temperature.

The next twenty years in southern Africa are likely to be generally drier with more multi-year droughts compared to the last twenty years, and are certain to be warmer, with heat-waves of unprecedented intensity and days with oppressive temperatures occurring at unprecedented frequencies.

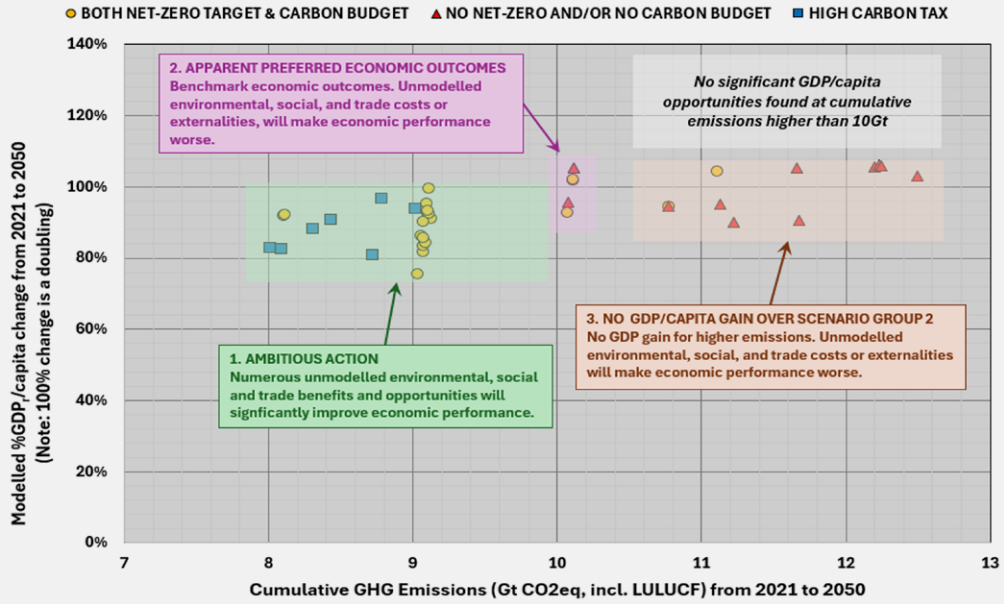
Under low mitigation futures, these changes are projected to amplify over time, to the extent that the combined impacts of multi-year droughts and intense, long-duration heat-waves may lead to the collapse of the maize crop and the cattle industry. More intense multi-year droughts may also pose the risk of more frequently occurring 'day zero' type droughts across southern African cities.

Over the eastern parts of southern Africa, heavy rainfall events are likely to occur more frequently, even in the presence of decreasing rainfall totals. This implies that cities in the east need to increasingly be prepared for the dual challenges of seasons with excessive rainfall and flooding, and multi-year periods of below-normal rainfall and drought.

As signatories to the Paris Agreement under the United Nations Framework Convention on Climate Change (UNFCCC), South Africa has agreed to set climate targets every five years. Figure 6 indicates GHG reduction can be achieved without impacting negatively on the GDP per capita of emission reducing countries [Group 2 (reduces Green House Gas (GHG) emissions while maintaining higher growth) and Group 3 (which maintain high levels of GHG emissions)].

A key driver of this outcome is that economic planning aimed at reducing carbon emissions can attract international finance, stimulate investment in renewable energy and clean industries, ensure business competitiveness, and support long-term job creation, particularly in emerging sectors.

Figure 6: Modelled %GDP per capita change from 2021-2050 v Cumulative Green House Gas (GHG) Emissions



Source: Modelled %GDP/capita change (real) from 2021 to 2050 (100% change is a doubling), versus cumulative GHG emissions (adapted from (PCC, 2024a))

9 This section is drawn from the SA-TIED paper by Engelbrecht and Steinkopf (2025).

The World Bank Country Climate Development Report (CCDR) indicates that deep decarbonisation is essential between 2030 and 2040 in sectors where cheaper technologies are available (World Bank,2022).

