AFRICAN BUSINESS

QUARTER1, 2022

TECHNOLOGY'S ROLE IN AFRICA IN 2022

COUNTRY PROFILES: NAMIBIA & LESOTHO

WHAT DOES COP26 MEAN FOR AFRICA?

IS THERE SCOPE FOR A PAN-AFRICAN AIRLINE?

The risks and rewards unpacked

THE AFRICAN OIL AND GAS SECTOR NEEDS AN ENERGY BOOST

Market complexities and climate change present challenges

THE TIME IS RIGHT FOR EXPLORATION

Africa's incredible mineral wealth urgently needs to be mapped, says **MOSA MABUZA**, CEO of the Council for Geoscience

MOSA MABUZA

WINDHOEK - Namibia:

The Gateway to Endless Opportunities

Windhoek is the capital and largest city of the Republic of Namibia. The city is the social, economic, political and cultural centre of the country. Nearly every Namibian national enterprise, governmental body, educational and cultural institution is headquartered here. Windhoek is a very attractive, tight-knit city with a rich, diverse community of about 450 000 people. The city boasts modern architectural homes and buildings, a vibrant fusion of cultures supporting a large selection of restaurants and entertainment as well as the best shopping malls in the country. Among so many wonders, perhaps Windhoek is renowned for its world-class beer and beef as it hosts Meatco and Namibia Breweries Limited (NBL), the meat and beer producers that enjoy global reputations.

Highways

The city's excellent road and rail networks offer a convenient and easy gateway to important transport corridors such as the Trans-Kalahari, Trans-Caprivi, Trans-Orange and Trans-Kunene which link Windhoek with the rest of the SADC region and all major world markets through the deep-sea harbour of Walvis Bay. These motorways support the two-way trade between SADC countries. With the upgrading of the Western Bypass freeway between the capital and the Hosea Kutako International Airport (HKIA), the city will enhance even more its road efficiency in terms of logistics.

Air Travel

Windhoek aviation needs are fulfilled and catered for by two airports, the Hosea Kutako International Airport and a smaller inner-city airport called Eros Airport that mostly serves the domestic market. Hosea Kutako International Airport handles both regional and international passengers and cargo between Windhoek and the world. This airport has a 14 869ft runway that is able to handle both corporate and private travel with friendly and convenient customs and immigration services. Hosea Kutako International Airport is located only 30 minutes' drive from the heart of Windhoek.

Rail

The strategic location of Windhoek has made it possible for the railway network to connect the city to the rest of the country and beyond by rail. The city is well connected to Walvis Bay through Okahandja and Karibib. It is also connected to Cape Town and Johannesburg through Karasburg in Namibia. The railway handles mostly heavy and bulk cargo for the Namibian market. Windhoek is therefore the city with the best transport infrastructure in the country and provides easy access to the rest of the country and beyond. Should you decide to invest in Namibia, Windhoek is the home you never want to miss.

Please contact invest@windhoekcc.org.na should you need more information on how to invest in Windhoek.

/CITYOFWINDHOEK

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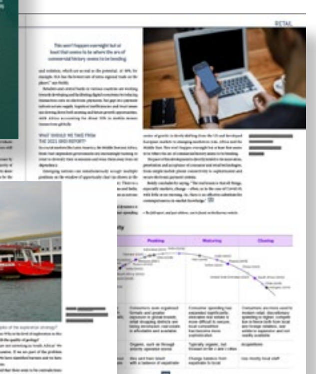

African Business

A unique guide to business and investment in Africa.

The third issue of *African Business* marks a departure for this respected guide to business and investment on the continent. The first two journals were published in 2020 and 2021 but as of 2022, *African Business* is a quarterly journal.

This affords our team more opportunities to bring to readers up-to-date information and opinions and offers our clients increased exposure at specific times of the year, either related to events and conferences or in conjunction with feature articles on specific topics.

Every edition will carry editorial copy that will cover the following general topics, with a wide range of subjects within the broader economic sector: energy; mining and exploration; trade; finance; technology and tourism.

As an example of the sorts of articles or opinion pieces that might be run under the last heading, topics could include freedom of movement, AfCFTA, its implications and progress, hotel groups, trends, airlines' health/mergers, "freedom of the skies", eco-tourism/conservation balance and case studies.

In this edition, the in-depth interview with Council for Geoscience CEO Mosa Mabuza tackles current and controversial topics such as the recent court case in South Africa which brought a halt to offshore testing for oil and gas. The question of balancing economic development and conservation is one which all African countries are grappling with as the debate about reducing the carbon load intensifies.

Another article on a similar theme explores the complexity of the oil and gas market for investors while a British academic unpacks the results of the COP26 climate change conference for African countries.

Green hydrogen is in the spotlight as a possible solution, particularly as African countries are blessed with many of the minerals that can help in the process. There is also no shortage of wind and solar energy coursing over the continent and the article covers the major steps that are being taken in Namibia towards creating the hydrogen economy.

Digital advance is the theme of two further articles, one relating to retail and the other looking at general trends that can be expected in terms of technology on the continent in the year ahead.

In the shadow of Covid-19, the highly topical question of the future of African aviation is explored while two countries are profiled in this issue: Namibia and Lesotho.

In addition to this, special features on topical matters will be published periodically, along with country profiles.

The positive reception accorded the first two issues of *African Business* was encouraging and we are optimistic that this publication and future issues will continue to meet the need for timely and relevant information in an exciting time for African business.

Global African Network is a proudly African company which has been producing region-specific business and investment guides since 2004, including *South African Business* and *Nigerian Business*, in addition to its online investment promotion platform www.globalafricanetwork.com

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GlobalAfrica NETWORK

NWU Business School

First business school in Africa to receive international BGA accreditation.

The NWU Business School at the North-West University (NWU) is a driving force of business education in Africa. Not only has the internationally prestigious Association of MBAs (AMBA) renewed the MBA accreditation of the NWU Business School, but the school is also now officially the first school on the African continent to receive international accreditation from the Business Graduates Association (BGA).

This follows a virtual visit to the NWU Business School by panel members of the AMBA, with which the BGA is affiliated. According to Prof Jan van Romburgh, chief director of the NWU Business School, the school managed to also successfully secure another five-year international accreditation for its MBA qualification.

"Business education in general – and the role of MBAs in particular – is going through a fundamental transformation, both globally and domestically. In a fast-changing world and country, business schools must remain relevant by providing business education that critically unpacks their socio-economic environment for successful business strategies."

Prof Van Romburgh says it is a huge vote of confidence from the BGA that it has accredited the NWU Business School as the first in Africa. "The AMBA accreditation also denotes the highest standard of achievement in postgraduate business education. Only 2% of recognised business schools around the world have AMBA accreditation. We are proud to be one of them. We recognise the big changes across the continent of Africa that excellent business education must help to navigate and manage successfully."

The AMBA is the only professional membership association that connects MBA students and graduates, accredited business schools and MBA employers across the world.

What is accreditation?

Accreditation certifies that an institution has the capacity to fulfil a particular function within the quality assurance system. Programmes that receive this accreditation reflect changing trends and innovation in the postgraduate education sector. They foster innovation and challenges and encourage business schools to continuously perform at the highest level.

Why is this a big deal?

Students and graduates, business schools and employers alike all recognise the AMBA and BGA accreditation as a gold standard. The rigorous accreditation criteria and assessment process ensures that only the best programmes achieve accreditation. The accreditation bodies look at programmes that demonstrate the highest standards in teaching, learning and curriculum design; career development and employability; and student, alumni and employer interaction.

Employers looking to attract game-changing managers and future business leaders know that graduates from accredited programmes have received the best quality, most relevant management education. To recruit a graduate from an AMBA- or BGA-accredited programme is to recruit top talent. This accreditation gives our business school worldwide recognition and honour.

What does it mean to the MBA students?

Employers are increasingly asking for business graduates who possess a balance between hard and soft skills, innovative capabilities and a mind-set geared towards being more socially responsible. We can guarantee that our students who obtained an MBA or Postgraduate Diploma in Management will bring all these qualities and skills to the table at their workplace and make a viable contribution to their company.

"For our MBA graduates, accreditation offers the opportunity to connect with peers from the best global MBA programmes. Student and graduate membership of the AMBA means alumni can network internationally, knowing that they are connecting with individuals from equally impressive programmes."

Prof Van Romburgh says that students, through the AMBA, can enjoy career advice and support, a job portal, events, access to the latest research and thought leadership and selected offers and benefits.

"In short, it opens doors and facilitates opportunities and we are committed to making sure that each and every student receives the best possible education in order to shape executive minds in Africa."

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https://www.facebook.com/NWUBusinessSchool/videos/337838344438189
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NWU BUSINESS SCHOOL

NEWS FROM ALL AROUND AFRICA

Recent investments, expansions and milestones.

An artist's impression of what a hybrid power plant utilising both renewable energy and conventional energy sources might look like. Wärtsilä is one of very few companies that can deliver both types of energy.

WÄRTSILÄ REACHES 7GW INSTALLED POWER CAPACITY MILESTONE IN AFRICA

The technology group Wärtsilä first began its Africa operations in Tanzania back in 1975. Since then, the group has delivered more than 600 installations, supplied power plants in 46 countries, generating 25% of the national electricity supply in over 25 countries. Total installed capacity now exceeds 7.4GW of which one-third is covered by operation and maintenance contracts. Today, Wärtsilä is the undisputed leader in the medium-speed power engine market in Africa. This strong track record, built up over decades, has its roots in a dedicated local presence combined with the capability to bring together international expertise to build groundbreaking energy solutions.

With more than 650 employees and service hubs located in Kenya, South Africa and Senegal, Wärtsilä is proud to have contributed to many industry firsts. These include Africa's largest gas engine power plant on the Kribi coast of Cameroon with 216MW capacity, as well as Africa's highest installation, the 175MW power plant in Sasolburg, South Africa, sitting at 1 700m above sea level.

Another first, the KivuWatt power plant in Rwanda, is the first-ever power plant to use the naturally occurring methane from lake Kivu to generate electricity and reduce the environmental risks associated with such high concentrations of gas. Today's power output is 25MW but future planned expansions to this project will increase capacity by an additional 75MW.

Wärtsilä's reciprocating gas engine technology and innovative energy management systems play an important role in response to Africa's growing demand for flexible and reliable electricity. Small to medium-size projects can be used to establish microgrids in remote regions. Their flexibility means that they can work hand in hand with renewable energy resources. Output can be ramped up at the same rate as wind or solar output fluctuates.

One example is the 15MWp hybrid engine-solar PV power plant for the Essakane gold mine in Burkina Faso. The combination of low-cost renewables with flexible engine solutions enables energy intensive industries to enter an era of more cost efficient and climate-friendly operations.

CARRICK WEALTH EXPANDS ITS AFRICA FOOTPRINT

Carrick Wealth has added two African jurisdictions to its international footprint. Pending final approval of licences, Carrick will be opening offices in Kenya and Zambia in 2022 as well has reengaging its licence in Botswana. Carrick has an established presence in South Africa, Mauritius, Malawi and Zimbabwe. The company intends the new offices to affirm the company's status as a bold and optimistic pioneer in the African market and plans to open more offices on the African continent.

Carrick believes that international financial services providers view customers on the African continent, especially outside of South Africa, as easy sources of revenue who can be charged high premiums for services because their countries lack sophisticated and formalised financial sectors. Swiss banks, especially, charge high fees to African clients wishing to transact and invest, and rarely offer much in the way of wealth management services. By contrast, Carrick wishes to fill the gap in the African market for truly global financial advisers that assist clients to safeguard and grow their wealth.

The African continent is the world's true economic frontier, home to the billionaires of tomorrow. Increasingly, wealthy African clients are demanding better outcomes from their financial services providers. This entails sound and holistic advice about global investments, discretionary investment management, and the wrapping of their portfolios in proper fiduciary support including jurisdiction-specific wills and estates planning and trust administration.

Accordingly, clients are looking to safely invest and grow their wealth in international jurisdictions, mitigating the risk of living and earning in Africa. This keeps skilled persons and entrepreneurs at home within risk parameters that are tolerable to them and their families, helping to reverse the skills and capital drain that plagues African economies.

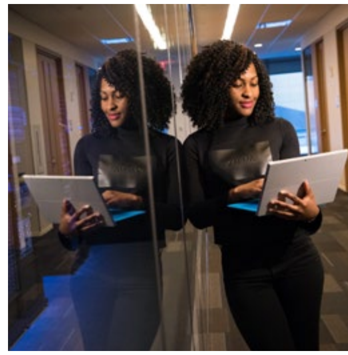
In addition to fulfilling those needs for its clients, Carrick is working hard to form partnerships with local banks, insurers, large employers and trust managers to provide complete and holistic financial management services for clients.

INVESTORS EXPECT AFRICAN INTERNET BOOM

Professional investors are forecasting strong growth in the value of Africa's Internet economy with mobile phones central to the expansion. This is revealed in research done for blockchain-based mobile network operator World Mobile.

The study of professional investors responsible for around $700-billion assets under management by independent research company PureProfile found one in four (25%) expect the value of Africa's Internet economy to more than double over the next three years from the current estimated $115-billion. More than half (51%) expect it to be worth more than $200-billion by 2025. Increased use of mobile phones will be central to the growth which will be further enhanced by improved affordability, the study among investors in the US, Germany, the UK, Hong Kong, India, Japan, Nigeria and Switzerland found.

Around 71% of investors expect affordability of mobile phones in Africa to improve over the next three years – currently it is estimated they account for around 6.8% of monthly incomes on average – while nearly all professional investors (97%) believe the Covid-19 pandemic has accelerated demand for mobile devices.



Professional investors questioned believe healthcare is the sector which will see the most benefit from increased connectivity. Around 53% highlighted the opportunities for healthcare ahead of e-commerce on 42% and media and entertainment on 40%. Education was chosen by 33% of professional investors questioned alongside finance which was selected by 34%.

World Mobile is launching its unique hybrid mobile network supported by low-altitude platform balloons in Zanzibar and plans to roll it out throughout the continent.

AFRICAN TECH STARTUPS BOOSTED BY ORACLE INVESTMENT

Early in 2022, cloud computing company Oracle announced that it would spend R15-million to help tech startups in Africa accelerate their digital initiatives with the latest cloud technologies and business resources. Led by Oracle for Startups, the company will provide extra resources and support to technology startups across Africa over the next two years

In addition, these businesses will also have access to hands-on technical support, executive mentoring, go-to-market resources and customer engagements.

"At Oracle for Startups, we help new businesses grow from grassroots through scaling. So far, enrolments from South African startups have grown by 91%, while enrolments from new businesses in over 13 other African countries have grown by 39% within the last year – all of which is evidence that Africa is at the forefront of the digital economy," said Jason Williamson, Vice President, Oracle for Startups. "This R15-million investment will further boost the efforts of tech entrepreneurs in Africa to utilise the latest digital technologies for the success of their startups."

