



This is part a series of publications by the IFoA Data Science, Sustainability and Climate Change Working Party which discusses progress updates on UN SDGs and AI usage. This publication focusses on South Africa.

Background to UN SDGs & AI benefits

Adopted in 2015, the United Nations' Sustainability Development Goals (UN SDGs) are a voluntary set of 17 target areas for governments around the world to address – further split into 169 targets, with the aim of tackling a wide range of challenges including extreme poverty, climate change and gender inequality by 2030.

Given the ongoing popularity and focus on Artificial Intelligence (AI), there is a broader question of if AI can be used to help accelerate progress for each UN SDG. (Source: [World Economic Forum](#)) Organised by the International Telecommunication Union (ITU) - the UN agency for digital technologies, the annual AI for Good Summit takes place in Switzerland which recognises the potential benefits AI solutions can have to both address any current problems and accelerate UN SDG progress.

This publication aims to look at both local SDG and AI progress in South Africa, and how AI solutions are being used to progress local SDG development.

Current challenges and SDG progress

South Africa currently ranks number one in Africa in terms of GDP totalling c.USD 373 billion. (Source: [Statista](#)) Major exports include gold, platinum, coal, cars and diamonds, with major imports being crude and refined petroleum, cars and broadcasting equipment. (Source: [OEC](#)) Further, South Africa was globally the 5th largest seaborne exporter of coal in 2023. (Source: [Coal Hub](#)) South Africa has strong trade partnerships with China, the USA, Germany, India, Japan and Saudi Arabia. (Source: [OEC](#))

Despite its position in terms of GDP, South Africa faces high levels of inequality, poverty and unemployment. It has been described as potentially having a “dual economy” i.e. two separate economies within the same country - one reflecting progress of a capitalist society versus another which is more consistent with underdeveloped regions of the world – reflecting the overall lingering historic divide within the country and difficulties of implementing an effective social reform to help people from all socio-economic backgrounds. (Sources: [African Journal of Hospitality, Tourism and Leisure](#), [Global Finance](#))

South Africa has been called the most “unequal country in the word” by the World Bank, with race being the largest underlying commonality accounting for around 40% of inequality, followed by education accounting for around 30%. (Source: [World Bank](#)) It has the highest income inequality score in the world in 2023, with a Gini coefficient score of around 63 out of 100. (Source: [Statista](#)) The Gini coefficient score is a measure of how income is distributed across a population within a country – a higher score indicates a higher gap between the incomes of a country's richest and poorest people.



It is estimated that around 13 million people are living in extreme poverty in 2024 out of an overall population of around 64 million people, with the poverty threshold at USD 2.15 daily. (Sources: [Statista](#), [Worldometers](#)) More than half of the population live on less than ZAR 1,558 per month (c.USD 88). (Source: [NZ City](#))

The official unemployment rate remained at over 30% for Q3 2024 and has persistently remained high over recent years, which may in part reflect a widening skills and education gap between requirement for roles and job seekers. (Sources: [Reuters](#), [WEF](#)) Unemployment amongst black South Africans stood much higher at around 38% compared to around 8% for white South Africans for Q2 2024. (Source: [Reuters](#)) Around 81% of the population was categorised as black, 8% coloured, 7% white and remaining 3% Indian/Asian according to the 2022 census. (Source: [Government of South Africa](#))

Many of the current inequalities represent a “legacy of colonialism and Apartheid rooted in racial and spatial segregation”, despite the end of Apartheid in 1994 and subsequent legal reforms, with “80 percent of the country’s wealth was in the hands of 10 percent of the population.” (Sources: [Al Jazeera](#), [World Bank report](#)) High inequality persists due to a “legacy of exclusion and inequalities are passed down from generation to generation with little change over time.” (Source: [Global Finance](#))

