**OVERBERG MARKET REPORT**

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Global Report

Nick Downing

Back to the roaring 20s

Inflation is the biggest threat to global financial prosperity. If it fails to return to central bank targets, interest rates will remain elevated, economies will stall, and financial markets will stumble. Inflation has come down sharply across the world since peaking in 2022. In the US consumer price inflation (CPI) has dropped from 9% down to 3.1%, but the inflation hawks believe it will be sticky at these levels, that the last mile to 2% central bank targets will be the hardest to conquer. They cite tight labour markets and the effect of high wage demands. In the US, wage growth is still high due to full employment conditions. The Employment Cost Index measured 3.5% year-on-year at the end of 2023. However, after adjusting for labour productivity growth of 2.7%, the so-called inflation residual is only 0.8%, consistent with CPI returning to central bank targets.

The inflation hawks say that 2.7% productivity growth is unsustainable, that is merely reflects a once-off recovery from the supply chain disruptions that occurred during the Covid pandemic and will return to the sub 1% levels that characterised the decade following the 2008/09 Global Financial Crisis. These were unusually low levels, due to private sector deleveraging as households and businesses repaired their balance sheets. The long-term average is 1.5%. The more optimistic view is that the US economy is going through a more permanent trend of rising productivity growth, led by Artificial Intelligence (AI). In this case, inflation should come down irrespective of whether the economy enters recession or not, due to the supply-side nature of the expansion.

AI is widely recognised as a General-Purpose Technology (GPT) with the potential to transform the global economy. Previous GPTs include the adoption of steam power during the 19th century and electricity in the early 20th century. These transformative technologies delivered surges in productivity and economic growth. Goldman Sachs research asserts that generative AI could raise US productivity by a substantial 1.5% per annum. When AI progresses along the spectrum from Generative AI to General AI, capable of replicating human intelligence for creative tasks, productivity growth could grow at an even faster pace. According to Bank Credit Analyst research "The global economy has experienced two phase transitions in the past: The Agricultural Revolution and the Industrial Revolution. Both revolutions saw GDP growth rise 30-to-100-fold relative to the previous epoch. A comparable increase in growth, this time driven by super-intelligent AI, would allow global GDP to double every year or faster."

The widespread adoption of transformative technologies takes time, but the adoption time becomes quicker as technologies advance. The internet revolution of the 1990s accelerated productivity growth from 1% to 3.5% in the early 2000s. The productivity benefits of the AI revolution should permeate even more quickly. A PricewaterhouseCoopers survey conducted ahead of this year's World Economic Forum meeting in Davos asked global chief executives what they believed would be the effect of generative AI on their businesses over the next 12 months. Among the surveyed CEOs 46%

said that AI will boost their firm's profits over the time frame, and one quarter that it will lead to a headcount reduction of at least 5%.

The productivity cycle goes through long-term waves, led by technological innovation, societal changes, fiscal stimulus and credit cycles. Wars or major crises often create inflection points for a change in trend. There are striking similarities between the current outlook and the early 1920s. Independent research firm AlpineMacro says "We believe that the surprise will be on the side of how well the US economy will continue to re-emerge from the Covid-19 pandemic crisis… The similarities between now and the early 1920s continue to draw our attention. Back then, the world just came out of the First World War (WW1), the 1918 Spanish Flu pandemic and a brief recession in 1920/21. This dark period was followed by booming business activities, soaring stock prices and a spurt of rapid productivity growth." The 1920s saw life-altering new technologies including electricity, the automobile, telephone, radio and assembly lines. The 2020s has seen long-lasting economic, social and technological changes, including Work-From-Home, AI, massive fiscal handouts, and onshoring which is creating a manufacturing investment boom in the US.

