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African Review

NOVEMBER 2021

of BUSINESS and TECHNOLOGY

POWERING AFRICA IN 2022 AND BEYOND

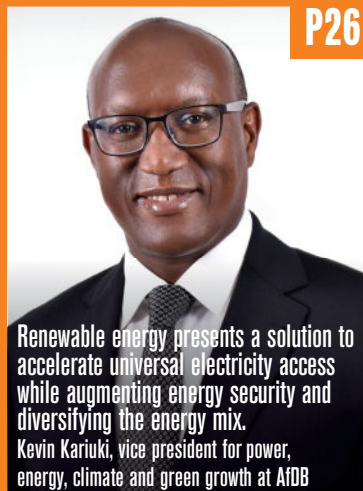
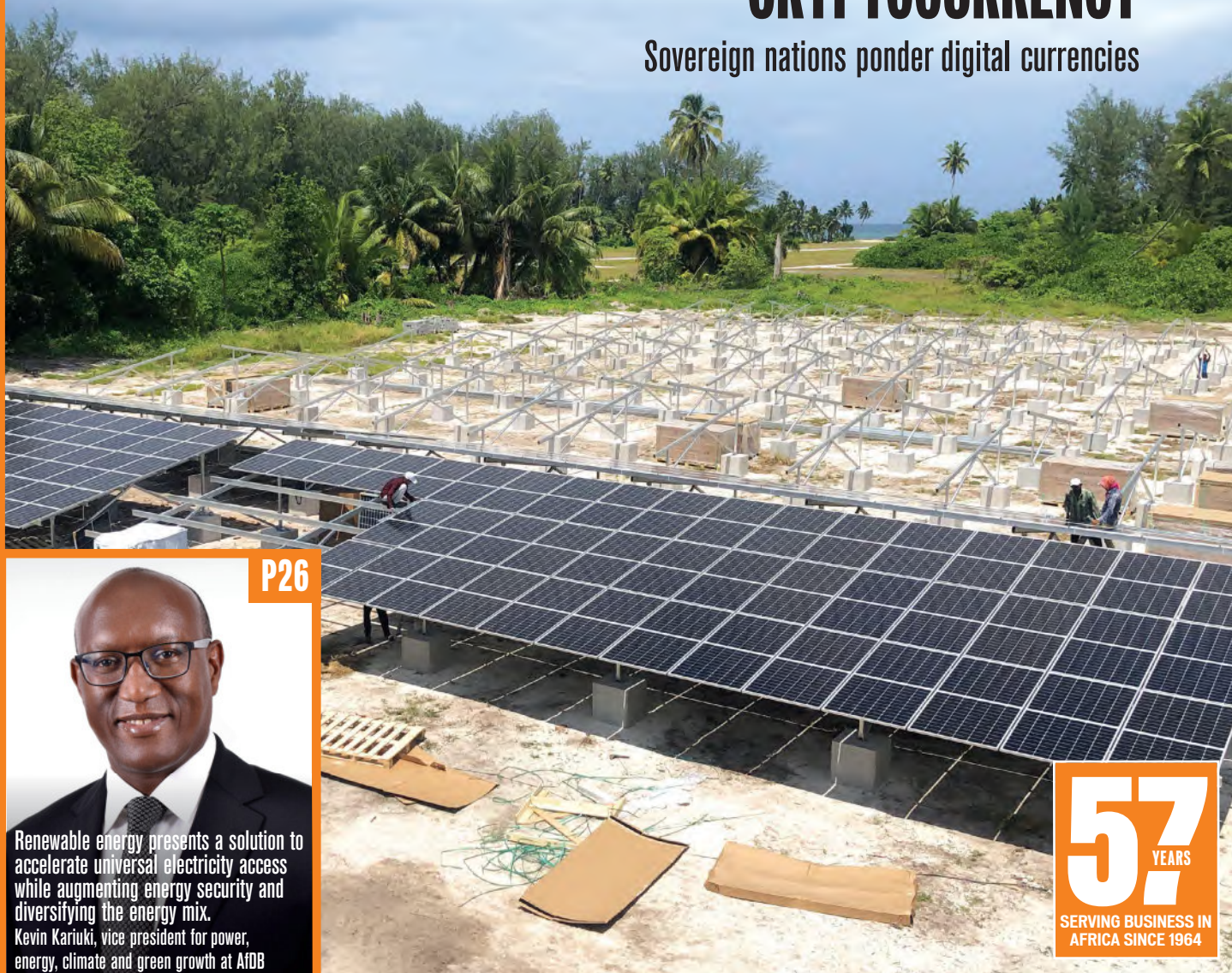
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Technology, innovation and uncertainty characterise an era of transition

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Renewable energy presents a solution to accelerate universal electricity access while augmenting energy security and diversifying the energy mix.

Kevin Kariuki, vice president for power, energy, climate and green growth at AfDB

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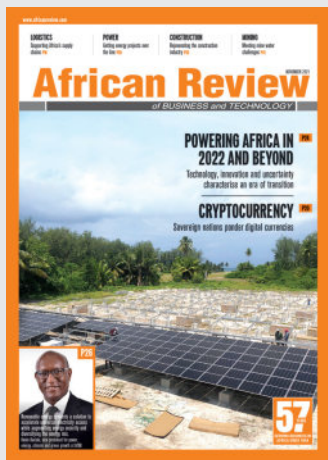
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Cover picture: One of Gridwork's power projects in the Seychelles which is serving some of the outer islands.
Cover Inset: Gridworks

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Editor's Note

Welcome to our November issue. This month, we've got a special report on all things energy, where we try to make sense of all the trends shaping Africa's power sector right now. That includes an interview with Dr Kevin Kariuki, vice president for power, energy, climate and green growth at the African Development Bank, one of the key players in the market, page 26.

Now is a time of transition, as new, clean and renewable power sources and technologies start to displace traditional energy systems. We look at some of the implications of this for Africa and what to expect in 2022 and beyond, page 24.

We've also got features on other infrastructure developments in Africa, page 33, including roads, bridges and the construction market. These are all industries facing similar challenges, with the ongoing impact of technology, plus the usual financing constraints, including the adverse effects of the Covid-19 outbreak.

But these are all areas that present tremendous opportunity too, given the continent's chronic under-development. From power generation to road construction, Africa holds immense potential to businesses prepared to take their time to understand the market. Here at ATR, we'll help you navigate the maze, just as we have done for almost 60 years.

Martin Clark, Managing Editor

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Mwangi Mumbo reports on the increasing popularity of waste-to-power projects across the continent and the major initiatives leading the way.

Hitachi Power Grids consortium to connect Egypt, Saudi with large-scale HVDC project

Hitachi ABB Power Grids has confirmed that it is the lead operator in a consortium that has been awarded a major contract from the Saudi Electricity Company and the Egyptian Electricity Transmission Company.

The contract will cover Middle East and North Africa's first ever large-scale high-voltage direct current (HVDC) interconnection.

Upon completion, the project will allow the Kingdom of Saudi Arabia and the Arab Republic of Egypt to exchange up to 3,000 MW of electricity, much of which is anticipated to be generated from renewable sources in the future.

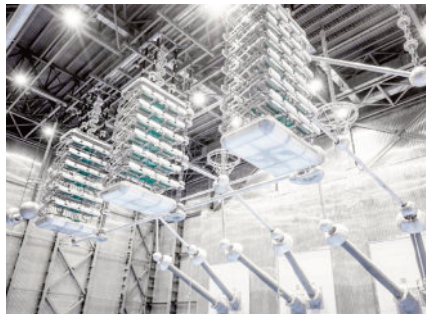
Supporting the flow of power in multiple directions, the project will connect three separate terminals and will be the first interconnective exchange of power between the two countries.

The link will provide Egypt with access to the interconnected grids of the Arabian Gulf, with Saudi Arabia, in turn, accessing those across North Africa. This interconnectivity will play into the two nations' ambitious climate targets, with Saudi Arabia targeting a 50% renewable energy goal by 2030 and Egypt targeting 42% by 2035.

Claudio Facchin, CEO of Hitachi ABB Power Grids, explained, "The clean energy transition is one of the most urgent and important challenges of our times. We are proud to have the opportunity to work with our esteemed customers and partners for this project."

Hitachi ABB Power Grids will be delivering a series of advanced technologies for the HVDC power link, including the supply of high-voltage DC converter stations, which will be located at Medina, Tabuk and Badr. Along with this, Hitachi will also supply system studies, design and engineering, transformers, valves, high-voltage equipment, technical advisory, commissioning and service. The other parties comprising the consortium include Saudi Services for Electro Mechanic Works and Orascom Construction.

In the longer term, this project has the capacity to be expanded to a broadly interconnected energy system with Europe and the eastern Mediterranean, providing the exchange of solar energy from the South and East with wind and hydro power from the North.



The project will exchange up to 3,000 MW between Saudi Arabia and Egypt.

Image Credit: Hitachi ABB Power Grids

GE SELECTED TO SUPPLY TURBINES TO MOROCCO

GE Renewable Energy has been selected to supply 40 of its Cypress onshore wind turbines to a new 200 MW offshore wind farm extension in Morocco.

The selection marks GE Renewable Energy's 'Cypress' platform's foray into Moroccan energy farms, and will enable the operator to contribute to 287 MW of installed base and backlog to the project.

The selection was made by Energie Eolienne du Maroc (EEM), a wind project developer and subsidiary of Nareva Holding. EEM will operate the Cypress turbines at 5.0 MW, utilising a rotor diameter of 158 metres. GE's scope of work also accounts for a 20-year full-service contract.

The Cypress onshore wind platform enables a significant improvement to annual energy production, increased efficiency in service ability, improved logistics and siting potential, and ultimately, more value.

The unit's two-piece blade design enables blades to be manufactured at longer lengths, improving logistical costs and offer more siting options in previously inaccessible locations.

Gilan Sabatier, onshore wind chief commercial officer at GE Renewable Energy, said of the selection, "Morocco has a great potential for wind energy and has been an early mover in the journey toward renewable energy integration, achieving great progress with its renewable targets."

Expected to start operations in 2023, the farm will support industrial companies under power purchase agreements and contribute to the nation's goal of sourcing 52% of its energy from renewable resources by 2023.

"We are thrilled to be partnering with Nareva to implement our Cypress technology in Morocco, confirming our commitment to the country's wind energy development," concluded Sabatier.

IHS SIGNS EGYPT TELECOM TOWERS AGREEMENT

IHS Netherlands EGY B.V. and IHS Netherlands GCC B.V., together forming IHS Towers, have signed a partnership agreement with the Egypt Digital Company for Investment S.A.E., the largest shareholder of Egypt Towers for Technology Services Company.

The agreement enables IHS Towers to obtain a license from Egypt's National Telecom Regulatory Authority to erect and lease telecom towers across the nation. A new company, IHS Telecom Towers Egypt S.A.E., will be formed, of which IHS Towers will own 80% and Egypt Digital Company will own 20%.

Sam Darwish, IHS Towers' chairman and CEO, commented, "I am delighted to announce IHS Towers' partnership with the Egypt Digital Company for Investment to enter the Egyptian telecommunications market. IHS Towers is committed to delivering critical infrastructure to the emerging markets. By partnering with the Egypt Digital Company, we intend to leverage their extensive market knowledge."

► BRIEFS

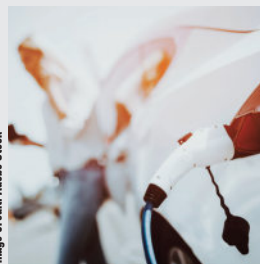


Image Credit: Adobe Stock

Eight 150 kW stations have been installed.

Morocco's first Tesla stations

Tesla has installed its first charging stations in Morocco, marking a continental first for the electric car manufacturer.

The two installations comprise four 'super-charger' stations in Tangier, delivering 150 kW, and four similar 150 kW stations at the Onomo Hotel, Casablanca.

These installations mark the beginning of Tesla's African expansion, and are likely to prompt a growth in interest for the electric vehicles.



Image Credit: National Oil Corporation

The agreement will begin the spatial development.

South Refinery project launched

Abdul Hamid Dabaiba, Prime Minister of Libya's Government of National Unity, recently led the signing ceremony for the establishment of the South Refinery.

The expansive project will achieve spatial development with the aim of solving the fuel and gas shortage in the southern regions. Deputy Prime Minister, Ramadan Abu Janah, and chairman of the National Oil Corporation's board, Mustafa Sanalla, co-signed the agreement.

Consortium to develop 500 MW wind farm in Egypt

Orascom Construction PLC has announced that its consortium with Toyota Tsusho Corporation (and group company) Eurus Energy Holdings Corporation and ENGIE has signed an agreement with the Egyptian Electricity Transmission Company (EETC) to develop, construct and operate a 500 MW wind farm in Ras Ghareb, Egypt for 20 years.

The project is subject to financial close, after which the wind farm will be implemented in an estimated 30 months.

Orascom Construction will have a 25% stake in the 500 MW wind farm and will execute the construction. The new project triples Orascom Construction's wind energy capacity to more than 750 MW and builds on the consortium's success in developing Ras Ghareb Wind Farm, Egypt's first renewable energy Independent Power Producer (IPP) project of its kind and size. The 262.5 MW wind farm was completed two months ahead of schedule in October 2019 and has been operational ever since.

Osama Bishai, CEO of Orascom Construction, commented, "We are collaborating once again with our long-term partners, Toyota Tsusho/Eurus Energy Holdings Corporation and ENGIE, to build another wind farm for our repeat client, EETC. We are proud to continue to deliver another project that will contribute to Egypt's sustainable energy development.

