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## South Africa Economic Outlook

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# Productivity Potential Index (PPI): A new way of measuring countries' productive competitiveness.

Human capital, logistics and institutions are some of the largest contributors to South Africa's productivity.

26 March 2024





# Ten key messages from this report

South Africa Economic Outlook March 2024



1

Productivity growth affects various aspects of society, from national prosperity to individual quality of life. **Productivity is a catalyst for economic growth and development, enabling nations to produce more with the same resources.** It plays a crucial role in bolstering employment opportunities, leading to better wages and improved economic conditions.

2

**Traditional productivity measures ignore many of the assets that determine an economy's productive capacity.** They do not, for example, include environmental impacts, erosion of trust, or the weakening of equity that a production process may generate. Furthermore, traditional measurements provide only a retroactive view of productivity.

3

**PwC's new Productivity Potential Index (PPI) adopts a 'multiple capitals' approach measuring productivity.** It includes the traditional inputs of human, physical, innovative and other intangible capital that underpin traditional productivity measures, and adds pillars for social, natural and institutional capital.

4

In developing countries, physical capital, life expectancy, institutional quality, and internet access are the most important predictors of productivity. **Around 40% of South Africa's productivity is determined by human capital, logistics and institutions. These factors are also currently among the country's biggest economic challenges.**

5

Education is at the core of human capital development. **South Africa's education spending is high (as a percentage of GDP), though the return on this investment is low.** This has resulted in a skills deficit and productivity challenges in the labour market, with soft skills (e.g. active listening and critical thinking) in particularly short supply.

6

**The job market calls for a paradigm shift in public sector education curriculums and teaching methods.** Many higher education institutions in South Africa have recognised this. The majority of them believe that industry-led curriculum design and learning methods are required to deliver curricula that match the rapid pace of change in the world.

7

Reliable infrastructure, well-maintained equipment, and appropriately applied technologies boost productivity. However, in South Africa, the state of port infrastructure and services have deteriorated in recent years, with the number of containers imported and exported declining from 4.42 million in 2021 to 4.18 million in 2023.

8

**One option to improve ports is a part public/part private ownership model.** Globally, the trend is for governments to play more of an oversight and ownership role, leaving some or all operational aspects to the private sector. Greater private involvement opens opportunities for more investment, particularly where governments are fiscally constrained.

9

**Our PPI added institutions as the third new pillar to the measurement of productivity because of their essential role in overseeing and regulating the economy, thereby contributing to productive outcomes.** The performance of South Africa's public institutions has unfortunately deteriorated since 2018.

10

**To improve public institutions, the government needs to adopt technologies that create transparency and transform organisational culture to improve understanding of why compliance is necessary.** In turn, private companies need to be agile to survive the impact of corruption emanating from the public sector and elsewhere.

# About this document

Productivity is a catalyst for economic development: boosting productivity creates employment, encourages innovation, and supports the sustainable and equitable growth of societies. However, research by the World Bank ranked South Africa 80<sup>th</sup> out of 170 countries for productivity growth in 2015-2021. During this period, the rate of local productivity growth – as measured by GDP per employed person – was only two-thirds of the pace seen globally.

Traditional measures of productivity typically do not include certain factors that we view to be critical to sustainable economic growth and development. These include factors like environmental impact, health, innovation, and the performance of institutions. This edition of the South Africa Economic Outlook considers a new PwC-created tool for measuring productivity that takes into account a host of factors relevant to long-term sustainability.

Our analysis shows that human capital, logistics, and institutions are some of the largest contributors to South Africa’s labour productivity. At the same time, these factors are also associated with some of the biggest challenges to economic and employment growth in the country. In other words, South Africa is very dependent on productivity factors that, right now, are severely underperforming.

This report considers the state of education, the logistics sector, and public governance in South Africa, along with potential solutions for both the public and private sector, as we collectively strive for a more productive economy.

Key elements of this report include:

- PwC’s Productivity Potential Index (PPI): A new way of looking at productivity ([page 5](#)).
- Multiple capital pillars: Unpacking South Africa’s productivity drivers ([page 6](#)).
- Labour and human capital: Educational systems need industry-supported curricula and teaching methods ([page 7](#)).
- Infrastructure and physical capital: New models for port management create opportunities for private sector investment ([page 8](#)).
- Public institutions: Quality governance increases service delivery and reduces corruption ([page 9](#)).

Lastly, we comment on how PwC assists our clients with workforce upskilling, supply chain optimisation and safeguards against corruption ([page 10](#)).



