ISSUE 80
OCT/NOV/DEC 2022

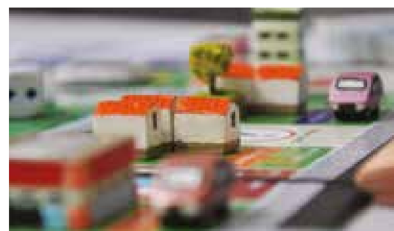
Service

LEADERSHIP IN GOVERNMENT

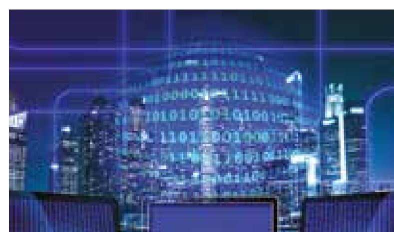
DR PHINDILE MASANGANE, CEO, PASA:
WE NEED TO DIVERSIFY OUR ENERGY MIX

THINK BIG

EDUCATION EQUALITY



INVESTING IN INFRASTRUCTURE



HOW GOVERNMENT SERVES CITIZENS

FROM STEM TO STEAM EDUCATION

Be the change you wish to see in the world

"We need to renew our focus on the areas of service delivery and basic infrastructure that we have known how to do for 100 years," former director general of the National Treasury, Andrew Donaldson, tells us on page 22. His view on South Africa's employment crisis is that we cannot apply temporary solutions to permanent problems.

Donaldson elaborates: "To talk to the issue of supporting the South African business environment is to cast the net wide. The reality is that 'business' is not a homogenous subject – in South Africa, due to the prevailing inequalities, the topic of 'business' extends from well-established commercial enterprises who have thrived for decades, to the emerging township economy, the economies that exist within informal settlements and accessibility issues that affect rural communities. The bottom line is that the South African government needs to invest in cultivating opportunities for work across the entire economy."

Simone Cooper, head of business clients, Standard Bank, says that given the very large role small businesses play in employment and GDP growth around the world, if South Africans are puzzled by lacklustre growth and the inability of our economy to provide employment, we need to look no further than how we support, develop and include our small business segments in the formal economy (page 26).

Constitution expert and law professor Pierre de Vos suggests the inequality that exists within South Africa's education system is not only a problem that affects and concerns the poor. It is in fact a problem that has far-reaching effects for every segment of South African society. Unequal opportunities in education are simply "unsustainable" in his opinion and is a reality characterised by the fact that 30% to 40% of South Africans do not have access to proper education, and by extension, jobs, while 5% to 10% of society pays most of the income tax. These injustices, De Vos argues, are "at the centre of our country's political instability" (page 24).

De Vos cautions South Africans against the belief that a "quick fix" like a curriculum change will solve an issue that is notoriously complex. "When implementing new policies, we need to realise that the issues we face cannot be divorced from our unique political history, so context is key. When we accept the politicised nature of education in South Africa, we can begin to unravel some of the long-standing intricacies of the problem," he concludes.

From STEM to STEAM on page 20 informs us that education needs to adapt with our evolving economy, but how do we equip students with both the hard and soft skills needed in the economy of tomorrow? Increasingly, STEAM education is seen as the answer to this question. Bringing the arts into STEM education is the central thrust of the STEAM model. The aim is to inspire students to think outside of the traditional boxes of science, technology, engineering and mathematics, using the creative arts and design thinking to apply STEM concepts to the real world.

It all seems to have to change.

The changes over the last two years, which we have been calling for, have been considerable and are positive for the infrastructure investment environment. An enabling environment with the appropriate regulatory oversight will galvanise and unlock private sector investment in our economy (page 18).

And while we are changing things: learn how to change the perceptions of service delivery in just six weeks on page 28.

Change is like a holiday, they say. Enjoy yours!

Alexis Knipe
Editor

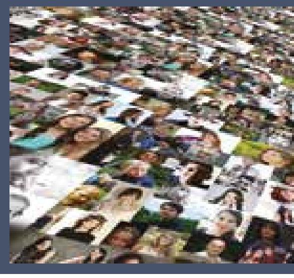
Editor: **Alexis Knipe** | Publishing director: **Chris Whales** | Managing director: **Clive During** | Online editor: **Christoff Scholtz** | Design: **Tyra Martin**
Production: **Yonella Ngaba** | Ad sales: **Venesia Fowler, Tennyson Naidoo, Graeme February, Tahlia Wyngaard** and **Vanessa Wallace**
Administration & accounts: **Charlene Steynberg, Kathy Wootton** | Distribution & circulation manager: **Edward MacDonald** | Printing: **FA Print**

Service magazine is published by **Global Africa Network Media (Pty) Ltd** | Company Registration No: 2004/004982/07
| Directors: Clive During, Chris Whales | Physical address: 28 Main Road, Rondebosch 7700
Postal: PO Box 292, Newlands 7701 | Tel: **+27 21 657 6200** | Email: **info@gan.co.za** | Website: **www.gan.co.za**

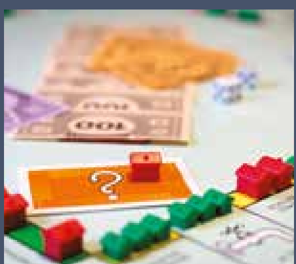
Member of the Audit Bureau of Circulations

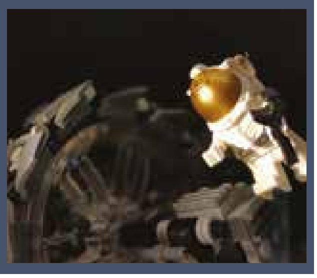
IN THIS ISSUE | SERVICE 80 | OCTOBER/NOVEMBER/DECEMBER 2022












SERVE AND DELIVER

PRESIDENT CALLS ON MAYORS TO BE GAME CHANGERS

President Ramaphosa has called on executive mayors to serve the communities with honesty and become part of a local government that contributes towards regaining and rebuilding the trust and confidence of society in local government as an important sphere of government.

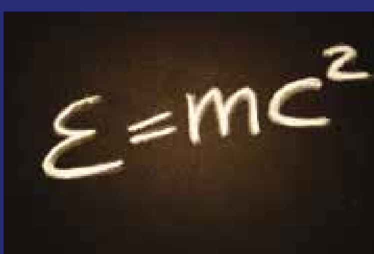
Ramaphosa was addressing mayors who converged for the Council of Mayors which was convened by the South African Local Government Association (SALGA). He said the newly-elected mayors and executive mayors must rise to the challenge of changing the narrative regarding the image of local government.

"A game changer in this term of office is needed and required. To show and demonstrate that we are changing the narrative of local government, there must be consequence and accountability. This must be the hallmark of restoring the credibility of our municipalities," Ramaphosa said.

The president impressed upon mayors and executive mayors to appoint professional and competent managers to run municipal administrations.

The purpose of the Council of Mayors is to provide for a formalised structure in SALGA that will meet at least annually and will focus on addressing challenges experienced by mayors and serve as a platform that can be used for learning, sharing and reflecting.

STEM EDUCATION VITAL FOR THE ENERGY-EFFICIENT FUTURE OF SA



In the wake of COP26, decisive action was taken by the South African government to concretise its commitment to the Just Energy Transition – a move towards a sustainable, low-carbon and equitable energy system – as a national imperative. On the positive side, major players in the local energy sector have followed suit, joining the fray of South African industry leaders who have demonstrated their support of this mandate.

However, now, as the drive towards a more sustainable future accelerates, it's clear that skilled workers are needed within the science, technology, engineering and mathematics (STEM) industries, who are equipped to design, develop, execute and manage renewable energy programmes.

This is according to Mustafa Soylu, CEO of Defy Appliances, who says that upskilling within this field is of relevance within our unique socioeconomic context, with South Africa notoriously having the highest Gini coefficient (measurement of income distribution across the population) in the world. "Our country faces a widening divide in terms of wealth and opportunity.

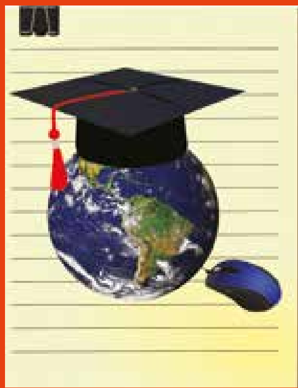
"This is a gap that training and education can serve to bridge, particularly in STEM careers that are characterised by their ability to pay a living wage thus tackling poverty."

However, he highlights that there is certainly no "quick fix", and successfully making the transition towards a more sustainable and equitable energy system requires a long-term commitment from all stakeholders.

Defy's WE-InTech programme is one such example: offering training, internships and job opportunities to women pursuing careers in the STEM fields. The initiative is centred around increasing participation in new generation Research and Development (R&D), offering a sustainable solution that will contribute to building a more inclusive economy. In alignment with this plan of action, Eskom announced its decision to invest in upskilling staff to become renewable energy artisans – a resolve that has been heralded as a move in the right direction. Through partnering with the South African Renewable Energy Technology Centre (SARETEC), Eskom made clear its intention to upskill technicians and qualifying community members in renewable energy.

In conclusion, Soylu says: "We must ensure that all solutions to the energy crisis are socially responsible as well as sustainable, in that they benefit the individual and community as well as the broader environment."

NATIONAL SCHOOL OF GOVERNMENT FOR PUBLIC SERVANTS



The National School of Government (NSG) invites public servants to enrol for the "Championing Anti-Discrimination in the Public Service" and "Managing Performance in the Public Service" courses, directly on the NSG eLearning platform. The two courses are offered online at no cost as part of the drive to provide knowledge and skills for public servants to utilise in delivering services to the public.

The "Championing Anti-Discrimination in the Public Service" online course was developed explicitly to empower public servants with information and tools to end discrimination in the public service, among public servants and by public servants against the public.

"The course will help public servants to critically reflect on their own beliefs, attitudes, thought patterns and behaviour. They will identify and apply relevant strategies and principles to challenge discrimination in all contexts, examine legislation that addresses discriminatory processes and plan how these principles can be applied. They will also be able to assess their departmental policies and practices in light of global anti-discrimination standards. Importantly, they will be empowered to initiate and support anti-discriminatory behaviour in the public sector," says Professor Busani Ngcaweni, principal of NSG. All senior managers are required to undertake the course.

The "Managing Performance in the Public Service" course is designed to assist employees who are not part of the senior management service to manage their own performance and abide by the public service performance management system prescripts. It will enable them to, among other things, write performance goals that are measurable, clear, achievable and aligned to organisational objectives; assess performance continuously; identify gaps and compile a suggested plan of action and revise performance objectives where required.

"The courses have been deliberately converted to free courses that are available on our eLearning platform so that public servants can enrol themselves easily and quickly and be able to undertake the courses at their pace and convenience," says Professor Ngcaweni.