Both the updated IRP and South Africa's Nationally Determined Contribution (NDC) commit South Africa to achieve net-zero by 2050 (Department of Electricity and Energy, 2025; Republic of South Africa, 2025). The journey to Net-zero is important to ensure sectors, communities and workers are given enough time and support to transition.

REPOSITIONING FOR STRUCTURAL CHANGE

A major strategic objective should be to strengthen the linkage between energy policy and industrial policy. The expansion of electricity infrastructure, especially transmission and distribution networks, can stimulate domestic engineering, construction and manufacturing sectors. Modern electricity systems also require digital controls and networking, Artificial intelligence and related cyber-security skills.

Skills development will be essential to support these industries. Partnerships with universities, TVET colleges and SETAs can help develop technical expertise aligned with the changing economy

Research and development aligned with the country's overall energy security and industrial policy strategies should be facilitated by the Department of Science, Technology and Innovation and by the relevant science councils. The Department of Energy and Electricity needs to adopt policy positions that favour local content, local industry and the local engineering, project management and construction industry.

This policy approach positions energy transition not simply as an environmental obligation, but as a developmental strategy aimed at strengthening domestic productive capacity. Government institutions including the Department of Mineral and Petroleum Resources, the Department of Trade, Industry and Competition, National Treasury, Eskom, NTCSA, Department of Energy and Electricity and Transnet must coordinate more effectively to support implementation.

International partnerships are also important. South Africa is seeking to strengthen cooperation through platforms such as BRICS; the Just Energy Transition Partnership (JETP); the SADC; and broader African energy cooperation initiatives. Policies going forward should reduce excessive dependence on US dollar-denominated trade, particularly in energy markets. Expanding local currency trade arrangements and alternative payment systems could help reduce vulnerability to currency volatility and geopolitical pressures.

INVESTMENT AND FINANCING OF ELECTRICITY INFRASTRUCTURE

The Development Bank of South Africa (DBSA), the Presidential Climate Commission, the National Planning Commission, and the National Treasury partnered to determine the investment requirements to achieve energy security and net zero goals by 2050 (DBSA, NPC & PCC, 2025).

The objective of the study pertains to the need to achieve energy security at least-cost while meeting South Africa's climate targets. The objectives of the study were achieved through a modelling exercise comparing energy mix pathways as scenarios.

South Africa has a mature electricity system that has evolved over the past century. This includes a national grid that connects nearly 90% of the population to electricity supplied overwhelmingly by 46 GW of coal-fired power stations, 2 GW of nuclear power and 6.9 GW of utility-scale renewable energy. The 8.3 GW of rooftop solar is also largely grid-connected but cannot be controlled by the NTCSA's system operator.

The coal-fired fleet of power stations is ageing rapidly, with an average age of 42 years. Six of these power stations should have been closed already, and two, Medupi and Kusile, have recently come into operation and will most likely remain in operation for at least four decades.

Since 2011, renewables have grown rapidly, currently at approximately 15.2 GW, 8.3 GW of which is rooftop solar, and the rest is utility scale wind and solar farms. Underinvestment in the transmission grid over the past decade has caused both maintenance and extension backlogs that will require an investment of R400 billion over the next decade.

Due to a mix of corruption, inefficiencies and mistaken policy decisions, Eskom has a debt burden of nearly R400 billion that was more than halved by a multi-year equity investment by the state in 2023. Up until 18 months ago, South Africa suffered regular loadshedding that undermined economic recovery.

Table 1: Total Energy Investment by Scenario (in billion ZAR)

Scenario	Total Generation Capex	Total Generation Opex	Total Grid Capex	Total investment required	Average annual investment
BAU	1 446	2 490	231	4 166	160
Market	1 229	2 166	262	3 657	141
Green	1 651	1 552	383	3 586	138

Source: (DBSA et al., 2025). BAU = Business as usual; Market = Market-based; Green = Green Industrialisation - As per Table 2, these scenarios provide estimates of the amount of investment required, both the capital and operational expenditure per annum, to achieve each stated target.

To assess future investment requirements, three scenarios were developed by the NPC/DBSA/PCC/SA-TIED report as shown in Table 1.