"This project also underscores our strategy to continue pursuing infrastructure investments that create new construction opportunities coupled with long-term recurring income," Bishai added.

Orascom Construction PLC is a leading global engineering and construction contractor primarily focused on infrastructure, industrial and high-end commercial projects in the Middle East, Africa, the United States, and the Pacific Rim. The group has consistently ranked among the world's top contractors and is ranked number 32 on ENR's 2020 Top 250 International Contractors list. Orascom Construction PLC also develops and invests in infrastructure opportunities, owns 50% of BESIX Group, and holds a construction materials and facilities management portfolio.



BIWARE RAISES FUNDS FOR EXPANSION

BIWARE, a technological SMB committed to supporting companies create value from their data, has announced the closing of its first fundraising valued at 3.5mn Dinars (approximated US\$1.2mn) from CDC Gestion and Zitouna Capital.

This fundraising symbolises an important milestone for the Tunisian company, which already has 11 years of existence on the African and European markets, allowing it to realise its strategic development plan (2021 – 2026) supported and financed by the EBRD, in partnership with PROQUAL. This plan concerns the commercial and operational development, as well as the software development dedicated to Analytics and Artificial Intelligence.

To celebrate the occasion, the company organised a ceremony that took place in Tunisia, in the presence of Biware executives, its founders and associate directors, and representatives of investors CDC Gestion and Zitouna Capital.

BIWARE provides verticalised solutions with SAS and Microsoft technologies to address business issues and assist customers in decision-making, such as customer knowledge and targeting, fraud detection and management, and demand forecasting.

Biware has a portfolio of about fifty customers (mainly large companies) in the finance, telecommunications, retail, service and energy sectors, present in African and European markets. Its first customers were telecommunications operators, a sector in strong competition, where the detailed knowledge of the behaviour of their customers is a strategic lever for marketing to capture, increase revenue and retain the customer. Africa's financial and energy sectors followed suit from 2016 onwards.

Through this fundraising, Biware aims to reach a hundred engineers and three African and European branches by 2025.

AYA GOLD & SILVER TRIPLES PRODUCTION FROM MOROCCAN MINE

Aya Gold & Silver Inc., a silver producer with operations in Morocco, has recorded that its Zgounder Silver Mine, Morocco, has nearly tripled production in Q3 2021 compared to the same period last year.

The company announced that the mine produced 338,624 ounces of silver at an average grade of 242 grams per tonne in Q3 2021, an enormous increase from the 113,655 ounces produced in Q2 2020.

Benoit La Salle, president & CEO of Aya Gold & Silver commented, "This was a solid operational quarter where the changes implemented over the past year enabled the mine to deliver 338,624 ounces. Despite the hot, summer months, we intensified capital project development activities to further upgrade our mining facilities and achieve additional operational efficiencies. The better than anticipated operational performance and execution gives us the confidence to increase Zgounder's production guidance by 29% to 1.55 million ounces for the year."

BRIEFS



TATNEFT and NOC Libya have been partners since 2005.

TATNEFT returns to Libya

TATNEFT has resumed geological exploration in Libya with the support of the National Oil Corporation of Libya (NOC). The company is starting to complete the work on the wells of one of the contract blocks. Representatives of TATNEFT and NOC Libya are also considering other promising areas of cooperation including the use of the company's engineering developments in the implementation of oil production projects.



The roads are expected to enhance traffic circulation, improve accessibility and bolster tourism.

Building the North Luxor Axis

Hassan Allam Roads and Bridges, a subsidiary of Hassan Allam Holding, has begun the construction of the North Luxor Axis, Egypt, which will connect the eastern and western desert roads, passing across the eastern agricultural road, the western agricultural road, and the Nile River. The project includes one main bridge crossing the Nile river and ten other bridges for the intersections with a total of 2.5 km length, connected through road networks spanning 16 km.

Teraco completes Cape Town hyperscale data centre expansion

Teraco Data Environments Proprietary Limited, Africa's vendor-neutral data centre and interconnection services provider, has announced the completion of phase one of CT2, its new hyperscale data centre in Brackenfell, Cape Town. The new facility supports the growing demand by enterprises and cloud providers for data centre capacity. CT2 offers highly resilient and secure colocation facilities in line with Teraco's long-term vision of enabling digital transformation across Africa.



An aerial view of CT2, the new hyperscale data centre in Brackenfell, Cape Town.

Image Credit: Teraco

According to Teraco, Cape Town, as one of Africa's most digitally connected cities, is a logical destination for Teraco's continued investment into data centre infrastructure on the continent. Home to thriving digitally connected enterprises including telecommunications, financial services, e-commerce, logistics, and retail, Cape Town benefits from its enviable location at the southern tip of Africa, and the landing of many major subsea cable systems such as ACE, WACS, SAT-3 and SAFE. The abundance of subsea cable connectivity is set to continue with Google's Equiano and the 2AFRICA cable system developments.

The first phase of CT2 comprises 25000 sq m of building structure, 8000 sq m of data hall space, and 18 MW of critical power load. Teraco has secured adjacent land and power for future expansion and brings the total critical power load to 36 MW at the end state.

As part of Teraco's broader Cape Town campus, both the CT1 and CT2 data centres aim to provide enterprises with direct access to Platform Teraco; a rich ecosystem of over 250 network providers, global cloud on-ramps, subsea cable systems, access to over 50 managed service providers, and direct peering at NAPAfrica, Africa's largest Internet exchange point. Clients deployed in either of these facilities can connect to AWS Direct Connect and Microsoft Azure ExpressRoute directly or via Teraco's Africa Cloud Exchange.

This multi-billion rand data centre facility dramatically extends Platform Teraco's capacity in the Western Cape, according to Jan Hnizdo, CEO, Teraco who added, "Forming a vital part of the African IT landscape, Platform Teraco is an essential part of the modern enterprise's digital transformation strategy with its diverse industry ecosystems and open interconnection marketplace."

SASOL'S ROLE IN GREEN HYDROGEN PROJECT

Sasol has been engaging with the Infrastructure and Investment Office (IIO) to develop a hydrogen economy in South Africa. The company has signed a memorandum of agreement (MOA) with the Northern Cape Development Agency (NCEDA) to lead the feasibility study to explore the potential of Boegoebaai as an export hub for green hydrogen and ammonia. This study is expected to take approximately 24 months. The outcomes of this feasibility study will determine the next step of development.

Sasol has signed a MOA with the Gauteng Provincial Government (GPG) to leverage Special Economic Zones (SEZs) that have been earmarked as enablers to unlocking South Africa's green hydrogen market potential for domestic use, such as mobility and aviation.

In parallel, Sasol has also partnered with the Industrial Development Corporation (IDC) who will provide joint funding for the feasibility study.

STANDARD BANK WINS ACCOLADES IN AFRICA

Standard Bank Group has been named the best bank in Africa in Global Finance's 28th annual listing of the best banks worldwide. Standard Bank was also recognised as the best bank in South Africa and the best bank in Uganda.

Global Finance selected Standard Bank and other winners of the World's Best Banks 2021 awards based on their performance over the past year and other criteria such as management excellence and leadership in digital transformation and corporate citizenship.

Sim Tshabalala, chief executive of Standard Bank Group, said, "To be recognised in this way by Global Finance is a great honour for the Standard Bank Group. Over the past year we have had to work even harder than usual to support our employees, clients and communities during difficult circumstances. I'm delighted to accept this award in grateful recognition of the excellent work done by my dedicated and resilient colleagues throughout our business."

Standard Bank's OneFarm platform share has partnered with HelloChoice, a digital agri-trade platform, and FoodForward, a beneficiary network, to match excess produce from farmers with certified food recipients. Food is procured at a reduced cost or donated by farmers and then provided to beneficiary organisations. According to Standard Bank, OneFarm has already provided six million meals to people across South Africa.

Further to this, Global Finance recognised Standard Bank's partnership with Salesforce to power the group's digital platform and service the bank's ecosystem of clients. The partnership will allow both organisations to co-create bespoke solutions for clients, also enabling them to create solutions themselves by partnering with the group's service providers and vendors.

► BRIEFS

Autodesk announces Civil 3D and InfraWorks



Users can now extract design data and export it to custom reports or AutoCAD tables.

Autodesk, a developer of software products and services for architecture, engineering, construction and other sectors, has announced the 2022 release of its Civil 3D and InfraWorks software. Distributed across southern Africa by WorldsView, the new software capabilities and enhancements enable users to achieve more complex designs, without compromising on accuracy. Civil 3D now includes features such as enhanced project explorer, grading optimisation and more.

Mahindra inaugurates certified pre-owned dealers



Sales disruptions during the strict lockdown have strained the supply of new vehicles, according to Mahindra.

Mahindra has launched a dedicated used vehicle division at qualifying Mahindra dealers across South Africa. The move is said to have the full backing of Mahindra South Africa and is aimed to offer customers an upgraded service experience in the used car market.

Rajesh Gupta, CEO of Mahindra South Africa said that the new used vehicle offering is in response to the ever-increasing demand for used Mahindra vehicles in South Africa.

Emirates and South African Airways reactivate partnership to boost connectivity

With South African Airways (SAA) resuming operations, Emirates has been working closely with SAA to reactivate its long-standing partnership which aims to improve the customer experience and provide more value to travellers when flying on both carriers.

The move also helps cement SAA's standing and position and will aim at building growth momentum as the carrier initially restarts flights to six African destinations.

Emirates and SAA have been working towards increasing alignment across products, services and reactivation of synergies between loyalty programmes, and will be initially kicking off with a reciprocal commercial arrangement. The agreement includes SAA coded and Emirates-operated routes between South Africa and Dubai on a single ticket, enabling travellers to seamlessly check-in their bags to their final destinations.

Emirates will also place the SAA code on major trunk routes between South Africa and Dubai.

Adnan Kazim, chief commercial officer, Emirates Airline, said, "The partnership between Emirates and South African Airways builds on our shared commitment to providing customers more schedule choices and increased connectivity across Africa and through our growing network. We value our nearly 25 years of successful partnership with SAA and we are working hard to take more positive steps forward to continue to grow our relationship and provide our customers with even more connectivity in the future."

SAA's interim CEO, Thomas Kgokolo, said, "As SAA starts to rebuild, the long-standing partnership with Emirates is both valued and critical to our future growth plans. We share the same vision of seamless, efficient, and excellent customer service with connectivity to multiple destinations. We are confident this partnership will lead to the addition of more route and destination options, particularly across Africa as we both recognise the economic, trade and tourism potential the continent has and our key role as enablers."



Image Credit: Adobe Stock

With the restoration of the SAA partnership, Emirates' footprint across southern Africa offers customers more options across the continent.

DIGICO EYES GLOBAL EXPANSION

One Thousand and One Voices (1K1V), a private equity firm that invests in sub-Saharan Africa with an exclusive limited partners base of leading family offices, has announced a US\$13.5mn investment in a minority stake in Digital Ecosystems (DigiCo), an investment holding company that provides integrated technology services to the telecommunications sector, as well as various SaaS platforms.

This investment marks 1K1V's second investment in the technology space this year.

DigiCo enables the rollout of mobile-mediated sales, financial services, banking, couponing, gaming, loyalty programmes and a myriad of other payment tender methods. DigiCo's technologies and products aim to enable a business-to-business-to-consumer service, agnostic to any phone type or any mobile operator. The company operates in 22 countries across the globe with six subsidiaries in the digital space which include: Airvantage, M4Jam and PayMeNow (mobile financial services); Hyve Mobile and Viamedia (VAS infotainment); and Cellfind (integrated communications).

Hendrik Jordaan, president and CEO of 1K1V, said, "DigiCo's world-class, locally-developed technology, IP and service offering are at the forefront of the rapidly-changing digital economy. We believe some of this unique technology is way ahead of its time and has not been deployed yet in developed economies. Our goal is to reposition the company for growth in these markets through our Three-Dimensional Capital provided by our leading family LPs and our extensive global networks."

Andrew Dunn, CEO of DNI, the majority shareholder of DigiCo, said, "The investment by 1K1V into DigiCo is an important step in the journey to grow, expand and internationalise our business."

SENS COLLABORATES WITH THYSSENKRUPP UHDE

Sustainable Energy Solutions Sweden Holding AB (SENS) has announced that it has entered into a collaboration with ThyssenKrupp Uhde Africa on underground pumped storage power plants in South Africa. The collaboration refers to a feasibility study on a specific site in South Africa with the aim of developing a full-scale project together. ThyssenKrupp Uhde Africa collaborates with a number of international companies on the possibility of reusing abandoned mines, which will now also include SENS.

Acting CEO of SENS, Lise Toll, said, "We are now seeing our international ambitions realised and the portfolio work of large-scale and commercial projects begun. The collaboration with ThyssenKrupp opens up opportunities for us to undertake large-scale international energy storage projects, in line with SENS' new strategy. Together, we will now explore the potential of deep gold mines and use these for a more sustainable tomorrow together with one of the world's leading industrial companies."

BRIEFS

Mastercard partners with Digital PayGo

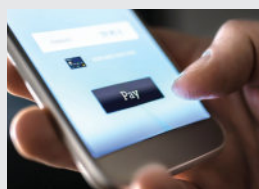


Image Credit: Adobe Stock

The partnership will drive secure electronic payments and digital transformation of SMEs.