Public servants should enrol for these courses as follows:

1. Go to the NSG website (**https://www.thensg.gov.za/**).
1. Click on **Open eLearning courses** under the eLearning tab.
2. Follow the on-screen instructions to register an online profile (if they have not done so yet).

For enquiries contact: **Elearning@thensg.gov.za**

EXPLORING FOR SUSTAINABLE DEVELOPMENT

Gas and oil have an important role in South Africa's economic future.

In the debate about the future of energy, stark choices are often presented between renewable energy technologies and fossil fuels.

A recent report published by the International Energy Association (IEA) argues against framing the debate in that way. Both can and should be used, according to *Africa Energy Outlook 2022*. A key factor in allowing Africa to continue to industrialise will be an uptick in the discovery and use of gas. If all the gas so far discovered in and off Africa was used, the continent's share of global emissions would rise by 0.5% to 3.5%.

"We should not be brought into a false narrative and a false choice," says Dr Phindile Masangane, CEO of Petroleum Agency South Africa, in agreeing with the report's conclusions. "It can be both and that is what this report is calling for."

Dr Masangane points out that with South Africa's excellent solar resources it makes sense to localise the solar value chain to boost manufacturing but the country should not ignore what it has. "At the same time, we know that the gas value chain is well established in the country, so let's also capitalise on that."

"I wish that as South Africans we can have a holistic debate around our energy mix," says Dr Masangane. "We do need to diversify our energy mix."

Energy security and sustainable development

A major takeaway from the IEA report relates to Africa's historical export of its oil and gas to power other regions. This serves to undermine the continent's economic development. As Dr Masangane states, "It is time for Africa to shift gear and catch up with transformation."

Africa's gas resources can reindustrialise some areas and industrialise for the first time some countries on the continent.

This does not mean that exports need to stop. As Dr Masangane states, "We do still have the opportunity to export the oil and gas that we produce on the continent while making sure that we are intentional about using a lot of that produce for our economic development and reindustrialisation."

Being able to supply electricity to citizens of South Africa and Africa is a key human development goal, and halting oil and gas exploration would make it more difficult to provide energy to places where electricity is scarce.

Current methods of heating and lighting for poorer communities are themselves very polluting and lead to deforestation. If natural gas were to replace traditional methods, that would be a form of decarbonisation in that deforestation would be reduced.

Gas as a fuel in the transport sector is also considerably less polluting than current options, which is why gas is increasingly being seen as a transitional energy source on the road to a cleaner, greener future.

The multiple uses of gas could play a major role in helping South Africa transition away from fossil fuels while at the same time boosting economic growth. "We need gas not just in electricity

and transport," noted Dr Masangane, "but importantly for South Africa, which is in desperate need of an economic turnaround, is for us to use this gas for our manufacturing industry."

In this way, a just energy transition can be achieved.

Dr Masangane notes in the context of major discoveries of oil condensate off the southern coast, "The development of these discoveries has the potential to replace more than 2 300MW of diesel-fired electricity generation in Gourikwa, Dedisa and Ankerlig, thereby reducing the carbon emissions from these plants by more than 50% while eliminating sulphur oxide and nitrogen oxide emissions, which are also harmful to the environment. Gas is therefore an obvious bridge to a lower-carbon future in South Africa."

Dr Masangane sums up the IEA report and its conclusion: "So the use of oil and gas can be part of the decarbonisation and I think that people give a false narrative that it cannot be part of your decarbonisation strategy. This report puts that argument to rest."

Attracting investors

South Africa has vast gas and oil resources and exploration and the exploitation of these resources has barely scratched the surface. Having to import oil and gas has a serious impact on the country's balance of payments.

This makes it more difficult to industrialise the country. For the 2021/22 financial year about 50 applications for exploration and production were received but only about 10% of that number were approved.

This is because of very stringent licensing and environmental regulations which must be followed. As Dr Masangane explains, "We assure South Africans that the slow pace is because we have to make sure that we have a robust system that incorporates all the aspects of licensing but importantly, that the environmental impact assessment is thoroughly undertaken."

Despite this, planned seismic surveys were halted after opponents of the process went to court in 2021 and 2022. Proponents of continued exploration argue that the seismic process being followed is no different to that which has been followed in the past, and which is employed all over the world.

Investors are still very interested in the South African proposition. The recent finds off the south coast by TotalEnergies are huge and have significant economic potential benefits (see box).

The massive resources of natural gas that Renergen has been working on for the last few years are about to start commercial production in the northern Free State. Liquid natural gas for the domestic market and helium for export from this project will create an entirely new stream of energy options.

Most offshore exploration interest tends to come from foreign investors because of the high costs but within South Africa, there is a growing number of local participants. A women and black-owned company, Imbokodo, is making a name for itself as a participant as a shareholder in a number of licensing rounds.

FINANCIAL POTENTIAL OF GAS DISCOVERIES

TotalEnergies and its partners have deployed the Deepsea Stavanger offshore drilling rig to explore off the coast of Mossel Bay. The two fields are called Luiperd (where 2.1-trillion feet of contingent gas resources has been found, enough to power a city the size of East London for five years) and Brulpadda (1.3 Tef), which are part of Block 11B/12B.

If this gas were to be piped to the existing gas-to-liquid plant at Mossel Bay, Mossgas, then instead of spending about R12-billion on decommissioning the plant, the facility could instead start generating R22-billion in taxes and royalties and save South African taxpayers R26.5-billion through not having to import oil and refined products.

PASA estimates that the gas found in these blocks could produce 560-million cubic feet per day of gas for more than 15 years. TotalEnergies' expenditure on stream phase one could amount to $3-billion in 2027 and create 1 500 direct jobs, 5 000 indirect jobs and increase the country's gross domestic production by R22-billion.

The plan is to run the gas via a pipeline to a new fixed steel platform, and from there to use the existing pipeline to get the gas to Mossgas. Up to 18 000 barrels per day of condensate and 210-million cubic feet per day (MMcfd) are expected to be pumped to the facility. Gas condensate is a hydrocarbon liquid stream separated from natural gas and is used for making petrol, diesel and heating oil.

HOW GOVERNMENT SERVES CITIZENS

There are more bytes of data than stars in the observable universe, and government can apply artificial intelligence to this data to save up to 1.2-billion hours of work.

By Elsabe Booyens, CEO, Lehaeng Technology

These technological advances are changing how governments deliver their services, from ensuring food safety to issuing key documents and more. Similarly, artificial intelligence (AI) and big data analytics have been applied to problems ranging from building code violations to financial fraud investigations.

To truly take advantage of these new technologies, government will have to fundamentally change how it delivers services to citizens. AI is an exciting new technology, but one that can't simply be grafted onto existing business models. AI-enabled chatbots can be incredibly valuable tools to help people navigate complex processes. But simply adding a chatbot to a traditional government webpage has no value.

Previous innovations around identity mostly focused on improving the existing driver's licence, making it plastic instead of paper, adding anti-fraud features, etc. But now, new technologies are opening the possibility for entirely new forms of identification. New temporary digital identities take advantage of advances in cloud, mobile computing and cryptography to offer government-backed identity verification that is temporary, revocable and shareable. It meets the needs of both citizens and merchants in a way that modifying old, plastic ID cards never could.

Creating new processes or interdepartmental relationships may seem simple when weighed against the potential benefits they can bring to citizens, but such changes go completely against the grain of innovation in government. Rather than evolving around its core product — the citizen service — government's innovations tend to refine the efficiency of current models. The result is that one of the key motivators of adopting new models is lacking.

TAKE ADVANTAGE OF SYNERGIES

Technologies of the Fourth Industrial Revolution are the engine of transformation and understanding how they work together can help government leaders innovate effectively. Technologies do not exist in isolation — they work in conjunction with each other. For example, it's rare to find AI working without cloud to provide the vast volumes of data it needs. In fact, 83% of enterprise AI runs in the cloud. Virtual reality (VR) by itself is just an interesting add-on for gamers. But in combination with AI and the digital twins of a city's transit system, VR becomes a serious tool that can transform everything from city planning to defence wargaming.

Identifying the synergies in new technologies is the first step to uncovering entirely new ways of delivering government services. For example, with the Covid-19 pandemic forcing so many in-person government services to close (at least temporarily), many agencies took advantage of the cloud to quickly pivot to a virtual footing.

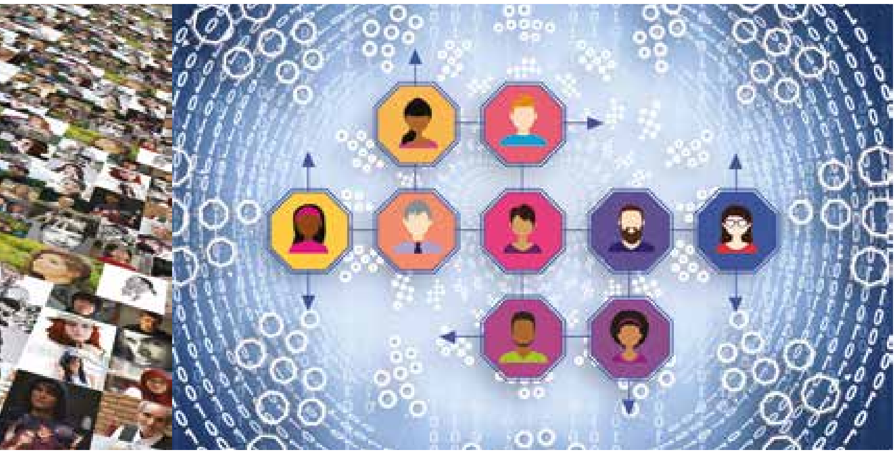
But the move to the cloud didn't only allow remote working; it also allowed government to layer on new automation tools to deal with surges in volume for services such as unemployment insurance. Governments can use these technologies to reach citizens in new ways with chatbots that are integrated into digital assistants so that citizens can query government services in their own voice.

The Department is increasingly using technology to improve the way it renders services to the people and to improve the security of our departments.

Government does not need to solve every problem itself. Rather, by creating the right processes and communication channels, IT provides the space for a wide network of players to deliver needed public services.

UNCOVER THE "JOB TO BE DONE"

Citizens do not want a government service, they want a job done, and government service is just one way of accomplishing that. For example, citizens don't necessarily want a fire department, they want buildings not to burn down, and there can be many ways to



accomplish that. Mental challenges (such as functional fixedness) can limit us to seeing familiar tools or services as the only way to do that job.

ADVOCATE FOR RELIEF

Government manages risk for both employees and customers, as well as for all citizens. Unlike a private entity, government programmes are often created by statute. As a result, government can face legal constraints on the services delivered to citizens. While most government agencies still have a wide latitude in how to best serve citizens, if regulation constrains new developments, leaders should advocate for relief that can enable innovation while still protecting citizens.