In the US household debt levels are the lightest in 22 years. The economy is no longer facing deleveraging pressure. Company and bank balance sheets are also at their healthiest in decades, paving the way for another credit boom. AI has reached an important threshold where its application will begin to proliferate at an accelerating pace. What does this all mean for the financial markets and share prices? According to independent research firm Capital Economics which recently reiterated its bull case for equities, "Gains from AI are likely to flow to capital rather than to labour", and "… investors have historically sought to capture the perceived economic benefits of new technologies ahead of these technologies actually diffusing through the economy." Equity market gains may initially be centred on technology shares and the US, due to its greater capacity to innovate, diffuse and adapt, but benefits should rapidly spread more broadly, leading to strong global equity market gains over the next two years and quite likely for the remainder of the decade.

Local Report

Gielie Fourie

IRP 2023 Unpacked – How not to Fix Eskom.

UNPACKING IRP 2023: The target of the International Energy Agency (IEA) is Net-Zero emissions by 2050, titled Net-Zero 2050. Government's response to Net-Zero 2050 was the IRP 2023. The long-awaited 2023 draft Integrated Resources Plan (IRP 2023), replacing IRP 2019, was released by government on 4 January 2024. The minister of the Department of Mineral Resources and Energy (DMRE), min Gwede Mantashe, is responsible for implementing IRP 2023. Min Gordhan's Roadmap includes a plan to separate Eskom into three separate subsidiaries: generation, transmission, and distribution. Government continues to pursue a diversified energy mix that will provide security of electricity supply while ensuring compliance with its emission reduction plan. The energy mix will include:

CLEAN COAL: Eskom's 15 coal-fired power stations, generating ~43,000-megawatt (MW), continue to play a significant role in electricity generation. To retain capacity 13 power stations will be shut down gradually in planned phases before 2051. After 2051 only the two "monster" newer power

stations, Medupi and Kusile, will continue with production, running on clean coal. These two power stations generating 4,800 MW each, are the fourth largest power stations in the world.

NUCLEAR: Koeberg power station supplies 4.6% (2,000 MW) of our energy. Nuclear power is a clean and dispatchable energy source. Dispatchable electricity refers to a system which can be turned, or switched, on or off on demand by the system controller. It makes power supply flexible and adds security to power supply. Koeberg reaches the end of its design life in 2024. To avoid the demise of nuclear in the energy mix, government has decided to extend Koeberg's design life. Prof Anton Eberhard of the UCT Graduate School of Business (GSB) has warned that new nuclear investments have been a disaster in Western countries like the US, Finland, France, and the UK due to cost and time overruns. Germany has closed all its nuclear power plants. Prof Benjamin Sovacool of the University of Sussex Business School reported that worldwide there have been 99 accidents at nuclear power plants since 1952 which resulted in the loss of human life or property damage.

GAS-TO-POWER: Liquified natural gas (LNG) is an entirely new addition to our energy mix. Adding LNG, being a fossil fuel, will not take us to Net-Zero. Min Mantashe's strategy has changed from being pro-coal to being pro-gas. South Africa does not produce gas. Sasol produces a small quantity of gas, but it will be stopped in 2026. In the short-term we will have to import gas from Mozambique. Mozambique is running out of gas fast. Commentators expect a tapering in supply, leading to a "gas cliff" and a "day zero" scenario in 2026. Industry experts expect gas prices to rise substantially. In the very long-term there is enormous potential in this respect with the Brulpadda gas resource in the Outeniqua Basin near Mossel Bay, but that is decades away. Gas-to-Power technology is dispatchable. It takes around ten minutes to start up the system and dispatch power. Gas-to-Power is the technology used by Karpowerships of Turkey. Mr John Purchase, former CEO of the Agricultural Business Chamber, said we will have to import gas, which will be expensive. Purchase suggests it "allows opportunities for corruption and control by people with personal interests."

BATTERY energy storage facilities are already part of the energy mix. Battery power is dispatchable at the request of the power grid operator. Grid batteries are the fastest dispatchers of electricity – it can dispatch in milliseconds.