Mastercard has partnered with Zambian-based fintech company, Digital PayGo, to launch a new merchant mobile payments solution, which will enable Small and Medium Enterprises (SMEs) to safely make and receive digital payments through various online channels. The solution called "SME-in-a-Box" is aimed at supporting the enablement of digital payments for merchants and their customers, by providing them with an easy-to-use and safe way to perform cashless transactions.

Botswana Diamonds acquires control of the Thorny River Project

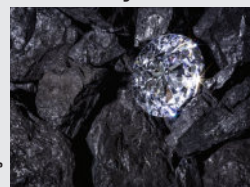


Image Credit: Adobe Stock

Plans are in place to re-activate the mining of the Marsfontein gravels and dumps.

Botswana Diamonds has exercised its pre-emption right to acquire control of Vutomi mining. The control of Vutomi means Botswana has the opportunity to develop the Thorny River Project, according to a press release. Thorny River is an advanced stage kimberlite exploration property located at the eastern side of a kimberlite dyke and blow system spanning Klipspringer Mine, 15 km to the west, and the iconic Marsfontein Mine, 4 km to the west.

Full funding for Kouroussa Gold Mine

Hummingbird Resources has announced that it has received a group level financing package of up to US\$100mn from Coris Bank International to fully fund the Kouroussa Gold Mine into production, along with internal cash flows.

The project, located in Guinea, is forecast to be a high-grade, low-cost mine which will produce an average of between 120,000 and 140,000 ounces for the first three years of production and an average 100,000 ounces over its lifetime.

The life of the mine has increased to a minimum of seven years from the original five year estimate at purchase of the project based on the optimised mine plan, and is forecast to produce at an average all in sustaining cost in the range of US\$900-US\$1,000 per ounce, with material upside potential through further exploration drilling which is currently being planned.

Construction is scheduled to commence in Q4 2021, with first gold pour scheduled for the end of Q2 2023. Key operational appointments and project construction contracts have already been negotiated and are set to be awarded to internationally recognised partners.

16,000 m of a 24,000 m 2021 infill drilling programme to upgrade confidence in the mineral resources at Kouroussa has been completed, with the remaining to be finalised on schedule in 2021. The projects current mineral resources are 1.18mn ounces.

Dan Betts, CEO of Hummingbird, commented, "The completion of the financing and the imminent commencement of building Kouroussa marks the next phase of Hummingbird's strategy to become a multi-mine, multi-jurisdiction gold producer.

"Kouroussa is a low cost/high margin project which will more than double Hummingbird's gold production, substantially improve future cash flows and generate returns for all our stakeholders. With one of the highest IRRs for a gold project in West Africa, and material upside to extend LOM through further exploration within our licences area yet to be fully explored, Kouroussa provides a strong platform for our next phase of growth."



Image Credit: Adobe Stock

Construction is scheduled to commence in Q4 2021, with first gold pour scheduled for the end of Q2 2023.

UNTAPPED GLOBAL AND PAGA TO BOOST DIGITAL PAYMENTS

Untapped Global, an investment company focused on emerging markets, has announced a scale up of its partnership with Paga, a mobile payment and financial services company.

The programme finances point-of-sale devices (POS) for merchants in Nigeria.

The collaboration between Paga and Untapped focuses on empowering small businesses to accept digital payments and bring financial services to the masses. The financing is structured to lower the overall cost of entry for merchants to acquire a handheld POS terminal and other digital tools for their businesses, making it easy for them to buy, sell, and get paid.

"We have built the best on-ramps and off-ramps for cash in Nigeria through the Paga agent network and are further digitising merchants via our new merchant platform, Doroki. Our collaboration with Untapped is accelerating our progress to reaching 120,000 merchants in the next two years by lowering the startup and onboarding costs for merchants," said Tayo Oviosu, founder and CEO of Paga Group.

Paga's POS devices enable merchants to accept cards, mobile payments, and other forms of digital payments, and offer other value-add financial services to customers. The financing from Untapped is unique, as payments are recovered from the revenues earned on the devices.

"The network of the POS devices that will be available for merchants via this partnership is powerful," Untapped founder and CEO, Jim Chu, commented. "It enables a seamless process for merchants and their customers to buy, sell, and get paid. We are excited to use Smart Asset Financing to greatly increase access to financial services across Nigeria with partners that know the space best, like Paga."

WÄRTSILÄ PROVIDES POWER TO NIGERIAN CEMENT PRODUCER

The technology group Wärtsilä, has signed a five year long-term Operation & Maintenance (O&M) agreement with Lafarge Africa Plc, one of Nigeria's leading building material producers. The agreement covers the 100 MW Lafarge Ewekoro power plant, which provides a dedicated supply of electricity to the company's concrete and cement manufacturing processes.

The captive Ewekoro plant was supplied and commissioned by Wärtsilä in 2011. It consists of six Wärtsilä 50DF dual-fuel engines, operating primarily on gas, but with the flexibility to automatically switch to liquid fuel in case of a disruption to the gas supply. Similarly, should the quality of the gas supply be disrupted, the Wärtsilä engines will continue to operate efficiently, delivering an assured and reliable power supply to the facility. The captive power plant provides the cement production facilities a steady supply of electricity and an efficient use of available natural gas as primary fuel.

IATF 2021 holds Côte d'Ivoire Roadshow



Image Credit: IATF

The Intra-African Trade Fair will take place from 15-21 November 2021 in Durban.

The organisers of the Intra-African Trade Fair (IATF2021) met with the business community in Abidjan, Côte d'Ivoire, to raise awareness for Africa's premier trade and investment event set to take place in Durban, South Africa.

IATF2021 will provide a platform to promote trade under the African Free Trade Continental Agreement, which speakers noted was a huge opportunity to speed up transport infrastructure development, boost trade and create jobs on the continent.



Image Credit: Adobe Stock

Benin is a leading cotton producer, the by-product of which can be used as bio-feedstock.

Biofuel opportunity for Benin

The CEO of Eni, Claudio Descalzi, met with the President of Benin, Patrice Talon, to discuss a possible collaboration in the field of the energy transition and the circular economy.

Descalzi and President Talon discussed projects for the agro-industrial chain, focused on the valorisation of agricultural waste and the production of oleaginous plants that do not inhibit food production, to be used in bio-refining, where Benin can play an important role as a country with a strong agricultural sector.

MFS Africa announces expansion into Nigeria with an agreement to acquire Baxi

MFS Africa, the pan-African digital payments hub, has signed an agreement to acquire Baxi, one of Nigeria's super-agent networks. The deal is subject to approval from the Central Bank of Nigeria and will be the second-highest fintech acquisition in Nigeria to date.

According to MFS, Nigeria is home to one of the most dynamic markets on the continent being Africa's largest economy and home to the largest number of SMEs. It is also the largest remittance market in Africa and home to one-third of intra-Africa remittance flows. MFS Africa's presence in Nigeria to date has been limited given the country's small number of mobile wallets. With the acquisition, MFS Africa will expand its pan-African network into Nigeria, connecting Nigerian businesses to the continent and the rest of the world.

Dare Okoudjou, MFS Africa founder and CEO said, "This deal is a pivotal step in our journey. By combining Baxi's network of SMEs operating as agents with our pan-African network, we aim to take Nigeria's SMEs to the rest of Africa and the world. Our expansion into Nigeria brings us one step closer in our mission of making borders matter less."

Founded in 2014 by Degbola Abudu and Folu Majekodunmi, Baxi is one of Nigeria's independent SME-focused electronic payment networks. Baxi aims to provide a cash-in/cash-out offering as well as value-added services such as account opening, money transfer, bill payment and more.

According to Baxi, through its network of more than 90,000 agents, the company has processed over US\$1bn transactions this year. Following the acquisition's close, MFS Africa will build Baxi into a key node on its digital payment network, allowing customers to make regional and global payments to and from Nigeria. MFS Africa will also expand Baxi's proposition for offline SMEs to select markets within MFS Africa's footprint of 320 million mobile wallets across more than 35 African countries.

Baxi's role is to simplify and integrate online and offline payments for SMEs and merchants in Nigeria through its omnichannel distribution network. MFS Africa simplifies cross-border payments, integrating payments via a single hub.



Image Credit: Adobe Stock

MFS Africa will expand its pan-African network into Nigeria, connecting Nigerian businesses to the continent and the world.

ITFC SIGNS FINANCING AGREEMENT WITH SENELEC TO SUPPORT SENEGAL'S ENERGY SECTOR

The International Islamic Trade Finance Corporation (ITFC) has approved a US\$116mn Murabaha financing to SENELEC (Senegal National Power Company).

The company said that the strategic mandate is to ensure the production, transmission and distribution of electricity in Senegal.

According to ITFC, the facility is purposed to cover almost 20% of SENELEC's financing needs to purchase refined petroleum products, directly impacting the production, transmission, and distribution of electrical energy throughout the country.

The operation comes to support the Senegalese government's efforts to ensure steady availability of electricity and provide the required energy for the development of all economic sectors while contributing to the SDG 7 'Affordable Energy' and SDG 8 'Decent work and economic growth'.

Commenting on the signing, Eng. Hani Salem Sonbol, ITFC CEO said, "ITFC subscribes to the sustainable development goals and avails itself to support Member-Countries achieve them. In the same vein, we believe access to electricity is crucial for individuals and businesses especially for a post-covid global economic recovery, and we see this new financing made available to SENELEC as our contribution to securing the provision of such a crucial need."

"We have had a very good partnership with Senegal since our inception and we look forward to supporting the country on its quest for economic growth and development."

The multi-million Murabaha financing is aimed at meeting the growing electricity demand, improving the reliability of power supply, reducing losses and expanding access to previously unserved communities.

QAIR AND STOA JOIN FORCES FOR MIHIA

Qair and STOA join forces around MIHIA, an investment platform dedicated to renewable energy projects in Africa, and announce the first project in Burkina Faso.

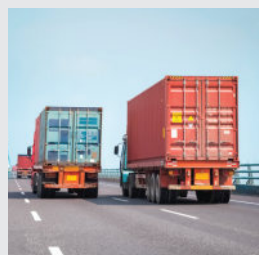
The producer of renewable energy Qair and STOA, created by the Caisse des Dépôts et Consignations (CDC) and the Agence Française de Développement (AFD) have announced the launch of a joint investment platform, MIHIA Holding (Make It Happen In Africa), in which they hold 51% and 49% respectively.

The construction of the platform's first solar power plant project in Burkina Faso is expected to start soon in Zano, in the department of Tenkodogo. The objective is to reach the commissioning of the plant during 2022's second half of the year.

According to Qair, the plant will boast a capacity of 24 MWp and an annual production of 48,000 MWh and the 54,500 panels of the solar power plant is expected to supply electricity to nearly 75,000 homes.

BRIEFS

Image Credit: Adobe Stock



JICA is comprehensively supporting improvements to the major arterial road in this area.

JICA signs agreement with Ghana

Japan International Cooperation Agency (JICA) has signed a grant agreement with the government of the Republic of Ghana to provide grant aid of up to US\$32mn for the project for improvement of the Tema motorway roundabout in phase 2.

The project will construct a north-south flyover at Tema Motorway Roundabout to ease traffic congestion and secure safe road traffic.

Image Credit: Adobe Stock



MIGA's support for these solar projects is considered critical to their realisation.

MIGA partners with GreenYellow

MIGA, a member of the World Bank Group has issued a guarantee for US\$5.2mn to GreenYellow SAS, of France, that will cover its equity and quasi-equity investments into Société de Production d'Énergie Solaire de Ouagadougou SAS (SPES Ouagadougou) for a period of up to 20 years. According to GreenYellow, the projects will have a capacity of 102 MWp and constitute the country's first round of solar independent power producers.

Winch Energy and NOA bring off-grid solar solutions to Uganda

Winch Energy Limited and EoT Offgrid Africa (NOA) have made progress on their ambition to build the largest portfolio of mini-grids in sub-Saharan Africa and reach a portfolio worth US\$100mn by establishing projects in Uganda.

So far, the two companies have invested around US\$12mn in projects across Uganda and Sierra Leone with 49 villages to be equipped with off-grid and remotely controllable solar solutions – Remote Power Units (RPUs). Designed and manufactured by Winch Energy, these units will supply power to nearly 60,000 people.

In the second phase, 6,000 portable batteries will be deployed in the villages to serve people who live too far from the power unit while, at the same time, partnerships with telecom operators will be established to guarantee Internet access for households.

Installation of the project has already started with the RPU's for the first 13 villages shipped to Uganda and all 25 RPU's are expected to arrive in the country before the end of 2021. The Uganda sites are expected to be operational in early 2022.

Winch Energy IPP Holdings Limited (WIPP) is the new investment platform for these projects. FMO, the Dutch entrepreneurial development bank, has arranged a syndicated facility where FMO (through the Access to Energy Fund) and the Renewable Energy Performance Platform (REPP) – managed by Camco Clean Energy (Camco) – will lend to WIPP a first tranche of around US\$4mn for the portfolio of mini grids in Uganda and Sierra Leone.

A second tranche of up to US\$6mn is also included in the facility to finance future projects since WIPP plans to expand its operations in Sierra Leone, Uganda and to other countries.

Nicholas Wrigley, CEO of Winch Energy, said, "We are obviously delighted to close this debt financing from FMO and REPP Camco. This first tranche represents the beginning of our investment programme with our partner NOA and additional investments will soon follow in Sierra Leone and Uganda and we are also targeting Nigeria and Ethiopia for 2022. The teams at Winch Energy and NOA have worked extraordinarily hard to bring about this innovative debt financing and for that I wish to thank them."