Governments should always be evolving and innovating, and the current time offers exciting new possibilities. But to make sure we make the most of these possibilities, we need to consider thinking differently and be open to entirely new models of government service delivery. Success in doing so could be the first step toward a truly digital government. S

HOME AFFAIRS DIGITISATION WITHIN THREE YEARS. CAN IT BE DONE?

With more than 300-million paper records dating back to the 1800s, the South African Department of Home Affairs is ripe for digitisation.

By Donné Nieman, Workforce Staffing

In the 2022 State of the Nation Address, President Ramaphosa announced that the Department of Home Affairs (DHA) intends to appoint 10 000 young IT workers to accelerate the process of digitisation over the next few years. As part of an extension of the Presidential Employment Stimulus programme, a significant number of unemployed young people will be put to work digitising paper records, while enhancing their skills and contributing to the modernisation of citizen services.

A STARTING POINT FOR DIGITISATION

The digitisation of DHA records was previously the responsibility of SARS, but the DHA is turning to the unemployed youth instead. According to the Minister of Home Affairs, budget constraints meant the DHA could only afford to pay for five-million records to be processed annually, at which rate it would take SARS more than 60 years to digitise current records.

This is simply not feasible, given that citizens have reached peak displeasure with endless bureaucratic inefficiencies, long queues and reams of paperwork. The digitisation of these DHA documents will streamline record-keeping processes and eliminate much of the frustration.

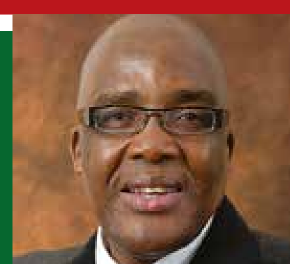
DIGITISATION, WITH SPEED

To this end, more than R222-billion has been requested from the National Treasury for this project to cover equipment and salaries. The Minister has confirmed that this is not an internship programme, but rather a recruitment drive that is open to all unemployed young people with IT qualifications.

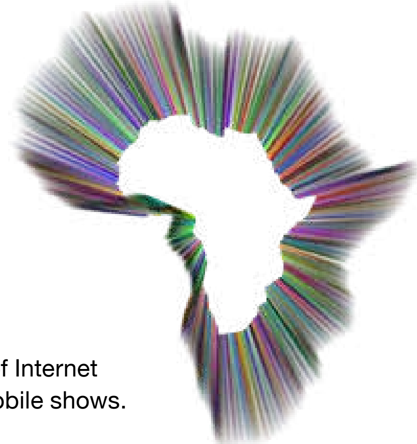
"The Department is increasingly using technology to improve the way it renders services to the people and to improve the security of our departments. This will be possible through the realisation of the secondary objective of our digitisation project which seeks to recruit 10 000 unemployed young graduates. The project will run over a three-year period, effective from November 2022 until October 2025.

The Department will partner with relevant stakeholders to facilitate training of these recruits. Training offered will be relevant to the job for which they are contracted to perform. Continuous learning and development interventions will be provided to enhance their employability and/or allow them to leverage on entrepreneurial opportunities beyond the project."

Minister Aaron Motsoaledi, 11 August 2022



Dr Pakishe Aaron Motsoaledi, Minister of Home Affairs.



CONTINENTAL CONNECTION

Greater innovation from telecoms and technology companies is vital to drive the expansion of Internet connectivity in Africa, new research for blockchain-based mobile network operator World Mobile shows.

The study of companies with a combined annual revenue of $6.75-billion found that 65% of respondents worry that a lack of infrastructure is stopping traditional telecoms companies from delivering the Internet connectivity Africa needs. Two-thirds believe connectivity will improve over the next five years with 24% expecting dramatic improvements. Almost 78% of African business leaders believe the biggest benefits of expanding connectivity will be growing internal trade on the continent and around 75% pointed to growth in international trade.

Micky Watkins, CEO, World Mobile says, “Improving internet connectivity is vital to delivering the potential of Africa, which is not just good for global economic growth but also for improving living standards across the continent and we are focused on playing our part in supporting innovation.”

World Mobile is working with the Zanzibar government in launching a unique hybrid mobile network delivering connectivity supported by low-altitude platform balloons, offering a more cost-effective way to provide digital connection to people and is the first step in its mission to help bring nearly four-billion people online before 2030.

SALDANHA BAY LEADS CHARGE NATIONALLY

Tanya Lourens, Managing Executive, Zoom Fibre.

Saldanha Bay Municipality Executive Mayor, Andre Truter.

Saldanha Bay Municipality is testament to the power of authentic public-private partnerships, built on a shared vision. In a nod to the government stating that connectivity should be a basic service earlier this year, fixed-network operator, Zoom Fibre, has partnered with the private sector and local government to deliver fibre as a municipal amenity.

At the launch of the Digital Citizen app in the Saldanha Bay Municipality, Executive Mayor Andre Truter said the dream of a smart city “has been enabled” by the hundreds of kilometres of fibre deployed across the region.

“Our purpose is to enable connectivity and digital inclusion and working alongside the visionary Saldanha Bay Municipality and private partners to deploy fibre to every household in the municipality is proof that with a shared vision and commitment, anything is possible. In many ways, this project provides a template for other municipalities across the country to follow,” Zoom Fibre managing executive Tanya Lourens says. Cornell de Kock, the municipality’s director for economic development and strategic services, says that the launch of the app, developed in a partnership including Amoeba TSC, was another step to achieving the dream of a real smart city. The open access network, deployed and owned by Zoom Fibre, unlocks a multitude of possibilities, ultimately connecting the municipality to its citizens.

“During the State of the Nation debate the presidency said fibre should be a municipal service and we, in Saldanha Bay Municipality,

are the first nationally to do this. We have a mandate to serve all citizens, no matter where in the municipality. The cornerstone principle is: what are the telecoms infrastructure requirements to be able to deliver services? Citizens are divided until you bridge the digital divide."

Lourens agrees, adding that the public-private partnership, known as the Baobab Fibre project, requires a fixed-network operator to fully invest in a region. "There is no space in these types of projects for hit-and-run type deployments. We have invested fully in the region, complete with a regional head office.

"We believe that once the fibre is live, and the promise has become reality, the importance of this public-private partnership will be especially apparent," she adds.

Truter echoes these sentiments: "Every great house needs a foundation, and in this case that foundation is the fibre network. This will position us uniquely in South Africa. No other municipality can compete with us at this point. It is an uncomfortable space, but we must push forward and learn."

MTN TARGETS 5G

With over 1 000 active 5G sites across the country currently, MTN aims to have at least 25% of the population covered by the end of 2022.

"We want to have 5G connectivity across almost every part of South Africa. Our aim is to bring the benefits of the Fourth Industrial Revolution to more people in an efficient and cost-effective way. This means expanding our 5G coverage every day, with a strong focus on investment into main metros, peri-urban areas and larger townships initially," says Charles Molapisi, MTN SA's CEO.

5G wireless technology delivers higher multi-Gbps peak data speeds, ultra-low latency, reliability, massive network capacity, increased availability and a more uniform user experience to more users. It ushers in the next generation of service, with higher performance and improved efficiency to connect new industries. Economies will see more growth and jobs as a result.

MTN has 555 5G sites in Gauteng, increasing to 575 when Rustenburg and Brits come online. Total 5G coverage is set to reach 179 sites in the Western Cape by year-end. Investment is on track to add 21 sites and to build on the existing 45 in the Free State and 21 in the Northern Cape. Limpopo and KwaZulu-Natal each have over 100 live 5G sites.

The president on the energy crisis

There is consensus that the energy plan announced by the president in his address to the nation in July is an important measure to stop loadshedding once and for all.

"South Africa has installed capacity to produce approximately 46 000MW of electricity, and at peak times we use about 32 000MW. However, only 60% of this installed capacity is available at any given time due to some units going through planned maintenance and others having unplanned outages.

The average age of Eskom's power stations is 35 years. Generally, as power stations get older, their performance deteriorates. The construction of our newest power stations, Medupi and Kusile, started late and they have experienced several delays and some design flaws. These challenges are being addressed.

As a result of this, Eskom deferred essential maintenance to keep the lights on, which is causing breakdowns and failures now. The performance of some of Eskom's power stations have been further worsened by extensive theft, fraud and sabotage. After years of state capture and mismanagement, a capable and effective management team is working hard to turn the utility around and reverse years of decay.

We are still faced with an electricity shortage of up to 6 000MW.

As this administration, we have already taken important steps to increase generation capacity and diversify our energy supply. One of the first steps we took to address the electricity shortfall was to revive the renewable energy procurement programme in 2018. Since then, over 2 000MW of solar and wind power has been connected to the grid through Bid Window 4 of the programme.

A further 2 600MW of capacity has been procured through Bid Window 5, which will begin to add capacity from early 2024. We have started to diversify generation by allowing parties other than Eskom to generate electricity.

Last year, we raised the licensing threshold for new embedded generation projects from 1MW to 100MW. This removed the licensing requirement for generation projects up to 100MW that are connected to the grid. This measure enabled these generators to have the ability to sell electricity.

We changed the regulations to allow municipalities to procure power independently. A number of municipalities are already in the process of doing so.

Eskom recently made land available next to its power stations in Mpumalanga for renewable energy projects, which will unlock 1 800MW of new capacity. Eskom has identified additional land that will be released for this purpose.

In the course of time, the maintenance programme of Eskom's electricity generation fleet has declined. Over the next 12 months, Eskom will increase the budget allocated for critical maintenance to increase the reliability of its generation capacity. We are cutting red tape that has made it difficult for Eskom to effect repairs.


President Ramaphosa.

One of the challenges that Eskom has faced has been the shortage of skilled personnel and engineers. The utility is now recruiting skilled personnel, including former senior Eskom plant managers and engineers from the private sector.

As part of addressing the shortage of megawatts, Eskom will purchase additional energy from existing private generators such as mines, paper mills, shopping centres and other private entities that have surplus power.

Our neighbouring countries in Southern Africa have more electricity capacity than they require. Eskom will import power from these countries through the Southern African Power Pool arrangement.

Eskom will use interim power solutions, such as mobile generators, to supplement current generation capacity for a limited period.

Eskom's huge debt, which stands at close to R400-billion, continues to be a huge burden on Eskom's ability to address its many challenges. The National Treasury is working to finalise a sustainable solution to Eskom's debt.

We will use climate funding provided through the Just Energy Transition Partnership to invest in the grid and repurpose power stations that have reached the end of their lives. Eskom will be constructing its first solar and battery storage projects at Komati, Majuba, Lethabo and several other power stations. These will result in over 500MW being added to the system.