RENEWABLES: Wind generates 4.4% (2,000 MW) and solar 2.2% (1,000 MW) of our energy. The rollout of renewable energy is set to increase rapidly, while also decarbonising the electricity supply. Renewable energy from solar PV and wind is now cheaper than any other form of power generation in South Africa. The next round of the renewable energy procurement programme is widely expected to deliver electricity at prices of less than 50c/kWh. This price covers the full cost of these plants, including capital expenditure. Elon Musk once remarked: "The amount of solar energy received by Earth could power a civilization over 100 times larger than ours."

HYDRO power is not part of the IRP 2023 energy mix. However, 1.4% of our electricity comes from hydro installations. Hydro plants are capital intensive, but they can operate 24-hours per day. Eskom has two hydro power stations on the Orange River. Steenbras Hydro Station supplies Cape Town with 180 MW of power.

TOTAL CAPACITY: Our total domestic electricity generation capacity is 58,095 MW from all sources There is general agreement that South Africa needs 60,000 MW of new generation over the next ten years, while the IRP 2023 target is much lower, a mere 29,000 MW of new generation by 2030. The. In reaction experts said the plan proves that Eskom is undermining South Africa's aspirations to grow DMRE said the reason for the low target is that it expects low economic growth and low demand for

electricity due to loadshedding the economy. Min Mantashe has extraordinary powers to procure new generation, yet in nearly 5 years, since 2019, only 150 MW has come online from his procurements.

IRP 2023 ROADMAP

1. 4 January 2024 : IRP 2023 published.
2. 4 January – 23 February 2024 : Public Comments invited.
   Extended by min Mantashe at the Mining Indaba to 23 March 2024.
3. 9 January 2024 : "Unpacking the Draft" document published.
4. 18 January and 31 January : Online public workshops – Unpacking IRP 2023.
   : Workshops were virtual, not face-to-face.
5. February – March 2024 : Review and consideration of public comments.
6. April 2024 : Presentation to Nedlac.
   : The Nedlac consultations for IRP 2019 took one year.
7. May 2024 : Final IRP 2023, after feedback from Nedlac.
8. Next step : IRP 2023 will be gazetted to replace IRP 2019
9. 2023 - 2030 : Horizon 1
10. 2031 - 2050 : Horizon 2

TWO HORIZONS: IRP 2023 follows a Two Horizons strategy:

- Horizon 1: 2023 – 2030. The focus will be mainly on solar and wind energy. The target is to generate 29,000 MW.
- Horizon 2: 2031 – 2050. New nuclear will be included in the energy mix. The target is to roll out 14,000 MW of new nuclear power.

BID WINDOWS: Bid Window 6 has largely failed. On 14 December 2023, the DMRE quickly rolled out "mega" Bid Windows calling for the procurement of 7,615 MW of new generation capacity.

- Bid Window 7 : 3,200 MW onshore wind.
  : 1,800 MW solar photovoltaic.
- Bid Window 8 : 2,000 MW Gas-to-Power. Eskom's first Gas Bid Window.
- Bid Window 9 : 615 MW Eight battery storage facilities in the Northern Cape.
- Total for 2024 : 7,615 MW. Capacity to be added to the Transmission Grid.

ADDITIONAL BID WINDOWS ENVISIONED FOR 2024

- A bid window for 1,000 MW of gas-to-power, specifically for Nelson Mandela Bay, will be published.
- Requests for proposal (RFP), not a bid window, for 2,500 MW of nuclear power. The request is for a reactor to replace Koeberg (2,000 MW) as well as new smaller modular reactors. A nuclear power station takes 10 – 15 years to develop. This will not make any difference before 2030. After 2030, the focus switches to nuclear.

TRANSMISSION LINES: There is a shortage of transmission lines, but ironically, there are no Bid Windows for transmission lines. Bad planning created a massive bottleneck. Producers are queuing to get access to transmission lines. Compton Saunders of the SA Wind Energy Association commented: "Many mature projects in the Western, Eastern and Northern Cape provinces are stranded." Some suppliers and constructors have already entered business rescue. Vaughan Hatting of the IPP (Independent Power Producers) stressed: "A strategy is needed to debottleneck the crisis." A new technique, termed "curtailment," will be introduced to increase grid line capacity by 3,470 MW in the Eastern and Western Cape.