Winch Energy and NOA have invested around US\$12mn in projects across Uganda and Sierra Leone.

SUPPORT FOR RENEWABLE ENERGY PROJECTS IN BURUNDI

GET.invest has launched its second country window to support renewable energy projects and businesses in Burundi access finance. With funding by the Delegation of the European Union to Burundi, GET.invest Burundi will support the country's efforts to implement the goal of universal access to modern, clean and affordable energy services by 2027.

"With the law on the liberalisation of the energy sector, Burundi has established a legal framework favourable to private sector investments. The EDFI ElectriFI window and the technical assistance provided by GET.invest have the mission to further support these investments," said HE Claude Bochu, ambassador of the European Union to Burundi.

"I am delighted that Burundi is among the first African countries to benefit from such initiatives thanks to a dedicated national envelope. I therefore encourage private sector actors involved in the energy sector to seize this opportunity that the European Union is putting in place in collaboration with the Ministry in charge of energy, and to invest in Burundi, to help achieve the objectives of the National Development Plan 2018 -2027."

Following the official launch on day one, a workshop for the Burundian private sector was held focusing on the modalities of accessing support by GET.invest and EDFI ElectriFI. Additionally, RENAC, one of GET.invest's newest partners, presented the 'Green Banking for Recovery' training programme to financing institutions and renewable energy developers.

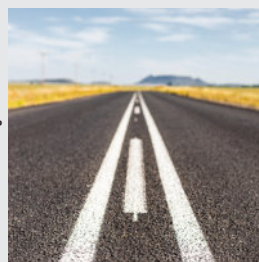
In the country, GET.invest will continue to work closely with EDFI ElectriFI, helping companies and projects prepare in the areas of investment strategy, business case structuring and accessing finance.

POSITIVE SIGNS FOR CARACAL GOLD'S OPERATIONS IN KENYA

For its Kilimapesa Gold Mining and Processing Operations in Kenya, Caracal Gold plc is advancing an initial shallow trenching programme on high priority targets on the newly targeted Southern Mineralized Zone ahead of the commencement of its planned RC and diamond drilling programmes later in the year.

Robbie McCrae, CEO of Caracal, said, "Whilst early days, these shallow and high grade trenching results, particularly the 40 m running at almost 5g/t of gold, provide us with very good indication that, what we potentially have at the newly targeted Southern Mineralized Zone, is a very wide and extensive gold mineralised zone that extends for several kilometres on our prospecting license and is open at depth. It is very encouraging that this Southern Mineralized Zone is in addition to, and south of the mineralisation and JORC compliant resource of over 671,400 ounces that we have already defined and is being mined at Kilimapesa."

Image Credit: Adobe Stock



More than 10,500 km of roads are currently under construction across Kenya.

11,000 km of tarmacked road for Kenya

The Kenyan Government is planning to tarmac more than 11,000 km of road by the end of its term after Transport Cabinet Secretary James Macharia noted that more than 10,500 km of road across the country were already under construction. Macharia made the comments on an inspection of the roads under construction and added that the administration is committed to completing them by mid 2022 in an effort to boost economic activities.



The CPF will support private sector development and job creation.

Djibouti receives development goals boost

The World Bank Group's board of executives have discussed the new 2022-2026 Country Partnership Framework (CPF) for Djibouti which will help reduce poverty in the country through a focus on private sector development. The CPF will support reforms to create the right environment for inclusive and job-creating growth by stimulating SME development and strengthening basic services.

Edenville Energy provides update on Rukwa Coal Project, Tanzania

Following the closing of Edenville Energy Plc's capital raise at the end of May 2021, the energy provider has been focused on site preparation to ensure the conditions are appropriate. The project will aim to meet the expected demand for Rukwa coal.

Preparation work has primarily focused on overburden pre-strip, with a total of 13,000 tonnes of material removed as of September 2021.

The excavation work has enabled a further 4,000 tonnes of Run of Mine (ROM) coal to be delivered to the existing wash plant stockpile, and provided access to an ongoing basis to coal from the Northern Zone of the Rukwa deposit.

During Q3 2021, the company confirmed an order for up to 3,500 tonnes per month of washed coal. Edenville Energy Plc anticipates that this demand will result in an average monthly delivery of at least 2,000 tonnes per month.

Alistair Muir, Edenville's CEO, said, "I am pleased to report operations are being ramped up at Rukwa, and I appreciate, for many investors, the delay has been frustrating. However, the company elected to take a prudent approach, first recapitalising the company and then ensuring operations and customers were in place before committing its resources to production."

Looking ahead, the company will focus to bring operations to an initial processing rate of 3,000 tonnes of washed coal per month in the current quarter. Achieving this rate will allow the company to satisfy a further order of 600 tonnes per month from a long-standing customers.

Following recent positive trial shipments, Edenville will supply sample sizes to an East African company who has indicated a demand for 3,000 tonnes per month of washed coal.

"Those familiar with the company will note that the production achieved during the second half of September 2021 is similar to the whole of H1 2021, as outlined in the company's recent interim results.

"We believe the company is now well positioned to meet its internal production targets for the year end. Moreover, as additional customers are identified, Rukwa has the potential to expand operations," concluded Muir.



Rukwa has proved fruitful, with 4,000 tonnes of ROM coal already delivered to a wash plant stockpile.

Image Credit: Edenville Energy Plc

UGANDA LANDS US\$650MN OF DEALS FROM EXPO 2020

Uganda has announced major investment deals, worth US\$650mn, at Expo 2020, which began in October.

The investment deal spans sectors including healthcare, energy, and transportation. The deals were signed the day after the Ugandan National Day.

The US\$650mn deals comprised US\$500mn for renewable energy and transportation projects, along with a US\$50mn investment into mineral processing and an additional US\$50mn for a pharmaceutical facility to manufacture high quality diagnostics kits for HIV/AIDS, Malaria, TB and other POC diagnostic technologies.

Robert Mukiza, director-general of the Uganda Investment Authority, said, "The announcement of around US\$650mn in investment is part of our broader ambition to bring in US\$4bn of new investment into Uganda to propel the country forward on its post-pandemic recovery."

The announcement marked the first major sign of Expo 2020 Dubai's investment opportunities. The event brings together worldwide representatives under three sub-themes: Opportunity, Sustainability and Mobility.

Continuing, Mukiza added, "We are currently promoting around 79 bankable projects at different stages of development, that are all ready for investment. These projects can be actualised through public and private partnerships, joint ventures, private or public arrangements. Some are greenfield, brownfield or expansion projects. Our partners, therefore, have a wide variety of investment options to pick from.

"This was the first trip abroad that our President has taken in over two years and it was undertaken to support this major announcement."

Letters of intent were witnessed by the Ugandan Minister of Finance.

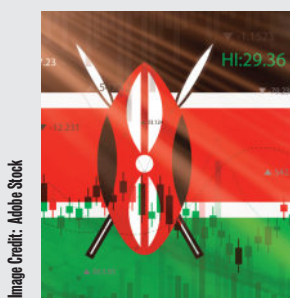
ETIHAD EXPANDS AFRICAN FOOTPRINT

Ethiad Cargo, the cargo and logistics arm of Abu Dhabi's Etihad Aviation Group, has expanded its African footprint and operations, after signing an agreement with Astral Aviation and Kenya Airways to operate reliable and cost-effective airfreight solutions across Africa, especially within the continent's pharmaceutical sector.

Astral Aviation serves a network of 15 African destinations with a fleet of 14 freights from Nairobi and Johannesburg hubs. Etihad Cargo will leverage this operation for increased vaccine distribution. This will also enhance the capabilities of the Hope Consortium, which provides global Covid aid.

The SLA, a first Pharma Interline agreement, will ensure Etihad Cargo partners are fully compliant with GDP and IATA Pharma regulations and standards. The passive packaged pharmaceuticals will be delivered within the COL range (2° to 8°), CRT range (15° to 25°) and ERT range (2° to 25°).

BRIEFS



A 5% growth is expected in 2021.

Kenya anticipated to rebound

World Bank Group has released its October 2021 analysis of Africa's economic future.

In a positive forecast, the report predicts economic activity in Kenya to rebound from a -0.3% growth in 2020 to 5% in 2021.

Ahead to 2022-23, the report anticipated an average growth rate of 4.8%. This outlook represents improvements across construction, education, information, communication and real estate sectors.



Up to US\$1.5mn is available.

Assistance for Somali renewables

Private companies that promote the use of renewable energy across Somalia are set to earn grants and assistance through the Renewable Energy and Climate Technologies in Sub-Saharan Africa (REACT SSA) Somalia, implemented by the Africa Enterprise Challenge Fund. Funding between US\$100,000 and US\$1.5mn will be awarded upon the achievement of mutually agreed milestones.

Upcoming Events Calendar 2021 / 2022

NOVEMBER

1-3

EGYPT ENERGY

Egypt International Exhibition Centre
www.egypt-energy.com/en/home.html

8-11

AFRICA OIL WEEK

Dubai, UAE
<https://africa-oilweek.com/Home>

8-12

AFRICACOM

Virtual
<https://tmt.knect365.com/africacom/>

9-12

AFRICAN ENERGY WEEK

Cape Town, South Africa
<https://aew2021.com/>

15-17

AFRICA ENERGY FORUM

London
www.africa-energy-forum.com

15-21

INTRA-AFRICAN TRADE FAIR 2021

Durban, South Africa
www.intrafricantradefair.com/en

24-26

THE BIG 5 CONSTRUCT KENYA

Nairobi, Kenya
www.thebig5constructkenya.com

DECEMBER

2-3

OFF-GRID EXPO + CONFERENCE 2021

Augsburg, Germany
www.off-grid-expo.de

2-3

MSGBC OIL, GAS & POWER 2021

Diamniadio, Senegal
<https://energycapitalpower.com/event/msgbc-oil-gas-power-2021/>

2-4

SOLAR AFRICA 2021

Addis Ababa, Ethiopia
www.expogr.com/ethiopia/solarexpo/index.php

7-9

MAURITANIDES 2021

Nouakchott, Mauritania
www.mauritanidesmr.com

9-10

U.S.-AFRICA ENERGY FORUM 2021

Houston, Texas
<https://energycapitalpower.com/event/us-africa-energy-forum/>

JANUARY 2022

17-19

WORLD FUTURE ENERGY SUMMIT 2022

ADNEC, Abu Dhabi
www.worldfutureenergysummit.com

Energy community prepares for aef

The African energy community is looking forward to the return of the African Energy Forum (aef) which will provide the opportunity to reunite, build momentum and create a space for energy project discussions.

The 23rd aef will arrive in London on 15-17 November at the London Marriott Hotel Grosvenor Square at a time when thousands of African energy professionals and government representatives will be in the country attending COP26.

Covid-19 has magnified the need to be able to deliver energy in times of crises, and this year the forum will focus on the digitalisation of the energy sector and how to harness technology so humanity can better recover. These themes will explore the relationship between energy, technology, purpose and inclusivity.

Instead of the usual panel sessions, this year the agenda streams will focus on interactive boardrooms where stakeholders can come together in a collaborative environment and leave with productive outcomes through enhanced networking.

An opportunity to reconnect

The forum has earned a solid reputation as the most meaningful gathering of decision-makers



The aef community last converged in 2019 in Lisbon.

within the African energy community to form partnerships, identify opportunities and move the industry forward.

The aef community last converged in 2019 in Lisbon where 2,000 participants, 300 speakers, 19 ministers and secretaries of state networked across four days and celebrated key industry announcements.

Commenting on the 2019 event, Deepak Thakur, CEO, Sterling & Wilson, said, "Meetings

that usually take place over six months can be completed in three days...we only do one show a year and it's this one."

A vast wave of investment is set to sweep Africa, and aef 2021 aims to help harness this potential so the continent doesn't just recover – it recovers better.

For more information, visit the aef website:
<https://www.africa-energy-forum.com/>

“Africa has the opportunity to leapfrog traditional fossil-fuel based energy systems to achieve a robust renewable energy mix. Wind power is a vital part of this clean energy transition allowing for decentralised, affordable and clean energy. In addition, Africa boasts fantastic wind resources which can power the continent 250 times over while creating jobs and enabling the development of local industries. GWEC’s Africa WindPower will bring various stakeholders together to decrease the knowledge gap and increase the development and deployment of wind power throughout the continent.”

Image Credit: GWEC



WANGARI MUCHIRI
Africa WindPower coordinator

“Fair and broad access to effective and safe Covid-19 vaccines is key to saving lives and strengthening Africa’s economic recovery. Faster vaccine deployment would accelerate the region’s growth to 5.1% in 2022 and 5.4% in 2023 – as more containment measures are lifted, boosting consumption and investment.”

ALBERT ZEUFACK
Chief economist for Africa at the World Bank

“The urgent need to reverse these negative and devastating trends has prompted African leaders to commit to the restoration of the continent’s ecosystems. Through its roadmap for development, Agenda 2063, the African continent commits to ecosystems restoration by protecting, restoring and promoting sustainable use of terrestrial ecosystems, sustainably managing forests, and combating desertification.”

IBRAHIM ASSANE MAYAKI
CEO of the African Union Development Agency-NEPAD

“Our vision is to make Africa a full and active participant in the global information and knowledge society by enabling universal access to ICT systems and services across Africa. Collaboration with a global industry leader such as Nokia is therefore crucial in this regard and will help us accelerate towards a digital transformation and knowledge economy.”