- The **Green Industrialisation Scenario** assumes full alignment with global climate policies, a 2 $GtCO_2e$ electricity sector carbon budget, air quality compliance mandated by 2030, optimistic technology learning rates, low fossil fuel prices, and a 10% cost of capital premium on new fossil fuel technologies.
- The **Market Forces Scenario** assumes partial alignment with global climate policies, a 3 $GtCO_2e$ carbon budget, air quality compliance by 2035, moderate learning rates, moderate fuel prices, and a 5% fossil fuel premium.
- The **Business-as-Usual Scenario** abandons NDC commitments and global climate commitments, imposes no carbon limit, does not mandate air quality compliance, applies pessimistic learning rates, high fuel prices, and no fossil fuel cost premium.

South Africa requires between R3.6 and 4.2 trillion in total system investment through 2050 to achieve energy security. It is cheaper, however, to achieve energy security *and* climate goals via 'green industrialisation' policy commitments rather than via market forces or business-as-usual solutions. *The Green Industrialisation pathway emerges as the least-cost option at R3.6 trillion* (discounted 8% to 2024 real terms) and achieves NDC targets for the power sector while delivering modest positive GDP impacts (approximately 0.3% deviation above baseline by 2050) compared to business-as-usual scenarios. Total grid expansion costs to cater for a substantial increase in renewables will be nearly R400 billion by 2050, with distribution collector networks representing 43-53% of these costs. (This modelling result is different to the Transmission Development Plan which provides for a R400 billion investment in the grid over the next decade.)

Under the Green Industrialisation pathway, installed capacity must expand from the current approximately 60 GW (which includes, coal, nuclear, hydro and renewables) to approximately 240 GW by 2050, with variable renewable energy (solar and wind) comprising 61% of total capacity, or 85% when including storage and hydro. This represents not merely a scaling of existing infrastructure but a complete reconceptualization of system design, operation, and market structure.

The modelling identified critical technology deployment milestones that must be achieved to maintain system reliability while transitioning away from coal. By 2030, under the Green Industrialisation scenario South Africa requires 24 GW of solar PV, 18 GW of wind, and 11 GW of battery energy storage systems (BESS) (i.e. 53 GW including BESS). These targets do not significantly exceed current procurement programmes. The current pipeline of approved renewables projects through to 2030 is an additional 31 GW on top of the current 15.2 (46.2 GW). As already discussed, the role of gas, however, emerges as particularly nuanced—while contributing only approximately 5% of energy generation in TWh, substantial gas-fired capacity of 23 GW by 2050 is essential for system stability and the integration of renewables, with 9 GW of gas projected for 2030 by the Green Industrialisation scenario.

Transmission infrastructure emerges as a critical requirement across all scenarios. The modelling identifies multiple transmission corridors requiring substantial expansion, with the three main 765 kV corridors — Northern Cape (Western), Eastern Cape (Eastern), and Western Cape via Hydra Central (Central) — requiring the most significant capacity increases.

The Green Industrialisation scenario achieves cumulative emissions of 2.1 GT CO_2 from 2023 to 2050, with 123 Mt/a in 2030, which is generally considered within the current September 2021 NDC range for the power sector. By 2050, emissions decline to around 8 Mt/a, consistent with (near) net-zero ambitions.

Total capex through to 2050 would be R2034 billion (generation plus grid). Thus the capital requirements would average R78 billion annually through to 2050 under the Green Industrialisation scenario against an estimated available funding of approximately R100 billion per annum. However, the near-term capex requirement (2024-2030) would be higher at around R125 billion per annum given the need for accelerated up front investments in renewables, storage and the grid. Assuming the current levels of investment remain constant at around R100-R110 billion, a gap of R15 billion or more for the 2024-2030 period is possible. However, if current levels of investment continue (i.e. over R100 billion per annum), there is no significant gap between what is required and what is available for the period 2031-2050.

It therefore follows that there are financing gaps if all else remains equal, with funding availability constraints potentially intensifying over the longer term after 2030 if the expected regulatory reforms and risk mitigation measures do not materialize. However, the study also found that with improved policy and regulatory certainty, there is no shortage of funding after 2030 and beyond if a 'South Africa First' approach is adopted rather than a dependence on international companies and financing.