Photo: Supplied

A recent report from the IDC, which highlighted the importance of corporations supporting startups to help further spur innovation, reported on Oracle for Startups, "Highly valuable to the startup community. Not only do they provide technology support, but they also provide benefits aligned in business areas such as marketing, market access, business knowledge, and expertise." This programme follows Oracle's recent announcement of its first cloud region in Africa to meet the rapidly growing demand for enterprise cloud services on the continent. The Oracle Cloud Johannesburg Region will boost cloud adoption across Africa while helping businesses achieve better performance and drive continuous innovation. The opening marks Oracle's 37th cloud region worldwide, with plans to have at least 44 cloud regions by the end of 2022, continuing one of the fastest expansions of any major cloud provider.

KINGSLEY HOLGATE'S TRANSCONTINENTAL EXPEDITION HELPS FIGHT MALARIA

While the world was focusing on fighting Covid-19, malaria made a comeback on the African continent. The World Health Organization's research reveals that the death rate among children from malaria in Sub-Saharan Africa has doubled in two years and that a child now dies from malaria every minute on the African continent, compared to every two minutes as previously reported, before the pandemic.

Goodbye Malaria and the Kingsley Holgate Foundation are continuing their fight against malaria, setting out on a world-first, 30 000km Land Rover Defender transcontinental expedition to take the tools to fight the disease to communities across the African continent

The first ever "Hot Cape to Cold Cape" expedition, departing from Cape Agulhas on the southern tip of the African continent to Nordkapp in Norway's Arctic Circle, will cross 30 countries in Africa and Europe over some of the roughest and most demanding terrains.

The expedition's partnership with Goodbye Malaria will allow the team to distribute effective, long-lasting, insecticide-treated mosquito nets to pregnant women and mothers with young children, along with teaching communities how to prevent the disease. It will also support the successful Goodbye Malaria indoor residual spraying programme in Mozambique.

As with all Kingsley Holgate expeditions, the principle of 'using adventure to improve and save lives' will be a strong focus of this journey which aims to assist 300 000 people with malaria prevention, eye tests and reading glasses, water purification systems, encouraging the conservation and protection of Africa's wildlife and habitats, nutritional food packs and ECD teaching material to children and teachers and Spekboom-thicket and tree planting to offset the expedition's carbon footprint.

In 2021, Goodbye Malaria ramped up its efforts to realise a malaria-free Africa by spraying 18 districts across southern Mozambique, protecting over two-million people from malaria, of which 264 864 were children under the age of five. Between the 2020 and 2021 spray seasons, Goodbye Malaria reached 98% in indoor residual spraying protection coverage, exceeding the WHO's mandate of 85%.

"This expedition promises to be one of our most challenging and significantly humanitarian journeys to date, and it wouldn't be possible without the support we've received from Goodbye Malaria," says Kingsley Holgate, South African explorer and humanitarian. "We're grateful to have partners like these, as well as the countless volunteers, friends and communities who have helped our work grow from strength to strength while touching millions of lives over the years." AB

LEADING THE MARCH TO RE-IMAGINE MINERAL EXPLORATION

The CEO of the Council for Geoscience, Mosa Mabuza, explains why the time is exactly right to align the amount of exploration South Africa does with the incredible potential of the country's mineral wealth.

Above: The CEO of the Council for Geoscience, Mosa Mabuza

BIOGRAPHY

After qualifying as a geologist from Wits University, Mosa held various positions at De Beers and Anglo American and worked in jurisdictions as varied as West Africa and Canada. From his appointment as the Director of Mineral Economics in the former Department of Minerals and Energy, he was promoted to Deputy Director-General of Mineral Policies and (Investment) Promotion in 2012. He has been CEO of CGS since 2017.

What is CGS doing in Eswatini?

We were approached by the Eswatini kingdom and the Council for Geoscience counterpart there to assist them with a geophysics survey for the country. We are almost done with the section we started to survey and we are already in conversation to cover other parts. The kingdom is beginning to appreciate the value of geoscience and they are investing in geoscience holistically. They are very keen on mineral development, particularly the extension of the Barberton rocks into Eswatini.

Because of gold?

Yes, gold-bearing rocks, as well as other minerals. The big interest now is in rare earth elements. The world has developed an appetite for rare elements and there is no better place to be looking for them than in the African continent.

Are you active elsewhere in Africa?

We've been active in many parts of the African continent where we have collaborated with the geological surveys of many countries. We have a footprint of around 50% of the African continent historically, but we are currently active in Namibia and Eswatini, and we are finalising our arrangement with Malawi.

We have an active discussion with the Ivorians. We supported the South African president recently in a state visit to Ivory Coast and they are very keen to explore collaboration with CGS. Nigeria is another country that is keen to develop its mineral prospects. When they discovered oil in the Sixties, they decided they would rely on oil so they held the development of minerals in abeyance. It is only now that they are seeking to diversify their economic basket and minerals development is one of those areas.

What is the nature of your collaboration?

It's country specific. Sometimes it is institutional capacity, sometimes we collaborate on analysis or we send staff or we host their staff. Our approach to the African continent is that we see ourselves as equal partners.

We are also the permanent secretariat of the organisation of African Geological Surveys, which is into the 15th year of its existence. It is a coalition of the willing and all member states of the African Union can step forward and participate in the Organisation of African Geological Surveys (OAGS). We look at projects of common interest.

From a geological perspective I think South Africa remains the most attractive in minerals as well as oil and gas frontier nation.

Does OAGS have an annual conference?

We have an AGM and every two years we organise a geological conference at different countries.

Any other international agreements?

We have active collaboration with European geological surveys. We have just entered the second phase of a project with our European partners. It gives practical training and we share experiences. There is a lot of deep knowledge in the African continent. The Europeans invested €10-million into this initiative which ran over three years.

The OAGS and the European Geological Surveys (EGS) have now entered the second phase of this collaboration.

What progress has been made on the new exploration strategy of the CGS?

The thing that has me most excited is that the South African government has put its money where its mouth is. We have received support of half-a-billion rand in additional funding as a directive to spearhead the re-imagination of exploration in South Africa. There was a time when we used to have a 5% share of global exploration expenditure.

In 2003 we peaked at $400-million in exploration but we have been hovering below $100-million for 15 years or so, which is less than 1% of the global exploration expenditure. We have been given orders to recapture the 5% minimum. CGS will not do exploration but CGS does its work to catalyse exploration activities.

Left: The *SA Agulhas II* will serve as a platform to explore maritime potential. Credit: DFFE

And you rely on national government to provide a steady framework in which investors feel comfortable and Eskom will supply power?

You have all of those things in a basket. I am encouraged with the energy-security conversation that government and parliament are having and all the plans that are in place. You do exploration today to mine in 10 or 15 years. By the time we are ready to mine I am convinced that we would have resolved all of these energy challenges. This is a temporary challenge in my view.

This exploration activity that has reached its lowest ebb is inconsistent with the geology of this country. It is not geology alone that will encourage exploration but without geology, you don't have anything.

This is the time for us to have our hands on deck and private sector participation is key. We are very keen to work with the private sector to unlock the value that we have. The last calculation we did of gross in situ value of minerals in South Africa is \$9.6-trillion.

In the ground?

Yes, and that excludes any additional potential from the extension of existing mineral systems. We have been too comfortable because we have been mining gold for 150 years. We have looked in the normal places and now we are discovering that these systems are actually extending into other areas that have a geological continuity.

We think that we have entered a new era of not only talking about exploration. There is no better time for us to bring the crème de la crème of geoscientists to study our geology and to develop models that can fast-track exploration activities.

We have seen globally that exploration is ticking up, post-Covid. We have entered the next boom of exploration and potentially mining. The timing for us to do this work has never been more impeccable.

What are the key principles of the exploration strategy?

We have asked the question: Why is the level of exploration in this country not consistent with the quality of geology?

Why is it that people are not investing in South Africa? We had to have a frank discussion. If we are part of the problem then we must be honest. We have identified barriers and we have recommended interventions.

At political level, we said that there seem to be contradictions and lack of streamlining of pieces of legislation that are frustrating the mining industry. You go to various departments for a prospecting right, an environmental authorisation, a water-use licence and then we have protected areas.

We respect the environment and we understand the importance of conservation but we equally understand that there must be

Below: The Maltese Cross is a natural rock formation formed by the weathering of sandstone in the upper Peninsula Formation at the farm Dwarsrivier, Cederberg.

development and that development and conservation are not necessarily mutually exclusive.

We pitch them against each other. That's why you saw Shell chased away off the South Coast and they went and made a major discovery next door. Any country that claims that it is desperate for development will of course pay attention to the type of technology that is used within its borders but equally, it will validate the veracity of the allegation that technology is bad, either for particular species or for the environment at large.

Below: Large-scale soft sediment deformation and folding occurring in the uppermost Peninsula Formation at its contact with the Pakhuis and Cedarberg Formation at Baliesgat, Cederberg. This "Fold Zone" formed some 440-million years ago during the deposition of the glacigenic Pakhuis Formation.

Was an EIA done before Shell was given permission to do a seismic survey?

It was.

So the Department of Mineral Resources and Energy (DMRE) believed that EIA to have been valid but the judge sided with the protestors. Then it's essentially just a view on the quality of the EIA?

It is not even so much the view of the quality of the EIA. We have embraced this culture of environmental fundamentalism. Anything that reaches the levels of fundamentalism is a problem. I think that in a society where if you hold a different view you are ridiculed, you are called names and you are attacked, to me it says that we are a society that is quickly degenerating. I think that we genuinely need to guard against that level of degeneration.

What should replace that?

Have honest conversations. It is okay to have differences of opinion but our relationship as members of society is not defined around our difference of opinion on a particular matter. But we can have a conversation and allow for a battle of ideas. From that, a dominant idea that is substantiated with facts must prevail. But we are becoming a society whose dominance of ideas is defined by the level of noise and not the facts and that troubles me very deeply. I honestly believe that as a nation we've got to be very careful that we are not defined by who makes the loudest noise.

Please expand on your statement that conservation and development are not mutually exclusive.

I am not sure that we are asking the right questions. I have learned that there is nothing worse in life than getting the right answers to the wrong questions. The question is: Can we have development and conservation? My answer is yes.

The next question is what would it take to have both? Then invest in research. We have the crème de la crème of scientists in this country, in our academic institutions and various research institutions of the state. We have collaborations in the African continent and the rest of the world. Are we directing research to answer the right development questions? Which development questions must take into cognisance the importance of conservation? I am not sure as a society we have yet been

deliberate enough to define the question and then direct the research to answer that question. I think there is just a lot of haphazard research.

Was there research knowledge that might have been employed in the debate about the maritime seismic survey?

To everybody everywhere in the world, it is incomprehensible and inconceivable that only the whales off the south coast will be affected by a seismic survey. It is a well-developed technology globally; everybody everywhere in the world uses this technology. There is nothing that Shell has brought here that we have not been using.

The Council for Geoscience uses seismic surveys to map. We recently launched a small research vessel of our own to do surveys within 15 nautical miles. It continues to do surveys.

Tell us more about the CGS's maritime programme?

We are moving very aggressively and we are focused on the near shore at the moment. We recently signed a service-level agreement with the SA Navy. They are going to make available another boat for us in the short term, and when their replacement vessel for *SAS Protea* is complete, we will be able to place our equipment on board.

We have approached the military and said to them we are one country, we are one government, we are one state, we have the same pool of resources. We will not compromise your security; we just need to mount the instruments so that when you do your research or you do a patrol you collect the data.

The last calculation we did of gross in situ value of minerals in South Africa is $9.6-trillion.

This process is ramping up?

We are focusing on the near shore and we have approached the Department of Forestry, Fisheries and the Environment (DFFE) so that we can gain access to *SA Agulhas II*, the huge ship that visits the Antarctic.

We are increasing marine mapping. Planning around Operation Phakisa (the blue economy) showed us that we have vast prospects right under our nose that we have not looked at through a coordinated economic and developmental prism balanced with environmental stewardship.

South Africa has applied for the extension of the exclusive economic zone (EEZ) at the United Nations. Part of the reason our application has taken so long is because we don't have sufficient knowledge of our offshore geology.

Above: Prolonged pseudokarstic weathering of coarse-grained sandstones of the Skurweberg Formation at Stadsaal, Cederberg, give these rocks their characteristic grotesque (or "scabrous") appearance from which the mountain namesake derives its Afrikaans name.

Is there a protocol for countries to extend their EEZs?

You can apply for an extension but there are technical considerations. We had to make major compromises because we have had to extrapolate some of the geology. Because we don't have some answers, we will forfeit part of the plan. For all practical purposes this application could double the size of the country. It has been a subject of adjudication now for five years but there have been substantial delays.

How important is the Brulpadda find off Mossel Bay?

Two things make it very exciting. For us as geologists it confirms the pre-Gondwana setup. All the major oil- and gas-producing nations are conjoined with this part of our oceanic basin and therefore it was not unexpected. Oil and gas in Namibia, Angola, Brazil, Argentina, Australia – and now the discoveries that are made in Mozambique – it cannot be that this vast ocean will not be blessed with the same. From a geological perspective I think South Africa remains the most attractive in minerals as well as oil and gas frontier nation.

If you look at the time that led to that discovery, the time that they spent collecting information and the amount of money they have spent collecting that information leading to that discovery, it was completely insignificant compared to other jurisdictions that are not established oil and gas basins. So that's number one.

Number two, I think it was under President Obama that the US managed to achieve the status of a net exporter of energy which it had never achieved previously. This came after it had duly considered and processed its oil and gas both in shales and elsewhere. For us as a developing nation, I cannot emphasise enough the importance of properly evaluating these prospects and evaluating them in the context of our climate change commitments.

I worry about this fundamentalism that has taken a predetermined position that net zero can only be achieved if we move away from hydrocarbons. I have always been under the impression that our intention as humanity is to reduce the amount of carbon dioxide that we have been pumping into the atmosphere. If that is true then surely that cannot only be achieved through one method.

South Africa is blessed with a lot of coal and gas and there will be more that this investment in geology will uncover.

We think that we have entered the next boom of exploration and potentially mining and therefore the timing for us to do this work has never been more impeccable.

I think the biggest mistake we can make that generations after us will never forgive us for, is not optimising the utilisation of the resources that we have responsibly for. This must be done in a manner that balances the exploitation of those resources with environmental stewardship. Is that possible? I think it is absolutely possible. AB

Below: Stratotype section of the Bokkeveld Group at Klipbokkop, Grootrivierhoogte in the Cederberg. Alternating bands of mudstone and sandstone form the basis for stratigraphic subdivision and give the succession its characteristic hogsback topography in outcrop due to differences in lithology.

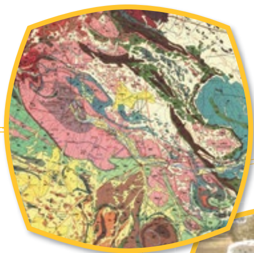
COUNCIL FOR GEOSCIENCE

March 2022

The Council for Geoscience (CGS) is the national custodian responsible for the collection, compilation and curation of all onshore and offshore geoscience data and information. The CGS aims to use this information and knowledge to develop geoscience solutions to real-world challenges in South Africa.