JOHN OMO
Secretary general of the African Telecommunications Union (ATU) on the MoU with Nokia to drive digital transformation for development

“While educational needs globally are immense, the private sector can leverage their resources and core competencies to support governments to enhance skills development and help unlock the necessary investments to ensure quality learning opportunities are accessible.”



Image Credit: UN

COUMBA MAR GADIO
Resident coordinator of United Nations in Zambia

“The South African ecosystem is perfectly primed for an intervention that supports the country’s efforts to implement its Nationally Determined Contribution by bringing together stakeholders that can develop and finance climate projects at scale. If this reorganisation can be done in a ‘just’ way, an opportunity arises to address many of the existing social ills through increased investment, new jobs and new skills. This is particularly true when investing in long-term infrastructure projects which will have lasting economic, environmental and socio-economic impacts.”

JACK RADMORE
GreenCape energy and climate finance programme manager

Facilitating trade and investment in West Africa

Hosted by BVI Finance and African Review, a panel of financial experts and business leaders joined moderator Anthony Osaë-Brown, bureau chief at Bloomberg, to discuss how to minimise risk and maximise economic growth in West Africa.

According to a report by the ODI, IFCs have contributed some US\$1.6 trillion in investment between 2007 and 2014.

Passionately speaking about the unique opportunities posed by Africa, Akintoye Akindele, chairman & CEO of Atlantic International Refinery and Petrochemicals, said, “Africa is an opportunity in itself. There are 1.4 billion people in Africa in need of accommodation, food, shelter, phones, data, everything. The market size has been opened up more by the African Continental Free Trade Area (AfCFTA), driven by a young population and it is scaling up globally. We have a lot of challenges, but these gaps are also opportunities.”

“Over the last five years more information and data availability has meant that there is more exposure. This drives interest which, in turn, drives investment. We now have teams who are partnered globally, developing skills and have business models which are scalable.”

Olufunmi Adepoju, managing partner, PearlMutual Consulting, built on the affect AfCFTA will have. She said, “Each government needs to ensure that while this is a great opportunity, they need to look out for local business as you don’t want to open the market for everybody and then begin to lose the local market. This can be done by providing adequate infrastructure, reducing multiple or duplicate taxes on local businesses and helping to facilitate business’ access to finance.”

Facilitating growth

Commenting on the role of incubator funds to help develop African businesses, Adenike Sicard, managing partner of Sinclairs BVI, said, “An incubator fund is mainly used for investment managers as a low cost option to set up and also develop a track record without having to comply with onerous regulations. Once a track record is established, they can then develop and transition into a bigger fund, get regulated and

attract a higher network of investors.”

“Incubator funds are very easy to access, and BVI is one of the best offshore jurisdictions to launch these funds because of the speed, economy and ease of which you can set them up.”

“My advice to businesses is to encourage steps to scale up quickly by looking at what are the products available to meet your needs. BVI has six different types of products for this.”

Jeffrey Kirk, managing partner, Appleby (BVI) Limited, noted that access to finance will be pivotal within AfCFTA for African businesses, and this where international finance centres (IFCs) such as BVI can offer a lot of added value.

Kirk added, “According to a 2019 report published by the Overseas Development Institute IFCs have a crucial role in businesses reaching that financing and can create a unique venue for investors, both private and public. The report stated that IFCs contributed some US\$1.6 trillion in investment between 2007 and 2014 and boosted GDP by US\$400bn in developing countries.”

Giving advice to upcoming organisations, Austin Okere, founder, CWG PLC, said, “In regards to starting a business it is important to recognise a problem and then provide a solution that can lend itself to commercial success. It is about looking for a problem, solving it and then condensing a business around it. After this, establish a minimal viable product and, when the minimal value is proven, you can start looking at value propositions, partnerships and resources you need. Then you can approach an incubator fund once you have reached the point when you need to scale it.”

Understanding risk

Ayodeji Adelakun, executive director & group chief financial officer, GZ Industries, said that

the business environment is becoming more complex which has led to increased risk levels in the operating environment for businesses. This, however, creates opportunities for businesses that are able to manage these risks efficiently.

“This is one major reason investments in emerging markets of Africa command higher returns compared to developed markets – because of the volatility of the environment which commands a higher risk premium. What sets businesses apart is their approach to risk management. If you have two businesses in the same industry and exposed to the same risk complexities, what will set one apart is their attitude and approach to risk management, and this could determine the one that will be successful and the one that will fail.

“So how should an organisation approach and mitigate risk? First of all, risk awareness and management must be imbibed in the culture of a business: a methodological approach to identifying and monitoring enterprise risk, with a defined risk management framework that captures an organisation’s risk policy, risk appetites and its risk governance must be in place. There must be orientation around this from top to bottom.”

Kirk added, “In regards to risk mitigation, what we see with our clients is that there is clear focus and gaze at Africa. This is a time for opportunity and a time for investment. It doesn’t make sense to be overly cautious. All international investors see opportunity in Africa, and it makes sense that people within Africa invest also.” ■

To hear about the challenges and opportunities for East Africa, be sure to attend the East Africa CxO Roundtable at the end of October: <https://www.alaincharlestraining.com/webinar/east-africa-bvi-finance>



EASY TRANSPORT



EASY USE



EASY LOAD

E-SERIES MOBILE MIXING PLANTS



E015



E025



E050



SEVENTY



**DIFFERENT MODELS & INSTALLATIONS FOR MANY USES
CONCRETE - COLD ASPHALT - CEMENTITIOUS MIXTURES**



Supporting Africa's supply chains

The logistics sector's return to normality has been marked by the adoption of innovations in order to maximise efficiency.



The onset of Covid-19 disrupted every facet of life and industry, and was felt keenly within the logistics sector. With lockdowns imposed and facilities closed or running at reduced operational capacity, warehouses and supply chains struggled to meet demand and the movement of goods was restricted. Since the peak of the pandemic last year, this sector has witnessed a slow return to normality as infections decline, however some trends born out of such troubled times are here to stay.

Before the pandemic began, the supply chain was already embracing new technological developments, such as the use of e-commerce and shopping online, which were being introduced to Africa. However the pandemic accelerated this tech-driven revolution, with the advantage to working online and automatic operations apparent.

According to the IFC, this has increased investment in technology such as IoT, cloud computing, automation, and data analytics as well as, in the longer-term, robotics, drones, and autonomous vehicles, all of which have the potential to enhance supply chain efficiency and reduce the exposure to labour shortages.

Trasnet, a South Africa logistics operator, was crippled by a cyber attack in July. Associated websites of

the company were down for some time, internal systems were affected and equipment and information was damaged, forcing the company to switch to manual operations. The result was widespread disruption to certain goods in ports and constraints to warehousing were felt for some weeks after. While this is no cause for celebration, and perhaps should serve to highlight the importance of cyber security for all industries, it does indicate the

reliance on technology within the supply and distribution sector and the importance of data and automotive technologies that are surely set to become a mainstay in warehouses across Africa.

The technological wave driving business

The benefits of introducing technological and digital innovations into warehouse services and supply chains are many and can serve to bring efficiency to business while reducing costs. For instance, according to Kardex Remstar, automated storage and retrieval systems can recover up to 85% of existing floor space when compared to standard shelving, can help solve labour challenges and manage unpredictable spikes in demands.

DSV is one such company that is leaning into this trend. Recently it consolidated its Guateng operations

“ We have packed the new DSV facility with solutions such as an innovative sorter that can handle 12,000 packages every single hour.”

KEITH PIENAAR, CEO OF DSV AFRICA

in South Africa into a centralised facility, the largest of its kind in Africa. Situated near O.R. Tambo International Airport, with easy access to the East and West Rand, the logistics centre consists of approximately 130,000 sq m of buildings and covers supply chain solutions managed under one roof.

CEO of DSV Africa, Keith Pienaar, commented, “The inauguration of DSV Park Gauteng once again underlines DSV’s strong commitment to South Africa and our will to grow the business in the region. DSV Park Gauteng consolidates several smaller offices and warehouses around Johannesburg into one large, modern logistics centre.”

“We have packed the new DSV facility with solutions such as an innovative sorter that can handle 13,000 packages every single hour. Throughout the whole building



The cross-dock sorter can handle 13,000 packages every hour.

process, we have also utilised our global experience to construct buildings where sustainability and resource optimisation have been fundamental in all processes,” said Brian Almind Winther, EVP and head of Group Property, DSV.

Field Intelligence

The effects of the pandemic were perhaps nowhere more firmly felt than within the medical industry itself. Field Intelligence recognised that Africa’s fragmented pharmaceutical supply chain

frequently caused accessibility issues for patients and front line workers and has strived to implement a simple, data-led solution to support this supply chain.

To cut through these challenges with practical live data, inventory, the company developed Shelf Life in 2017. This technology-enabled platform helped to combat pharmaceutical shortages during the pandemic by using data analytics to optimise predictions and identify irregularities in the market to get ahead of and avoid impending disruptions for its members.

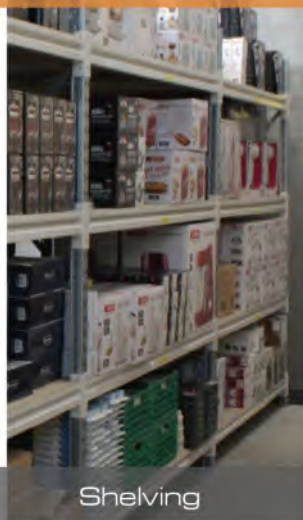
The ability of the system to do so was rewarded with membership increasing by 47% in Nigeria and 65% in Kenya and is a testament to the rapidly growing interest in such innovative solutions within the African supply chain and their ability to circumnavigate disruption. ■

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Konecranes support container terminal in Togo

Lomé Container Terminal (LCT) S.A. in Togo has ordered five more Konecranes Rubber-Tired Gantry (RTG) cranes, to be delivered in the second half of 2022.

"LCT is a customer of long standing and I'm proud that LCT continues to trust our company and our technology. When these new cranes are delivered and commissioned, LCT will operate a fleet of 32 Konecranes RTGs. Today, there are over 200 Konecranes RTGs at work across West Africa," said Antoine Bosquet, VP regional sales EMEA, Konecranes Port Solutions.

The Konecranes RTGs are identical to those already operated by Lomé. They are 16-wheel machines lifting containers 1-over-6, 7 containers wide plus truck lane, with container anti-sway provided by the Dynapilot system. They are fully electric Ecolifting machines powered by busbars and equipped with smart features Auto-steering and Stack Collision Prevention.

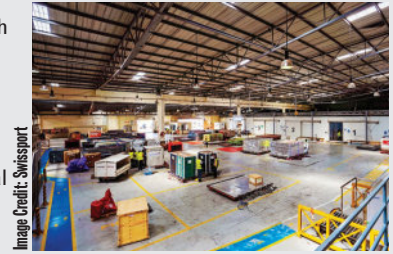
LCT is part of Terminal Investment Limited (TiL) which, since its founding in 2000, has become one of the largest terminal businesses globally.



There are more than 200 Konecranes RTGs at work across West Africa.

SWISSPORT RECEIVES FRESH CERTIFICATION IN KENYA

Swissport Kenya has been awarded the IATA CEIV Fresh Certification for perishable cargo, making it the only ground handler with this certification at Nairobi's Jomo Kenyatta International Airport and the first ground services provider in sub-Saharan Africa to attain the standard.



The certification scope includes Swissport Kenya's Cargo Handling facility and Ground Services processes.

Nairobi is a major hub for perishables in East and Central Africa and perishables represent about 80% of cargo handled by Swissport in Kenya.

"In February 2020, Swissport's operations in Nairobi were awarded with the IATA CEIV Pharma certification, establishing the first Swissport Pharma Center on the African continent. With the added CEIV Fresh certification, we are now very proud to offer our customer airlines a secure and certified cool-chain process across the board", commented Racheal Ndegwa, CEO of Swissport in Kenya.

"With 27 years of experience handling perishable goods in Nairobi, this certification attests to the organisation's robust, efficient and sustainable processes for handling perishable cargo."

This recognition underwrites Swissport's ambitions to ensure that delicate and short-shelf life products reach their final destination unspoiled and with minimal waste.

SEC Exports delivers 'wow factor' storage installation

SPONSORED CONTENT

SEC Exports Ltd has designed and installed a highly efficient storage solution for Fuji Oil, at their production facility in Ghana, using world-leading Dexion products to deliver a two-tier shelving system with the addition of an independent mezzanine floor.

For Fuji Oil, Ghana, it was vital that the storage solution would meet a number of criteria including the provision of a flexible environment conducive to the storage of numerous plant spare parts of different sizes and weights, and improvement in the retrieval time of stored spare parts when needed, to minimise plant downtime. Additionally, the installation of this storage solution had to be a significant pre-requisite for rolling out a new maintenance management software solution, linking stock availability to maintenance activities.

In order to ensure minimal downtime of plant and machinery, often in remote locations, and maintain everyday operations, a significant range of expensive spare parts needed to be easily accessible. Therefore it was vitally important that the storage solution design should allow easy identification and retrieval of parts, as well as optimising the warehouse cube to ensure full usage of the available space, maximising the



The equipment and materials were delivered directly to the facility and installed by SEC's local team.

number of parts that could be stored.