We cannot expect to unwind decades of Apartheid and potential centuries of colonialism within a short period - much of the remnants are still embedded within society despite changes to legislation. South Africa is a “country that has worked tirelessly to reconcile its past and build a future based on equality and justice.” (Source: [IOL](#)) There have been noticeable strides in progress since the 1990s - a new constitution in 1996, freedom of movement, land ownership, cultural integration, voting rights for all and freedom of speech. (Source: [World Atlas](#)) For example, there has been a substantial increase from c.9.4% in 1996 to 34.7% in 2022 in the completion of secondary education amongst black Africans. (Source: [Department of Statistics, South Africa](#))

It is interesting to note though that despite the progress of removing inequalities between races, inequalities within races are now increasing due to financial progress for individuals within society. (Source: [Social Compass](#))

Other challenges faced within South Africa include (Source: [Human Rights Watch](#)):

- Potential anti-migrant rhetoric during the recent 2024 elections and potential unlawful arrests of asylum seekers towards the end of 2023 / start of 2024.
- Physical abuse against women despite progressive laws aimed at protecting women’s rights.
- Potential legislation not fully addressing education access and needs for children with disabilities, despite the introduction of the recent [Basic Education Amendment Act](#) which seeks to remove barriers to access to education for all.
- Over 20 per cent of children living with severe food poverty, with potential exposure to malnutrition.
- Potential insufficient social security provision for the elderly. However, the government is actively providing social grants to address health, education and social protection for those from vulnerable groups. (Source: [The Conversation](#))
- Potential repression of human rights activists, for example, the Abahlali baseMjondolo, a movement advocating for land, housing and dignity for urban shack dwellers, housing, has faced significant threats and violence.



Freedom House, a non-profit organisation based in Washington DC, USA, classified South Africa “free” giving it an overall “global freedom” score of 79 out of 100 for 2024, noting that it has been “regarded globally as a proponent of human rights and a leader on the African continent.” (Source: [Freedom House](#)) Globally too South Africa acts a prominent voice in the fight against racism. (Source: [Human Rights Watch](#))

Climate Action Tracker currently scores South Africa’s efforts in its fight against climate change as “insufficient”, with Climate Change Performance Index (CCPI) ranking South Africa 38th in the World. (Sources: [Climate Action Tracker](#), [CCPI](#)) CCPI assesses countries on climate policy, energy use, GHG emissions and renewable energy. The government did however on 23 July 2024 sign into law the Climate Change Act, which aims to facilitate transition to a low-carbon and climate-resilient economy. (Sources: [Human Rights Watch](#), [South African Government](#))

Focussing on UN SDG progress

South Africa has acknowledged these challenges of improving poverty and inequalities with its National Development Plan 2030, which was adopted in 2012 a few years before the UN SDGs were made official in 2015. (Sources: [South African Government](#), [WHO](#)) To integrate the UN SDGs locally, the UN and the South African Government have worked together to implement a Cooperation Framework, with the aim of helping people in South Africa to live prosperous and healthy lives in a safe and cohesive society that protects and values environmental sustainability. (Sources: [One Planet](#), [UN Sustainable Development South Africa](#), [UN South Africa](#))

However, a 10-year review by the South African National Planning Commission stated that the National Development Plan 2030 “has not materialised over the past decade.” (Source: [South African Government](#)) Local progress is still lacking with only 6% of the 32 measurable SDG targets reviewed on track to be achieved by 2030. Although progress has been made for some of the SDGs which include addressing local drinking water, basic sanitation and climate action at policy level, local crises have halted gains in poverty reduction and food security remains an issue. (Source: [UN Development Programme](#)) In a report jointly produced by the African Union, African Development Bank, United Nations Development Programme and the United Nations Economic Commission for Africa in July 2024, several governance issues within the country were highlighted including local corruption and persistent debt distress which hinder SDG progress.



Key recommendations of the report include:

- Scaled-up concessional development financing.
- Forward-looking debt sustainability analyses.
- Comprehensive economic and institutional reforms.
- Strengthened climate information services and early warning systems.
- Full implementation of the African Continental Free Trade Area (AfCFTA).