MINERALS AND ENERGY

The Minerals and Energy theme includes integrated geoscience mapping, which is the core function of the CGS. This theme aims to attain a fundamental understanding of South Africa's onshore and offshore geology using an innovative multidisciplinary approach. The theme encompasses fundamental geoscience mapping, economic geology and geochemistry and various geophysical techniques. These data are integrated towards enabling South Africa's minerals and energy security and socioeconomic growth.



ENGINEERING GEOLOGY AND GEOHAZARDS

As the custodian of the national seismological network, the CGS monitors and maintains a geohazard inventory for South Africa. This information is primarily used in developing effective and novel geohazard mitigation solutions to promote safe and judicious land use. Modern artificial intelligence techniques are applied in subsidence mapping and seismic hazards characterisation.

WORLD CLASS FACILITIES

The geoscience functions of the CGS are supported by a multi-facetted laboratory that performs a wide range of analytical services such as petrography, whole rock geochemistry, petrophysics, coal science and hydrochemistry. In addition, the CGS manages a geoscience museum, library, bookshop and a national core repository, all of which are used by the scientific community and the general public.

WATER AND ENVIRONMENT

The CGS carries out hydrogeological studies and aquifer modelling. In addition, the organisation carries out environmental geoscience research which aims to monitor and mitigate the impact of geology and mining activities on the health of the environment and its inhabitants.

AFRICAN FOOTPRINT AND OTHER COLLABORATIONS

As the Permanent Secretariat of the Organisation of African Geological Surveys (OAGS), the CGS leaves an impressive footprint in the African continent where it oversees and carries out various geoscience services in line with global standards, international policy and governance. In this capacity, the CGS also collaborates with various academic institutions and science councils.

CGS AT WORK

- The CGS is undertaking an integrated and multidisciplinary geoscience mapping programme across South Africa.
- Some recent projects under this programme include:
  - Multidisciplinary geoenvironmental baseline investigations in the southern Karoo into the feasibility of shale gas development. This work has uncovered previously undefined groundwater aquifers.
  - Regional soil geochemical sampling and detailed follow-up surveys, particularly in the Northern Cape, North West and Mpumalanga Provinces.
  - Geothermal energy and carbon capture and storage research, aiming to expand South Africa's current renewable energy mix while decreasing the country's carbon footprint.
  - Ground stability and geotechnical assessments for infrastructure development in the Northern Cape and Free State Provinces.

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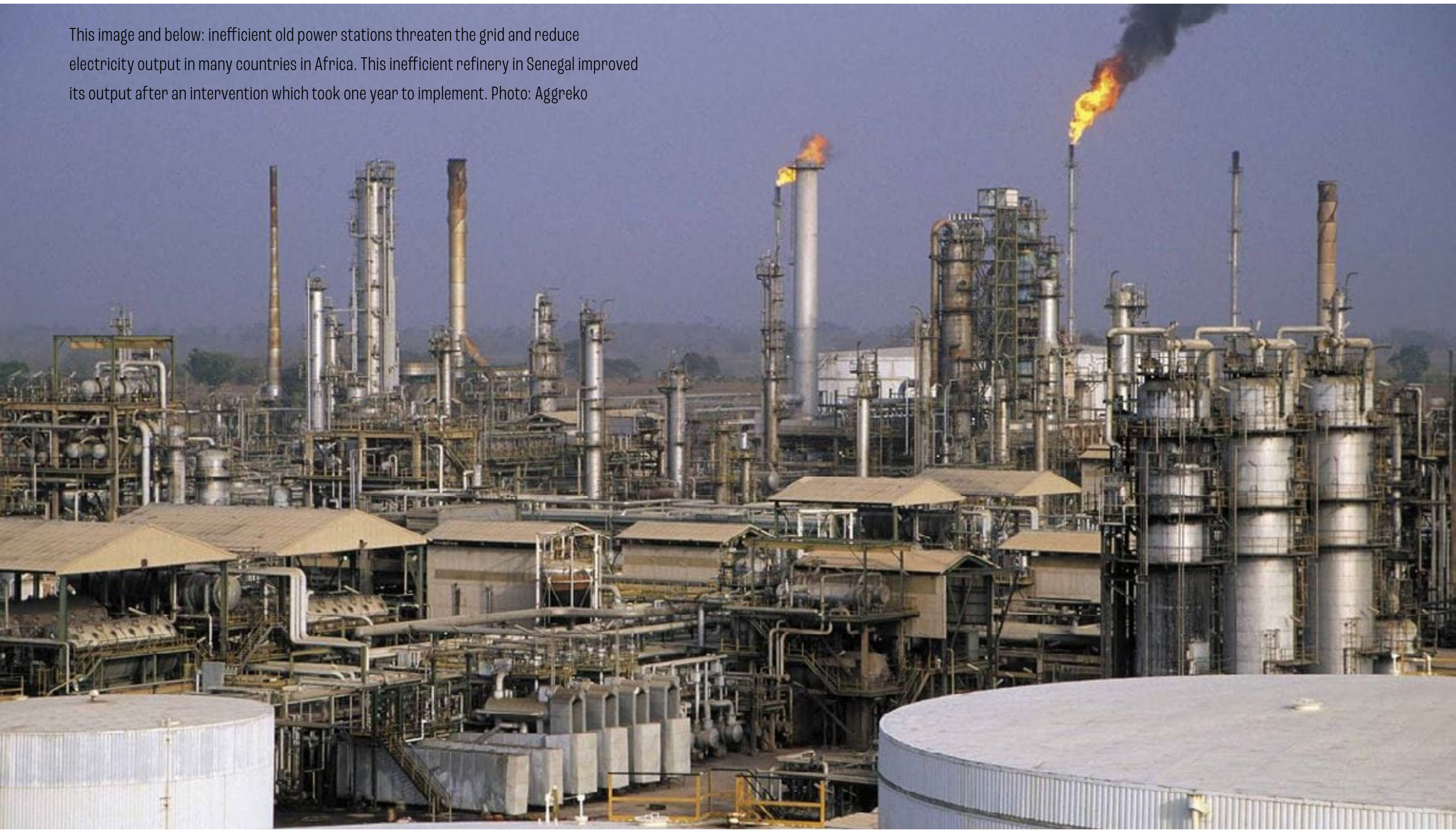
Council for Geoscience

THE AFRICAN OIL AND GAS SECTOR NEEDS AN ENERGY BOOST

Africa must approach energy consumption and investment intelligently to cope with the complexities of the market and climate change, says Kweku Frempong, Aggreko's Area General Manager for Western and Central Africa.



This image and below: inefficient old power stations threaten the grid and reduce electricity output in many countries in Africa. This inefficient refinery in Senegal improved its output after an intervention which took one year to implement. Photo: Aggreko

The past 18 months have left behind complex layers of economic instability and uncertainty about financial growth. For the oil and gas sector, these months have badly affected the bottom line.

As the African Energy Chamber (AEC) Africa Energy Outlook 2021 report points out, the outlook for CAPEX spend in the 2020-2021 period was almost $90-billion pre-pandemic, but it is now down to $60-billion thanks to delays and cost-cutting. This landscape is further complicated by growing global pressure on the African market to cut greenhouse gas emissions, meet the targets outlined by the Paris agreement, and, by doing so, capture investment attention and retention.

Currently, Africa is not leading the way when it comes to carbon emission efficiency and this is influencing investors. Ultimately, money goes where there is certainty and environmental accountability and the continent has to pay attention to these challenges if it wants to stay on the investment radar. This is a concern raised by the AEC report and one that the sector needs to address if it wants to stay ahead and play the long game. Africa is not alone in its slow energy transition – the USA continues to lag behind Europe and other countries – but the continent

This is the time to look at alternative energy supplies and solutions that allow for the organisation to cut its carbon emissions, reduce its environmental footprint and show commitment to the global move towards a cleaner planet.

Good insulation can go a long way to reducing energy usage. Photo: John Young

Kweku Frempong

can leverage this complexity for gain if it approaches energy consumption and investment intelligently.

A CHANGING MARKET

The market is defined by tough conditions, rough outlooks and uncertainty, but it can still achieve its potential despite these challenges. While the market will not suddenly recover from the massive impact of the pandemic, it is on a slow and steady path that is weaving its way through the reverberating costs, lost projects, and income impacts to find growth.

Africa is not alone in its slow energy transition – the USA continues to lag behind Europe and other countries – but the continent can leverage this complexity for gain if it approaches energy consumption and investment intelligently.

For companies within this sector, it is crucial they take a forward-thinking approach to cost, investment and energy usage to ensure that they are at the front of the line when it comes to investment and growth. This is the time to look at alternative energy supplies and solutions that allow the organisation to cut its carbon emissions, reduce its environmental footprint and show commitment to the global move towards a cleaner planet.

This is not just a box to tick. Not when record highs and lows and climate-related challenges are already making themselves known on the global stage. As the world sits up and takes notice, the oil and gas industry must entrench good energy practice into its ethos, strategy and systems.

FINDING THE PERFECT BALANCE

Of course, unpacking the right energy structure and developing the right combination of power and energy services is not a simple process. In this industry, no two projects are the same and time is always of the essence. You are expected to move at speed and deliver on promises without compromising on cost or energy ethics. Fortunately, the challenges that have put pressure on the market are the same that have seen smart solutions and service providers emerge, adapting their offerings to fit what the market needs.

You need to collaborate with a trusted third-party service provider that can offer you customised energy solutions that fit your very specific challenges. They need to provide you with services that fit into every part of your project lifecycle – from construction to startup and testing, to production, maintenance and decommissioning. Solutions have to be capable of meeting your rigorous performance goals on time and within budget while consistently optimising your production. It is also important that your engagement mitigates the risk of downtime – keeping your project running no matter where it is located, no matter how rural or remote.

Plus, any engagement with any third-party service provider must ensure that your business is reducing its carbon emissions and meeting its energy transition needs. AB

ABOUT AGGREKO

Aggreko has collaborated with numerous organisations in the oil and gas industry in Africa, providing the latest technology and energy-efficient solutions and support.

Our equipment is energy efficient, our solutions are relevant, and we work with you to make sure you are managing your carbon emissions effectively.

Aggreko creates bespoke solutions to provide all electricity, heating and cooling needs using the latest fuels and storage solutions.

This is powered by our trademark passion, unrivalled international experience and local knowledge.

Renewable energy options are being rolled out all across Africa. Photo: BTE Renewables

AS AFRICA LOOKS TO A LOWER-CARBON FUTURE, SOUTH AFRICA INVESTS IN GAS EXPLORATION AS A STEPPING STONE

Gas can drive economic growth and play a role in the transition to a clean energy future, argues Petroleum Agency South Africa CEO, Dr Phindile Masangane.

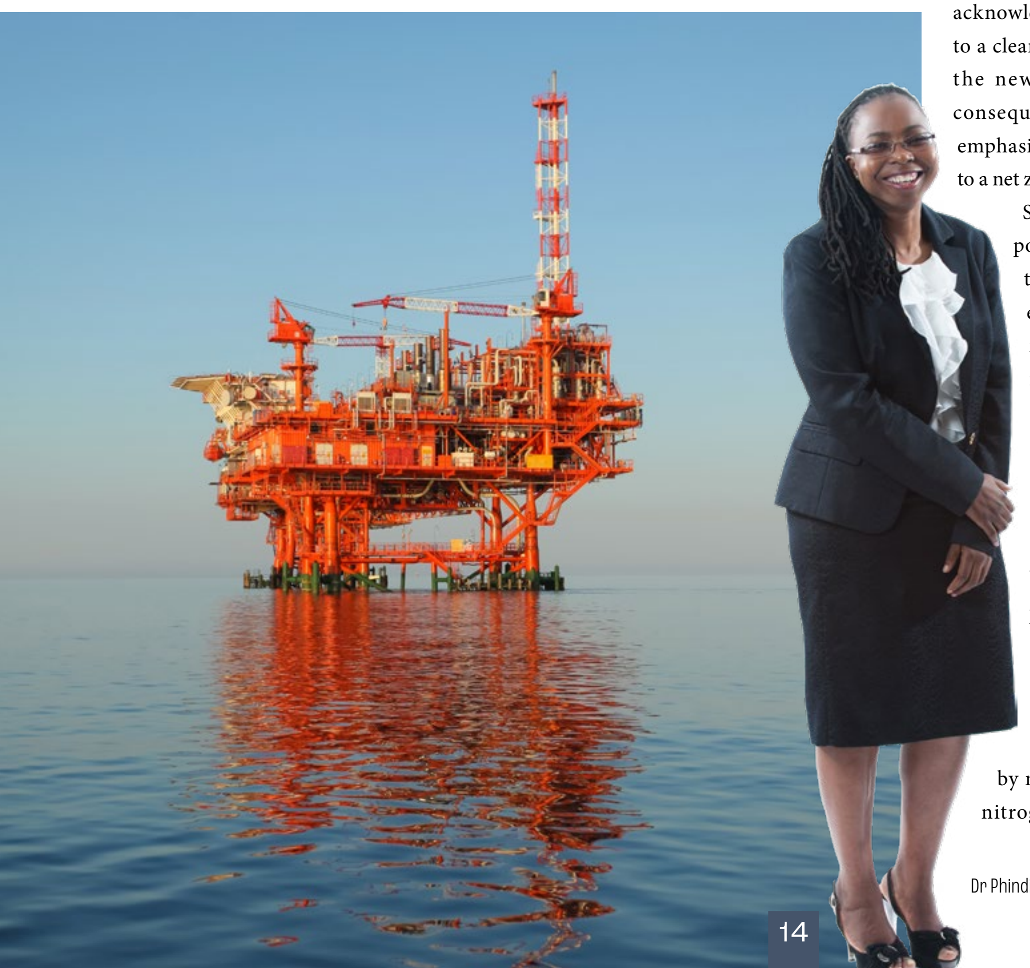
Today the biggest threat to humanity is climate change and the biggest threat to South Africa's social stability is the high unemployment rate, which has primarily been caused by economic stagnation.

As the global economy recovers from the devastating effects of Covid-19, demand for oil and gas has gone up significantly. If there was ever a need for proof that oil and gas still drive the global economy, recent statistics demonstrate the trend.

The world's developed economies industrialised on the back of oil and gas production and use. Now, just as Africa is on the cusp of being a significant gas producer and is making plans to use such gas for power generation, industrialisation and economic growth, the negative effect of greenhouse gas emissions on the environment has become undeniable.

The continental shelf of the Republic of South Africa covers some 200 000km^2 and the country has a coastline approximately 3 000km in length.

The urgency for action to mitigate the risk of climate change is no longer debatable. Between 1990 and 2018 the top five emitters have produced more than 50% of greenhouse gas emissions. During the same period South Africa has contributed 1% to global emissions.



Dr Phindile Masangane, CEO, Petroleum Agency South Africa

This is by no measure insignificant, and as a responsible global citizen South Africa must take steps to reduce its carbon footprint.