To end loadshedding, we need to urgently add more capacity to the grid. Our second priority is to accelerate the procurement of new capacity from renewables, gas and battery storage.

The relevant government departments are working together to ensure that all projects from Bid Window 5 of the renewable energy programme can start construction on schedule. This includes taking a pragmatic approach to the local content requirements for these projects, prioritising the need to build new capacity as quickly as possible.

Generation capacity procured through Bid Window 6 will be doubled from 2 600MW to 5 200MW. We will release a request for proposals for battery storage by September 2022, and a further request for gas power thereafter.

To ensure effective planning, the country's Integrated Resource Plan is being reviewed to reflect the need for additional generation capacity and our climate commitments.

We are accelerating greater private investment in generation capacity. We announced the raising of the licensing threshold to 100MW in 2021. It has unlocked a pipeline of more than 80 confirmed private sector projects with a combined capacity of over 6 000MW. While they will not require licences, all new generation projects will still have to register with the regulator and comply with the technical requirements for grid connection and our environmental legislation. One of our greatest challenges in adding capacity to the grid is the time that it takes for any energy project to receive the necessary approvals and commence construction. The process, from design to commercial operation, has tended to take more than three years due to lengthy regulatory processes.

The current crisis requires that we act decisively and more speedily. We will therefore be tabling special legislation in Parliament on an expedited basis to address the legal and regulatory obstacles to new generation capacity for a limited period.

We will in the meantime waive or streamline certain regulatory requirements where it is possible to do so within existing legislation. This includes reducing the regulatory requirements for solar projects in areas of low and medium environmental sensitivity. It means Eskom can expand power lines and substations without needing to get environmental authorisation in areas of low and medium sensitivity and within the strategic electricity corridors.

We are establishing a single point of entry for all energy project applications, to ensure coordination of approval processes across government. We intend to enable businesses and households to invest in rooftop solar. Eskom will develop rules and a pricing structure – known as a feed-in tariff – for all commercial and residential installations on its network. This means that those who can and have installed solar panels in their homes or businesses will be able to sell surplus power.

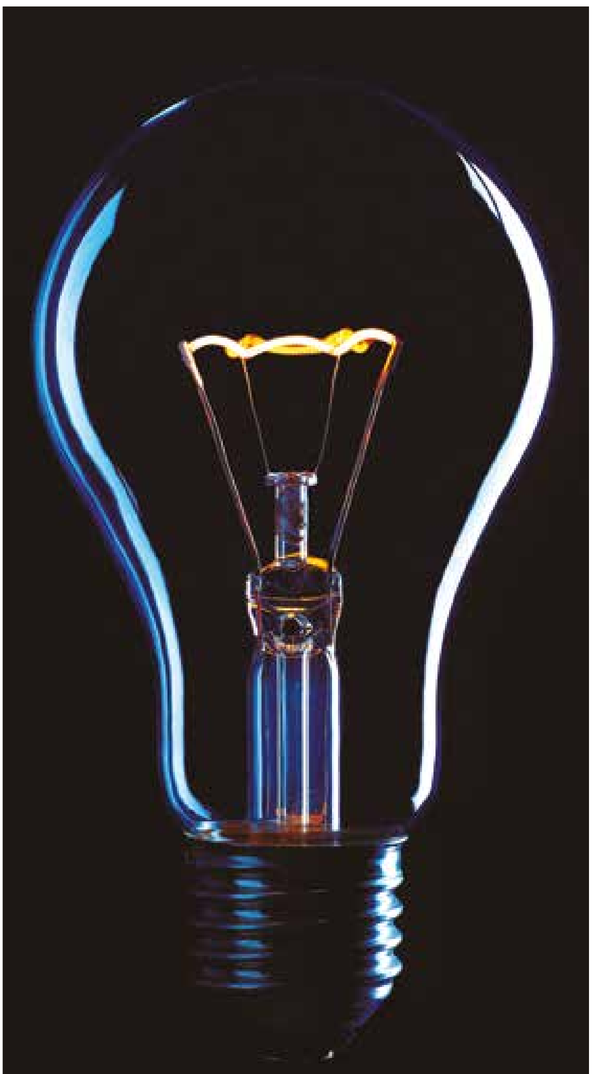
Eskom [will be restructured] in three entities, namely generation, transmission and a distribution entity. Eskom has established an independent transmission company and is on track to separate its generation and distribution businesses by the end of 2022.

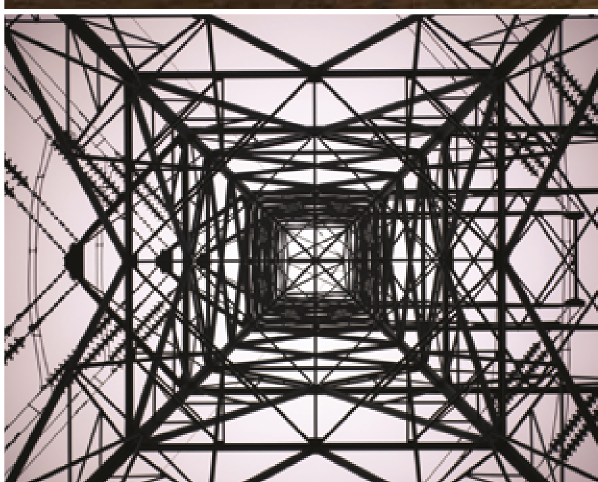
Broader reforms to establish a competitive electricity market will be expedited through the finalisation of the Electricity Regulation Amendment Bill to enable private sector investment.

The grid will remain state-owned.

We will position our country as a leading player in the transition to sustainable energy sources, turning this crisis into an opportunity for future growth and resilience." S

An excerpt from the speech that President Cyril Ramaphosa made in his address to the nation on 25 July 2022.





Municipalities can play a key role in South Africa's economic development. Here's how

Local economic development and better municipal service delivery are vital if South Africa wants to broaden economic participation and reverse its unemployment trend.

By Johann Kirsten, Director and Helanya Fourie, Senior Economist, Bureau for Economic Research, Stellenbosch University

To achieve these objectives, it is necessary to strengthen municipal finances and investment. Good municipal governance is a prerequisite. Intermediate city municipalities have an important role to play, because urban development is critical for growth and investment. It may also reduce the pressure caused by urbanisation to metros.

Municipalities should:

- provide democratic and accountable governance for local communities
- ensure the provision of services in a sustainable way
- promote social and economic development as well as a safe and healthy environment
- encourage the involvement of communities in matters of local government

Current outcomes suggest that South Africa's municipalities are failing in many of these respects.

The consequences for the country are dire and widespread. Municipal failure not only affects large businesses. It also has an impact on households, small, medium and micro-enterprises and other investors in local economies.

Economic growth, job creation and local economic development initiatives depend on municipal finances. They become constrained when local governments don't function well. Households directly suffer the consequences when basic service delivery is poor. But the problems extend beyond the household level.

Municipalities need to provide the infrastructure and basic services that support a favourable investment climate. Without this investment, deepening unemployment and poverty may follow. This has the further effect of eroding the local tax base, increasing municipal dependence on fiscal transfers and worsening South Africa's already constrained fiscal environment.

RIPPLE EFFECTS

Two examples illustrate how municipal failure can have a direct negative impact on local economic development.

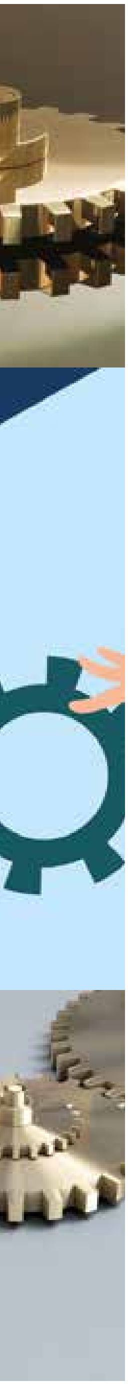
The first is Clover, the food and beverage company. It has announced that it's closing its cheese processing facility in Lichtenburg in the North West province. Production will be moved to an existing plant outside Durban in KwaZulu-Natal. The company attributed the decision to ongoing problems with service delivery by the Ditsobotla Local Municipality. It specifically mentioned water and electricity outages as well as the poor quality of roads. The move is estimated to lead to 330 job losses in the Lichtenburg economy.

Another example is Astral Foods, one of South Africa's largest poultry producers. The company owns a processing plant in Standerton in the Lekwa Municipality. Astral took legal action against the municipality due to severe supply disruptions caused by disintegrating infrastructure. Power cuts and water shortages reportedly cost the company around R62-million in its latest financial year. A court ordered the municipality to submit a long-term plan to repair and improve the infrastructure. But this didn't improve outcomes. Earlier this year a new court order was issued. This required national government and the Treasury to intervene and prepare a financial recovery plan.

THE SCALE OF THE PROBLEM

We set out to better understand the degree of municipal failure across different types of municipalities.

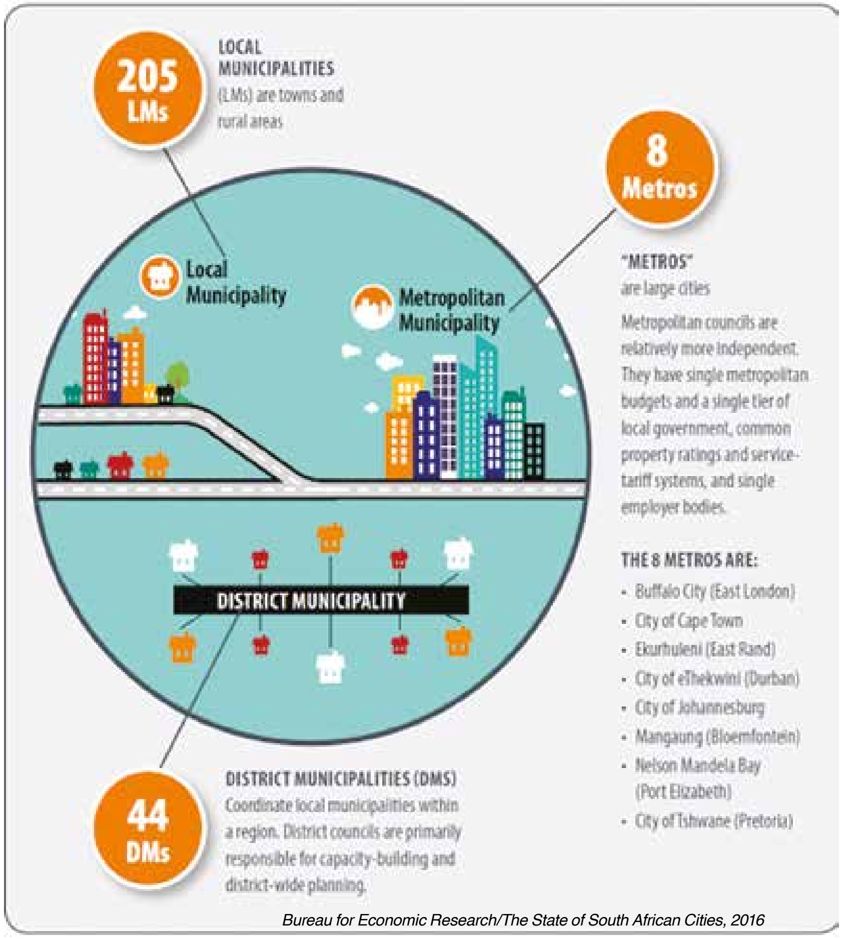
Article courtesy of The Conversation.