(Sources: [2024 Africa Sustainable Development Report](#), [UN Development Programme](#))

Published in early 2024, a joint study by the World Bank and the Development Bank of Southern Africa (DBSA) mentioned that there is a need for significant changes to infrastructure and related spending to address the current lack of progress in local SDGs in South Africa. (Sources: [Report by the World Bank and DBSA](#), [World Bank Group](#))

South Africa published its Voluntary National Review, a summary of its progress against the UN SDGs, back in 2019 where it acknowledged major challenges remained to address inequalities, violence against women, discrimination and transitioning to a low carbon economy. (Source: [UN](#))

Given the challenges mentioned earlier, currently South Africa is ranked 115th globally in terms of progress, with an overall score of 63.4 out of 100. (Source: [SDG Index Dashboard](#)) Several of these SDGs are classified as facing major challenges including SDG 1 (extreme poverty), SDG 2 (zero hunger), SDG 3 (good health and well-being), SDG 7 (affordable and clean energy), and SDG 10 (reduced inequalities).

Examples of local SDG projects

South Africa is actively engaged in a range of projects to achieve UN SDGs, including:

Local initiatives

There is a range of local initiatives which are looking to address some of the challenges mentioned earlier:

- Ubuntu Pathways which is a local non-profit organisation which aims to provide “integrated support system of health, education, and social support in the townships of Gqeberha, South Africa.” (Source: [Ubuntu Pathways](#))
- Khulisa Social Solutions is a non-profit organisation which aims to “empower vulnerable children, youth, those who are marginalised, and the community at large to unlock their full potential in order to develop resilient pathways and skills that lead to a sustainable future.” (Source: [Khulisa homepage](#))
- Local Initiatives Fund South Africa (LIFSA) which provides grants of up to ZAR 160,000 to help civil society organisations working in vulnerable areas in Guateng. (Source: [LIFSA homepage](#))

Upskilling and education opportunities

The Code for Cape Town education programme which aims to see more young women pursue tech-related study paths and enter the workforce equipped with the skills they need for roles in the tech industry. (Sources: [Code4Ct](#), [Github homepage](#))



Food subsidies

The National School Nutrition Programme is a government programme that provides access to nutritious meals in poorer primary and secondary schools. (Source: [South African Government](#))

Sustainable water

Water initiatives including the National Water Resource Strategy framework which aims to promote the need for sustainable water. (Source: [South African Government](#))

Wider access to healthcare

The National Health Insurance system (NHI) is a bold reform which aims to address unequal access to healthcare across different socio-economic groups. It was signed into law in May 2024, and will take several years to phase in. The legislation will create a new public fund to allow citizens free access to healthcare and gradually limit the role of private insurance. This should benefit low-income individuals and households though there has been opposition from local health insurers who have raised concerns on the underlying proposed funding model. (Sources: [BBC](#), [British Medical Journal](#), [Reuters](#), [South African Government](#))

Local initiatives include the Tshildzini Society for the Care of the Aged at Tshisaulu, which started over 30 years ago. The project started as a meeting place for the elderly to exercise and for nurses to help with treatment and medication. (Source: [Zoutnet](#))

Inclusive employment opportunities

On 12th April 2023, President Cyril Ramaphosa signed the Employment Equity Amendment Bill of 2020 into law. One of the major amendments of this bill is to introduce sector-specific numerical equity targets to ensure equitable representation of designated groups – defined as “black people, women and people with disabilities.” (Sources: [Labour Department of South Africa](#), [Lexology](#), [Webber Wentzel](#)) There are potential concerns however that any such change would come at the expense of others. (Source: [Al Jazeera](#))

Investment bonds

Social Impact Bonds with the proceeds of such investments used to help with local social development. First introduced in 2018 in South Africa, these are locally gaining popularity. For example, the Bonds4Jobs is an initiative aims to help individuals in securing job opportunities by covering costs such as transportation, interview costs and relocation fees. (Source: [Intellidex \(Pty\) Ltd](#)) Similarly, in 2022, the Innovation Fund Impact Bond was launched which aimed to help early childhood development and future opportunities in the Western Cape. (Source: [Government Outcomes Lab](#))

Agriculture

Agri-parks which are government initiatives launched by the Department of Rural Development and Land Reform and are aimed at revitalising agriculture, catalysing rural industrialisation and supporting local farmers. (Source: [Treasury in South Africa](#)) They promote sustainable agriculture and food security. Examples of agri-parks include in Limpopo and Mpumalanga.