Only 1,675 km of new line capacity is planned to be added by 2027. It is insufficient to connect new generation, and to prevent loadshedding. Wind and solar energy can only be economically produced in the three provinces below. Outside these provinces production costs will escalate by 30%.

- Western Cape : Nil line capacity. Wind energy cannot be added to the grid.
- Eastern Cape : Nil line capacity. Wind energy cannot be added to the grid.
- Northern Cape : Nil line capacity. Solar energy cannot be added to the grid.
- Rest of country : Sufficient line capacity is available to distribute 19,900 MW.

EAF - THE VITAL FEATURE: A vital feature of Eskom's generation strategy is to improve the energy availability factor (EAF) - actual generation performance as a percentage of total installed capacity. A plant may have an installed (name plate) capacity of 2,000 MW. However, when aging and neglected plants are forced to shut down for some months for maintenance, its actual output may drop to 70%, and the EAF drops in tandem. EAF is the figure to watch, not the name plate capacity. An EAF below 70% triggers loadshedding. Chris Yelland, an electrical engineer, calculated that Eskom's EAF has been on a downward trajectory. This makes mockery of EAF targets of 65.0% by Eskom and politicians. With the planned new capacity Eskom expects loadshedding to continue until 2027. Prof Eberhard describes the plan as an "admission of failure."

EAF performance:

- EAF 2022 Actual : 58.0%
- EAF 2023 Actual : 54.7%
- EAF 2024 Projected : 59.0%
- EAF minimum to prevent loadshedding : >69.0%

JUST ENERGY TRANSITION AND THE PARIS AGREEMENT: Eskom's Just Energy Transition (JET) Office was established in 2020. "Transition" describes the gradual movement towards lower carbon technologies, while "Just" qualifies that this transition will not negatively impact society, jobs, and livelihoods. JET's vision focuses on achieving "Net-Zero" carbon emissions by 2050. To work towards JET, and the Paris Agreement on climate change of 2015, a timeline for the closure of 13 coal-fired power stations before 2051 has been published.

CLOSURE OF COAL MINES: A research study by a UCT academic, Dr Megan Cole, found that more than six million people will be affected socially and economically by coal mine closures, with communities in the coal belt, near power stations, to be the most affected. The study calls for government and companies to think about the social risks that will accompany the closure of coal mines while the country ramps up investments into cleaner energy. Closing 13 power stations could lead to the closure of 69 coal mines, and six million job losses. No one should be left behind.

| **CLOSURE OF COAL-FIRED POWER STATIONS** | | |
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| **YEARS** | **TOTAL** | **DETAILS** |
| 2022 | 1 | Komati, the oldest power station, was closed as a litmus test for the transition away from coal. The closure had to be "just and equitable, leaving no one behind." |
| 2024 – 2025 | 4 | Camden, Grootvlei, Hendrina, and Arnot |
| 2026 – 2030 | 3 | Kriel, Matla, and Duvha. Duvha's EAF is a low 20%, which is trifling. |
| 2031 – 2040 | 4 | Tutuka, Kendal, and Eskom's two best performing plants Lethabo and Matimba, both consistently producing 2,700 MW with EAFs of 75%. |

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| 2041 – 2051 | 1 | Majuba. |
| Post 2051 | | Medupi and Kusile. Two extra-large (monster) power stations still under construction. |
| Total closures | 13 | |

OBSERVATIONS OF ENERGY EXPERTS – HOW NOT TO FIX ESKOM: Several energy experts have been critical of the draft IRP 2023, describing it as a "wholly unsatisfactory document that lets the country down in a crucial area of development". Prof Anton Eberhard called it a "Neanderthal plan and a stitch-up, with predetermined outcomes in line with what min Mantashe has been advocating – wishful thinking around improvements in Eskom. It is hard not to conclude that this IRP indicates a government that has failed to fully grapple with the emergency of our power crisis."