In our research note we drew a comparison between metros, intermediate city municipalities and other local municipalities. The population density potential economic activity and resource base of intermediate city municipalities suggest that good local government could unlock substantial economic opportunities in these hubs.

Creating economic opportunities in intermediate city municipalities may also reduce some of the service delivery pressure caused by urbanisation to metros. It may help create a less skewed spatial distribution of economic activity and opportunities.

It is important to remember that municipalities have varying blends of service delivery responsibilities across rural and urban zones. They face different opportunities in terms of access to revenue. Hence, not all face an equal set of challenges. In addition, municipalities form part of the broader architecture of government. They are therefore interdependent on national, provincial and district government functions. They also need entities such as the power utility Eskom and the water boards to function properly. Municipalities cannot influence local economic development in isolation from these agents. Our research note identifies several cross-cutting problems within South Africa's local government sphere. We look at service delivery and explain how issues in supply chain management and the audit process can cause poor or non-delivery of basic services. We also highlight some financial performance metrics that contribute to poor outcomes. Examples include low expenditure on repairs and maintenance and inadequate debt collection rates.



Overview of different spheres of local government.

Finally, personnel vacancy rates are high. And there is a lack of competencies. Political influence and interference in the appointment of managers and other municipal executives contribute to the problem.

SOLUTIONS

It is important to ensure that professionals have the necessary qualifications. It may help if municipal managers are required to register with professional bodies. What may also assist is ensuring that appointments are merit-based and made without undue political influence. This is particularly important within the administrative arm of local municipalities. Also, a mechanism that sanctions or removes municipal officials from their positions if they are consistently underperforming might contribute to better outcomes.

Supply chain management and audit processes need to prevent fraud and corruption. But they shouldn't hamper spending. Nor should they shift the focus away from core municipal functions. The need to find a less cumbersome supply chain management process is critical. This should have a stronger focus on strengthening financial management and responsibility for service delivery. It wouldn't simply focus on the minutiae of compliance and post-facto audit interrogations.

The regulatory system should enhance rather than paralyse service delivery.

The complex developmental problems that South Africa faces cannot be solved with local municipalities operating in isolation. There is a need for better management of inter-jurisdictional collaboration between the players. They include municipalities, water boards, provinces, Eskom and national departments. Public-private partnerships may also provide valuable opportunities. These could, for example, help improve the management, expansion, maintenance and operation of select revenue-generating components of service delivery. Water, sewerage and sanitation and solid waste management come to mind. But not all municipalities have the skills to manage such projects. Many may need technical support. These initiatives should be planned well and should not be the consequence of inadequate capacity or skills within municipalities. These considerations could contribute to better outcomes and improved service delivery. The important developmental role that intermediate city municipalities can play in creating employment and stimulating economic growth suggest that these areas in particular should be prioritised. S

This article is an extract from South Africa's municipal challenges and their impact on local economic development, *a research note published by the Bureau for Economic Research at the University of Stellenbosch.*

Infrastructure Guidance Required

The government took another significant step in paving the way for retirement funds to invest meaningfully in infrastructure investments when it gazetted Regulation 28.

By Conway Williams and Luzuko Nomjana, Prescient Investment Management

The finalisation of Regulation 28, which takes effect on 3 January 2023, ultimately increases the scope of potential investment and importantly, lifts the ceiling on the amount retirement funds can invest in infrastructure assets to 45%. It follows two rounds of public comments in 2021.

The gazetted changes coincided with a planned overhaul of infrastructure in the power, transport, telecommunications and water sectors. This has resulted from increased focus by the government on policy reform as one of the key mechanisms to unlock economic growth.

POLICY SUCCESSES

Reform in the power sector has seen the amendment of the Electricity Regulation Act to allow private power generation to construct larger facilities for their own use, while some much-needed updates have been made to the wheeling regulation.

There has been encouraging progress in the unbundling of Eskom, and the South Africa Renewable Energy Programme continues to enjoy positive momentum. This includes the fact that some projects awarded as part of the Emergency Bid Window are close to reaching financial close, the Bid Window 5 awards were released, and more recently, the Bid Window 6 Request for Proposals (RFP) was released.

The market is also awaiting the release of the 513MW storage RFP, which the Independent Power Producer Office indicated would be released before the end of October 2022. These are essential as South Africa continues to suffer from electricity shortages. Structural changes to how we create and distribute power are much needed from a government funding and economic perspective.

In the transport sector, the government recently allowed third-party access to the Transnet Freight Rail infrastructure, while the Transnet National Ports Authority will be separated into Port Infrastructure and Operations to drive efficiencies. Additionally, R9.1-billion has been set aside to be spent on capital projects in the Central Region ports over the next seven years.

South Africa's telecommunications regulator, the Independent Communications Authority of South Africa, concluded the long-awaited Spectrum Auction in March 2022, generating R14.4-billion for the fiscus. The auctioning of the government's radio frequency spectrum will lower data costs, improve rural access to digital connectivity and allow the country to remain globally competitive as an investment destination.

An enabling environment with the appropriate regulatory oversight will galvanise and unlock private sector investment in our economy.

To address the shortfalls in South Africa's water infrastructure, a National Water Resources Infrastructure

Agency has been established to address bulk supply management and improve access to water for all. This entity will be responsible for building, operating, financing and maintaining national water resources across the country.

REGULATION 28 – INFRASTRUCTURE SPECIFICALLY

Under the correct conditions, the gazetting of the changes to Regulation 28 has the potential to open investment opportunities available to retirement funds, particularly now that they can invest up to 45% in the asset class. While positive, it is critical to highlight that infrastructure is a highly complex, specialist asset class. The key difference between this asset class and the listed universe of assets is that it is less liquid and generally more structured compared to publicly traded equities and bonds.

The need to understand the infrastructure ecosystem is something that the broader retirement industry must come to grips with and to unlock capital, affected parties will have to allay members fears, unfounded or not.

For this reason, Regulation 28 is key. Although the changes are meant to widen the scope of potential investments for retirement funds while facilitating much-needed investment into infrastructure opportunities, it should not be forgotten that it provides regulatory oversight to retirement funds.

Regulation 28 suggests that "before making an investment in and while invested in an asset, consider any factor which may materially affect the sustainable long-term performance of the asset, including those of an environmental, social and governance character and those related to infrastructure investment, taking into account the necessary due diligence and risk-adjusted returns, acting in the best interest of the fund and its members and avoiding conflicts of interests".

With the changes noted, read in line with the thinking above, it should give the retirement industry significantly more comfort in increasing their allocation to the asset class.

THE MISSING PUZZLE PIECE: GUIDANCE

Our concern with respect to the gazetted amendments to the Act is that no guidance was provided on the application of the definition of infrastructure. As such, we believe that there could be a risk of (mis)interpretation of what infrastructure is. While we have noted the importance of having reached the milestone of the definition itself, the risk and the unintended consequences of subjective interpretation cannot be underestimated.

Without the requisite guidance on the application of the definition, the risk is that it could be an all-encompassing one, and, as such, existing investors who have already invested will be unable to invest further as they could already be at their maximum limit. Conversely, if too narrowly applied, projects that would be appropriate investments with significant positive externalities may inadvertently remain unfunded.

Misinterpreting the definition without regulatory guidance has the potential to ultimately undermine all

Regulation 28, issued in terms of section 36(1) (bB) of the Pension Funds Act, "protects retirement fund member savings by limiting the extent to which funds may invest in a particular asset or in particular asset classes, and prevents excessive concentration risk".

efforts to grow the infrastructure space, which goes against a key premise of the proposed changes – to "explicitly enable and reference longer-term infrastructure investment by retirement funds".

We hope adequate guidance is provided in due course, preferably well before the amendments take effect in 2023. We understand that the FSCA is finalising the standard on reporting requirements aligned to this latest edition of Regulation 28, and these are expected to be issued for public comment.

WHAT'S NEXT?

The successes noted above are definite steps in the right direction. The changes over the last two years, which we have been calling for, have been considerable and are positive for the infrastructure investment environment. An enabling environment with the appropriate regulatory oversight will galvanise and unlock private sector investment in our economy.

What we now need is a credible pipeline of bankable infrastructure opportunities. Outside of the renewable energy arena, large-scale infrastructure opportunities remain limited. The regulatory changes won't have the desired impact without credible and appropriately considered investment opportunities. S

Investing in Infrastructure: Why Now?

With equities weaker in 2022 and trading on fast-moving events, such as the Federal Reserve's aggressive rate hikes and the war in Ukraine, infrastructure's long-term proposition has been looking more attractive to investors today.

By Shane Hurst, Portfolio Manager, ClearBridge Investments

This is because infrastructure returns are driven by investment plans in essential services, which span 10 or more years into the future, and these returns accelerate over time while providing considerable predictability compared to equities.

The relative predictability of infrastructure returns is delivered by contracted assets, which are our focus as we build infrastructure portfolios. With regulated assets such as water, electricity and gas transmission and distribution, a regulator determines the revenues a company should earn on its assets. Because demand for these assets is steady, and the regulator determines revenue, this mechanism leads to a relatively stable cash flow profile over time. Additionally, regulated assets are often monopolies, typically defensive and generate high amounts of income.

We also focus on user-pay assets, which include airports, ports, rail, toll roads and communication infrastructure. These are long-term concession contracts leveraged to the growth in the underlying economy, which means they are tied to the volume of people and cargo flying, moving through ports and along railways or using cellular towers.

INFRASTRUCTURE'S INFLATION HEDGE

We believe two key features of infrastructure should interest investors right now. The first feature is its ability to act as an inflation hedge in investment portfolios. Inflation has been running hot globally as the Covid-19 crisis waned and demand for goods and services returned, while supply chains struggled to meet demand.

The war in Ukraine gave inflation a further jolt: Europe consumes about 45% of Russian gas, and as Europe and other parts of the world try to wean their way off Russian gas, effectively lowering supply and creating demand, this transition has resulted in an increase in commodity prices.