Other initiatives include Agrigreat Soilteach, an initiative aimed at promoting sustainable agriculture and combating soil degradation. The company specialises in producing composts and organic fertilisers using biowaste collected from townships. (Source: [UN South Africa](#))

Modernisation of electricity supply

South Africa's electricity grid - owned by the government-owned company Eskom - requires investment and upgrading, with power outages ("load shedding") being common. On saying this, it recently announced 300 days of uninterrupted power supply. (Source: [Times Live](#))

Coal-generated electricity remains the largest source of energy to power homes and businesses alike, accounting for around 70% in 2022, with only 8% accounted for by renewable energy. (Source: [IEA](#)) On saying this, South Africa has enormous potential to leverage solar power, having the largest capacity for solar power within Africa in 2023. (Source: [Statista](#)) Recent proposed changes to their tariffs by Eskom, which supplies more than 80% of the electricity generated in South Africa and uses coal as its main source, may have a negative cost impact on those who use solar energy. (Source: [BusinessTech](#))

Acknowledging the need for a move away from coal to renewable energy, South Africa and the International Partners Group (IPG) announced the Just Energy Transition Investment Plan (JET IP) at COP26 in Glasgow to move towards clean energy sources. In November 2021, South Africa secured a USD 8.5 billion deal with other countries, including the USA, EU and the UK, with financing spread over a period of 5 years (from 2023 to 2027). This deal is designed to support the transition from coal to renewable energy. (Source: [UK Government](#))

Despite this, the current progress driven by JET IP has been relatively slow to date, with projected costs to cover the energy transition from fossil fuels to renewable energy, modernisation of the electric grid and related infrastructure, decommissioning of coal plants and socio-economic costs related to job losses and retraining estimated to be substantially more. (Source: [AT Chartbook](#)) The true cost required to transition to cleaner energy is estimated to be USD 250 billion over the next 3 decades. (Source: [Al Jazeera](#))

There is a wider question of the socio-economic impact of transitioning away from coal, with c.91,000 people employed in the coal industry, and how any transition does not result in large scale job losses and wider negative impacts on these communities. (Source: [The Conversation](#))

Opportunities for the mining industry

Mining accounted for around 6%-7% of South Africa's GDP in 2023. (Source: [Mining Review](#)) In a recent survey of senior mining and metal leaders published by EY, almost half of the respondents said they are confident of meeting their nature-positive obligations with an overall goal of halting and reversing nature loss by 2030. Companies have also started to pilot low-carbon metals. (Source: [EY](#))



AI progress

South Africa ranked 77th in the world scoring 47.28 out of 100 on Oxford Insight's AI Readiness Index and similarly 50% on IMF's AI Preparedness Index – both indices showing indicative progress for AI adoption within a country. (Sources: [Oxford Insight's AI Readiness Index](#), [IMF](#))

Currently, the market size of AI within South Africa stands at just below USD 1 billion with the market expected to grow to c.USD 4bn by 2030. (Source: [Statista](#))

Earlier in 2024, Microsoft announced a USD 70 million investment in the South African economy over the next decade to promote growth in technology and develop AI transformation. The investment also includes c.USD 19 million to help develop local skills in this area. (Source: [Empower Africa](#))

Other tech giants are also investing in future development across the African continent, including South Africa. For example, IBM is working with local universities and non-profit organisations to upskill young people and those currently in the workforce. (Source: [Global Business Outlook](#)) Similarly, Google is committing c. USD 5 million to develop cybersecurity and IT skills across Africa, with South Africa, Nigeria and Kenya being the main recipients. (Source: [Global Business Outlook](#)) Further, in 2023, Google partnered with the African Institute for Mathematical Sciences (AIMS), to launch an AI for Science Master's programme. (Source: [Google Deepmind](#))