Macroeconomic forecasts (March 2024)				
Baseline scenario	2022	2023	2024f	2025f
ZAR/USD	16.36	18.45	18.89	19.39
Consumer price inflation (%)	6.9	6.0	5.2	4.8
Repo rate (end-of-period)	7.00	8.25	7.75	7.00
Real GDP growth (%)	1.9	0.6	0.9	1.2
Unemployment rate (%)	32.7	32.1	32.5	32.8
Probability weighted average	2022	2023	2024f	2025f
ZAR/USD	16.36	18.45	19.09	19.55
Consumer price inflation (%)	6.9	6.0	5.2	4.9
Repo rate (end-of-period)	7.00	8.25	7.73	7.05
Real GDP growth (%)	1.9	0.6	0.9	1.1
Unemployment rate (%)	32.7	32.1	32.5	32.9

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*Productivity matters because it supports innovation and resource optimisation. This, in turn, spurs economic growth and increases global competitiveness, making the country more attractive to investors. The economic gains from a more competitive economy includes higher tax revenues and increased exports in support of smaller fiscal and current account deficits. High productivity also prepare economies to better absorb shocks and recover from economic downturns. For South Africa, a more productive economy could also mean higher salaries and wages that directly elevate the standards of living and quality of life.*



**Lullu Krugel, PwC South Africa Chief Economist**

# PwC's Productivity Potential Index (PPI): A new way of looking at productivity.

South Africa Economic Outlook March 2024

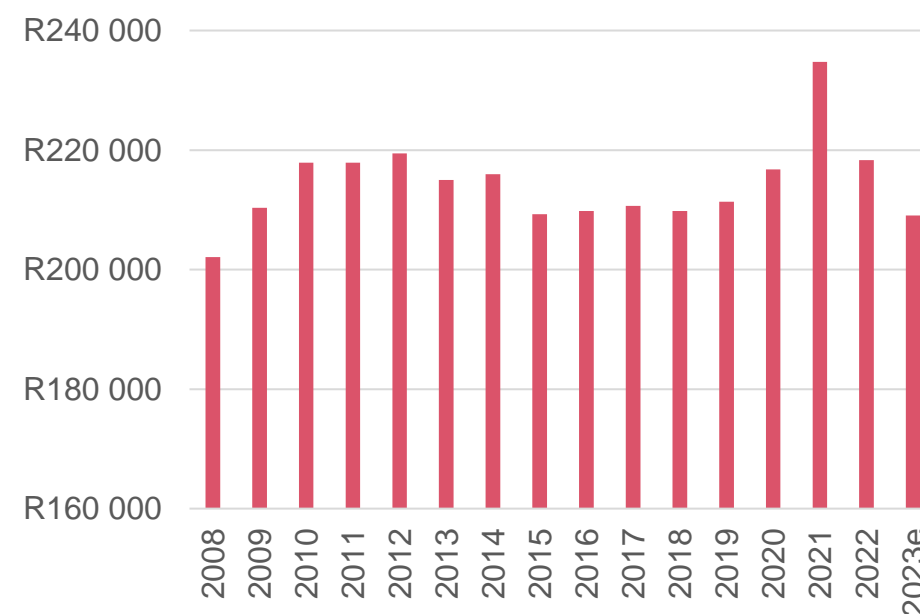
**Summary:** Productivity is a catalyst for economic growth and wealth. Traditional, backward-looking metrics to measure productivity ignore many of the capital assets that determine an economy's productive capacity. To the regular inputs of human, physical, innovative and other intangible capital that make up traditional measures, PwC's forward-looking PPI adds pillars for social capital, natural capital, and institutions.

## Traditional measures ignore many of the capital assets that determine an economy's productive capacity.

Boosting productivity growth directly affects various aspects of society, from global competitiveness and national prosperity to individual quality of life. Productivity acts as a catalyst for economic growth and development, enabling nations to produce more with the same resources. It plays a crucial role in bolstering employment opportunities, leading to better wages and improved economic conditions for individuals at the household level and across the nation. Therefore, **as South Africa heads towards its seventh democratic national election, understanding the levers that impact national productivity is critical for would-be policymakers in the next Parliament if they are to achieve their economic development objectives.** Whether these policies pertain to investments in education, advancements in technology, infrastructural enhancements, or regulatory reform, they can effectively bolster productivity growth and steer South Africa toward more sustainable and more rapid economic development.

Traditional measures of productivity relied upon by economists and policymakers to explain a country's economic performance include GDP per employed worker and total factor productivity (TFP). GDP per employed worker (See Figure 1) focuses on the real (inflation-adjusted) value of outputs created by workers. In South Africa, years of economic underperformance resulted in this metric showing no net gain between 2015 and 2023.