The technical modelling revealed that a fundamental transformation of South Africa's electricity system architecture is required across all scenarios, though with markedly different trajectories and outcomes.

The study demonstrates that the accelerated transition towards renewable energy plus backup (batteries, gas and hydro) represents not merely an environmental imperative but the most economically viable pathway for long-term energy security and sustainability, contingent upon strategic capital formation, effective risk mitigation, and comprehensive regulatory reform.

Reinforcing the report on the investment requirements to achieve energy security and net zero referred to above, the National Planning Commission produced a report in 2025 titled Transforming South Africa's Monetary Architecture, 1983-2024 (Swilling and Murau, 2025) that confirmed that although there is limited fiscal space for funding the national infrastructure programme the additional R150 billion per annum that is required is available within South Africa's wider financial system.

It was found that South Africa's financial system has, since 1994, expanded faster than the real economy. However, **surplus capital has not been re-invested in Gross Fixed Capital Formation (GFCF) which has declined dramatically since 2014 to around 15% of GDP. This is way below the NDP target of 30% of GDP.** As a result, large quantities of much needed capital spins around the financial system or leaves the country. The World Bank estimates that only 5-7% of the funds invested by non-banking financial institutions (who manage R18 trillion worth of assets) are invested in infrastructure. The NPC report recommended a range of solutions that could redirect this capital into GFCF, in particular into energy infrastructures.

Based on the relevant PCC, NPC and PEAC reports, the following specific priority actions are proposed:

» In light of the approval by the President of the Eskom Restructuring Task Team (ERTT) report at end July 2026, it is essential that NTCSA is unbundled out of Eskom Holdings and established as the fully independent TSO by end of 2027. This decision will now make it possible for NTCSA (as the future TSO) to raise the required debt from South African financial institutions to fund the rollout of the TDP.

» A crucial precondition for the energy transition going forward will be NERSA approvals of an unbundled tariff that will ensure clear, long-term and predictable revenue flows to the three publicly owned entities that will drive the next phase of South Africa's energy sector reforms, namely Eskom Generation (including Eskom Green), NTCSA/

TSO and the future independent electricity distribution company. Without these predictable revenues, funding renewables, storage and transmission will be challenging.

» Tariff unbundling is the precondition for addressing the municipal debt problem, which is now over R110 billion owed mainly by non-metropolitan governments. Tariff unbundling makes it possible to introduce financial disciplines that will help resolve the municipal debt problem. However, unless unemployment and poverty are also reduced, the underlying driver of municipal debt will not be resolved.

» The SAWEM will start small and gradually broaden outwards to include more market actors as the more complex trading systems mature. However, it may take some years before the required regulatory and trading capacities have been built up to ensure effective operationalisation of the SAWEM.

» The Human Resources Development Council has established the JET Skills Forum to craft a human resource strategy to underpin the large-scale structural transformations underway, in particular the renewables, BESS, gas and transmission build programmes. There is a massive shortage of skills across the board, from your front-line artisans who manage on-site construction and maintenance, to project managers, engineers, project preparation managers in the financial institutions, lawyers, infrastructure planners and regulators in the public entities. A national JET Skills strategy is urgently needed.

» To maximise the potential of local content requirements to drive industrial strategies, the upcoming Request for Proposals for ITPs must ensure that South Africa's mature and competent EPC sector must be included by simply providing for the 49% local equity partner to be required to demonstrate experience in building transmission assets.

» Instead of looking outward for funding from foreign investors and multi-lateral development banks, South African investors should be prioritized. There is more than enough capital available in South Africa's financial eco-system to fund the energy transition, including generation, transmission, distribution and various technologies to enhance flexibility (e.g. batteries, synchronous condensors, etc). However, this might require tweaks to the regulatory framework that incentivise pension funds in particular (but also banks, insurance funds, and even shadow banks) to substantially increase their investments in infrastructure. For example, Regulation 28 of the Pensions Act specifies that a maximum of 45% can be invested in infrastructure, but does not specify a minimum. This means that there is significant potential for mobilising larger quantities of South African financial resources for investment in the country's electricity grid and other infrastructure. A key proviso being that for such resource mobilisation to succeed in rebuilding electricity infrastructure, the necessary restructuring of Eskom, electricity tariff structures, and the wider electricity sector would have to be actioned without delay.