The Fourth Industrial Revolution is a term popularised in 2016 by Klaus Schwab, founder of the World Economic Forum, and covers the current era of technological transformation we are living in, such as adoption of AI, Internet of Things (IoT), blockchain and autonomous solutions. In 2019, the South African Government launched its Fourth Industrial Revolution (4IR) strategy with the aim of leveraging new technologies for economic growth, social development and job creation. (Sources: [South African Government](#), [World Economic Forum](#)) Adoption of AI within South Africa is expanding into other areas including asset management. (Sources: [JTC Group](#), [Sygnia](#))

There is currently no explicit AI legislation in South Africa. The draft South Africa National Artificial Intelligence (AI) Policy Framework 2024 (National AI Plan) may set the foundations to such future legislation. The draft National AI Plan was launched in April 2024, and was published by the Department of Communications and Digital Technologies (DCDT) in October 2024, with comments on the draft Plan welcomed by the deadline of 22 November 2024. The Plan is a policy framework which aims to promote the integration of AI in order to drive economic growth and enhance societal well-being, and such an AI policy would serve as the foundational basis for creating AI regulations and potentially an AI Act in South Africa. The draft framework goes further than other global approaches, which consider trustworthiness and fairness within AI development and robust data governance, by encouraging sectoral strategies to acknowledge local unique challenges including historical inequalities and unequal access to technology and education.

The framework proposes a holistic Futures Triangle approach, which covers the “pull of the future”, “push of the present” and “weight of the past”. The framework explores various strategic pillars including research & development, public sector implementation and a human-centred approach. (Sources: [Bowmans](#), [Michalsons](#), [Pinsent Masons](#), [WhiteCase](#))



There is a concern that AI might widen the gap between the rich and the poor. Similarly, many businesses are largely focussing on AI to improve efficiencies and automation, which may replace repetitive, routine tasks such as low-skilled jobs. We must ensure that any adoption and future integration of AI within South Africa works in partnership to address the current challenges of inequalities and unemployment, and not simply compound such problems. (Sources: [Discover Thought](#), [Tzu Chi Medical Journal](#))

Example local AI projects used to promote SDGs

South Africa has seen a growing number of AI initiatives aimed at leveraging technology for various sectors. Here are some notable examples:

Agriculture

Agriculture currently accounts for around 2.5% of annual GDP. AI-driven technology helps farmers to optimise crop yields and improve sustainability practices. Farmers can leverage machine learning algorithms and use information from sensors, drones and satellites which gather real-time data on crops, soil health and water usage. This can help farmers to decide on optimal planting times or when to apply pesticides. Smart tablets, mobile phones and bar code readers are being used in packing and delivery of products. Adoption of new technology is still slow given the relative cost compared with cheap farm labour. Is there a wider duty of care however for labourers whose jobs may be at risk with adoption of such technology? (Sources: [Boston Consulting Group](#), [London School of Economics](#))

Smart cities

Smart cities use digital innovation and real-time data to improve sustainability and the quality of life for their inhabitants. Progress towards smart cities within South Africa includes Cape Town, which uses smart-grid technology to support its digital economy and its open [data portal](#) which includes a range of open source data sets covering local economic and social development, as well as transportation. (Sources: [Cape Business News](#), [Cape Town magazine](#), [City of Cape Town](#)) The broader concept of smart cities in South Africa is explored further in the 2021 [joint paper](#) by the Department of Cooperative Governance (DoCG) and the Council for Scientific and Industrial Research (CSIR).