SEC Exports analysed the range of product requirement for storage and designed a shelving solution to encompass the ground and first floors with over 100 bays of shelving, plus one aisle of Dexion pallet racking for additional storage of larger parts. The equipment and materials were delivered directly to the facility and installed by

SEC's local team, meeting the expectations of Fuji Oil for a well planned and executed project.

"It fits the global standard of Fuji Oil and everyone who comes in to see the installation says 'wow!'" commented Prosper Ocloo, Engineering Manager, Fuji Oil Ghana. ■

For more information, visit: www.sec-exports.co.uk

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Developing countries have high grassroots cryptocurrency activity.

Crypto goes sovereign

The rise of cryptocurrencies seems an unstoppable phenomenon. Now, sovereign nations are starting to adopt a digital coinage future. Stephen Williams reports.

Cryptocurrencies are digital or virtual currencies secured by cryptography, which makes them nearly impossible to counterfeit. Most cryptocurrencies are decentralised networks based on 'blockchain' technology – a distributed ledger system held by a disparate network of computers.

Developing countries have high grassroots cryptocurrency activity. Venezuela represents an excellent example of what drives cryptocurrency adoption in developing countries and how citizens use it to mitigate economic instability.

A defining feature of cryptocurrencies is that they are immune from any central government interference or manipulation.

But that is changing and a number of countries – especially those that rely heavily on remittances and with economies prone to inflationary pressures – are considering officially adopting and regulating digital currencies.

Nigeria

On the 4 October, Nigeria launched its eNaira cryptocurrency. Originally scheduled for 1 October, but delayed so that it did not clash with independence celebrations, Nigeria has seen a cryptocurrency boom (despite the bank originally banning crypto-transactions) as people sought ways to escape the weakening naira and offset the high cost of living and unemployment in Africa's most populous country.

From October 4, customers are able to download the eNaira app and fund their mobile wallets using their existing bank accounts, according to CBN governor Godwin Emefiele.

Emefiele has also advised all

Nigerian businesses and institutions that they must be prepared to accept eNaira payments just as they accept paper currency.

Nigeria's central bank has long been concerned about the impact of cryptocurrencies that are quickly becoming popular among tech-savvy young residents.

Young Nigerians continue to explore new ways to make money and store value in the face of double-digit unemployment and inflation – as well as the collapse in the value of the local naira.

Earlier this year, Nigeria's central bank ordered lenders to stop facilitating cryptocurrency transactions over allegations it was

being used for money laundering and terrorist financing.

Nigeria selected global financial technology company, Bahamas-based Bitt Inc. for its digital currency launch known as "Project Giant" after more than three years of research into the digital currency.

The CBN governor, Godwin Emefiele, was forced to make a public statement (denying scurrilous press reports) that he did not own Bitt Inc. but it is thought that the CBN has invested in the company.

"The CBN will rely on the company's tested and proven digital currency experience, which is already in circulation in several countries," a spokesperson for the Central Bank of Nigeria said.

The new eNaira will be issued by the CBN as legal tender like the current naira currency and will operate on the Hyperledger Fabric Blockchain. It will also follow the official exchange rate.

Emefiele says eNaira will benefit Nigeria's economy in many ways,

“A number of countries are seriously considering officially adopting and regulating digital currencies.”

from cross-border trade to making remittance inflows more efficient.

The importance of remittance flows is illustrated by the Boston Consulting Group's 2020 research that reported, "The ultimate size of the market across Africa could be as high as 850 million customers, supporting about US\$2.5 trillion to US\$3 trillion in transaction volume and US\$25bn to US\$30bn in yearly revenue from the financial transactions alone," (although not all transactions are remittances).

Remittances sent to Nigeria fell to US\$17.2bn last year, the lowest level since 2007. This was partly due to Covid-19 pandemic fallout, but observers say Nigerians abroad are moving away from official channels to embrace cryptocurrency transactions – seen as faster and more efficient.

Ghana

It is a familiar, if a more cautious, story from Ghana where the central

“I think there is a lot more emphasis on looking at digital money which is backed by the state.”

ERNEST ADDISON, GOVERNOR OF THE BANK OF GHANA

bank (BoG) has for many years been considering the adoption of an eCedi.

In 2018, the BoG stated, "The Bank of Ghana is currently investing a lot of resources to further enhance the payments and settlements system, including digital forms of money and also to introduce cyber security guidelines to safeguard electronic and online financial transactions."

More recently, in June, the Bank of Ghana's governor, Ernest Addison, said the bank is "in the advanced stages" of introducing a digital currency.

"I think there is a lot more emphasis on looking at digital money which is backed by the state," Addison stated.

Ghana is looking at allowing a digital currency pilot following the launch of a fintech regulatory and innovation live testing pilot. The pilot will give preference to projects using blockchain technology from early in the New Year.

The rest of the continent

There is still no sign that Africa's strongest economy, South Africa, is considering a sovereign

cryptocurrency. In June 2021, South Africa's Intergovernmental Fintech Working Group (IFWG) unveiled a staged approach to regulating crypto asset service providers.

The paper laid out 25 recommendations "for a revised South African policy, legal and regulatory position on crypto assets and related activities."

Another four African nations – Morocco, Tunisia, Kenya, and Madagascar – are still in the research stages, while Tanzania's president, Samia Saluhu Hassan, has told the country's central bank, the Bank of Tanzania, that it must be prepared for the emergence of cryptocurrencies and begin preparations for their adoption.

The high cost of sending cash home from overseas – an important catalyst for development and social uplift – has emerged as a top motivator for the growing popularity and adoption of virtual currencies in the continent. ■

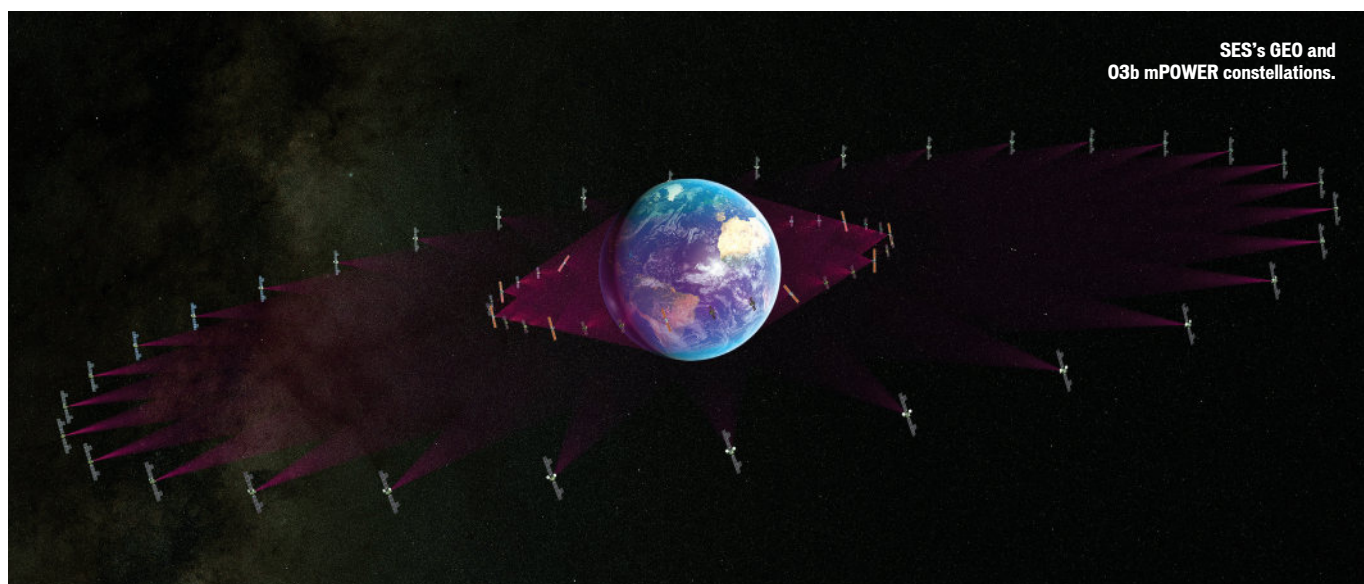
The adoption of virtual currencies is becoming increasingly popular on the continent.



Image Credit: Adobe Stock

Satellite connectivity to play crucial role in empowering the African continent

Caroline Kamaitha, Vice President, Fixed Data Africa, SES Networks, explains how Africa's connectivity landscape is changing to transform people's lives and businesses.



In the last few decades, the connectivity landscape in Africa has changed dramatically. The continent has seen multiple fibre-optic cables laid and many satellites launched, including SES's own O3b constellation in 2014, resulting in a rich supply of connectivity.

O3b originally stood for connecting the "other three billion" people and SES has been working together with Telcos, MNOs, ISPs, etc to bring connectivity to the most remote locations in the world. Governments and businesses have leveraged this connectivity to connect people and communities, transform industries while propelling economic growth and business innovation seen in Africa today.

As the only satellite constellation operating 8,000 km away from Earth and in the Medium Earth Orbit (MEO), SES's O3b has been delivering low latency and high throughput services across Africa and beyond. It has been rewarding to see telco operators roll out 3G/4G networks in

underserved areas while service providers, government and institutions players provide faster broadband services to close the digital divide. It has also enabled mining and energy customers to digitalise their businesses.

SES are already a trusted partner to the world's leading telecommunications companies, mobile network operators as well as governments, connectivity, and cloud service providers. While serving customers such as Airtel, Gilat Telecom, Orange and Vodacom, SES has helped to drive

digital inclusion in Africa and this connectivity has been aiding business opportunities, education, health access, and tourism: these are all important factors impacting the economic development of any country, region, or continent.

With enterprises and governments around the world adopting the cloud across their operations, SES has partnered with leading cloud services providers to deliver secure and dedicated connectivity to their customers' demanding cloud-based applications that span dense cities to remote, rural locations.

O3b mPOWER

Now SES is preparing to launch O3b mPOWER, building on the commercial and technology success of O3b that has positively been impacting the world since 2014.

After the launch of O3b services, we've been delivering high-quality, reliable connectivity services to governments as well as companies in telco, oil, gas, and mining industries. Together with our African partners, we have truly transformed people's lives and businesses.

With O3b mPOWER, SES will offer even more connectivity and high flexibility. The enhanced flexibility and scalability of O3b mPOWER will truly connect Africans living in underserved areas in the most economically viable manner and when launched this year, its connectivity is set to further disrupt the telecommunications industry within Africa. ■

“The enhanced flexibility and scalability of O3b mPOWER will truly connect Africans living in underserved areas in the most economically viable manner.”

CAROLINE KAMAITHA, VICE PRESIDENT, FIXED DATA AFRICA, SES NETWORKS

For inquiries, contact
Marketing.Africa@ses.com

EEA expands provision of solar energy in sub-Saharan Africa

ENGIE Energy Access (EEA) has significantly expanded its customer base to deliver solar energy to 6.5 million people in sub-Saharan Africa, within one year of integrating its decentralised energy business.

EEA has acquired approximately 200,000 new customers across its nine markets of operation in Africa throughout 2021, despite the challenges that Covid-19 created – bringing its customer base to more than 1.3 million. It saw a growth in customers in Uganda to 600,000, Zambia to 250,000, Benin to 150,000, and Mozambique to 50,000.

In April 2021, EEA began rolling out its new solar home system (SHS) customer brand, MySol, replacing the Fenix Power and Mobisol brands. With MySol, EEA offers a wide range of PAYGo SHS throughout Africa, catering to all kinds of customers. EEA has equipped 13 villages with its ENGIE PowerCorner mini-grids to date, comprising 3,000 households and 200 businesses. In the past year, it has successfully strengthened the mini-grid pipeline, securing more than 180 additional projects – including 60 mini-grids approved in Zambia and 11 more in Benin. Three mini-grids are under construction in Benin, Nigeria and Uganda, with more pilots on the way.



Image Credit: EEA

EEA is now providing 6.5 million Africans with clean energy.

NEW POWER PROJECT IN GABON

Wärtsilä and Gabon Power Company (GPC) have signed a Concession Agreement with the Government of Gabon for the development, supply, construction, operation and maintenance of a 120 MW gas power plant. Wärtsilä, jointly leading the project development with GPC, will build the plant under a full Engineering, Procurement, and Construction (EPC) contract and will then operate and maintain the plant under a long-term 15-year Operation and Maintenance (O&M) agreement. The EPC contract and the O&M agreement will be signed in 2022 with Orinko S.A., the joint venture between Wärtsilä and GPC.

The plant will be located at the industrial site of Owendo, close to Libreville, the country's capital. When commissioned, the plant will supply electricity to Société d'Énergie et d'Eau du Gabon (SEEG), the Gabonese utility, under a 15-year Power Purchase Agreement. The project represents one of the largest of its kind in sub-Saharan Africa and a sizeable energy infrastructure project for Gabon.

"There is currently a structural deficit between the supply capability and the demand for electricity, which is increasing year by year. This project will play an important role in bridging this deficit, and some 600,000 people will ultimately benefit from a more sustainable and economical electricity supply delivered to SEEG. The plant will replace rented generation assets by SEEG and bring significant benefits, in line with Gabon sustainability ambitions," said Marcelin Massila Akendengue, general director, Gabon Power Company.

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A time of transition

Powering Africa in 2022 and beyond: how technology, innovation and uncertainty will characterise energy development in the continent through the coming decade and beyond.



Africa's power sector is likely to be characterised by increased innovation and ongoing uncertainty in the years ahead, as clean technologies start to displace traditional thermal energy.

It creates an uneven future outlook, but the good news is that the funding is there for the right projects.