The UN Framework Convention on Climate Change was established in 1992 to coordinate the global response to mitigate the threat of climate change, and specifically to get countries to commit to policies and plans that will ensure that the average global temperature rise is kept less than 1.5°C above pre-industrial levels.

The International Energy Agency (IEA) proposes that to achieve this goal the world's energy sector must reach net zero emissions by 2050. In its global energy net zero 2050 pathway, the IEA acknowledges that there is no single pathway to this goal, as developed and developing countries face different socioeconomic challenges and have contributed disproportionately to greenhouse gas emissions to date.

COUNTRY-SPECIFIC PATHWAYS

What a number of environmental interest groups seem to be ignoring in the IEA "Net Zero by 2050" report is the acknowledgment that there will be a differentiated approach to a clean energy future, taking into consideration the cost of the new clean energy technologies and the economic consequences of transitioning for each country. The IEA emphasises that each country must develop its own pathway to a net zero emission future.

South Africa's economy has been predominantly powered by coal, which is also a significant contributor to the country's economy in terms of GDP as well as employment. Of all primary energy resources coal is the most carbon-intensive, and South Africa therefore has a relatively high carbon-intensive economy, contributing about 1% of annual global greenhouse gas emissions.

In addition to coal, South Africa imports oil, gas and petroleum products for its energy needs as the upstream petroleum industry is still at a nascent stage. The two recent world-class gas discoveries in the Outeniqua basin off the south coast of the country are the biggest petroleum discoveries made in South Africa.

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

The International Energy Agency has acknowledged that there will be different paths to clean energy.

environment. Gas is therefore an obvious bridge to a lower-carbon future in South Africa.

Importantly, these gas discoveries could restore the gas-to-liquid refinery in Mossel Bay to full production and profitability, saving about 1 200 direct jobs. A complete shutdown and abandonment of this refinery would not only lead to job losses at the refinery, but the effects would reverberate throughout the town of Mossel Bay and the Southern Cape region, since the refinery contributes about R2-billion a year, or 26% of the Mossel Bay economy, and 6% to the Southern Cape economy when producing at full capacity.

The Petroleum Agency South Africa awaits the licensee of these gas discoveries submitting its production right and environmental authorisation applications when the exploration right expires, or earlier. The agency expects the licensee to use world-class technologies and standards to minimise the effects of the gas and gas condensate production on the environment, while maximising the in-country benefit or local content from this development to support South Africa's economic recovery.

These discoveries could indeed support both the country's economic recovery and its transition to a clean energy future. AB

DATABASE MANAGEMENT

The continental shelf of the Republic of South Africa covers 200 000km^2 and the country has a coastline approximately 3 000km in length.

Petroleum Agency SA is responsible for the archive and management of the national hydrocarbon exploration database on behalf of the state. It has digitised, indexed and archived all of the data and reports resulting from the drilling of more than 300 offshore and some 200 onshore boreholes.

The exploration database also include seismic field and processed data for more than 300 000km of 2D and 40 000km^2 of 3D seismic data that was acquired offshore and some 9 800km of seismic processed data that was acquired during the late 1960s in the Karoo, Algoa and Zululand onshore basins.

Being the custodian of the National Petroleum Exploration and Production Database of South Africa, the Agency relies on a sustainable and effective Information Management Infrastructure in order to comply with its mandate to:

- Archive and maintain a database on petroleum exploration and production data.
- Provide access to existing data, cores, well samples, information and literature on request.
- Add value and incorporate new as well as interpreted data into the database.
- Maintain records of all hydrocarbon exploration and production activities.

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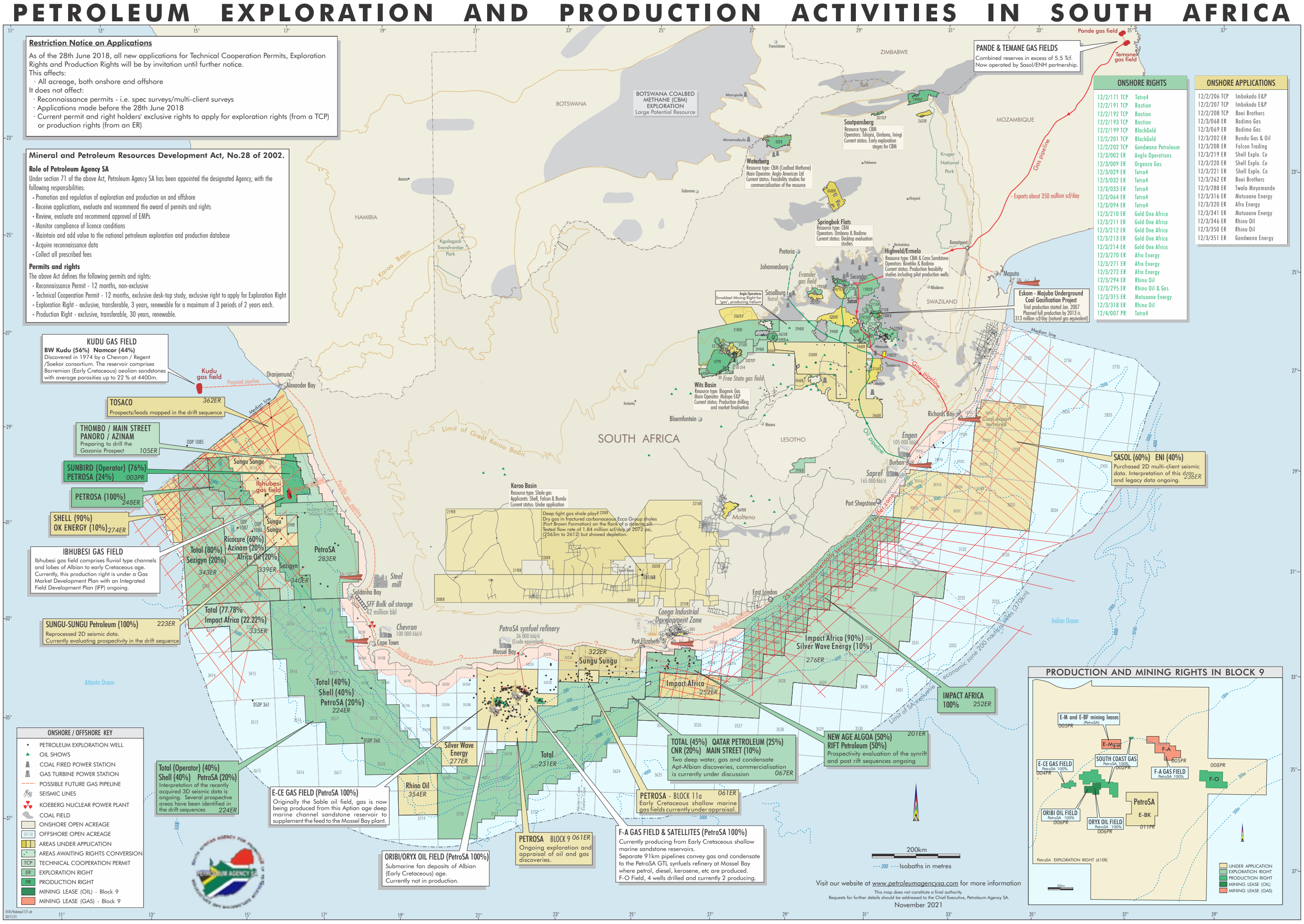
PETROLEUM EXPLORATION AND PRODUCTION ACTIVITIES IN SOUTH AFRICA



THE WORLD'S MOST VULNERABLE NATIONS ARE FACING THE BIGGEST CLIMATE CHANGE CHALLENGES

African nations signed the Glasgow agreement at COP26, but it's the emissions from industrialised nations that threaten the future, as Margaret Kadiri explains. Kadiri is a lecturer in Physical Geography at King's College London. Dr Richard Munang made valuable contributions to this article, which first appeared in *The Conversation*.

Under construction in Morocco, Noor Power Plant is the world's largest concentrated solar plant. Credit: IRENA/Flickr

The UN climate summit COP26, held in November 2021, focused the world's attention on the urgent need to tackle climate change and concluded with 197 countries agreeing to the Glasgow climate pact. But opinions on the summit's success are polarised.

We owe a profound gratitude to the developing nations – including those from Africa – who agreed to the pact. In doing so, they chose not to insist that richer developed nations, whose historical and ongoing greenhouse gas emissions have largely caused the climate crisis, pay reparations to them for the damage they've inflicted.

African nations continue to hold the unenviable position of being disproportionately vulnerable to climate change. Although the continent accounts for the smallest share of global greenhouse gas emissions – only 3.8% – it's already heating faster than the rest of the world.

And if the target of limiting global warming to 1.5° above pre-industrial levels is missed, Africa could be facing catastrophic temperature increases of up to 3° by 2050.

At the same time, the threat to the GDP of African nations that are most vulnerable to these changes – meaning the amount of economic activity that stands to be lost if these changes are severe enough – is projected to increase from £660-billion in 2018 to over £1-trillion in 2023. That's almost half of the continent's projected GDP.

CLIMATE MEETINGS

IRENA hosts events at the Conference of the Parties (COP), which are held annually (left), while IRENA's Council comprises 21 member states and is elected for a two-year term. The 15th Council (right) was held in Abu Dhabi, United Arab Emirates, in 2018.

INVESTMENTS IN RESILIENCE

Given these estimates, Africa's climate resilience must exceed the global norm. Some steps are being taken to protect the continent against the worst climate consequences through investments from national governments and the private sector. Organisations such as the African Development Bank and the UN Environment Programme are also leading climate change adaptation measures, like working to protect mangroves on over 200-million hectares of land.

However, the estimated yearly cost of this kind of climate adaptation for developing nations is around £52-billion and is expected to rise to between £100-220-billion by 2030. While developed nations agreed in the Glasgow pact to double climate change contributions to their developing counterparts by about £29-billion by 2025, this amount is just a fraction of what's needed.

The total amount provided by African national governments in fossil fuel subsidies rose to £55-billion in 2015 alone

One way to close this gap could be to leverage the Paris climate agreement, specifically a subsection of Article Six that allows countries with high emissions, such as the US and the UK, to offset them through investing in sustainable initiatives like reforestation in low-emitting countries, including those in Africa.

Gjenge Makers creates paving blocks and tiles out of recycled plastic. Credit: Gjenge Makers

African nations continue to hold the unenviable position of being disproportionately vulnerable to climate change. Although the continent accounts for the smallest share of global greenhouse gas emissions – only 3.8% – it's already heating faster than the rest of the world.

Such partnerships could act as a catalyst for the growth of low-carbon energy projects such as solar, geothermal and wind power.

Another option could be to redirect local government money towards sustainable schemes. The total amount provided by African national governments in fossil fuel subsidies rose to £55-billion in 2015 alone, causing calls for the "phasing down" of these subsidies to be enshrined in the Glasgow climate pact.

Since subsidy money was flowing into an industry employing less than 1% of Africa's workforce, it could instead be invested back into African economies, creating inclusive, environmentally friendly job opportunities. For example, it might be used to fund startups like Gjenge Makers, a Kenyan business making paving blocks and tiles out of recycled plastic.

Despite contributing the least to the changing climate, many African nations are also taking strides to transition to renewable energy. The world's largest concentrated solar power (CSP) facility in Morocco, Noor Power Plant, converts the sun's energy to electricity for around two-million households.

Unlike more widely used photovoltaic panels, CSP enables solar energy to be stored for nights and cloudy days. The facility generates more than a third of Morocco's power while reducing carbon emissions by around 690 000 tons per year.

Projects like these don't just create more jobs, they also make more money. Up to £236-billion of new business opportunities that aim to climate-proof food and land systems – including preserving local forest ecosystems and restoring degraded landscapes – could be added each year to Africa's economies between now and 2030. AB

IRENA PROMOTES RENEWABLE ENERGY

The International Renewable Energy Agency (IRENA) is an intergovernmental organisation that supports countries in their transition to a sustainable energy future and serves as the principal platform for international cooperation, a centre of excellence and a repository of policy, technology, resource and financial knowledge on renewable energy.

IRENA promotes the widespread adoption and sustainable use of all forms of renewable energy, including bioenergy, geothermal, hydropower, ocean, solar and wind energy in the pursuit of sustainable development, energy access, energy security and low-carbon economic growth and prosperity.

With a mandate from countries around the world, IRENA encourages governments to adopt enabling policies for renewable energy investments, provides practical tools and policy advice to accelerate renewable energy deployment, and facilitates knowledge sharing and technology transfer to provide clean, sustainable energy for the world's growing population.

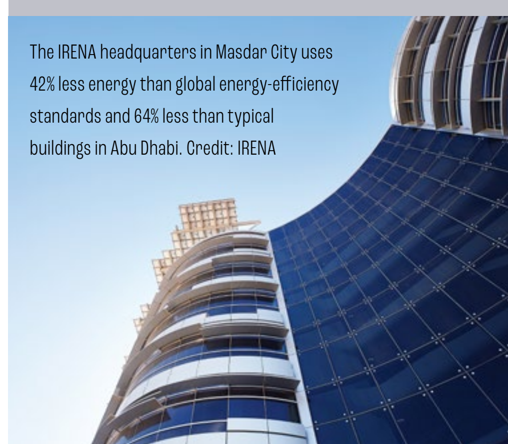
In line with these aims, IRENA provides a wide range of products and services, including:

ANNUAL REVIEWS OF RENEWABLE ENERGY EMPLOYMENT

- Renewable energy capacity statistics
- Renewable energy cost studies
- Renewables Readiness Assessments, conducted in partnership with governments and regional organisations, to help boost renewable energy development on a country-by-country basis
- The Global Atlas, which maps resource potential by source and by location
- Renewable energy benefits studies
- REmap, a roadmap to double renewable energy use worldwide by 2030
- Renewable energy technology briefs
- Facilitation of regional renewable energy planning
- Renewable energy project development tools like the Project Navigator, the Sustainable Energy Marketplace and the IRENA/ADFD Project Facility.

With more than 180 countries actively engaged, IRENA promotes renewable resources and technologies as the key to a sustainable future and helps countries achieve their renewable energy potential.

Website: www.irena.org



The IRENA headquarters in Masdar City uses 42% less energy than global energy-efficiency standards and 64% less than typical buildings in Abu Dhabi. Credit: IRENA

GREEN HYDROGEN CAN HELP THE GLOBAL TRANSITION TO CLEANER ENERGY

Africa has the minerals, the wind and the sunshine that the world needs. By John Young

A Toyota hydrogen fuel cell concept vehicle on display at Megaweb Toyota City Showcase in Tokyo. Credit: Darren Halstead on Unsplash

The global move away from carbon fuels presents several opportunities for Africa.

Green hydrogen is increasingly being seen as the ideal way for the world to transition away from carbon fuels to cleaner energy. Africa is rolling out many new renewable energy projects – the International Energy Agency (IEA) predicts that Africa's renewable energy capacity could reach 310GW by the year 2030 – which are answering the needs of African citizens for more access to energy and which also show the enormous potential that the continent has for renewable energy.