Figure 1: Real GDP per employed worker



Source: PwC calculations based on Stats SA data

However, these **traditional productivity measures do not consider negative outputs such as environmental impacts, erosion of trust and the weakening of equity that a production process may generate.** Thus, traditional productivity statistics would be unable to differentiate between two factories, one of which generated twice as much pollution as the other, if they were using the same inputs and generating the same output. Excluding such production externalities -- which could be positive or negative -- from productivity calculations means that traditional productivity data has some significant shortcomings. The available metrics ignore many of the capital assets that determine an economy's productive capacity, such as health, social capital, environmental factors (including water use and biodiversity) and the quality of institutions. Moreover, traditional productivity measurements provide only a retroactive view of productivity, lacking a forward-looking perspective that can yield predictive potential to inform policy making. We need a better measurement to address these shortcomings.

## PwC's PPI adopts a 'multiple capitals' approach to defining, modelling, and measuring productivity.

In their new report "[In Search of Productivity: The Next \\$50 Trillion In the Global Economy](#)", the Strategy& Middle East Ideation Centre put forward a solution to this: the Productivity Potential Index (PPI). **To traditional measures of productivity (human, physical, innovative and other intangible capital), the PPI adds pillars for social capital, natural capital, and institutions.** As illustrated on page 6, the PPI consists of 19 variables grouped into six pillars. A primary innovation of the PPI is to adopt a 'multiple capitals' approach to defining, modelling, and measuring productivity. By encompassing human, physical, natural, social, institutional, and intangible capital, it draws on a wide range of economic research and offers insights across the full spectrum of productivity policy.

Economies stand to benefit greatly from improved productivity levels. Productivity gains can lead to an acceleration in the growth rate of a country's gross domestic product (GDP) over time. For example, for the 25 economies assessed in our PPI report, their existing real GDP growth rate is forecast by the World Bank at an average of 2.6% p.a. over the coming decade. If each country addressed their weakest productivity factor and matched it to the best-in-class among the sample, average real GDP growth can accelerate to 3.5% p.a. across the group.

Note that the PPI is also fully aligned with the "Beyond GDP" movement that we explored in the May 2023 edition of this report ([Beyond GDP: Measuring socio-economic progress with companies' non-financial data](#)). The results of our research indicate that the sources of future growth and innovation in economies are diverging from and GDP components and becoming increasingly aligned with net zero social cohesion. As such, **the PPI will be a useful indicator for understanding the future sources of GDP growth and for delivering on the United Nations Sustainable Development Goals (SDGs).**





# Multiple capital pillars: Unpacking South Africa's productivity drivers.



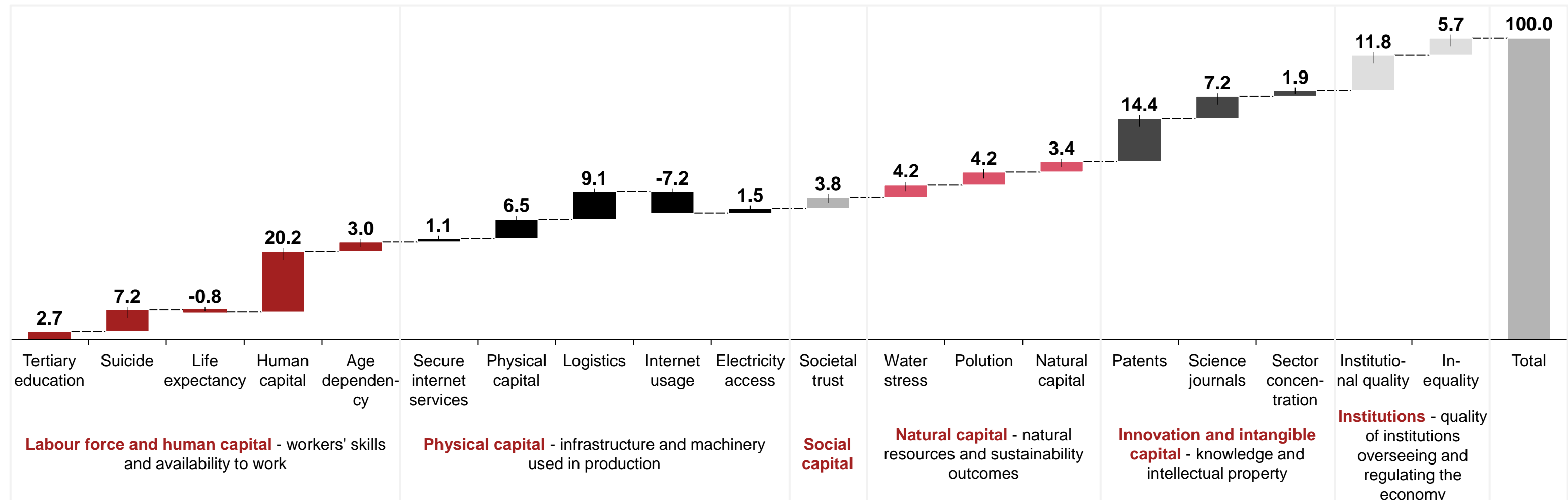
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**Summary:** The PPI is a modern economic indicator that uses machine learning to estimate country-specific productivity. There are key differences in the primary drivers of productivity across different types of economies. South Africa's productivity is strongly determined by human capital, logistics, and institutions, which are currently also among the country's biggest economic challenges.