For policymakers, economic development remains priority number one - but not at all costs. The advent of more competitive renewable energy, and a pressing political agenda determined to get to grips with climate change, will steer overall development.

Yet some context is needed here. Africa's power sector contributes less than 2% of global CO₂ emissions, and South Africa accounts for a large proportion of that. Thus, in

objective terms, global warming is not top of the agenda for most African states; economic and social development remains the number one goal.

But, luckily, the least-cost power sources are now also the most environmentally sustainable, according to Professor Anton Eberhard of the Graduate School of Business at the University of Cape Town.

"Solar and wind energy, and

geothermal in some countries, are the cheapest grid-connected sources of electricity. Solar PV offers an increasingly competitive option for mini-grids and off-grid applications."

The variability of solar and wind energy, however, needs to be complemented by flexible resources such as hydro, pumped storage and batteries, and some countries are continuing to invest in gas turbines.

“Solar and wind energy, and geothermal in some countries, are the cheapest grid-connected sources of electricity.”

ANTON EBERHARD, PROFESSOR, GRADUATE SCHOOL OF BUSINESS AT THE UNIVERSITY OF CAPE TOWN

It is creating an increasingly fragmented infrastructure, incorporating diverse generation and multiple grid systems, both large and small.

Perhaps there are some certainties, though. "New coal power plants are unlikely to be financed," says Eberhard. "And nuclear energy is mostly a pipe dream in Africa, with the exception of North and South Africa.

"Conventional nuclear reactors are too expensive and their scale is a poor fit for the small power systems of most sub-Saharan countries. Small modular nuclear reactors are not yet commercially available."

Battery storage

In some ways, Africa now occupies a unique place in the world's energy transition.

Many countries have leapfrogged the development of conventional energy to focus almost exclusively on renewable energy.

However, this itself can present its own problems, notes Corinne Duvnjak, counsel in the Clifford Chance international projects team in Paris.

“With renewable energy comes the associated challenges of intermittent renewable energy and the difficulty of integrating variable sources of electricity onto the grid,” she says.

A key to solving the problem of intermittent renewable energy resides in battery storage. “As battery storage options become more reliable and less costly, we can expect a large number of renewable energy plants to convert to battery storage, or new renewable energy projects being developed from the outset with battery storage technology in the coming years.”

Indeed, battery storage is already proving itself in some challenging environments.

Caterpillar dealer Tractafrica recently installed 7.5 MW of battery energy storage capacity for the micro-grid at Barrick Gold’s Kibali

mine in the Democratic Republic of Congo (DRC).

This provides grid stability, while a Cat Master Microgrid Controller integrates up to 45 MW of power generated by three hydroelectric stations and 36 Cat 3512 diesel generator sets.

Other mining and industrial groups will be watching closely to see how the micro-grid performs.

Creative solutions

At the the same time, some large thermal projects are still being completed, while hydro is also attracting significant funding - the grandest of them all being Ethiopia’s controversial Grand Ethiopian Renaissance Dam (GERD), which is reported to be edging closer to commissioning.

In South Africa, Voith Hydro recently completed the modernisation of three generators at the Drakensberg pumped storage plant, the second largest such facility in the country with an installed capacity of 1,000 MW.

Given its historical dependence on coal, South Africa perhaps faces the greatest transition challenge of them all, although the recent

“DFIs are still the lynchpin for standard project financing across much of Africa, and they are slowly shying away from gas-fired projects.”

SCOTT MACKIN, MANAGING PARTNER, DENHAM CAPITAL

discovery of offshore gas may help in the years ahead.

Financing is also adapting to all the changes, as the power sector embraces new technologies and distances itself from others.

Development finance institutions (DFI) remain integral to making things happen.

“DFIs are still the lynchpin for standard project financing across much of Africa, and they are slowly shying away from gas-fired projects, having long ago stopped funding coal-fired projects,” says Scott Mackin, managing partner, Denham Capital.

Financing may still come from Asian export credit agencies or the like and some commercial banks, he adds. However, the institutional pressure against financing even gas

continues to mount.

“Still, given renewables’ intermittent nature, gas and hydro are certainly necessary until energy storage technologies mature and become capable of filling the large gaps.”

Hydrogen economy

In the longer term, it is expected that the advances in hydrogen will impact Africa’s energy sector greatly.

“The most notable development shaping Africa’s energy future is the research, development, and implementation of hydrogen,” says François-Guilhem Vaissier, a partner at White & Case.

“The current leader is Morocco, which continues to build momentum, particularly with green hydrogen due to an ambitious policy, massive planned investments, and strategic support from Germany. There are even plans to develop the first high-volume green hydrogen production plant in Africa. Other African economies should follow soon.”

One of them is Egypt. Here, MAN Energy Solutions and its strategic partners are working on a pilot project to produce green hydrogen to fuel domestic tourist buses. It comes after Egyptian President Abdel-Fattah el-Sisi called for the establishment of an integrated green hydrogen strategy, utilising renewable energy instead of fossil fuels.

Ghassan Saab, head of MAN Energy Solutions’s energy business in the region, called it an exciting venture “in a country that has recognised what an incredibly important role green hydrogen will play on the path to a climate-neutral global economy.” ■



Caterpillar grid stabilisation system at Barrick Gold Kibali mine.

Image Credit: Caterpillar

Power broker

Dr Kevin Kariuki, vice president for power, energy, climate and green growth at the African Development Bank (AfDB) talks to African Review about supporting the energy transition.

African Review: What are the key constraints holding back Africa's power sector development today?

Dr Kevin Kariuki: The shortage of bankable projects is the biggest constraint to energy infrastructure development. Around 80% of infrastructure projects on the continent fail at the feasibility and business-plan stage and only about 10% reach financial close. AfDB is supporting project preparation for public and private interventions through various instruments, including trust funds and climate finance facilities to remove market barriers, build a more robust pipeline of projects and improve the risk-return profile of individual investments. One example is the bank's Sustainable Energy Fund for Africa (SEFA). It has, to date, committed US\$77mn across a portfolio of 56 projects in over 30 countries. This is expected to lead to investments of around US\$1.6bn, 250,000 new connections providing access to about 1.5 million people, and 600 MW additional generation capacity.

AR: How are you balancing the goal of boosting power supply on a large scale against growing climate change concerns?

KK: The bank is deploying dedicated initiatives to accelerate the clean energy transition. These include the Desert to Power initiative, which aims to turn the 11 countries of the Sahel into a renewable energy powerhouse. The bank has made significant progress to secure a political mandate at the level of the G5 Sahel heads of state by setting up the implementation structures with a dedicated Desert to Power taskforce and steering committee; developing clear implementation roadmaps endorsed by the

countries; mobilising a large coalition of technical and financial partners, with Power Africa playing a central role; and approving a first set of projects, such as the Djermaya solar project in Chad, that country's first private sector independent power producer (IPP) project.

AR: To what extent are conventional, large-scale thermal power projects going ahead in light of environmental challenges?

KK: Africa's natural gas reserves can play a crucial role in the continent's energy transition and socio-economic development — while adhering to the climate targets set out in the Paris Agreement. The continent's significant natural gas resources can provide flexible power generation that can anchor large-scale intermittent solar and wind generation. In addition, gas is an ideal fuel for countries with industrial ambitions, as it is a valuable feedstock to produce fertilisers and petrochemicals, and an efficient source of process heat for energy-intensive industries like steel and cement production. Furthermore, it can be used as a fuel in the transport sector.

AR: How significant a role will renewable energy play in expanding universal access?

KK: By far the most significant recent trend in energy infrastructure

is the dramatically declining cost of renewable generation, especially solar and wind. As a result, renewable generation has become cost competitive compared to conventional sources of energy. Indeed, subject to addressing their intermittence, these sources have limitless potential. Renewable energy presents a solution to accelerate universal electricity access across the continent while augmenting energy security at the national and regional levels and diversifying the energy mix. The International Energy Agency (IEA) projections sourced from its Sustainable Development Scenario in the World Energy Outlook indicate that by 2030 renewables could provide about 54% of Africa's capacity. From an electricity access perspective, the declining cost of solar has enabled rural electrification through distributed renewable energy solutions (solar home systems, mini- and off-grid systems) to an extent previously unimaginable.

AR: How do you see the role of the private sector in boosting power coverage?

KK: Africa's vast untapped energy resources, coupled with the urgent need to provide electricity access to hundreds of millions of Africans, constitute an investment market worth billions of dollars. Development finance institutions,



Dr Kevin Kariuki, vice president for power, energy, climate and green growth at the African Development Bank.

including AfDB, can extend 'catalytic' capital to the private sector to improve the bankability of projects and programmes. Where market barriers to financing on commercial terms prevail, concessional finance can often be mobilised alongside the AfDB's participation so that the 'blended' financial package can improve the risk/return equation in any given project, either by lowering financing costs and/or enhancing risk mitigation.

AR: What other trends could shape Africa's power sector going forward?

KK: Affordable solar technology complemented by cellular-based pre-payment platforms make distributed renewable energy feasible. The role of distributed renewable energy is crucial — and now recognised by all actors.

Projections vary but estimates from the IEA indicate that half or even two-thirds of new connections through 2030 will come from distributed renewable energy solutions. Digitalisation is another increasingly important factor, which will contribute to smart grids and facilitate the integration of several sources of energy. ■

“Africa's natural gas reserves can play a crucial role in the continent's energy transition and socio-economic development.”

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Connecting the dots

Grids, mini-grids and micro-grids: How Africa's transmission and distribution infrastructure is integral to bringing power to the people...and how it is now opening up to investors.

The opening to the private sector of the transmission infrastructure market, which has so far been a natural monopoly of governments, is one area tipped to grow in the years ahead.

Considering the amount of generation capacity required to meet Africa's development needs, market watchers foresee a big opportunity for investors in transmission and distribution (T&D) development, including regional interconnectors that will facilitate regional power trade.

Regional networks such as the Southern African Power Pool (SAPP) have been operating for years, though trade has typically been modest.

Now, new investors are taking an interest in this emerging area.

Gridworks, wholly-owned by CDC Group, the UK's development finance institution, was set up to address the central challenge of energy markets in Africa – unreliable, under-funded electricity networks.

Despite recent investment and improvements in generation, the lack of progress in developing T&D infrastructure has become a significant bottleneck to economic development across the continent; these networks have suffered from decades of historic under-investment.

"Gridworks' top priority is to create sustainable and investable opportunities in T&D, both on- and off-grid," the company's CEO Simon Hodson tells ATR.

The company works with governments, utilities, project developers, multilaterals and other investors to bring much-needed capital and expertise to the T&D sector.

"Our mandate allows us to take a longer-term view and to develop innovative solutions. This could include developing mini-grid concessions; bringing private sector funding into transmission; and making grids more sustainable and reliable, thereby creating investable and replicable models that allow for greater deployment of renewables."

Greater urgency

Two things have accelerated the need for African governments to consider opening their T&D sectors to private sector investment, he adds.

The first is Covid-19 and the pressure it has put on government resources. The second is the push to reach the UN's Sustainable Development Goal (SDG) 7, which calls for access to affordable, reliable, sustainable and modern energy for all.

Many countries are waking up to

the fact that they can no longer rely on support from donors and concessional multilateral funding to prop up an unsustainable T&D sector but will need to reform and make sustainable their utilities to meet these objectives, says Hodson.

"In order for private sector capital to flow, African governments can put in place the right environment and appropriate regulatory frameworks," he says. "This isn't happening consistently, but we're seeing more opportunities and more openness to reform."

He adds: "We're also seeing a growing number of alternatives to traditional utilities in the form of distributed renewable energy. These new models have the potential to become sustainable and viable investments, but they need critical mass and the right regulations to succeed. We were able to recently create Moyo Power - a large-scale solar mini-grid utility that will serve over half a million people in three cities in DRC - because we had that combination of size and regulation."

Africa style

In true African style, what's likely to evolve over the longer term is a more creative, hybrid model encompassing a mishmash of



Simon Hodson, CEO of Gridworks.

network systems.

In the medium term, African networks are unlikely to look like traditional European or American models, reckons Hodson.

"We're seeing master plans from many countries that forecast local extensions of the main grid, alongside a growing role for mini-grid and solar home systems. This combination is a function of what different customers can afford to pay."

The advent of battery storage is also likely to play a major role. The lack of interconnections within and between countries leads to systemic inefficiencies that can be mitigated by the use of batteries.

There may be a point in the longer-term when there are large-scale, regionally connected networks, but, crucially, these networks will need really significant capital increases.

"This capital won't come unless countries move towards creating regulated business models that are sustainable and investable. It's here that donors, multilaterals and investors must coordinate to help them do that."

As things stand today, 52 out of 54 of Africa's network utilities are financially unsustainable, and the push to fund access, without fixing sustainability, is making those utilities less investable, leading to higher subsidies and little real progress.

"Sector reform, cost-reflective tariffs and efficient utility operations are all needed to bring Africa's energy sector close to realising its potential." ■



The Tandii solar plant, Namibia, built and financed by SPS.

Bringing solar power to African operations

Solar solutions provider, Mantrac Group, is taking advantage of the sunny African climate by offering support for large solar projects.

As one of the sunniest continents on Earth with some of the planet's most cloud-free areas, Africa is well placed for businesses looking to operate on clean, environmentally friendly power. Finding a reputable company that can evaluate a site, customise a design, install the solution, train staff and offer financial support is key.