Some estimates put the continent's potential for renewable power generation of the at 1 475GW, but with most rivers untapped and almost endless supplies of strong sunshine and steady wind, it is difficult to put a figure to the real opportunity that exists to generate power from natural resources.

If renewable energy is deployed to make the electricity that makes the hydrogen, then that is "green hydrogen".

Some big projects hold massive potential. As listed by African Energy Week (AEW), such projects include the 6 450MW Grand Ethiopian Renaissance Dam in Ethiopia, the 580MW Noor Ouarzazate Solar complex in Morocco and the 310MW Lake Turkana wind farm in Kenya.

AEW points out that developments on this scale "could be used to create competitive green hydrogen markets".

Hydrogen is generated via the electrolysis of water using electricity. If renewable energy is deployed to make the electricity that makes the hydrogen, then that is "green hydrogen".

Hydrogen has a wide range of uses across multiple sectors, from transport to heat generation and power.

In South Africa, Anglo American is running a project to power its trucks with green hydrogen. In 2012 Anglo Platinum launched an underground locomotive powered by a fuel cell.

Finding new uses for platinum is one of the new priorities exercising the minds of the leaders of the mining industry as it moves to adapt to a world which is moving away from fossil fuels. Platinum coating greatly enhances the hydrogen absorption capacity of fuel cells.

In 2016 Impala Platinum Refinery unveiled a fuel cell forklift and a hydrogen refuelling station in Springs. Research at that facility is ongoing. The head office of the Minerals Council South Africa in Johannesburg is powered by 40 ounces of platinum and natural gas, South Africa and Africa's first baseload installation.

The editor of the respected *Mining Weekly* publication, Martin Creamer, has published a series of articles and editorials extolling the virtues of what he calls the "best of two new carbon-reducing technology worlds".

Creamer notes that South Africa's abundant supplies of platinum group metals (PGMs) and manganese ore can make the country a leader in battery electric vehicles (BEV) and fuel cell electric vehicles (FCEV). He further points to the work being done by Hydrogen South Africa (HySA) at three universities and the Council for Scientific and Industrial Research (CSIR). South Africa's good supplies of sunshine and wind make it ideally suited to generate hydrogen and if the country could capture 25% of the world market, it would be worth $600-million.

What applies to South Africa, naturally applies in an even greater degree to Africa as a whole. A structure has been created for the development of hydrogen on the continent, the African Hydrogen Partnership Trade Association (AHP), which is incorporated as

The Port of Walvis Bay. Credit: Namport

The Port of Rotterdam anticipates that 20-million tons of hydrogen will pass through its facilities annually by the year 2050.

a non-profit company in Mauritius. Two member companies are Anglo American and the Port of Rotterdam.

The AHP argues that Africa is uniquely well-suited to achieve a green hydrogen technology revolution because: the region is not locked into old energy technologies; African governments have the power and flexibility to kickstart such a development in a very short time; national hydrogen energy plans can be developed from scratch in the region; African governments are already proactively and decisively supporting environmental policies (Ethiopia's green policies, for example); there are unlimited natural resources for producing low-cost green electricity and green hydrogen; and a rapidly growing, young population demands innovative green energy concepts.

A memorandum of understanding has been signed between the Port of Rotterdam and the Namibian Ports Authority regarding future flows of green hydrogen from Namibia to the Netherlands. René van der Plas, Director: Port of Rotterdam International with Namport CEO, Andrew Kanime. Credit: Namibian Ports Authority

African hydrogen routes. Credit: AHP

AHP wants to see power-to-gas renewable energy hubs all over the continent and has developed a map to show the proposed routes (above). The AHP website states:

"The first hydrogen economies will begin with construction of large-scale P2G renewable energy facilities for exporting green hydrogen or hubs along important trans-African highways. They'll also be built in ports, where hydrogen stations will provide fuel for long haul heavy goods vehicles (HGVs), buses and trains powered by hydrogen fuel cells."

NAMIBIA MOVING

Namibia is making concrete moves to introduce hydrogen as a new economic sector.

The country has a high proportion of land allocated to national parks, one of which also happens to be one of the top five sites in the world in terms of the combination of wind and solar resources and its proximity to sea and land routes for export.

The Tsau //Khaeb national park is where a vertically integrated green hydrogen project will start producing either pure green hydrogen or in its derivative form, green ammonia, from 2026. HYPHEN Hydrogen Energy, the company which won the bid to run the project, says that it will create 2GW of renewable electricity generation capacity in the first phase at an estimated capital cost of US$4.4-billion. Expansion phases in the late 2020s will increase the total investment to more than US$9-billion and increase combined renewable generation capacity to 5GW and electrolyser capacity to 3GW. The goal is to produce 300 000 tons of green hydrogen per year.

Namibia has already made plans for where this hydrogen will go, having been in talks with both German and Netherlands entities. The Port of Rotterdam anticipates that 20-million tons of hydrogen will pass through its facilities annually by the year 2050.

The Namibian Ports Authority (Namport) and the Port of Rotterdam have signed a Memorandum of Understanding (MoU) to collaborate on various areas of mutual interest, including positioning the ports to become green hydrogen export hubs and how best to facilitate the forecasted growth and flow of the green hydrogen supply chain from Namibia to Rotterdam in the Netherlands.

Namport has allocated 350ha of land at the Port of Walvis Bay North Port for allocation to businesses related to green hydrogen. This might include an electrolyser or factory that produces the green hydrogen as well as the factory that converts the hydrogen into ammonia. These facilities will need to be close to a port to keep costs down.

In addition to the plans for Walvis Bay, the planned new deepwater port of Luderitz at Angra Point now takes on added significance. Studies done in relation to the project will be revised to take into account the potential for green hydrogen export as an additional factor.

The governments of Germany and Namibia signed a Joint Communiqué of Intent to establish a German-Namibian hydrogen partnership in 2021. The European country's Federal Research Ministry will provide up to 40-million euros in funding as part of the partnership. European countries are under pressure to find alternative to carbon-based fuels.

Germany has a National Hydrogen Strategy 2020, part of which is to establish partnerships across Africa. One of the most ambitious is the H2Atlas-Africa project, a joint initiative of the German Federal Ministry of Education and Research and several Sub-Saharan African partners. The project's goal is to produce 165 000TWh of green hydrogen annually in West Africa across multiple sites.

Other countries where Germany is active is in the Democratic Republic of the Congo, South Africa and Morocco. AB

South Africa's good supplies of sunshine and wind make it ideally suited to generate hydrogen and if the country could capture 25% of the world market, it would be worth $600-million.

The Port of Walvis Bay in Namibia is being prepared as a hub for green hydrogen activity. Credit: Namport

AFRICA IS PERFECTLY PLACED TO TAKE ADVANTAGE OF NEW PAYMENT SOLUTIONS

Digital payment options in Africa present a massive development opportunity. The shift to a contactless ecosystem is also accelerating the de-cashing of the economy and has primarily been led through mobile. The CEO and founder of Ozow, Thomas Pays, explains how Africa is perfectly primed to leapfrog and quickly adapt to new technology.

Thomas Pays

Digital innovation has evolved payments solutions at breakneck speeds. Everything from contactless payments and QR codes to digital wallets, consumers today have many new ways to pay. The big challenge is to ensure that the millions of people who still use cash are able to access these services.

"Unfortunately, cash still dominates as the main payment form for millions of South Africans," says Thomas Pays, CEO and co-founder of Ozow.

"This happens simply because of a lack of access to infrastructure, high data costs, and a general mistrust in financial institutions. All of these factors ultimately prevent many consumers from participating in the digital economy."

There is hope, though.

A recently published South African Township Marketing Report found that while cash is still the preferred method of payment for many low-income earners, people in townships are open to alternative payment methods.

"To better serve the needs of low-income communities, it is critical to develop solutions that work for them. For someone in a township, who largely makes peer-to-peer payments, digital payment solutions need to match what they will use them for," Pays explains.

Fuelled by the pandemic, there has been a rapid adoption and acceptance of these new payment methods. With concerns of the spread of the virus, the increased usage of contactless payments has also empowered people to transact securely from their own devices without any physical contact.

The shift to a contactless ecosystem is also accelerating the de-cashing of the economy and has primarily been led through mobile. In fact, mobile payments and digital wallets are two of the most popular payment types globally, eclipsing cash transactions in 2020.

Unlike developed countries with legacy banking systems, Pays explains that many countries in Africa are perfectly primed to leapfrog and quickly adapt to new technology.

"We can see wider adoption because people don't have to make any significant change from one system to the next. Without decades of legacy systems, we have a tremendous advantage in being able to do this," he adds.

The widespread usage of digital payments in various forms has also worked to resolve the historical disconnect between online and in-store pay points, where the ease of checkout has been a big issue.

Pays says that retailers responded by integrating this technology into the point-of-sale systems, providing more ways for customers to pay for goods and services.

Innovation isn't slowing down either.

The introduction of e-wallets and invisible payments, like those used by Uber and Amazon Go, are providing people with a way to pay for goods and services without having to take any action. While traditionally these often required a credit card on file, this is being eliminated with the introduction of wallets and direct payment links to bank accounts through digital overlay services developed by fintechs.

"With every new payment solution introduced, the most important thing to understand is that these are designed with the highest international safety and security standards to ensure that consumer and banking data is protected," he adds. This future of payments is very exciting, says Pays.

"With every new technology developed, the goal will always be to simplify people's lives by making payments even easier, quicker, and more secure. At the rate that it's evolving, we will easily get to a stage where wearable payment tech won't require cards, batteries or an Internet connection."

"This innovation has one primary goal – to drive financial inclusion and access for everyone," says Pays.

A recently published South African Township Marketing Report found that while cash is still the preferred method of payment for many low-income earners, people in townships are open to alternative payment methods.

Photo: by Mikhail Nilov from Pexels

ABOUT OZOW

Ozow provides easy, fas and secure payment solutions for everyone, from QR codes, point of sale, eCommerce, e-billing, peer-to-peer payments, and everything in between. Ozow has experienced rapid growth and has attracted millions of transacting consumers and merchants in the South African market alone. Among many of its merchants are household names such as Takealot.com, Uber, FlySafair, MTN, Vodacom, Makro and Netflorist. Ozow currently operates in South Africa and Namibia. Find more information at www.ozow.com

SURVEY FINDS AFCFTA IS DRIVING OPTIMISM AMONG AFRICAN CEOS

Attitudes to sectoral and country growth are upbeat.

ABOUT PAFTRAC

The Pan-African Private Sector Trade and Investment Committee (PAFTRAC) unites African leaders from the private sector and provides a unique advocacy platform, bringing together the African private sector and African policymakers to support extra- and intra-African trade, investment and pan-African enterprise. PAFTRAC enhances advocacy and supports policy actions and recommendations of the private sector on trade and investment issues at the national, trade corridor, regional and multilateral levels

A new survey of African CEOs from 46 countries conducted by PAFTRAC, the Pan-African Private Sector Trade and Investment Committee, has found that CEOs were confident that their businesses will grow in the next year. A majority are also optimistic about the economic outlook of their industry. In addition, 87% of respondents believe that there will be in increase in intra-African trade as a result of the African Continental Free Trade Area (AfCFTA).

The CEOs believe that the global recovery, led by greater demand, will drive Africa's economic recovery. Interestingly, their positivity stems more from their faith in international and regional trade strategies and agreements such as enhancement of trading opportunities through AfCFTA, than as a result of national economic recovery strategies like ease of lockdown restrictions or better national business climate.

Commenting on the survey, Pat Utomi, chair of PAFTRAC, said, "The positive sentiment expressed by survey respondents demonstrates the potential of the AfCFTA and the eagerness of Africa's private sector to take advantage of the market access opportunities it offers. However, access to trade information, trade-enabling infrastructure and trade finance emerged as key constraints that need to be addressed to ensure that intra-African trade opportunities are exploited for the benefit of African SMEs.

"One major advantage of AfCFTA is that it can enable aggregation across borders so that African countries can pool products in volumes and quality that make them more competitive in global markets."

The respondents expressed strong faith in AfCFTA. Over 71% of respondents believe that the AfCFTA will encourage them to invest to grow their business regionally. More than half of respondents (57%) also believe that the agreement will open up new markets to export regionally and provide the necessary frameworks to export more regionally (62%). The four top export destinations in Africa are South Africa (27%), Ghana (25%), Kenya (25%) and Nigeria (19%).

African CEOs said the key challenges they foresee, which will have a negative impact on Africa's economic recovery prospects, are a lack of access to finance (64%), the ongoing impact of the Covid-19 pandemic on economic opportunities (61%) and a slowdown or lack of public sector investment and expenditure (48%).

Though the appetite for regional trade is strong, a majority of respondents placed access to trade finance and access to investment capital as the two biggest constraints when trading regionally. AB

• *Distributed by African Media Agency (AMA) on behalf of PAFTRAC.*

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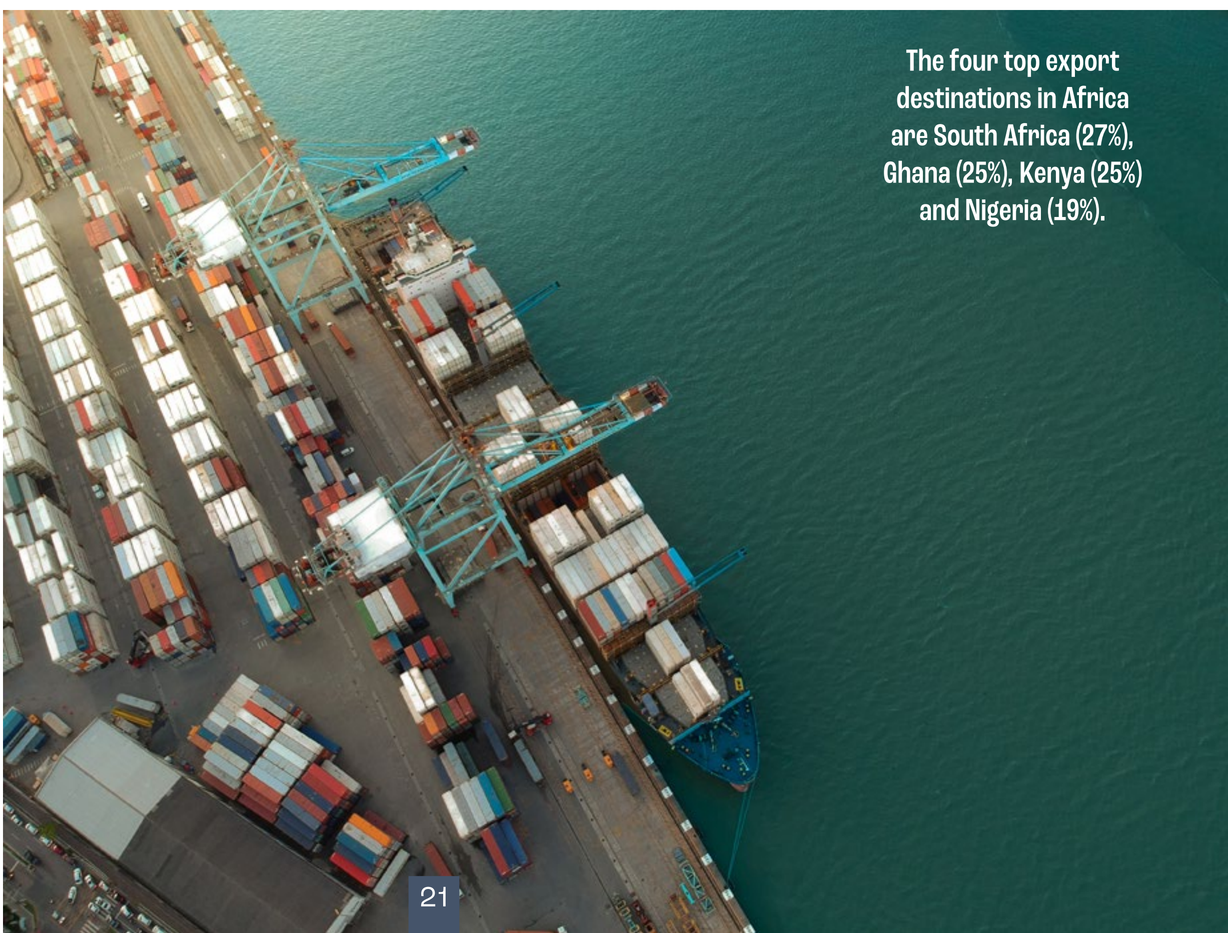


Photo: Rafael de Campos from Pexels

DIGITAL-SAVVY YOUNG CONSUMERS ARE FAST-FORWARDING THE AFRICAN RETAIL LANDSCAPE

Kearney's biannual Global Retail Development Index (GRDI) reveals that Africa is poised to move away from traditional retail models and become the most sophisticated market in the world.