The PPI is modern not only in its conception but also in its calculations. **With the help of a machine learning process, we estimated country-specific potential productivity using all the available data, across all 25 countries and variables in our study.** This enabled us to identify those pillars that individual countries would specifically need to focus on if they wanted to boost their own productivity growth. By design, the PPI is inherently forward looking. Mainstream productivity analysis describes only the past and today's decision-makers need economic indicators that can shape the future.

There are key differences in the primary drivers of productivity across different types of economies. In developing countries, physical capital, life expectancy, institutional quality, and internet access are the most important predictors. In contrast, in advanced economies, inequality is the most important predictor, followed by physical and human capital. Based on the PPI report, Figure 2 illustrates the contribution of different capitals to the productivity of a South African employee. **Around 40% of South Africa's productivity is determined by human capital, logistics and institutions. These factors are also currently among the country's biggest economic challenges.**

Figure 2: Components of the Productivity Potential Index (PPI)



# Labour and human capital: Educational systems need industry-supported curricula and teaching methods.

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**Summary:** South Africa's education spending is high (as a percentage of GDP) though the return on this investment is low. The job market calls for a paradigm shift in public sector education curriculums and teaching methods. Many higher education institutions have recognised the need to innovate curriculum and their approaches to teaching. Most HEIs believe that industry-led curriculum design and learning methods are required to achieve this.

## Education, health, and demographics are added to the human capital components of the productivity equation.

Labour and human capital are traditional inputs for calculating TFP. This category, which includes workers' skills and availability to work, is a crucial factor influencing productivity. We have nonetheless enhanced this pillar by **adding three factors that also relate to labour and human capital but that are currently absent from the traditional measurement:**

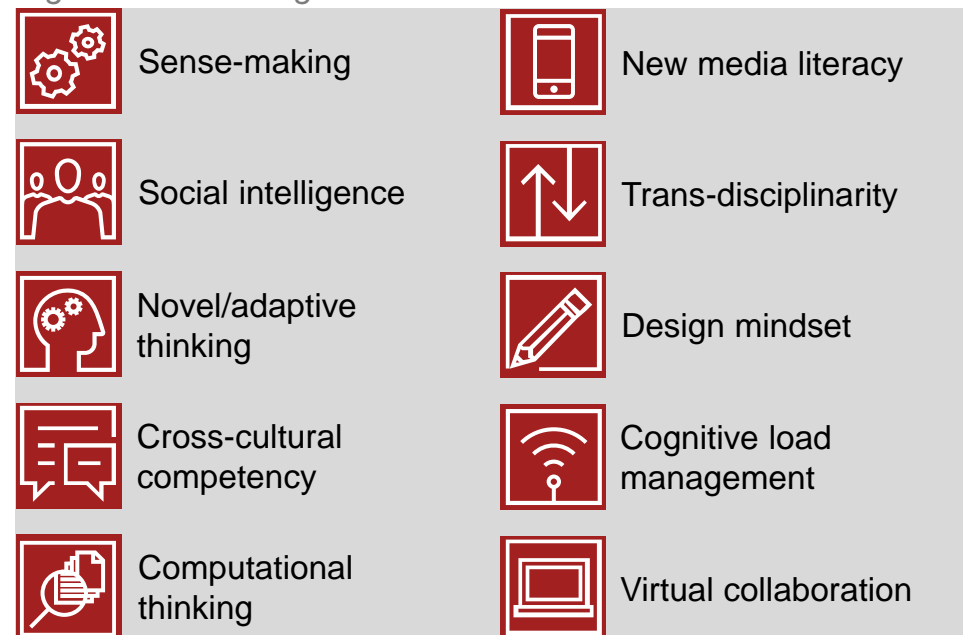
- Education: A well-educated workforce can adapt to technological advancements while engaging in more demanding jobs that require higher technical abilities.
- Health: Healthy individuals are likely to have higher tenure and greater capabilities on the job. This includes both physical and mental health.
- Demographics: This dimension measures whether immigration and retirement ages can affect the labour force, which in turn affects productivity. Family support policies for parental leave and childcare support can also influence parents and their productivity.