Enhanced AI-based detection of tuberculosis

AI-based computer-aided detection (CAD) tools are helping with screening for tuberculosis (TB) – one of the country's leading causes of death. Currently, people with TB are often asymptomatic and never get tested. Screening initiatives are now in place where mobile X-ray units give free X-ray chest scans to communities where TB is more prevalent. CAD tools alleviate pressures on the limited number of medical staff including radiologists, and are able to interpret these X-ray scans to a similar, if not better, degree of accuracy. (Sources: [Qure.ai](#), [Spotlight](#)) Given the ongoing global drive for us of AI-driven tools within the health industry however, there is a wider call for regulation. (Sources: [News 24](#), [Omnia Health](#), [WHO](#))



Opportunities for local actuarial innovation within SDGs

There are several opportunities for local actuarial innovation in South Africa that align with the Sustainable Development Goals (SDGs). Here are some key areas:

Microinsurance solutions

Microinsurance solutions, which are aimed at lower income individuals who would not normally have access to such products. Regulations surrounding microinsurance products and providers continue to evolve. Examples of microinsurance solutions include the Go Cover mobile phone app developed by Sanlam which facilitates the purchase and management of such products. (Sources: [DHL](#), [KPMG](#))

For volunteer opportunities and seminars on microinsurance via the Actuarial Society of Africa, please see <https://www.actuarialsociety.org.za/assa-committees/microinsurance-committee/>.

Lifestyle choices influenced by insurers

Insurers play a key role in promoting sustainable day-to-day habits for individuals. For example, the insurer Discovery offers customers an Apple watch to track their daily movements via its Vitality programme. The more active the customer, the less insurance premium they pay. Another insurer Momentum promotes a similar product – they provide a fitness tracker for customers who in turn pay reduced premiums the more active they are. These initiatives indirectly promote wider health and well-being benefits to individuals and society. (Source: [Instanda](#))

Technological advances

[Pineapple Insurance](#) is a new innovative insurer, which allows customers to take photos via their mobile app of items they would like to insure and allows customers to insure on a per-item basis. Insurers such as [Momentum Insurance](#) allows for virtual GP appointments for policy holders. [Outsurance](#) enables customers to request emergency to their location via its mobile app. Mobile access to insurance products is increasing including for funeral cover insurance for example [Ubuntu Life](#). Funeral insurance cover represents a material proportion of the insurance industry in South Africa, with around half of the adult population having cover in 2021. (Source: [Stich Money](#))

KPMG's The South African Insurance Industry Survey 2024 showed that around 52% of insurance CEOs identified AI as critical technology to implement strategic goals over the next few years. Their 2024 survey considers the use of Retrieval Augmented Generation (RAG) – which combines the large language models with information retrieval from relevant sources beyond the original training data set e.g. policy and claims database. (Sources: [KPMG](#), [Stich Money](#))



Further reading

1. 2024 Africa Sustainable Development Report <https://www.undp.org/africa/publications/2024-africa-sustainable-development-report>
2. 2030 National Development Plan in South Africa
https://www.nationalplanningcommission.org.za/National_Development_Plan
3. Actuarial Society of Africa's insurer climate change survey 2024
<https://www.actuarialsociety.org.za/download/Milliman%20Climate%20Survey/?wpdmdl=25590>
4. Africa Healthcare Sustainability Index <https://futureproofinghealthcare.com/en/africa-sustainability-index>
5. OECD AI summary for South Africa <https://oecd.ai/en/dashboards/countries/SouthAfrica>
6. Reuter's commentary on challenges and progress within South Africa
<https://www.reuters.com/graphics/SAFRICA-ELECTION/ECONOMY/egpbonzrqvq/>
7. South Africa 2023 SDG Country Report
https://www.statssa.gov.za/MDG/SDG_Country_report.pdf
8. South Africa's Just Energy Transition Investment Plan (JET IP) for the initial period 2023–2027 https://assets.bbhub.io/company/sites/63/2022/11/south-africa_s-just-energy-transition-investment-plan-2023-2027.pdf
9. Sustainable Development Solutions Network homepage for South Africa
<https://southafrica.unsdsn.org/sdgs/>
10. UN SDG dashboard <https://dashboards.sdgindex.org/profiles/south-africa>
11. UN South Africa homepage <https://southafrica.un.org/en>
12. UNESCO South Africa homepage <https://www.unesco.org/en/countries/za>
13. UNESCO 2022 report on AI adoption across Southern Africa
<https://unesdoc.unesco.org/ark:/48223/pf0000385563>
14. Voluntary National Review – South Africa 2019 <https://hlpf.un.org/countries/south-africa>

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