Africa is set to host the world's fastest-growing retail sector. Photo: Craft Design Institute

The biannual Global Retail Development Index (GRDI), published in 2021, notes that African retail is on the cusp of significant change, with traditional models giving way to modern methods. The study shows that Africa is poised to move away from traditional retail models and become the fastest-growing, richest and most sophisticated market in the world.

Prashaen Reddy, a partner at management consulting firm Kearney, says that this is thanks to the explosive growth of young, urban and digitally-savvy consumers, increasing mobile phone penetration, the creation of digital payment and shopping networks, favourable governmental regulations and spending initiatives and significant investment by both foreign and domestic companies.

In the most stable times, retailers expanding their global footprint face a series of difficult decisions. Yet in the wake of Covid-19, these forces are transforming the face of African retailing and providing a blueprint for the development of other emerging markets, seeing Morocco, Egypt and Ghana making the top 10.

Determining which markets are growing, attractive and relatively risk-free is one of the goals of Kearney's Global Retail Development Index, which ranks 35 emerging countries based on a set of 26 factors, including four key variables: country risk, market attractiveness, market saturation and sales growth.

Questions GRDI asked included, Should retail enter new markets? Expand their operations in emerging nations that may or may not be yielding returns, or cut their losses? How to evaluate the comparative potential of modern retailing in nations still dominated by informal or traditional vendors?

Reddy adds, "The global population is expected to increase by two-billion by 2050, and Africa will be home to the majority of these new lives. The population of Sub-Saharan Africa (SSA) alone is expected to double by 2050, with Nigeria expected to be the third-largest country in the world."

This is one of the reasons that growth in Asia will begin to slow down and Africa will emerge as the next big retail hotspot. It's also predicted SSA will enjoy the highest rate of disposable income growth on earth, about 9% compound annual growth rate (CAGR).

There are four classes of SSA retail – informal, traditional, modern and illicit, with modern retailing dominated by regional players, primarily South African operators, such as Shoprite, Mr Price, Pick n Pay and a few international players.

With South Africa not making the top 30, we need to look at the where and why South Africa fits into the closing bracket within the GRDI property scale of window of opportunities. This means consumers are used to more modern retail, the discretionary spending is higher and there is a fierce competition from both local and foreign retailers. This closing segment is where investments are ripe for acquisitions.

In the face of increasing competition and margin pressures, Africa's retailers are focusing on return-on-investment (ROI), adopting franchising and other new business models and rationalising store footprints following the lead of Massmart, which recently announced it would be closing the 8% of its stores that were underperforming. This includes plans to double down on African countries, focusing on price, private label and building customer loyalty.

"The main challenges are corruption, widespread poverty, security concerns, supply chain issues, lack of infrastructure, active conflicts, archaic governmental retail policies and practices

"The global population is expected to increase by two-billion by 2050, and Africa will be home to the majority of these new lives. The population of Sub-Saharan Africa (SSA) alone is expected to double by 2050, with Nigeria expected to be the third-largest country in the world." – Prashaen Reddy, Kearney

ABOUT KEARNEY

As a global consulting partnership in more than 40 countries, our people make us who we are. We're individuals who take as much joy from those we work with as the work itself. Driven to be the difference between a big idea and making it happen, we help our clients break through. For more information, visit www.kearney.com.

This won't happen overnight but at least that seems to be where the arc of commercial history seems to be bending.

and isolation, which are as real as the potential. At 18%, for example, SSA has the lowest rate of intra-regional trade on the planet," says Reddy.

Retailers and central banks in various countries are working towards developing and facilitating digital ecosystems by reducing transaction costs on electronic payments, but gaps in e-payment infrastructure supply, logistical inefficiencies and trust issues are slowing down both existing and future growth opportunities, with Africa accounting for about 50% in mobile money transactions globally.

WHAT SHOULD WE TAKE FROM THE 2021 GRDI REPORT?

In crucial markets like Latin America, the Middle East and Africa, fossil fuel-dependent governments are increasingly turning to retail to diversify their economies and wean them away from oil dependency.

Emerging nations can simultaneously occupy multiple positions on the window of opportunity chart (as shown in the report, which can be viewed on Kearney's website). There is a significant difference between urban and rural China and India, so much so that we are well-advised to think of them as not one market but two or three.

Understanding consumer attitudes, situations and dynamics is the basis of all retail success and the world's consumer-spending centre of gravity is slowly shifting from the US and developed European markets to emerging markets in Asia, Africa and the Middle East. This won't happen overnight but at least that seems to be where the arc of commercial history seems to be bending.

The pace of this development is directly linked to the innovation, penetration and acceptance of consumer and retail technologies, from simple mobile phone connectivity to sophisticated and secure electronic payment systems.

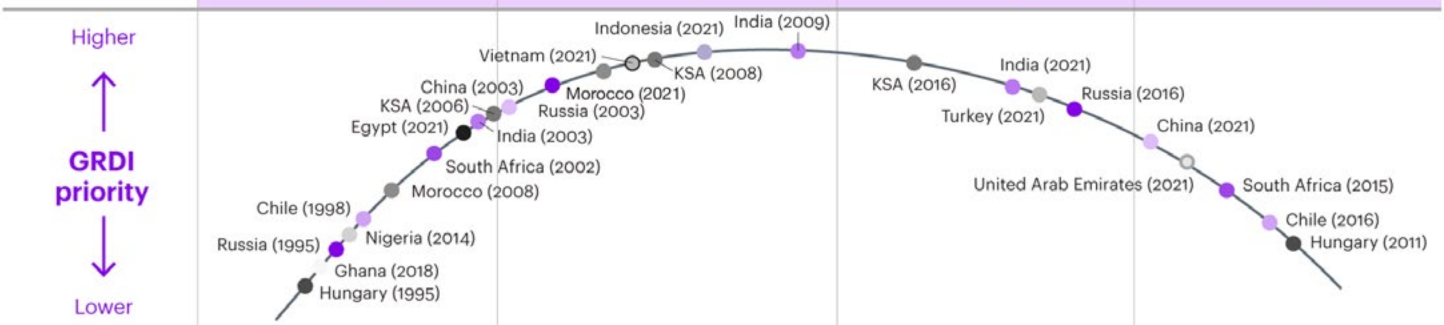
Reddy concludes by saying, "The real lesson is that all things, especially markets, change – often, as in the case of Covid-19, with little or no warning. So, there is no effective substitute for contemporaneous in-market knowledge." AB

• *The full report, and past editions, can be found on the Kearney website.*

Above: Technology is revolutionising how retailers work.
Photo: Allejandro Escamilla on Unsplash

The GRDI window of opportunity

	Opening	Peaking	Maturing	Closing



	Opening	Peaking	Maturing	Closing
Definition	Middle class is growing; consumers are willing to explore organised formats; government is relaxing restrictions	Consumers seek organised formats and greater exposure to global brands; retail shopping districts are being developed; real estate is affordable and available.	Consumer spending has expanded significantly; desirable real estate is more difficult to secure; local competition has become more sophisticated.	Consumers are more used to modern retail; discretionary spending is higher; competition is fierce both from local and foreign retailers; real estate is expensive and not readily available
Mode of entry	Minority investment in local retailer	Organic, such as through directly operated stores	Typically organic, but focused on tier 2 and 3 cities	Acquisitions
Labour strategy	Identify local skilled labour for management positions	Hire and train talent with a balance of expatriate	Change balance from expatriate to local	Use mostly local staff

Source: Kearney

CCBSA IS TAKING WATER SERIOUSLY

On World Water Day 2022, Coca-Cola Beverages South Africa celebrated significant progress in meeting its sustainability goals.

CCBSA is committed to achieving its sustainability goals in relation to water savings and helping South African communities to become more water resilient.

CCBSA has long recognised its moral and commercial responsibility to use water wisely in its manufacturing processes and also to play a significant role in helping to improve South Africa's water security. The Coca-Cola Water Stewardship Strategy 2030 is based on the reasoning that water is important "capital" for the company, as it is the main ingredient in its beverages. Globally, the business has adopted a three-pronged strategy to water which is focused on regenerative operations, healthy watersheds and resilient communities.

CCBSA's Coastal region, namely KwaZulu-Natal, Eastern Cape and parts of the Western Cape Province, has been very active in taking the initiative in terms of the company's water strategies.

REGENERATIVE OPERATIONS IN CCBSA

Regenerative operations are intended to reduce local shared water challenges by complying with Coca-Cola's water stewardship requirements to prevent water wastage, reduce the amount of water being used and safely discharge water. The intention is also to achieve regenerative water use by reducing, reusing, recycling and replenishing within company operations.

CCBSA has water recovery processes in its production facilities, which allows it to reuse water for non-production related activities, like cleaning. It is currently investing in rainwater harvesting and groundwater initiatives to diversify its sources. To this end, it has three out of four sites in the Coastal area which are using at least 1% to 10% of their total water from these sources.

At the Premier site, rain water is harvested. At both Premier and Phoenix, water recovery systems are in place while at Lakeside, groundwater is used. All of the sites are also exploring further alternative resources. AB

Globally, the business has adopted a three-pronged strategy to water which is focused on regenerative operations, healthy watersheds and resilient communities.

MEET THE WOMEN LEADING CCBSA'S WATER STRATEGY IN THE COASTAL REGION

SAMUKELISIWE NXUMALO: REGIONAL ENGINEERING MANAGER FOR CCBSA COASTAL

Samukelisiwe started her career as an engineer in training (EIT) at Umgeni Water in 2007. She joined Eskom as a Systems Engineer in 2008. In 2010, she ventured into the construction industry, working for Murray & Roberts as Site Mechanical Engineer and then joined Scorpion Mineral Processing in 2012 as a Project Engineer. By 2015, she had carved her niche in multi-discipline projects from having served Tongaat Hullet Starch as a Project Engineer and later at Sasol Group Technology, as a Project Manager responsible for Capital and Renewal Projects. In 2019, she was appointed as a Senior Mechanical Engineer for Sasol Synfuels Operations: Refining Plant in Secunda, responsible for specialist equipment health assessment, availability, maintenance and performance improvement.

As Regional Engineering Manager for CCBSA Coastal, Samukelisiwe is responsible for providing technical leadership and serves as a custodian for legal compliance, engineering standards and drives the company's sustainable agenda.

NOLUNDI MZIMBA: REGIONAL PUBLIC AFFAIRS, COMMUNICATIONS AND SUSTAINABILITY (PACS) MANAGER FOR CCBSA COASTAL

Nolundi started her career in 1996 with SABC Radio as a presenter and later joined the SABC Sales and Marketing team as an Accounts Executive. She has over 15 years' experience in Fast Moving Consumer Goods, 10 of which were spent at Coca-Cola SABCO as Group Communications Specialist and later Public Affairs and Communications Manager for Coca-Cola Fortune. The balance of that period of time was working at CCBSA as the Regional Public Affairs, Communications and Sustainability Manager.

Nolundi is currently responsible for the Coastal region.

HEALTHY WATERSHEDS

PROTECTING SOUTH AFRICA'S WATERSHEDS

Healthy watersheds are about rehabilitation, restoration and protection of the country's watersheds and catchments. Watershed restoration and protection is aimed at addressing long-term, sustainable and cost-effective water security through nature-based solutions such as clearing invasive plants.

Projects in CCBSA's Coastal region involve the rehabilitation of areas in the Baviaanskloof and the restoration of the Langkloof, resulting in the removal of 1 734 hectares of invasive plants and the replenishment of over 332-million litres of water that would have otherwise been consumed by these thirsty plants. These projects also helped create 116 jobs, mainly benefiting women and youth.