In our PPI index, human capital per capita is represented by World Bank data calculating the present value of future earnings for the working population over their lifetimes. This data represents the amount of human capital that a child born today can expect to attain by age 18, given the risks to health and education that prevail in the country where the child lives. South Africa's education system absorbs a large chunk (around 20%) of

fiscal budget spending and a high proportion when compared to the size of the economy (5.8% of GDP over the past decade). In fact, **South Africa's education spending is higher than the Organisation for Economic Co-operation and Development (OECD) country average (5.1% of GDP).**

However, as noted in the September 2023 edition of this report ([In search of the lost demographic dividend](#)), the return on educational investment is low. According to research by the World Bank, **the average South African learner can expect to receive around nine years of basic education by the age of 18, though when adjusted for the quality of education this is equivalent to only five years of learning.** The country's weak education outcomes translate into a skills deficit – and productivity challenges – within the labour market. According to the Department of Higher Education and Training, South Africa's largest skills shortages are reading, comprehension, writing, speaking, active listening and critical thinking. These and other soft skills (as listed in Figure 3) are crucial for a productive workforce and should ideally be formed at a primary or secondary education level.

Figure 3: Most sought after skills for the future workforce



Source: PwC

## What can the public sector do to fix this?

Academic institutions are under pressure to produce graduates that are adaptable in the market and be 'robot-proof'. **The job market calls for a paradigm shift in public sector education curriculums and teaching methods.** Many higher education institutions (HEIs) have recognised the need to innovate curriculum and their approaches to teaching and learning. Funding challenges and the increasing war for talent means that academic institutions are having to do more with less, and the pace of technological change is making this an uphill battle. Academic institutions need to prioritise data, technology and human literacy to produce 'robot-proof' graduates. This can be achieved through increased writing skills, diverse classrooms, divergent thinking and intellectual entrepreneurship.

## What can the private sector do to help the public sector?

[PwC's Higher Education Leaders Survey 2023](#) found an emphasis at HEIs to engage with industries to inform the formal curriculum and co-curricula experience of students. The majority of leaders surveyed believe that **curriculum design and learning methods that are in sync with industry trends are required to deliver curricula that match the rapid pace of change in the world.** Recurriculation was explicitly mentioned by several HEIs who are partnering with industry experts and industry bodies to build more relevant learning experiences for students that maximise their exposure to industry challenges.

## What can private companies do to help themselves?

While employers are looking for talent with higher levels of emotional intelligence, resilience, empathy, and integrity, these attributes are rarely evident in the newly qualified workforce. As the impact of digital technology grows, employees who perform tasks that machines cannot are becoming more valuable. This emphasises the importance of soft skills, which machines cannot emulate. Once employers understand their human resource capacity and capability requirements, **companies need to take a proactive and integrated approach to attracting new skills and developing the existing workforce through upskilling programmes and collaboration with academic institutions.**





# Infrastructure and physical capital: New models for port management create opportunities for private investment.

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**Summary:** The volume of rail and port cargo handled in South Africa has declined notably over the past several years. The country's ports are ranked amongst the worst performing globally based on the operational time for port-of-call by ships. Options to remedy this include greater involvement of the private sector, either through part ownership of a public operating entity, or by investing in and operating of port services and facilities.