Commodity inflation has had little impact so far on regulated assets, and infrastructure is typically able to adjust to inflationary environments due to the largely pre-programmed way it builds inflation into regulation and contracts. This applies to both regulated utilities, which regularly reset their allowed returns with regulators to account for inflationary cost increases, and user-pay assets, such as toll roads or rail, as both types of infrastructure generate inflation-linked revenues.

Infrastructure's pricing power comes from the essential nature of its assets: even at times of economic weakness, consumers continue to use water, electricity and gas, drive cars on toll roads and use other essential infrastructure services. The income we look for from infrastructure is underpinned by long-term contracts, which ensure a steady flow of revenue over a long period of time.

THE MOVE TOWARD NET ZERO

The second key feature driving interest in infrastructure is its central role in the trend toward decarbonisation of the global economy. The move toward net-zero carbon emissions provides strong investment growth for infrastructure.

Infrastructure and utilities are at the forefront of this effort and offer investors a stable return on equity without additional technology risk. Annual power sector capital spending is expected to increase from $760-billion in 2019 to $2.5-trillion by 2030, with approximately half spent on solar, wind and other renewable energy generation and a third spent on modernising and extending electricity networks.

In an environment where coal plants are being retired and where gas will be used as a transition fuel, more spending must occur in renewables to meet global power demand. Spending on energy infrastructure needs to accelerate by at least 10 times from current levels, and this capital is expected to flow through to regulated utilities building out these resources.

Electric vehicles are gaining more widespread consumer acceptance. Around 20% of vehicles sold annually today are electric, and by 2030, that figure is expected to increase to 60%, although figures differ globally. Particularly with today's high fuel prices top of mind for consumers, electric vehicle sales seem likely to continue accelerating.

Global decarbonisation may impact other consumer transportation changes. Rising fuel prices and carbon emissions may affect air travel in the future. For example, airlines could be taxed if flights are too short, making rail and public transit more appealing to some consumers. And while energy infrastructure pipelines have seen renewed interest as energy security has become a strategic priority, midstream pipelines are beginning to facilitate an energy transition through hydrogen or carbon capture and storage, which are developing technologies that will have an increasing role in net-zero efforts.

There are several areas of infrastructure benefiting from decarbonisation tailwinds, not to mention other secular trends like 5G driving investment in communication towers. With infrastructure's ability to largely pass-through inflation, as well as provide current income, its attractiveness to investors now is no surprise.

We believe the opportunity set for infrastructure investors is only set to grow and will benefit from several powerful drivers, including attractive valuations and potential dividends that income-seekers would find appealing. S

THINK AND ACT GLOBALLY

AECOM is justifiably proud of its involvement with the Tema Port expansion project in Ghana, one of the biggest infrastructure projects of its kind on the continent to date.

Darrin Green, AECOM Africa

Darrin Green, MD of AECOM Africa, says that this is the sort of mega project that makes the rest of the world take notice of what Africa is capable of in terms of delivering infrastructure.

All eyes are now turned to the South African government's infrastructure fund rollout. "It is starting to filter through intermittently, but not nearly with the kind of volume that both the industry and the country requires. The situation is exacerbated by pricing pressure and fierce competition on all fronts. If the infrastructure rollout is really aimed at kickstarting the economy, then we need to see a lot more urgency and decisiveness from the public sector," argues Green.

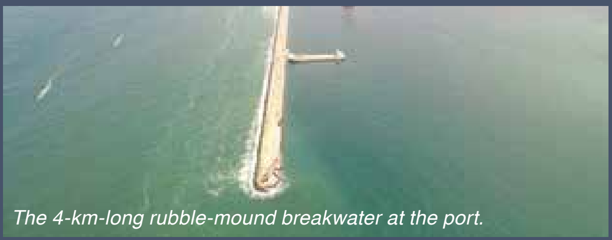
South Africa's infrastructure network is 40 to 50 years old and well past its design life. "The fact that it is not being maintained properly means that any repairs that need to be undertaken are commensurately more expensive as a result. What we need is a structured, broad-based asset-management approach to infrastructure development, where experts such as ourselves can contribute our expertise and experience, especially in terms of project and construction management," says Green.

In terms of growth prospects going forward, Green foresees these clustering around select opportunities in South Africa and in Africa generally. "We are seeing an uptick in the donor and lender funding space, but market conditions on the continent are likely to remain exceedingly challenging for the next 12 to 18 months." Closer to home, Green reveals there is a major need in South Africa to accurately gauge the country's infrastructure deficit. "That work has not been around in any real volume for at least the last 20 years," he says.

"The reality is that we really need to get the basics right first in terms of essential infrastructure such as water, wastewater, roads, power and telecoms before we begin to look at more advanced initiatives such as e-mobility or smart cities. If there is any good to have come out of Covid-19, it is the fact that it has accelerated the uptake of digitisation by at least 10 to 15 years."

Green concludes: "Despite these advances, what happens next is critical. We need to see the public sector drive the infrastructure rollout to assist the ailing economy, especially in terms of getting the basics right first. Only once these pieces of the puzzle have fallen into place will we be able to proactively and effectively plan for a future that will benefit generations to come."

The Tema Port expansion in Ghana.



The 4-km-long rubble-mound breakwater at the port.

From STEM to STEAM

The worker of tomorrow must be able to handle the uncertainties of a dynamic and evolving economy. Schools have doubled down on science, technology, engineering and mathematics teaching in response to the rising tide of digital jobs. In short, education must adapt.

At first glance, the traditional emphasis on science, technology, engineering and mathematics (STEM) education seems to be putting our students on the right track to the future of work. The US Bureau of Labour Statistics projects 8% growth for STEM and STEM-related occupations between now and 2029 – and these are lucrative jobs, fetching more than twice the median annual wages of non-STEM work.

Yet, a World Economic Forum report found that 65% of students entering primary school at that time would end up working in completely new job types that do not exist yet. In the upheaval that we have witnessed since the pandemic began, a LinkedIn study reported by CNBC revealed that companies are now also looking for – and struggling to find – candidates with soft skills such as critical thinking, problem-solving, adaptability and communication.

These are characteristic of what former IBM executive chairman Ginni Rometty coined as "new collar" jobs, which focus on skills and capabilities rather than degrees or traditional career paths. While STEM education continues to be a cornerstone for students today, traditional approaches that centre on individual learning and rote memorisation cannot produce the creativity and ingenuity that is needed in our future.

So, how do we equip students with both the hard and soft skills needed in the economy of tomorrow? Increasingly, STEAM education is seen as the answer to this question. Bringing the arts into STEM education is the central thrust of the STEAM model. The aim is to inspire students to think outside of the traditional boxes of science, technology, engineering and mathematics, using the creative arts and design thinking to apply STEM concepts to the real world.

In a STEAM classroom, students might use music or literature as a platform for programming, drawing lessons as a conduit to explore physical anatomy or urban-design concepts or embark on collaborative projects that span classrooms and disciplines. Take LEGO® Education and NASA's 10-part series Build to Launch: A STEAM Exploration Series. The programme makes use of interactive storytelling, open-ended prompts and engaging LEGO® Minifigures to get students to engage critically with the STEM-related challenges that real-world NASA teams deal with every day.

The National Assembly of State Arts Agencies found that students in the US do better on standardised tests when they were more

SCIENCE, TECHNOLOGY AND INNOVATION

"The National Advisory Council on Innovation (NACI) publishes the *South African Science, Technology and Innovation Indicators Report* annually as part of its monitoring of the national system.

Dr Blade Nzimande, Minister of Higher Education, Science and Technology.

INNOVATION ACTIVITIES

In 2020, South Africa had 25 patent applications per million population. This is lower than the average for other upper-middle-income countries (641 in 2020). The United Nations Conference on Trade and Development's Technology Readiness Index measures the level at which countries adopt frontier technologies. The index looks at five aspects: ICT deployment, skills, R&D activity, industry activity and access to finance. As South Africa, our main weakness is in skills. We are at 84th of 158 countries, industry (71st) and ICT (69th). Its area of strength is the availability of finance (13th). We also have the lowest technology readiness index of the BRICS countries.

ECONOMIC EFFECTS

South Africa's digital competitiveness ranking improved from 51st in 2016 to 44th in 2019, before falling steeply to 60th in 2020. About 71% of firms in manufacturing and services use email for conducting business and only 36% of firms have websites. Inadequate digital skills is one of the causes.

The country's Total Entrepreneurship Activity (TEA) rose steadily from 7% in 2014 to 11% in 2017, and then declined slightly to 10.8% in 2019. The decline is an indication that the motivation for entrepreneurs to start new businesses is low.

The country scored lowest among the BRICS countries regarding incentivising and expanding investment in research, innovation and inventions that could create the "markets of tomorrow". South Africa experiences challenges in creating markets of tomorrow, owing not only to weaknesses in its research and technological systems, but also weak public-private partnerships.

CONCLUSION

Let me indicate that the National System of Innovation (NSI) has laid a solid foundation for the future. However, it remains fragmented across government and between business, academia and civil society. It continues to be significantly underfunded, and the participation of black people and women at senior level (eg professors) remains too low.

South Africa's innovation performance is falling behind other middle-income countries regarding outputs such as patents and high technology exports. South Africa performs better in innovation inputs than innovation outputs. Considering its level of innovation investment, the country produces few innovation outputs.

In responding to these challenges, guided by the 2019 White Paper, as we will be furthering the role of the Science, Technology and Innovation (STI) in economic and social development, emphasising inclusivity, transformation and partnerships. We will implement the White Paper on the STI through the Decadal Plan which was approved for implementation by Cabinet in March 2021 to serve as a government-wide Masterplan. The Plan emphasises four societal grand challenges of climate change, future-proofing education and skills, re-industrialising our modern economy, as well as two STI priorities on health innovation and energy innovation."

Minister Blade Nzimande, launch of 2022 *South African Science, Technology and Innovation Indicators Report*, 29 July 2022.

active in the arts. But that's not the be-all and end-all of STEAM education. Students benefit from experiential learning – collaborating better with others and persisting in problem-solving as they work through the creative process. STEAM education helps students draw links between naturally – but not obviously – interconnected disciplines, fostering lateral thinking and creative instincts, skills which we know are in high demand today.

To deliver on their promise of technology-enhanced STEAM education, schools will need to invest in a robust technology foundation. Powerful workstations and edge devices are the building blocks of computationally heavy workloads, especially as student expectations towards, for example, animation or 3D-rendering outcomes become more sophisticated at the higher-education level. But there are lightweight options, including single-board computers, which are emerging as compact and powerful tools for students to run tests and build prototypes.