3.5 CONSOLIDATED ADVISORY

The current geopolitical crisis should not be treated as a temporary external shock, but rather as a structural inflection point in the global energy, trade and financial systems. **It is incumbent on South Africa to review and recalibrate its policy frameworks accordingly.**

For South Africa, the implications extend beyond short-term fuel price volatility and require an integrated national response that links economic resilience, energy security, industrial policy and socio-economic development.

The NPC, PCC and PEAC therefore advise the adoption of a coordinated strategy aimed at reducing structural dependence on imported fossil fuels, strengthening domestic productive capacity and accelerating the transition toward a more electricity-intensive and industrially competitive economy.

- **In the short term, government has correctly sought to cushion households, workers and strategic sectors from the impacts of global price volatility through targeted relief measures.** However, these temporary measures should not detract from the urgent need for deeper, structural reform.
- **South Africa's long-term resilience depends on rapidly expanding affordable domestic electricity generation, modernising and expanding transmission infrastructure and reducing dependence on imported petroleum products.**
- **The acceleration of renewable energy, battery storage, gas backup/peaking and transmission infrastructure represents a clear no-regret strategy for South Africa.** Renewable energy increasingly aligns with the objectives of energy security, affordable electricity, industrial competitiveness and climate resilience. **Transmission infrastructure has moved to the centre of the electricity system and requires accelerated investment,** institutional coordination and public leadership.
- **The unbundling of Eskom and the strengthening of an independent TSO remain essential to unlock investment, remove grid constraints and ensure fair access to a more competitive electricity market capable of achieving universal access and a competitive future price path.**
- South Africa's electricity market framework must avoid market containment and ensure that new market rules support genuine competition, transparency, broad participation and the building of South African companies and value chains.
- South Africa should also use the current crisis to **deepen industrial policy alignment with the energy transition. Strategic sectors such as electric vehicles, battery manufacturing, renewable energy components, public transport electrification and transmission infrastructure localisation present major opportunities for industrial expansion,** export competitiveness and employment creation.
- Accelerated implementation of industrial strategies such as SAREM, alongside targeted localisation policies and investment support, will be critical to maximising domestic economic benefits. An immediate priority is to ensure that South African companies are not excluded from being lead contractors in the upcoming Independent Transmission Projects programme.
- **A just transition approach must remain central to all interventions.** A purely private renewable energy model risks reproducing South Africa's structural inequalities through concentrated ownership patterns and dependence on international companies and investors.
- **Public, municipal, community and cooperative ownership models should therefore be actively supported alongside private investment to ensure broader participation** and more equitable distribution of economic benefits. Skills development, worker protection and local economic diversification must be integrated into energy and industrial planning to support vulnerable workers and communities through the transition.

PART 4:
CONCLUSION

For South Africa, the crisis presents both immediate economic risks and a longer-term strategic opportunity to rely more on domestic sources of energy and to build an inclusive, globally competitive economy around the country's inherent strengths. Rising oil prices, trade instability and geopolitical tensions threaten economic growth, fiscal stability and household welfare, while simultaneously accelerating the global shift toward cleaner, electricity-intensive economies.

Energy security, affordable electricity and renewable energy deployment increasingly coincide rather than compete. The expansion of renewable energy, transmission infrastructure and electrification presents an opportunity to reduce external vulnerabilities, strengthen industrial competitiveness and support long-term economic transformation.

The country's response must therefore move beyond temporary crisis management toward a coordinated development strategy that links energy planning, industrial policy, economic resilience and social justice.

By accelerating structural transformation, strengthening public institutions, investing in modern infrastructure and advancing a genuinely just transition, South Africa can emerge from the current crisis more resilient, more competitive and better positioned within a rapidly changing global economy.

The choices made today will determine whether the country remains vulnerable to future external shocks or emerges more resilient, more competitive and better positioned within a rapidly evolving global economy. Rather than viewing decarbonisation and economic development as competing objectives, the evidence increasingly shows that they are becoming mutually reinforcing.

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