## Reliable logistics systems and faster container throughput rates could support productivity.

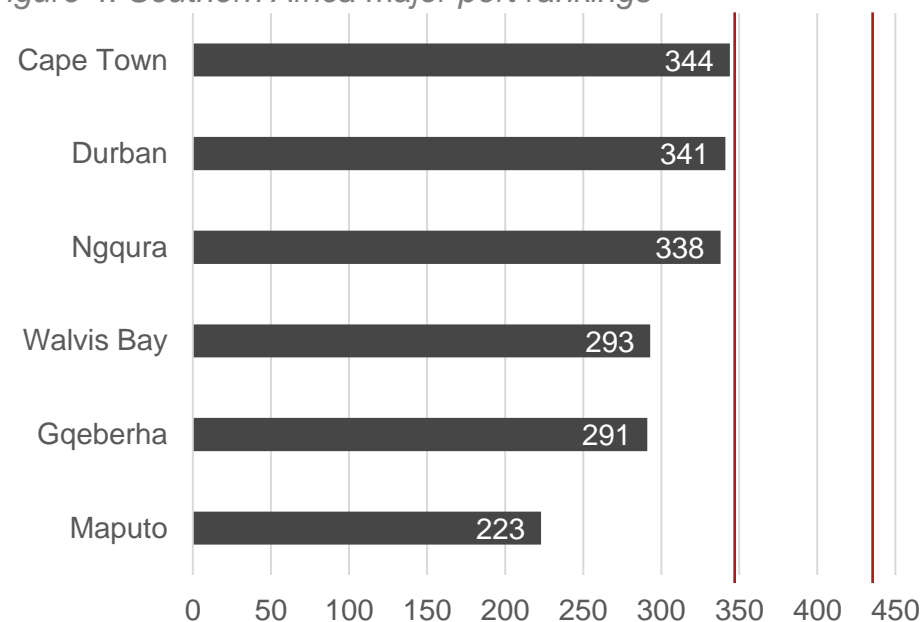
Physical capital includes the infrastructure and machinery used in production. A high level of capital stock means that workers have access to the best tools and equipment, increasing output per unit of labour. **Reliable infrastructure and well-maintained equipment boost productivity. In turn, a lack of infrastructure investment and maintenance weighs on productivity.** In the case of South Africa, capital investment declined every year during 2016-2020. In addition, capital formation contributed just a fifth (an average of only 0.5 percentage points) of the country's real GDP growth in 2021-2023. Admittedly, South Africa's key economic challenges this year - electricity generation, water supply, and railway and port services - are due to under-investment over a much longer period.

**At the confluence of rail and port activity, the number of containers imported and exported declined from 4.42 million in 2021 to 4.25 million in 2022 and 4.18 million in 2023. Railway freight volumes declined from a peak of nearly 20 million tonnes per month in mid-2017 to an average of less than 14 million tonnes per month during 2023.** As noted in the January 2024 edition of this report ([Turning short-term crises into opportunities for business value creation and societal impact](#)), this is part of a broader trend of the state being unable to deliver the quantity and quality of services that it previously did. Alongside this, road freight transport increased from 60 million

tonnes per month in mid-2017 to an average of 72 million tonnes per month in 2023. This indicates that road haulage has, over the past six years, absorbed six million tonnes of goods per month from the deteriorating railway system as well as an additional six million tonnes of 'new' freight.

The World Bank Container Port Performance Index 2022 ranks harbours based on operational time stamps for each individual port call recorded by 10 of the world's largest liner shipping companies. The data reflects information for 434 ports as recorded by S&P Global Market Intelligence, with the World Bank ranking 348 of the ports that had a sufficient volume of ship traffic for results to be considered reliable. Whether ranked out of 348 or 434 territories, **South Africa's port performance is dismal: Durban, the busiest shipping terminal in Sub-Saharan Africa, is placed 341st. This ranks the port at the 79<sup>th</sup> or 98<sup>th</sup> percentile, respectively, depending on the size of the ranking population.** In turn, rival ports (those competing for the business of South African exporters and importers) are doing much better. Mozambique's Port of Maputo (only 550 km from Johannesburg) is ranked 223<sup>rd</sup> while Namibia's Walvis Bay is placed 293<sup>rd</sup>.

Figure 4: Southern Africa major port rankings



Source: World Bank

### What can the public sector do to fix this?

South Africa's development strategy intended to use state-owned enterprises (SOEs) to provide services and infrastructure in support of private sector development. However, many SOEs have instead become an obstacle to development and a burden on the public. Our report "[Where Next for Government in South Africa? An opportunity for change](#)" noted **one of the potential remedies is to move the SOE out of the public sector – in part or in full. Over time, part public/part private ownership models have become increasingly common globally as stable, long-term arrangements.** Internationally, there are great successes of joint ventures (in port management and other activities) where the private sector introduces commercial skills and make an asset more valuable than it was under public ownership.

### What can the private sector do to help the public sector?

Across Sub-Saharan Africa, port ownership and service models are gravitating towards greater private sector involvement. **The trend is for governments to play more of an oversight and regulatory role, leaving cargo handling and ownership of some infrastructure to the private sector.** Greater levels of private involvement opens more opportunities for private investment, particularly in a scenario where a government is fiscally constrained. In South Africa, the recently agreed 25-year deal between Transnet and International Container Terminal Services Inc. (ICTSI) to expand the Durban Container Terminal has opened the door for more such partnerships.