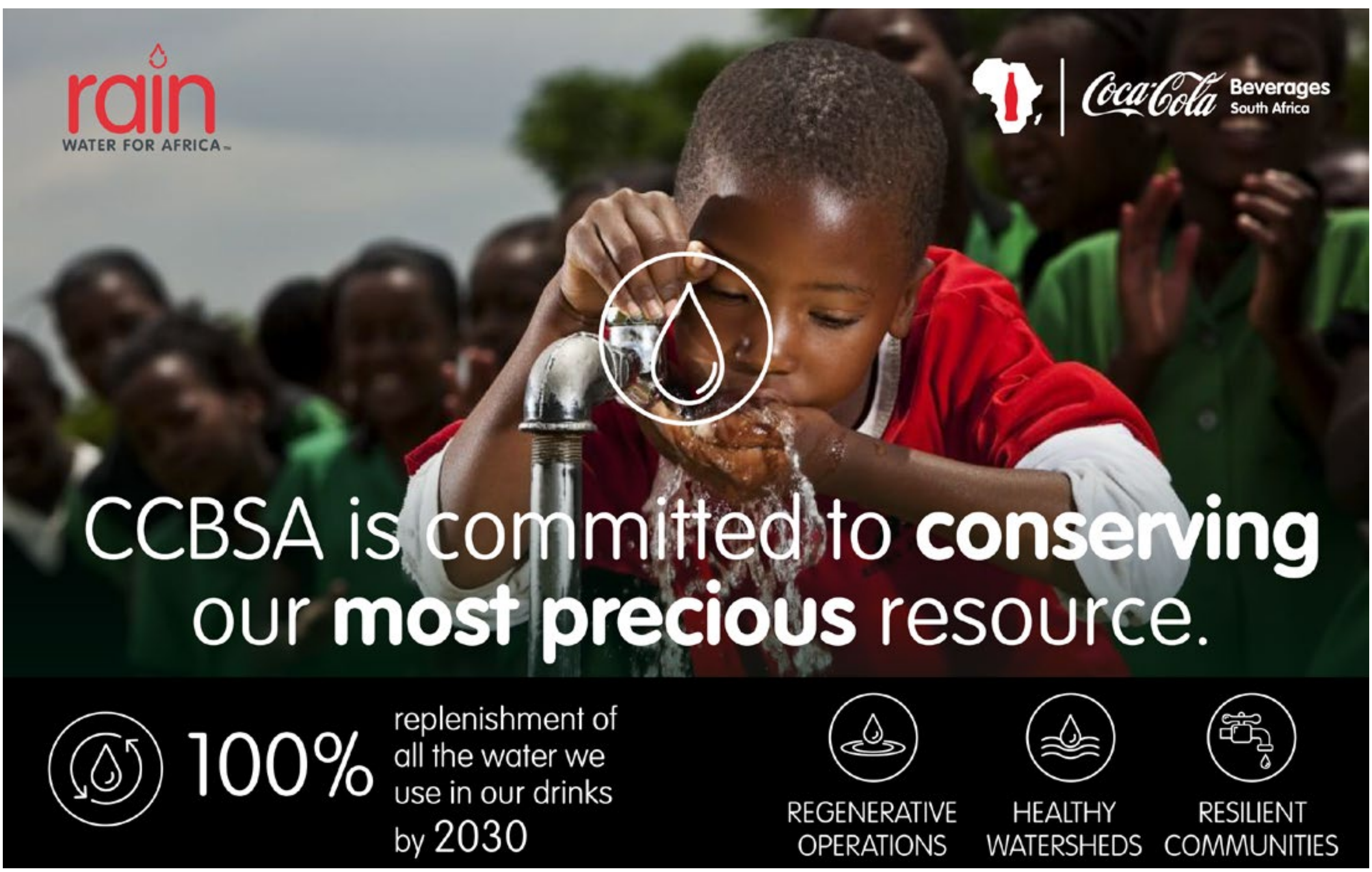
ENHANCING COMMUNITY WATER RESILIENCE

Enhanced community water resilience is focused on the provision of clean access to water, sanitation and hygiene facilities empowering women and girls, who are the most vulnerable in most communities in which CCBSA operates. This pillar also focuses on assisting communities to adapt to the impact of climate change.

One example is Coke Ville, a project bringing solar-powered groundwater harvesting and treatment for communities experiencing water insecurity. Launched in 2020, the project has expanded to a total of nine sites in South Africa, with five in the company's Coastal region, i.e. four in the Eastern Cape and one in KwaZulu-Natal. Each project is designed to provide these communities with between 10- and 20-million litres of water annually. By the end of 2021, Coke Ville was generating more than 130-million litres of water to the benefit of more than 15 000 households.

Another key initiative is a partnership with the town of Grabouw in the Western Cape to build skills and support the rehabilitation of water infrastructure through Project Lungisa. South African municipalities lose a huge amount of water through leaks and Grabouw was no exception – around 60% of its potable water was lost. Project Lungisa is transferring technical skills to local youth while providing the community with better hygiene and sanitation. It is also generating awareness of the need to conserve water. In a similar vein, CCBSA partnered with Gift of the Givers to purchase a 34 500-litre water tanker to assist in the distribution of water in drought-stricken Makhanda (Grahamstown). CCBSA will underwrite the running of the tanker for four years and is set to acquire another for the city of Polokwane, which has its own water crisis.

CCBSA's efforts in support of the Water Stewardship Strategy in South Africa show how a global strategy can be turned into concrete results and the practical difference it can make, both in how the company operates and in the life of the communities it serves. AB



WHAT 2022 MAY HOLD FOR TECHNOLOGY'S ROLE IN AFRICA

Cathy Smith, Managing Director at SAP Africa, looks forward and discusses trends to watch out for.

During the Covid-19 lockdowns, devices of all sorts were used far more frequently than before, a trend that is set to continue. Photo: Gabriel Benois on Unsplash

The past year proved that the only certainty in our world right now is further uncertainty and change.

With the world in flux due to the impact of the pandemic, the growing influence of digital technologies in every facet of our lives and the increasingly visible impact of a changing climate, most business leaders are operating in an environment of rapid and near-constant change.

But the past year has not been without its lessons. Our work with customers across Africa and the world has revealed several vital learnings and provides a glimpse into what we can expect in the year ahead.

My predictions for the year ahead include:

PREDICTION 1: DIGITAL TRANSFORMATION WILL CONTINUE (BUT WITH NEW RULES)

Last year moved the value of digital technologies to the top of every business leader's agenda. Those organisations that had already invested in digital transformation could adapt more quickly and with greater resilience to the changes forced on us by the pandemic.

In 2021, organisations continued their digital transformation efforts, with remote and hybrid work models as well as digital customer engagement high on African enterprises' agendas.

In 2022, organisations will ramp up their investments into digital technologies, but with one significant change: the days of large, lengthy, difficult and costly technology implementations are largely over. In their place is a new, more accountable model of engagement between organisations and their technology partners.

Technology providers will need to shift attention away from pure quarterly sales targets to a longer-term view of sales and performance. Customer engagements should focus less on products and features, and more on developing a deeper understanding of each customer's challenges and building trust over the longer term.

This change will put pressure on tech providers and their implementation partners, as it requires fundamental changes to their operating models as well as new skillsets.

Technology providers will need to shift attention away from pure quarterly sales targets to a longer-term view of sales and performance. Customer engagements should focus less on products and features, and more on developing a deeper understanding of each customer's challenges and building trust over the longer term.

PREDICTION 2: WE WILL ALL BE LEADERS IN THE FIGHT AGAINST CLIMATE CHANGE

With the earth now 1.1°C warmer than it was in the 1800s, countries and individuals face a mammoth task in changing course and bringing the world on to a more sustainable path. The IMF estimates the cost of adapting to climate change in developing countries may reach $300-billion by the end of the decade, while productivity losses due to heat stress reducing total working hours potentially leading to a global GDP cut of $2.4-trillion by 2030.

While it is encouraging that more business leaders are directly addressing sustainability – the topic is now 44% more common in corporate earnings calls than three years ago – what is urgently needed is action.

SAP believes nothing less than a complete reinvention of the global economy will be required to create a world that stays within the 1.5°C threshold and so limits the damage of climate change.

Every organisation can choose to be an exemplar and drive change through exhibiting behaviours and making decisions that put sustainability front and centre, for example by becoming carbon neutral. This form of climate leadership can inspire others and pave the way to a more equitable and sustainable future.

For a lucky few, including SAP, there is also the opportunity to be enablers, through the provision of tools, technologies and

Cathy Smith, Managing Director at SAP Africa

SAP believes nothing less than a complete reinvention of the global economy will be required to create a world that stays within the 1.5°C threshold and so limits the damage of climate change.

services that replace outdated and harmful business practices and power the circular economy.

SAP's Climate 21 software package, for example, allows our customers to measure and analyse the CO2 emissions directly associated with individual products they offer. Similarly, Ariba, the world's largest business network with $3.75-trillion in annual trade, can provide greater transparency in enterprise supply chains to enable organisations to make informed decisions over which suppliers prioritise sustainability.

PREDICTION 3: INNOVATION WILL BE CRUCIAL (BUT NOT IN THE WAY YOU EXPECT)

The word "innovation" usually conjures up images of the world's most ground-breaking companies, ones that invent products and services that create entire new industries, or new solutions that transform existing industries.

However, in 2022 a different type of innovation will be required. To meet our current and future challenges and deal with ongoing uncertainty and disruption, organisations will need to embed a culture of innovation that cuts across the organisation and transforms how people think about the challenges and opportunities they face.

Increasingly, business leaders are speaking of best-of-suite, which means choosing individual components of various different technology solutions and combining them in unique ways to deliver maximum value to the business.

Organisations will need to drive innovation in how they work with their customers, in how they approach sales, in how they provide continuous support, and a myriad other ways.

Such changes will be difficult and could lead to further disruption, so business leaders will have to ensure they keep the business in balance while building trust internally and externally throughout the change process.

PREDICTION 4: OUR TECHNOLOGY TOOLS WILL MATURE TO GIVE US THE BEST OF ALL WORLDS

One of the common remarks we encounter in the boardrooms of Africa's leading enterprises is the concept of best-of-breed. Organisations rightfully want to acquire the very best technology solutions to meet their needs and drive change and efficiency throughout the business.

Increasingly, business leaders are speaking of best-of-suite, which means choosing individual components of various different technology solutions and combining them in unique ways that are designed to deliver maximum value to the business.

In 2022, expect greater integration of technology solutions from different providers. For example, SAP's position as the leader in enterprise resource planning through our flagship S/4HANA solution makes us a natural choice for hundreds of thousands of global organisations.

In response to the demands from our customers, SAP has invested heavily in integration to allow our customers the freedom to integrate the solutions of their choice with any of our technologies. AB

• Distributed by African Media Agency (AMA) on behalf of SAP Africa.

ABOUT SAP

SAP's strategy is to help every business run as an intelligent enterprise. As a market leader in enterprise application software, we help companies of all sizes and in all industries run at their best: SAP customers generate 87% of total global commerce. Our machine learning, Internet of Things (IoT) and advanced analytics technologies help turn customers' businesses into intelligent enterprises. We simplify technology for companies so they can consume our software the way they want – without disruption. Our end-to-end suite of applications and services enables business and public customers across 25 industries globally to operate profitably, adapt continuously and make a difference. For more information, visit www.sap.com

Below: Tech providers need to focus on a deeper understanding of each customer's challenges. Photo by fauxels from Pexels

IS THERE SCOPE FOR A PAN-AFRICAN AIRLINE?

Eric Tchouamou Njoya analyses the risks and rewards faced by SA Airways and Kenya Airways, who have signed a strategic partnership framework. Njoya is a senior lecturer in air transport at the University of Huddersfield, Department of Logistics, Marketing, Hospitality and Analytics. This article was first published by *The Conversation*.

Kenya Airways flight staff. Credit: Kenya Airways

Africa has 357 airlines, the top 10 of which carry more than 60% of traffic. This reflects the fact that many airlines on the continent are very small: some have as few as two aircraft. Between them the airlines carried 95-million passengers in 2019, according to Routes, an online source of information on route announcements.

Airlines operating on the continent face particular challenges. First, the industry has to contend with huge disparities in economic and air transport development. There is also an uneven distribution of international air passenger traffic across regions and within countries. The traffic is predominantly centred in a few hubs in the north, east and south of Africa, and in the large and medium-size cities.

Other challenges include high costs of operation, market protectionism and safety and security concerns.

There are very few profitable African airlines. In 2020, only Ethiopian Airlines made a profit on the continent. And with financial woes compounded by Covid-19, it is likely many more airlines will go under.

There are very few profitable African airlines. In 2020, only Ethiopian Airlines made a profit on the continent. And with financial woes compounded by Covid-19, it is likely many more airlines will go under.

Two of the continent's biggest carriers – SA Airways and Kenya Airways – are under financial stress. Both have made significant losses over the past few years and lost market share and destinations to competition. SAA came close to being wound up and Kenya Airways reported losses of $333-million for the 2020 financial year.

In November, the two national airlines signed a Strategic Partnership Framework, formalising their plan to set up a pan-African airline in 2023.

In my view the partnership will only succeed if certain conditions are met. The most important ones are, first, that there must be strong national and political agreement and will. Second, that the tie-up must be driven by the private sector.

My recent research on Air Afrique's failure found that the airline was doomed by conflicting national objectives and some of the 11 participating countries were unhappy with what they called a subordinate role.

PARTNERSHIP CAN WORK

Several academic studies show that alliances affect the production costs of participating airlines through economies of scale (by means of joint operations of air and ground services), increased traffic density (through network expansion and additional traffic feed) and scope (through increased reach and efficient connections).

Joint ventures have been, and will continue to be, the key to the development of airline business. Air France and KLM are good examples of why airlines are better off working together. Both have experienced significant growth since getting together in 2004.

Some alliance arrangements may lead to a reduction in costs and increased efficiency. But they do not necessarily lead to a reduction in competition in the market.

Apart from these benefits, an alliance between SAA and Kenya Airways would be good for a number of reasons specific to Africa.

First, it would help them overcome some of the existing market challenges, such as market access restrictions and increased competition from major non-African airlines such as Turkish Airlines, Emirates and Europeans carriers.

Second, the alliance could take advantage of a return to pre-Covid travel levels. The International Air Transport Association anticipates a full return to 2019 air traffic levels in late 2023.

It is estimated that air transport will grow on average by 3.2% over the next decades in Africa and by 4.8% if African states implement the Single African Air Transport Market.

Third, it would enable them to create and encourage a market services specialisation among airline operators. Airlines may specialise in feeder services and fly to destinations with smaller demand and catchment areas. An example of this type of specialisation is the interlining agreement between Ethiopian Airlines and Airlink. The cooperation deal would also improve the financial viability of the two airlines. They could pool maintenance services and reduce costs by pooling purchases, sales and financial transactions. It would boost customer volumes if cost savings were passed on to customers by means of lower fares.

OR Tambo International Airport. Credit: ACSA

Introducing services in the SA market would be a great addition for Kenya Airways and vice versa. With their hub-based model, cooperation will help to boost the route networks of both airlines across Africa.

ALLIANCES CARRY RISK

Many alliances don't achieve the desired outcome. Examples include KLM-Alitalia and the European Quality Alliance, which brought together Air France, SAS and Swissair.

Alliances fail for various reasons. Studies show that ineffective governance, insufficient quality of alliance members and internal competition are the most common reasons. Other studies show that more than 50% of strategic alliances fail due to cultural differences, mistrust or poor operational integration.

In the case of Africa, the two airlines have to contend with the fact that there isn't a single African air transport market. Most of the continent's 54 countries have their own national arrangements or have underperforming state-owned airlines, resulting in protectionist policies.

There is hope that this will change. The Single African Air Transport Market, which by November last year had been signed by 35 countries, envisages a sharing of aviation space. This would enable eligible airlines from one African state to fly into another using only a prior notification procedure.

But there's a great deal of work that needs to be done for this to become a reality. A number of other factors could stymie the proposed alliance.

A big one is the governance structure, which is the oversight required to make and implement decisions essential to the success of an alliance. Elements of governance include legal form, communication structures, cultural differences, trust and commitment.

Yet another factor will be the extent to which the two governments allow efficient decision-making to happen. Airline managers should be left to select a course of action and then to get on with it. This could be difficult, given that the state owns substantial stakes in both SAA and Kenya Airways, in which the Kenyan government's shareholding is 48.9%.

Other factors include trust, transparency and communication about what both airlines do together and what they don't do together. Establishing trust and ensuring that the airlines understand each other's goals and objectives and that they are the same are key.