STEAM education is first and foremost a philosophy: its approach to education prizes interdisciplinary ways of thinking. With that in mind, schools and educators should leverage the advanced technologies available to provide students with a full palette of tools. Only then will they be able to fully integrate the STEM curriculum with the arts, enrich students' learning and prepare them for the jobs of the future.

Women account for 23% of STEM professionals in South Africa. Of those, only 17% are in leadership roles, and these numbers are significantly less for women of colour.

Think BIG

While government has implemented several measures to overcome unemployment, policymakers need to "think bigger". The webinar series, *Think Big*, gets to the crux of our country's most pressing issues by putting forward seminal questions to prominent leaders in the South African socioeconomic landscape.

PERMANENT POLICY

"We cannot employ temporary solutions to permanent problems," says former Deputy Director General of the National Treasury, Andrew Donaldson, who is an expert on South Africa's employment crisis.

In the years leading up to the pandemic, chronically high unemployment had already begun eroding South Africa's economic position. Now, post-pandemic, record-high unemployment seems an impenetrable barrier to economic recovery. Legislators need to be far more ambitious in expanding both public employment programmes and support for private sector job creation if these initiatives are to make a tangible difference.

In reference to initiatives like the Expanded Public Works Programme and Ramaphosa's Presidential Employment Stimulus Programme, Donaldson comments: "The state should not be thinking of job creation initiatives as temporary. If they are to make any kind of lasting impact, these programmes need to become permanent elements of our approach to raising living standards and investing in the socioeconomic fabric of the country."

For Donaldson, higher investment and growth are imperative, but job creation must come from both the public and the private sectors. "The youth employment incentive is not enough. The tax subsidy should be extended to all labour-intensive industries and low-wage earners, not just young first-time work seekers."

He elaborates: "To talk to the issue of supporting the South African business environment is to cast the net wide. The reality is that 'business' is not a homogenous subject – in South Africa, due to the prevailing inequalities, the topic of 'business' extends from well-established commercial enterprises who have thrived for decades, to the emerging township economy, the economies that exist within informal settlements and accessibility issues that affect rural communities. The bottom line is that the South African government needs to invest in cultivating opportunities for work across the entire economy."

Furthering his argument that employment development programmes need to become permanent fixtures on the country's socioeconomic landscape, Donaldson refers to the relative efficacy of the President's Employment Stimulus Programme which in six months achieved more success than that of preceding public employment programmes. The solution, therefore, is to scale up where institutional capacity is in place.

Former Deputy Director General of the National Treasury, Andrew Donaldson.

"The President's Stimulus Programme placed South Africans in schools across the country as assistants and workers in various capacities. Now, we need to take this same approach and apply it to sectors such as the healthcare industry, crime prevention, security on our rail system and in municipalities. In tandem with these kinds of efforts, we need to keep building our education system to address the skills shortage as a longer-term solution. In other words, we need to act with both the short and long term in mind – a two-pronged approach to the crisis," explains Donaldson.

For Donaldson, the reality of the South African situation necessitates a back-to-basics approach. He elaborates: "We need to renew our focus on the areas of service delivery and basic infrastructure that we have known how to do for 100 years. Municipal infrastructure, housing, transport and water services don't need new technologies or innovation, they require investment spending and long-term cost recovery from users. To do this, we need to cement public-private partnerships to inject much-needed funding into these areas. Ultimately, we need to invest in the infrastructure that can support labour-intensive industries."

The bottom line is that the South African government needs to invest in cultivating opportunities for work across the entire economy.

BUILD BACK BETTER

"Difficult days indeed lie ahead. However, we have proven our resilience as a nation over the past five months. The task before us now is to apply the same energies with which we have battled this pandemic to the economic recovery effort. We are weathering a long and difficult storm. We are enduring great hardship and suffering unbearable losses. But we continue to stand firm against this onslaught. A ray of light is visible on the horizon."

President Ramaphosa, Address to the Nation, 15 August 2020.

President Ramaphosa

The Covid-19 pandemic had a devastating economic impact, threatening the jobs and livelihoods of many South Africans – especially the most vulnerable. The pandemic exacerbated South Africa's pre-existing crises of poverty and unemployment. The Presidential Employment Stimulus sought to confront this impact directly, as part of government's broader economic recovery agenda. Its aim was to use direct public investment to support employment opportunities.

The employment stimulus is about building a South Africa that works – counteracting anticipated job losses and creating new opportunity for growth and renewal. The priority of the economic recovery strategy was to get the economy moving forward again in ways that enable new levels of dynamism, creating decent work and allowing people and communities to thrive.

The Presidential Employment Stimulus was designed to support a spectrum of opportunities, focusing on job creation through public employment, on job retention in vulnerable sectors, on direct support to livelihood strategies as well as on fast-tracking high-impact employment enablers.

EDUCATION EQUALITY

The problem at the heart of our education system is not one of "quality" but one of "inequality" says Constitution expert and law professor, Pierre de Vos, when asked for his opinion on issues relating to education as a human right in South Africa and its ability to turn he tide against rising unemployment among South Africa's youth.

The South African Constitution – one of the most advanced constitutions in the world – affords everyone the basic right to education. And while several state interventions are making inroads into providing for this fundamental right, we need to reach beyond implementing technical solutions and get to the heart of the problem, which in its essence is political. Only then can South Africa's education system provide viable and long-lasting solutions to issues such as record-high youth unemployment.

INEQUALITY BREEDS INSTABILITY

Commenting on the growing chasm that exists between South African education system that serves the South African middle-class and the experience of poor communities, De Vos says, "Education is one of the tools that can overcome the divide or perpetuate a system wherein one group of people is set up to succeed in the working world and the other is not."

De Vos suggests the inequality that exists within South Africa's education system is not only a problem that affects and concerns the poor. It is in fact, a problem that has far-reaching effects for every segment of South African society. Unequal opportunities in education are simply "unsustainable" in his opinion and is a reality characterised by the fact that 30% to 40% of South Africans do not have access to proper education, and by extension, jobs, while 5% to 10% of society pays most of the income tax. These injustices, as De Vos argues, are "at the centre of our country's political instability".

ELITISM LIMITS

Constitution expert and law professor, Pierre de Vos.

De Vos highlights the overarching sense of elitism that exists, which favours a certain kind of education over education in technical fields. On this point, webinar facilitator and journalist, Alishia Seckham, put forward Minister of Education Angie Motshekga's proposal that specialist subjects such as agriculture and maritime studies should be incorporated into national curriculums. "Interventions of this nature will go a long way in catering for a broader range of learners with special aptitudes that have historically been overlooked," De Vos concurs. "This 'second stream' of education will finally help in producing people with the expertise that the country actually needs."

For De Vos, the notion of inequality also applies to the hierarchical way of thinking that values academic knowledge over pragmatic application. He expands that academic proficiency is just one part of what education represents. In the legal system, "softer skills" like the ability to reason with independent and critical thinking, and the capacity to conduct research are cornerstones of what it takes to be effective as a legal professional. De Vos adds that there is a need for multilingualism at school and university level. "The problem lies in the fact that we see indigenous languages as something we need to shy away from in the professional world. In a country with 11 official

Pierre de Vos is the Claude Leon Foundation Chair in Constitutional Governance and is an expert on Constitutional law. He is the chairperson of the Board of the Aids Legal network and is a professor at the University of Cape Town's Department of Public Law.
Andrew Donaldson is the former Deputy Director General of the National Treasury and is currently a senior research associate of the Southern Africa Labour and Development Research Unit at the University of Cape Town.

languages, those who only speak English and Afrikaans are at a deficit. Multilingualism should therefore be something we see as a significant advantage at the level of schooling."

De Vos cautions South Africans against the belief that a "quick fix" like a curriculum change will solve an issue that is notoriously complex. "When implementing new policies, we need to realise that the issues we face cannot be divorced from our unique political history, so context is key. When we accept the politicised nature of education in South Africa, we can begin to unravel some of the long-standing intricacies of the problem," he concludes.

The Think Big *webinar series is sponsored by leading financial service group, PSG.*

Township businesses missing link in SA growth puzzle

Small businesses operating in historically designated townships on the periphery of the country's developed urban economy are as much a part of our economy as large national companies or home-grown multinationals.

"South Africa's small business sector is critically important because they can unlock growth, inclusion and long-term social stability – everything that has been eluding South Africa for so long. Far from being peripheral, small businesses are central to building the economy and society we all want," says Simone Cooper, Head of Business Clients, Standard Bank.

Whether one looks at established economies like the US, newly arrived economies like China or other emerging economies like Rwanda, small businesses account for the greatest segment of GDP, employment and innovation. In China, for example, more than 98% of all firms are small businesses with 300 or fewer employees. These businesses contribute over 60% of the total GDP, 50% of tax income, 75% of jobs and 68% of exports in China.

"Given the very large role small businesses play in employment and GDP growth around the world, if South Africans are puzzled by lacklustre growth and the inability of our economy to provide employment, we need look no further than how we support, develop and include our small business segments in the formal economy," argues Cooper.

South Africa's small business segment is characterised by a divide between more formal urban enterprises located closer to developed business and financial hubs. While South Africa has a raft of legislation designed to bridge this divide and grow the country's small business segment, interventions to date have not been coordinated. The result is fragmented initiatives that do not adequately address the pain points of small enterprises.

A larger and more robust small business segment in South Africa will dramatically increase employment, enabling more South Africans to support themselves and their families. The result will be fewer people relying on national government for welfare grants and other social services. A thriving small business sector will broaden the tax base and increase national revenue.

All this will free the government to focus funding on maintaining and expanding the social and economic infrastructure to drive growth and expand inclusion.

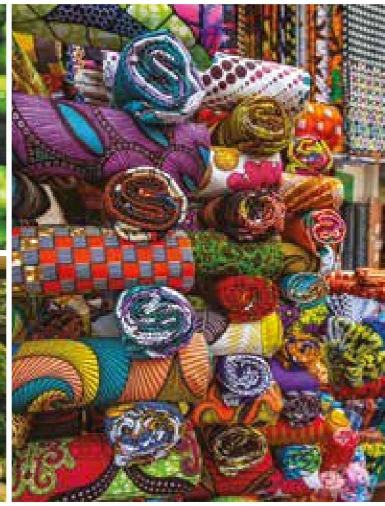
TRANSFORMING TOWNSHIPS

The Community Transformation Accelerator Programme's (CTAP) objective is to respond to the government's 2030 National Development Plan and become instrumental in the growth of the South African economy.

The programme's goal is to radically change the economy in townships and rural areas throughout the country and meet the needs of community-based enterprises. CTAP aims to develop these businesses by transforming how they transact and gathering valuable data to increase sales and become profitable. This profitability is passed on through job creation within the community that they operate in.

CTAP's target is to empower 35 000 SMMEs by the end of 2023. To date, they have signed up 15 000 businesses within the fast moving consumer goods (FMCG) industry.