### What can private companies do to help themselves?

Local companies are facing an unprecedented level of supply chain risk and uncertainty. Risks are far-reaching, including the key challenge of slow throughput times at ports. **Many South African enterprises are looking at alternative import/export options in order to reduce disruption to their supply chains, including airfreight and the use of ports in neighbouring countries.** The Ports of Maputo and Walvis Bay, for example, are already seeing increased traffic of goods originating from or destined for South Africa, with 70% of cargo currently handled in Maputo coming from or going to South Africa.



# Public institutions: Quality governance increases service delivery and reduces corruption.

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**Summary:** Quality institutions enhance governance and business confidence. Since 2018, South Africa has seen a deterioration in its performance on four out of the six Worldwide Governance Indicators (WGIs). Enhancing the uptake of technology can increase transparency and reduce opportunities for corruption. Private organisations also need to be proactive, agile, and resilient to react in an appropriate manner to corruption risks.

## Institutional quality enhances governance and fosters confidence, entrepreneurship, and innovation.

The PPI added institutions to the measurement of productivity because of their essential role in overseeing and regulating the economy and thereby contributing to productive outcomes.

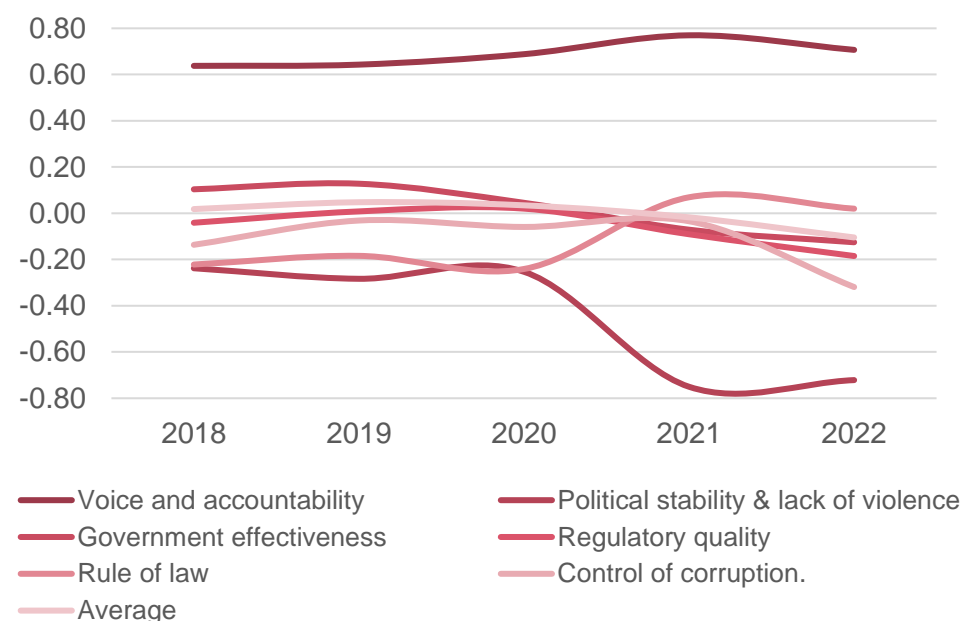
**Institutional quality captures how institutions enhance incentives, governance, and protection of property rights. This fosters business confidence, entrepreneurship, and innovation.** We considered South Africa's challenge of underperforming public institutions in the January 2024 edition of this report ([Turning short-term crises into opportunities for business value creation and societal impact](#)), noting that fiscal strain was reducing the quantity and quality of public service delivery.

In our PPI index, the quality of institutions is represented by World Bank data measuring the aggregate quality of governance. This measurement takes into account six elements as quantified by the Worldwide Governance Indicators (WGIs): 1) voice and accountability, 2) political stability and lack of violence, 3) government effectiveness, 4) regulatory quality, 5) rule of law, and 6) control of corruption. **Under the current administration (since 2018), South Africa has seen improved assessments for voice and accountability as well as rule of law.**

**Conversely, the country has seen deteriorated assessments for the other four aspects of institutional quality.** Two of these aspects – violence and corruption – are diverting state resources away from other important spending priorities:

- Political stability and lack of violence: A long-term upward trend in protest risk was exacerbated by the July 2021 unrest in KwaZulu-Natal. The event showed the social risks embedded in our society and the vulnerabilities to stability created by unemployment, poverty and inequality.
- Control of corruption: South Africa's position on Transparency International's Corruption Perceptions Index (CPI) – reflecting perceptions on the pervasiveness of corruption in the public sector – deteriorated from 73rd ranking in 2018 to 83rd out of 180 territories in 2023.