RECIPE FOR SUCCESS

A strategic alliance is similar to a marriage. In most cases there is no perfect match. To be successful partnerships must be nurtured and well managed. They must map out all the stakeholders that are relevant to the story and are going to help the partners achieve the key performance indicators set out in the alliance.

In my opinion, setting clear performance measures is important, as they will set the partners on a path that is measurable. AB

Most of the continent's 54 countries have their own national arrangements or have underperforming state-owned airlines, resulting in protectionist policies.

Jomo Kenyatta International Airport. Credit: Kenya Airports Authority

NAMIBIA

Green hydrogen and renewable energy projects are attracting investors.

Windhoek, Namibia's capital city.
Photo: John Hogg/World Bank

Namibia was one of the last African nations to achieve independence, primarily because South Africa hung on to control to use the nation as a buffer zone against anti-apartheid forces. In 1990 the Republic of Namibia was finally declared, barely two months after the speech in the South African parliament which freed Nelson Mandela and led to a non-racial and democratic South Africa. In a sense, Namibia's freedom was a precursor to its neighbour's.

Germany seized control of what is now the port of Luderitz in 1884 and extened that control inland over a multi-ethnic population which included Ovambo, Kavango, Herero, Damara, Nama, Caprivian, San, Baster and Tswana peoples. Various rebellions were ruthlessly put down. Between 1904 and 1908 what is now accepted as the first genocide of the 20th century took place against the Herero, Nama and San. The German government agreed in May 2021 to pay €1.1-billion over 30 years to fund projects in communities that were affected by the genocide.

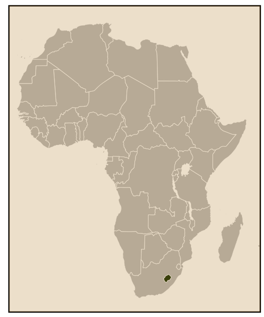
South African forces defeated German forces in World War I and ruled the country under a League of Nations mandate. The United Nations for years tried to get South Africa to give up the country. The World Bank reports that Namibia has "achieved notable progress in reducing poverty". AB

A haul truck being repaired and serviced at Rossing Uranium Mine.
Photo: John Hogg/World Bank

Capital: Windhoek. **Other towns/cities:** Rundu, Walvis Bay, Swakopmund
Population: 2.5-million. **GDP:** $12.4-billion. **GDP per capita (PPP):** $4 179
Currency: Namibian dollar, pegged to South African rand
Regional Economic Community: Southern African Development Community (SADC), Southern African Customs Union (SACU). **Landmass:** 824 292km². **Coastline:** 1 572km
Resources: Large quantities of uranium and zinc. Also diamonds, copper, gold, silver, lead, tin, lithium, cadmium, tungsten, zinc, salt, hydropower, fish, milk, maize, beef, millet
Main economic sectors: Diamond mining (alluvial and marine), other mining, meatpacking, fish processing, dairy products, pasta, beverages, tourism. **Other sectors:** Karakul sheep pelt exports (under the label Swakara) have recovered, although not to the very high levels of the 1970s. One co-operative sent more than 30 000 pelts to the Copenhagen Fur Auction in 2019. Possible deposits of oil, coal and iron ore.
New sectors for investment: Green hydrogen, renewable energy.
Key projects: A company has been appointed to build a green hydrogen plant. The US government has agreed to assist Namibia and Botswana in building a 5GW solar plant, with the African Development Bank, the International Bank for Reconstruction and Development, and the International Finance Corporation (IFC). The intention is to use both solar photovoltaic (PV) and concentrated solar power (CSP) technologies in what would be one of the biggest projects of its kind in the world.
Chief exports: Copper, diamonds, uranium, thorium, gold, chemicals, fish. **Top export destinations:** China, South Africa, Botswana, Belgium. **Top import sources:** South Africa, Zambia.
Main imports: Cars, copper, delivery vehicles, diamonds, refined petroleum.
Infrastructure: Airports 112, of which 19 paved; railways 2 628km (2014); roadways 48 875km, of which 7 893km paved (2018). Electrification 57% (2019). Major seaports, Luderitz, Walvis Bay. Merchant marine, 14 vessels. **ICT:** Mobile subscriptions per 100 inhabitants: 102.1 (World Bank, 2020). Internet percentage of population: 42%. ICT Development Index 2017 (ITU) ranking: 8 in Africa, 118 in world.
Climate: The Namib Desert, the oldest desert in the world, runs along the coast while the Kalahari Desert defines the country's eastern border. The environment is protected in Namibia's constitution and 14% of land is protected. Sparse rainfall, mostly hot and dry.
Religion: Almost 98% Christian.

LESOTHO

A massive water scheme originates high in the mountains of Lesotho.



Katse Dam, Lesotho. Photo: Lesotho Highlands Development Authority

Basutoland was founded in the early 19th century by Moshoeshoe, who united various groups at a time of great upheaval arising in what is now KwaZulu-Natal. White farmers (Boers) escaping British rule in the Cape then threatened Basuto land. The British intervened, ostensibly to protect the Basuto people. The British drew the Warden Line, awarding the fertile Caledon River valley to the Boers and leaving the Basuto with little arable land. Years of conflict ensued, against both the British and the Boers until 1869, when the present boundaries were drawn and Basutoland became successively a British protectorate, a part of the Cape Colony (against its people's wishes) and finally, in 1884, a British colony with traditional leaders retaining some power. In 1966 independence was achieved as the Kingdom of Lesotho, with Moshoeshoe II as king and Chief Leabua Jonathan as prime minister.

Many modern residents live below the poverty line and the country's HIV/Aids prevalence rate is high. Lesotho is, however, on course to achieve universal primary education and has one of the highest adult literacy rates in Africa. AB

Sheep grazing. Credit: Lesotho Highlands Development Authority

Capital: Maseru. **Other towns:** Teyateyaneng, Leribe, Mafeteng

Population 2.2-million. **GDP:** $1.8-billion (2020). **GDP per capita:** $861 (2020). **Currency:** Loti

Regional Economic Community: Southern African Development Community (SADC) and Southern Africa Customs Union (SACU)

Landmass: 30 355km². **Coastline:** Landlocked, surrounded by South Africa

Resources: Water, clay, sand, building stone, diamonds, beef, maize, mutton, potatoes, wool.

Main economic sectors: Textiles and garments, government, agriculture, handicrafts, tourism.

Other sectors: Diamond mining, food and beverages, construction.

New sectors for investment: Green energy, second and construction phases of the Lesotho Highlands Water Project (LHWP II) and the Lesotho Lowlands Water Development Projects (LLWDP -I and-II). Maseru district hospital. Road construction.

Key projects: Lesotho Highlands Water Project is a multi-phase project being undertaken over many years. The Lesotho Highlands Development Authority coordinates those initiatives while the Lesotho National Development Corporation implements the country's industrial development policies and has four strategic business units which relate to development finance, property development and management, investment and trade promotion and corporate services.

Chief exports: Diamonds, clothing and apparel, low-voltage protection equipment, footwear, wheat products. Many Basotho work in South Africa.

Top export destinations: United States, Belgium, South Africa, Switzerland.

Top import sources: South Africa and China.

Main imports: Clothing and apparel, delivery vehicles, medicines, poultry, refined petroleum.

Infrastructure: Roads 5 940km, of which 1 069km paved; 24 airports, of which three are paved. Electrification, 36% of total population (2019).

ICT: Mobile phone subscriptions per 100 inhabitants: 72.94 (2020 est). Internet percentage of population: 42%. ICT Development Index 2017 (ITU) ranking: 11 in Africa, 133 in world.

Climate: Cold, dry winters and hot, wet summers in mostly highland landscape with plateaus and valleys. There are more than 300 named mountains in Lesotho, the highest of which is Thabana Ntlenyana at 3 482m.

Religion: Christianity.

INVEST IN LESOTHO

A major exporter of diamonds with a thriving manufacturing sector, Lesotho is attracting interest in a wide range of sectors from mining and upstream textile manufacturing to tourism, high-value agriculture, automotive components and electronics.

The Kingdom of Lesotho is the southernmost landlocked country in the world. It is surrounded by South Africa. It is considered the 58th-smallest country in the world by area. The currency Lesotho Loti (LSL) is pegged to the South African Rand (ZAR) one-to-one and Lesotho is part of the regional Common Monetary Area. Lesotho has a thriving manufacturing sector that benefits from one of the lowest tax rates in Africa at 10%. The sector produces high-quality textile, garments and footwear for global brands in the US and South Africa. The country is also growing as a manufacturing hub for automobile components, providing components for South African assembling plants including Volkswagen, BMW, Nissan and Toyota. Major opportunities lie in mining and in upstream manufacturing in the textile industry. Investment opportunities also exist in the manufacturing of electronic and automotive components as well as tourism, high-value agriculture and micro, small and medium enterprises.

KEY INDUSTRIES

Mining

Diamonds are the most-exported commodity in Lesotho. The premium quality of 100-plus carat diamonds make them popular around the globe. Lesotho's mines produce the highest proportion of large stones in the world, representing attractive opportunities for new market entrants. Lesotho also has mineral deposits in base metals, clay, dimension stone, sand and gravel, which support the mining sector.

The country is exploring further investment opportunities in the mining sector value chain, including the exploration and mining of diamonds, diamond polishing, sandstone and quarrying and harnessing water resources.

Manufacturing

Textile, apparel and footwear: Lesotho is among the top four producers of textile and garments in Africa and has a well-established footwear sector. The country's single vertically integrated spin-yarn, dye-weave, textile mill specialises in the manufacture of denim fabrics and produces for notable companies such as Levis Strauss, The Children's Place and Gap.

Lesotho also produces knit garments and woven garments which are supplied to the South African market, including to high-end apparel retailers. The footwear industry comprises two manufacturers who produce Jaguar Shoes.

The clothing and footwear sector employs the highest number of people in Lesotho. It has started the "Made in Lesotho" initiative which has been attracting foreign investments. Lesotho is also known for its fair and ethical labour standards in the textile industry. Lesotho represents an attractive hub for investors looking to invest in the production of denim garments and has a higher potential for export and trade.

Automotive components

Lesotho has a growing proposition in the automotive industry, strategically focusing on supplying labour-intensive automotive components to South Africa's strong automotive industry. The country's competitive advantage in manufacturing, lower fuel costs, relatively competitive wages and overall lower production costs allows it to produce automobile components for companies such as Volkswagen, BMW, Nissan and Toyota.

Lesotho's automotive industry also benefits from lessons learnt from the textile industry. It has the potential to develop capacity for service-export markets such as the manufacture of leather car-seat covers, plastic and leather interior accessories and electrical components.

Since the implementation of South Africa's Automotive Production and Development Programme (APDP), which aims to increase vehicle production to 1.2-million vehicles per annum and substantially diversify and deepen the component supply chain, demand for automotive productions has increased, creating greater opportunities for increased manufacturing in Lesotho, whose automotive products qualify for local content under APDP.

Electrical appliances and electrical components

Lesotho's manufacturing sector also provides opportunities in the electronics component and appliances market. The sector currently produces switches, relays, fuses, surge suppressors, plugs, sockets, lamp holders and other products which it exports to China, EU and the UAE.

For the electronic appliance sector, Lesotho produces TV sets, sound recorders and producers and related accessories, which it exports to Southern African countries. Investors could benefit from double-digit returns in the electrical appliance and components sector.

Water

Lesotho has one of the purest water sources of any country in the world, with very little microbiological and chemical contamination requiring little treatment. The country currently sells bulkwater to South Africa, with its reservoirs pumping water directly to that country. Half of the power demand in Lesotho is supplied from its biggest dam (the Katse Dam) that feeds the Muela Hydopower Plant and the construction of a new dam could provide the country with the opportunity to be 100% energy self-sufficient. The new dam also provides the opportunity for Lesotho to sell bulkwater to Botswana. A second dam (Polihali) is under construction There are investment opportunities in the water-bottling industry to export safe drinking water to South Africa and neighbouring countries.

Agriculture and agro-processing

Lesotho is well endowed with a pristine climate that is good for agriculture and an abundance of pure water to support the growth of crops and processing. The government provides strong support to commercialise the agricultural sector in the form of lower tax rates (10%) compared to normal tax rates of 25%.

The favourable climate and highlands in Lesotho allow it to produce fruits such as peaches, apples and blueberries that are out of season in Southern Africa and other parts of the world, creating an opportunity for year-round production of fruits for exports. The country is also exploring opportunities in cold-chain management and increasing salmon farming for export to Japan and South Africa.

The Lesotho National Development Corporation is also providing support to investors in the agriculture sector by pooling land for investors and simplifying the process for setting up agro-processing businesses. Government plans to invest in greenhouses, plants and farms that can be leased to investors, thereby reducing the cost of setting up businesses.

Tourism

Tourism is a growing sector in Lesotho, with a focus on nature, mountains, highlands and adventure tourism. The country boasts a wide range of outdoor adventures and extreme sports, including skiing at Afriski slopes. Investment opportunities exist in the development of the Mohale Resort, which is located near the Mohale Dam in the Lesotho Highlands, Mohale Water Park, a leisure park comprising a cruise boat, a fly-fishing lodge and a community outdoor centre. Other investment opportunities exist for the development of Semonkong Resort with pristine views of the Maletsunyane Waterfalls, the tallest single-drop waterfall and world's longest commercial abseil. Other amenities include the chalets, a zipline and a suspension footbridge.

Technology and innovation

The high literacy level in Lesotho and pool of qualified graduates who are available for ICT projects of all types make the country an attractive proposition for investors in this sector. The country has a partially-open ICT sector with a good level of international connectivity.

Call centres

Lesotho has a pool of English-speaking graduates and its proximity to South Africa simplifies setting up and managing business operations. The country also has a globally-competitive cost per call centre seat per hour, making it a great destination for outsourcing call centre operations.

Knowledge Process Outsourcing (KPO) and Business Process Outsourcing (BPO)

Lesotho's steady supply of well-educated graduates and skilled and semi-skilled workers make it an attractive host for KPO and BPO. The government provides incentives to assist in the training and skills development of talent.

LESOTHO IN BRIEF

- Lesotho is an established manufacturing hub for textile, garments and footwear in Africa. It is second in Africa in value terms in exports to the US, fourth in volume.
- Building on its global competency and low cost of doing business, Lesotho is positioning itself for automobile component production, electronic appliances and electric components.
- The country has the potential to become a centre for IT outsourcing and innovation, given its high literacy rate of 86% and steady supply of graduates.
- Lesotho is developing Special Economic Zones (Mafeteng SEZ and Berea SEZ) which will serve several industries including agriculture and agro-processing, medicinal cannabis, pharmaceuticals and manufacturing.

Fashion design hub

Knowledge and experience in the garment industry in Lesotho provides the country with a unique opportunity to drive innovation and growth in the textile and garments sector. AB

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LNDC
LESOTHO NATIONAL DEVELOPMENT CORPORATION
We Build Industry

The automotive components sector provides many opportunities for potential investors in Lesotho. Credit: Lesotho National Development Corporation

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