The programme involves intense training and support by the CTAP business development facilitators. The instruction provides business owners with retail management and operational skills and is SAQA accredited.



WHY SOUTH AFRICA'S SMEs ARE VITAL

SMEs do not exist exclusively from the rest of South Africa's business sector. They are South Africa's business sector and understanding their importance and how much they need institutional support is paramount in the face of growing uncertainty.

By Daniel Goldberg, Co-Founder and CEO, Bridgement

According to McKinsey, SMEs in South Africa represent more than 98% of businesses across the country. These businesses employ between 50% and 60% of the workforce across all sectors and are responsible for not only a quarter of all job growth in the private sector, but also for 39% of South Africa's GDP. SMEs have the potential to promote inclusive growth as 38% of them are owned by women. These are not insignificant numbers.

In addition to having a dedicated state-level agency in the form of the Department of Small Business Development, multiple agencies spread across the country work hard to promote SMEs located and operating in their respective regions.

THE ROLE OF A SME

Job growth begins and ends on the ground level, where SMEs operate. They support our economy in other ways. A small business is one that innovates. Competition from others keeps up pressure to uphold consistent quality of service, and forces enterprises to think beyond their current state and explore new ideas. That quality of service contributes to long-lasting customer and community relationships. SMEs respond to local trends and are malleable enough to adapt in a short period of time – something larger entities struggle to do.

SECURING FINANCE ACROSS SECTORS

SMEs face economic and logistical setbacks like any other corporate entities in South Africa. The impact of loadshedding has long been documented since the outages first began more than a decade ago. Rising fuel prices, even prior to the Ukraine crisis, have not only dramatically increased running costs and company expenditures, but also emphasised the issues surrounding our rail and transport networks, and their importance to business.

With the Small Enterprise Development Agency (SEDA) reporting that the number of SMMEs in South Africa has declined by 11% year-on-year, support and change have never been more necessary.

Working capital is one of the key pillars of this support Obtaining finance is the first step to giving budding enterprises the resources they need to take off, or to give established businesses the capital they need to scale. With tech-enabled lenders streamlining the process, there's no reason why we can't increase growth in the sector. If the private and public sectors work towards the unified goal of creating a nurturing environment for SMEs, revitalising South Africa's small businesses is possible.

The number of SMMEs has only grown from 2.019-million in 2008 to 2.36-million in September 2020.

SPAZA SHOPS

Spaza shops are the backbone of many underserviced township and rural communities in South Africa. Many spaza shops are operated by "survivalist" owners selling basic goods with low margins. These store owners struggle to compete with large wholesalers and retailers that leverage their greater purchasing power to secure lower prices for products, placing them at a competitive disadvantage.

Spaza shops are vital to underserviced areas, selling essential items such as bread, milk and treats to local households. But they also operate in a highly competitive environment, and if their prices don't remain low enough, the risk is that buyers will simply walk up the road to another spaza shop or save to shop at a large retailer.

MONITORING & EVALUATION: change perceptions of service delivery in just six weeks

Calls for public/private partnerships continually emerge from various quarters, and none are without merit. There is a wealth of knowledge and expertise in the private sector that can benefit the country through innovation aimed specifically at aiding the business of government.

By Farhana Safedien, public sector lead at Altron Karabina

Farhana Safedien, Public Sector Lead, Altron Karabina

Altron Karabina, for example, known for the creation of bespoke enterprise solutions, felt the need to close the gap between what tax-paying residents are looking for in terms of the actuals around service delivery and the good work that government is doing. We felt it was important to find a way to assist public officials to report accurately and in real-time.

Through automated monitoring and constant evaluation of projects, the data required to provide the points of proof in presentations to parliament and other forums can be easily extracted to highlight the progress, successes and the problem areas that may need attention.

To this end, we designed a monitoring and evaluation (M&E) solution that has been specifically tailored for the public sector. The solution has already been successfully deployed within the social cluster of the South African government and the results to date are making a significant difference to this department's control of projects, budgets and reporting.

The fact is, a more complex, multi-faceted and expensive project than the government's multi-decade National Development Plan (NDP) would be hard to find, given that it transcends all spheres of government and involves every national, provincial and local department. Some would argue that a more important undertaking does not exist in our country either, considering the areas of impact it has on life in South Africa in general. It is imperative therefore that its many moving parts be kept in check.

Our government's medium-term strategic focus (MTSF) is described in President Ramaphosa's foreword of the Department of Monitoring and Evaluations document, MTSF 2019-2024, as a focus that is built on three foundational pillars: a strong and inclusive economy, capable South Africans and a proficient developmental state. Since the NDP was first made public in 2012, this MTSF is the second such iteration and it covers the work set out towards achieving South Africa's national development priorities as set for the five-year period occupied by the current administration in government.

Development planning, a results-driven approach to promoting growth objectives through setting measurable, high-impact targets linked to realistic implementation plans, is the means through which our national development goals can be achieved.

Annual performance plans, which work together with annual performance reports, are available for each department at national, provincial and local spheres of government – all geared towards ensuring effective service delivery to our country's citizens. Tracking every single project and every single associated budget, in every office across all spheres of government, is certainly no easy task and, as such, technological interventions through sound M&E systems provide a transparent, data-led, single-view solution.

Monitoring is the collection and analysis of information about an ongoing project, while evaluation is the periodic, retrospective assessment of an organisation, project or programme that might be conducted internally or by external independent evaluators.

The importance of the M&E function within public administration has been magnified by the growing voice of civil society and, perhaps in response, a policy framework for a government-wide M&E system has been issued by the presidency.

Issues of good governance and more effective public administration have now come to the fore like never before and pressure on governments and organisations everywhere is increasing to become more responsive to their stakeholders, for good governance, accountability and transparency, greater development effectiveness and the delivery of results that can be seen and felt at ground level.

The good news is that M&E, as a discipline, has been around for a long time as a functional aspect of project management in corporate business organisations. It is tried and well-tested in scenarios that are comparable to any individual project type, delivery timeline and budget that the public sector can throw at it. Built-in automation and AI-based budget and deliverable tracking and reporting can bring the transparent single view required in terms of offering an unbiased factual, real-time perspective on even the longest lead projects.

The benefits of M&E and what it offers government departments has been proven and is clear. While it may sometimes seem like a time-consuming exercise, an administrative burden or an unwelcome instrument of external oversight, if used well, M&E is a powerful tool for social change. It can help a government department assess what difference it is making and can provide the requisite intelligence to help assess and demonstrate its effectiveness in achieving its objectives and impact on people's lives.

Best of all is a solution like that which has already been successfully deployed within the social cluster – it will take just four to six weeks to implement in most other departments using the data sets they currently have in-house.

SMME VIRTUAL ROADSHOW

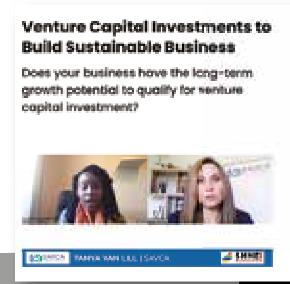
GLOBAL AFRICA NETWORK IS A TRUSTED PARTNER OF BUSINESS CHAMBERS AND OTHER REPRESENTATIVES OF ORGANISED BUSINESS IN EACH PROVINCE.

SMME VIRTUAL ROADSHOW

Global Africa Network Media (GAN) is an established authority on business development in South Africa's nine provinces. GAN's online products include its well-established B2B portals www.globalafricanetwork.com and www.southafricanbusiness.co.za, and its e-newsletters with a reach of over 23 000 subscribers.

Its stable of provincially-focused B2B print annuals was launched in 2005 and each of the nine titles has been utilised by all levels of government, parastatals, corporates, and national and provincial businesses. This uniquely provincial and local focus has established GAN as a specialist in small and developing business, and the company is a trusted partner of business chambers and other representatives of organised business in each province.

The SMME Virtual Roadshow 2023 will take the form of an online event targeted at specific needs of the participants, which will vary across levels of development and support requirements. Presentations by thought leaders will be pre-recorded to ensure quality. Supporting collateral will also be available for download.



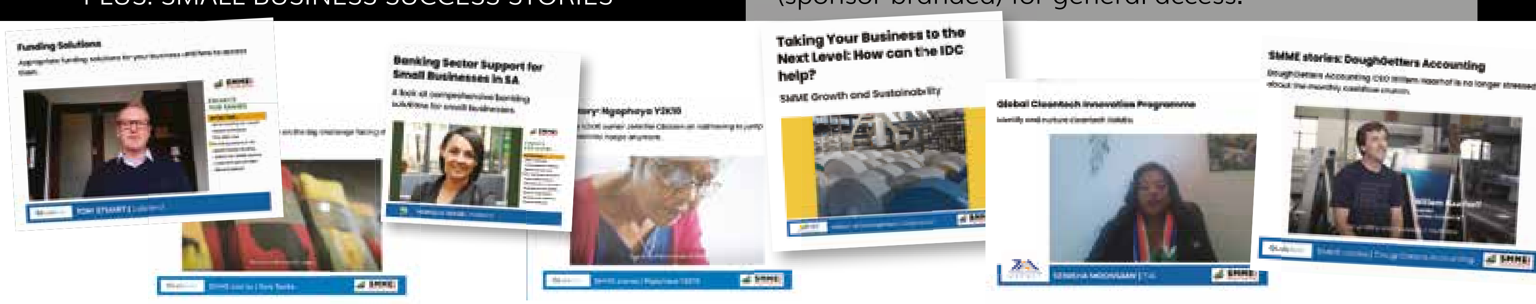
EVENT FORMAT

Seven Focus Hubs will structure the Roadshow:

- Access to funding for start-ups
- Access to funding for established small businesses
- Doing business with government
- Skills and development training
- Banking for small business
- Compliance – practical solutions
- Internet and telecoms solutions for small business
- PLUS: SMALL BUSINESS SUCCESS STORIES

Registration for delegates is free. Delegates will be filtered according to their objectives.

- Ongoing discussion forums monitored by Global Africa Network SMME online team.
- Attendance by delegates is monitored and measured.
- All interaction and attendee databases will be monitored and packaged for Hub sponsors.
- Selected questions and answers will be posted (sponsor branded) for general access.



PARTICIPATION

Attendance will be free of charge, and companies that register will be required to provide relevant information about their business, their objectives, and their requirements.

MARKETING

The event will be marketed through relevant business bodies, and GAN's monthly email newsletter, TradeInvest Africa, will promote the event to its custom database of 23 000 recipients.

DRIVING ECONOMIC GROWTH AND JOB CREATION.

REGISTER ONLINE: www.globalafricanetwork.com/smme-virtual-roadshow

GlobalAfrica NETWORK