Figure 4: Institutional quality scores\*



Source: World Bank (\*-2.5 = weakest, +2.5 = strongest)

Political instability, weak government effectiveness, regulatory burden and corruption all reduce the efficiency of public sector institutions and the support that these provide to labour and firm productivity. As noted above, **well-performing institutions support productivity. Conversely, government institutions that underperform discourages business activity and innovation that could productively employ more people.**

### What can the public sector do to fix this?

It's critical that stringent measures be put in place to ensure that every rand of taxpayer money is accounted for as strong and robust compliance systems play a crucial role in detecting corruption. Our report "[Where Next for Government in South Africa? An opportunity for change](#)" noted that **enhancing the uptake of technology across stakeholders can further opportunities for corruption. New technologies (e.g. e-governance systems) provide digital trust and have the ability to create transparency**; this significantly impedes the opportunity for corruption and also speeds up public service delivery. Transforming organisational culture is also crucial to improve understanding and appreciation of why compliance is necessary.

### What can the private sector do to help the public sector?

PwC has supported the development and implementation of an alternative model to the traditional Public-Private Partnership (PPP) premised on an equal partnership basis, with the government and private sector providing shared funding and having shared control over assets. This public-private collaboration model supports the government in executing its mandate of public service delivery and provides private entities with a social licence to operate. The collaboration model involves innovative funding models that reduce the impact on the fiscus. **To ensure strong governance structures, an independent execution body with representation from all partners to the model is set in place with appropriate governance structures.**

### What can private companies do to help themselves?

Bribery, corruption, and financial statement fraud are among the more prominent types of economic crime reported by private companies. To survive the impact of economic crime emanating from the public sector and elsewhere, **private organisations need to be agile and react in an appropriate manner. Business leaders have the ability to help tackle these issues by taking steps to prevent corruption, and by confronting corruption wherever they see it arising.** Organisations adopting the right approach to dealing with corruption will be able use these occurrences to emerge stronger.



# Economics services and contacts.

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## How we can help.

- **Workforce upskilling:** Our skills audit solutions serve not only to understand what an organisation's current skills gaps are, but to also baseline competencies against future skills that will be required as enterprises transform. We identify skills gaps and mismatches, build future-proof skills strategies, lay the cultural foundation, develop and implement upskilling, and evaluate return on investment. A personalised People Value Proposition (PVP) sets employees up to experience factors which significantly influence sustained engagement and motivation at work: conducive learning, psychological safety, a sense of individuality, and shared community.
- **Supply chain optimisation:** PwC is helping companies develop connected supply chains that unify processes across the organisation by implementing new capabilities that deliver seamless customer and consumer interactions. Our supply chain experts have deep experience in solving these complex challenges through, for example, transportation optimisation. This is done with robust transportation tools and industry-leading methodologies for cost analysis, route optimization, fleet efficiency, visualisation, and scenario planning.
- **Safeguards against corruption:** Our anti-bribery and corruption professionals have the knowledge, experience and global footprint to assist you in understanding, managing and responding to bribery and corruption threats and incidents. We can assist you in developing "best in class" compliance programs, raising awareness amongst your stakeholders, identifying compliance red flags in your organisation, conducting third party due diligence and investigating bribery and corruption allegations and incidents.

## Our services

The PwC South Africa Strategy & Economics team is a specialised unit of economists who serve our clients in a variety of ways. Our services include:

Measure your impact on the economy and society

- Economic Impact Assessment (EIA)
- Socio-Economic Impact Assessment (SEIA)
- Regulatory Impact Analysis (RIA)
- Environmental, Social and Governance (ESG)
- Total tax contribution
- Localisation calculations

Make decisions about risk and investment

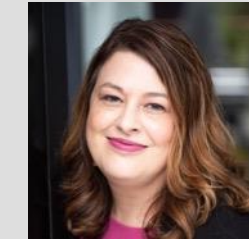
- Macroeconomic research
- Market entry analysis
- Country and industry risk assessments
- Commercial due diligence assistance

Plan for future economic scenarios

- ESG scenario planning
- Economic and political scenario planning
- Industry and macroeconomic modelling
- IFRS 9 audit assist

Please visit our website to learn more:

<https://www.strategyand.pwc.com/a1/en/solutions/purpose-led-economics.html>



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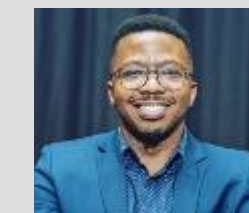


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