Mantrac Group, is one such company, and has seen a rise in the number of businesses looking to tap into the power of renewable energy. As an end-to-end solutions provider and authorised Caterpillar dealer operating across three continents in 12 territories, the Egypt-based company is well versed in finding the perfect solution for its customers.

Benefits of solar systems

Years of expertise mean Mantrac's Engineering, Procurement, and Construction (EPC) services far outweigh the obvious benefits of harnessing renewable energy to power businesses. Renewable solar energy systems like those offered by Mantrac Group decrease costs as well as enhancing efficiency and promoting profitability in virtually every industry, application and site condition.

As hybrid systems, they can be integrated into existing power systems and can work independently or in conjunction with existing sources. Solar panels are also ideal for remote areas, where extending power lines to connect to the grid is too expensive.

Installation in Egypt

Mantrac's systems have successfully powered several applications, including autonomous trucks on mining sites and production services in manufacturing plants, and have



Mantrac's systems have been installed for businesses in Egypt, Ghana and elsewhere.

Image Credit: Mantrac Group

already been installed for big players in Egypt, Ghana, and elsewhere.

In Egypt, the company designed and installed a 1.5MW photovoltaic (PV) power plant in Marsa Alam for Future Group Travel, who wanted to decrease their dependability on gensets and implement a more advanced, sustainable and cost-effective solution.

Since there was no government power plant nearby, Mantrac proposed an independent 1,500 kW solar power station. This would be combined with the gensets to create a hybrid system, equipped with ManConnect for remote monitoring, analysis of CO2 emissions and diesel fuel savings. More than 4,000 PV panels were entirely ground-mounted, making use of available space without adding infrastructure. Two power control units were made to manage the entire system, connected by nearly 20 km of AC and DC cables combined. And to overcome the risk of power

interruptions to the PV power plant, Mantrac installed a cloud forecasting system that increases the system reserve to the diesel gensets in unfavourable and cold weather conditions. A camera system was also installed as a safety measure to trigger alarms for operators.

The solution brought 30% savings for Future Group Travel, reducing their energy expenditure to the amount they used to spend on a single genset.

Solution in Ghana

Elsewhere in Ghana, Mantrac installed the largest solar installation in Accra for Spaceplast Ltd, facilitating a significant reduction in the company's electric bills. To bring Spaceplast immediate electricity savings, Mantrac studied, designed and executed the project in just seven weeks.

First, the company carried out a feasibility study to identify the

lowest-cost option that would meet their goals for long-term sustainable success. A solar powered solution was designed, sourcing the highest quality materials from USA, Italy, Germany, Belgium, Turkey and Egypt. It comprised Cat thin-film PV modules, string inverters, mounting systems, totalising panels, and a DC combiner box and cables. In total, 3,058 solar panels were used. To avoid infrastructure costs, the rooftop was used as the mounting area for the solar panels.

The solution reduced Spaceplast's electricity costs by 20%. In the future, the firm plans to add more solar panels and technology from Mantrac. ■

To find out more about Mantrac's expert solar EPC solutions and to see how much you could save, visit their website to try their online solar saving and payback calculator: <https://www.mantracgroup.com/>

Deal making in Africa's energy sector

When the deal pipeline itself resembles pieces of a puzzle, as new and established energy technologies compete for acceptance, how are banks and specialist financiers getting projects over the line?

Deal making in Africa's power sector has never been for the faint of heart. But projects have never been more complex either, amid mounting environmental pressures that continue to exert influence over which deals can get done.

"The pursuit of renewable energy has not affected the structuring of power deals in Africa, but it has brought on a significant shift in their financing," says François-Guilhem Vaissier, a partner at White & Case.

"In light of the global push for renewable energy, multilateral financial institutions increasingly focus on promoting innovative energy technologies, for instance, eschewing financing any type of coal projects. We are seeing this trend currently while working on four hydropower projects across Madagascar, Mali, and Gabon."

The firm's latest work reflects some of these trends, with projects across the renewables space and conventional thermal energy.

Recently, it completed the structuring and financing of the International Finance Corporation-backed Atinkou CCGT project, a 390MW gas-fired power plant using highly efficient combined-cycle turbine technology in Côte d'Ivoire. It also advised on the construction of four solar power plants in Niger and an onshore wind energy project in Morocco.

The energy transition has also brought with it a creativity, spurred on by environmental concerns, to shine a light on the overall sustainability of projects and their social impact, adds Vaissier.

"For example, we are currently advising on an innovative project in Côte d'Ivoire, which exemplifies this trend – a combustion power plant



Rolling out Africa's power infrastructure.

Image Credit: Pixabay/4839

fuelled by the shells of locally produced cocoa. Previously discarded as trash, now the shells do more than just produce energy – they also create an income source for locals farming the cocoa."

Groundbreaking work

Another major firm, Clifford Chance, is similarly working on a number of first-of-a-kind power projects in Africa. They include the first independent power projects (IPPs) in Burkina Faso (closed in September 2021), Benin and Chad.

It is also advising on new types of renewable energy projects such as the Niakhar solar project in Senegal, where the battery storage component is a key feature, as well as the BIOVEA biomass power project in Côte d'Ivoire. However, identifying common trends, in terms of project financing, is not always easy since African countries are all at different stages of development, with different needs.

"For example, in countries having

recourse to IPPs for the first time, payment guarantees and legal certainty are key," says Delphine Siino Courtin, a partner at Clifford Chance.

In countries which already have a number of IPPs, she says new questions are arising: such as the overcapacity generated by IPPs in territories like Ghana or Kenya, thereby putting the 'take or pay' model into question, or the limitation imposed by the International Monetary Fund (IMF) in respect of state guarantees.

"A clear trend that we see, however, is a continuing shift towards cleaner energy. In some countries, this is resulting in new renewable energy projects (in particular solar PV); in others, the focus is to convert some of the heavy fuel oil (HFO) plants into combined cycle plants or dual fuel plants allowing a shift to gas when the gas is available."

Given national and regional differences, there is no 'one size fits

all' for energy projects.

"However, as we move away from conventional thermal energy, one clear trend that we have seen throughout Africa is the reduction in the size of the projects being developed," she adds.

While there are more and more projects, they are generally smaller in size. The 300-400MW thermal energy projects have been replaced by a multitude of 30-60MW renewable energy projects, for instance.

This carries with it implications for financing. "Given the cost associated with structuring an IPP in a new jurisdiction and the lowering of energy prices across the continent, this can quickly deter renewable developers. Parties are therefore looking at ways to reduce costs, notably by bundling projects (same lenders for multiple projects or same developer for multiple projects). This has recently been used successfully in solar projects in Burkina Faso," she concludes. ■

CATERPILLAR RELEASES CAT XQP200 MOBILE GENERATOR SET

Caterpillar has announced the new 200 kVA Cat XQP200 mobile generator set, the company's first mobile power solution meeting European Union (EU) Stage V emission standards for engines used in non-road mobile machinery.

The Cat XQP200 generator set is the first in a series of EU Stage V mobile generator sets to be introduced by Caterpillar. Caterpillar engineers have delivered a fully-integrated solution optimised for performance and usability featuring engine modifications. Also, the off-engine after-treatment needed to meet the 93% reduction in nitrogen oxides and other changes specified by EU Stage V standards, has been introduced.

"The Cat XQP200 mobile generator set leverages numerous technological advances from Caterpillar's equipment portfolio to deliver consistent performance, reliability and fuel efficiency that improves the productivity of mobile equipment users," said Tom Caldwell, global general manager for electric power rental solutions at Caterpillar. "It helps our customers meet their sustainability goals while addressing current regulatory standards, which is especially timely as growing numbers of European municipalities institute low emission zones," he added.

The generator set offers numerous features that make it ideal for rental applications. It delivers increased flexibility by easily switching between 50 and 60Hz and across a range of voltages. This allows one machine to satisfy varying load requirements in diverse regions and applications, such as mining, manufacturing, oil and gas, and construction.

It is equipped with the EMCP 4.2B digital control panel, which provides all generator set controls and system indicators in a single, easy-to-access interface. Programmable logic controller functionality improves reliability



Image Credit: Caterpillar

The Cat XQP200 generator set is the first in a series of EU Stage V mobile generator sets to be introduced by Caterpillar.

and flexibility for accommodating changes in processes or application requirements. The generator set is designed with a dual-wall, open-top fuel tank that helps to protect the environment by containing spills, while coastal ingress protection enables operation in harsh conditions.

Fully tested by Caterpillar, the Cat XQP200 can be equipped with Cat Connect technology to remotely track and manage the generator set and improve efficiency. The telematics can send real-time information on fuel level, diesel exhaust fluid level, battery voltage and status.

BODY-INTELLIGENT VALVE FROM SIEMENS OFFERS ENERGY EFFICIENCY AND COMFORT

The Intelligent Valve from Siemens Smart Infrastructure, a self-optimising, dynamic valve with cloud connection, now has a unique Adaptive Flow Optimiser (AFO).

This technology, as well as new features such as automatic presetting, continuous optimisation of the delta T limitation and system-generated reports, make it possible to achieve cost and energy savings while maintaining comfort for the building occupants. Actions are autonomously evaluated and executed by the Intelligent Valve and communicated to the building operator.

"The AFO makes the Intelligent Valve more efficient and competitive than conventional pressure-independent control valves (PICV). Thanks to the automatic preset function, the valve now has the ability to automatically adjust the volumetric flow presetting during operation and to control itself. This leads up to 37% of energy savings for cooling and ventilation," said Lu Han, head of business segment connected devices at Siemens Smart Infrastructure.

The built-in learning mechanism is based on system demand and avoids maximum volumetric flow when it is not required. This reduces the probability of the delta T limitation control intervening, which would lead to a loss of comfort. Due to the automatic presetting, installation is quick and easy because the system does not need to have power and the installer does not have to adjust each valve multiple times. As a result, the valve supports out-of-the-box installation.

The Intelligent Valve's self-adjustment feature makes it easy to accommodate changes of usage and helps to continuously optimise the system and immediately detect faults and anomalies. The self-test report makes it easier to document the settings data and prove the efficiency of the system at any time. Since the report is system-generated, entry and copy errors are prevented. The RS458 interface for connection to Modbus RTU networks facilitates integration in building automation systems and improves monitoring of operating equipment anywhere in the world.

WITH FUEL AND ELECTRICITY PRICE INFLATION, SOLAR ENERGY IS BECOMING THE MOST EFFICIENT COST-SAVING SOLUTION

Mantrac is the leading expert on Caterpillar power solutions in Western & Eastern Africa with the ability to assess, advise, source, install and commission fully integrated hybrid renewable projects.



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Peace of mind, knowing that installation is done to professional standards

*While we cannot guarantee amount of sunlight needed to power solar cells, performance ratio of solar system is covered by our guarantee

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www.mantracgroup.com/solar-calculator



Work finally begins on Masama pipeline

Four years since it was put up for tender, the Water Utilities Corporation's 100 km water project from the Masama aquifer to Mmamashia has finally begun, with bulldozers busy with bush clearing in order to mark the pathway for trenching activities and associated works.

Khato Civils, the contractor for the project, has set up a base at Artesia, with expatriate engineers on site after completing a mandatory 14 day quarantine due to Covid-19.

Country manager Ishmael Maposa said they are currently finalising appointments of the workforce needed for the project, following advertisements for jobs in the local media in April, however designs and drawings for the project have already been submitted.

Mongezi Mnyani, group CEO of Khato Civils, promised to deliver a world class end product, as they have already shown with delivery of two pump stations project for WUC in the North.

Mnyani said over the years Khato Civils have invested in advanced technology like tesmic trenchers, also known as rockeaters capable of accomplishing in one day, what would otherwise take 20 excavators.

"We have all the machinery we need and are able to establish a site within one day after being appointed," Mnyani commented

The pipeline will be the first of its kind in the North-South Water Carrier 2.2 scheme to deliver sweet water from the Masama aquifer on a dedicated pipeline, ensuring that it would need minimal treatment as it will not be transferred on the same pipeline for raw water from the dams.

The Masama Mmamashia pipeline is seen as critical in the provision of reliable water supply to the heavily distressed southern part of Botswana which includes the nerve centre of the national economy, the Greater Gaborone, Kgatleng, Kweneng, Ngwaketse, Lobatse, all the way to Goodhope in Borolong.

Executors of the pipeline project have said they expect more than 500 jobs to be created directly during the various stages of the project, with Khato Civils championing a deliberate policy to recruit a chunk of the labour force from villages along the pipeline.

As an emergency project, WUC has targeted to complete the project within 12 months.



Work has begun with bulldozers bush clearing to make the pathway for trenching activities.

Image Credit: Khato Civils

TRAINING FOR ZAMBIAN CONSTRUCTION OPERATORS

The Government of Japan, the Government of Zambia, Hitachi Construction Machinery and the United Nations Industrial Development Organization (UNIDO), have joined forces to address the growing demand for skilled construction equipment operators in Zambia's construction and mining industries.

With the shift towards more capital- and skill-intensive sectors such as mining, construction, transportation and manufacturing, the demand for technical skills for the operation of heavy equipment operation has increased. However, construction and mining sector employers struggle to find skilled workers who meet modern machinery operational skills requirements.

Through a public-private development partnership (PPDP), the four-year project will align industrial skills development to the needs of the industry and the labour market. This will be achieved by jointly establishing a centre of excellence for construction equipment operator workers at the Kitwe Vocational Training Centre (KVTC). Starting from the third year of project implementation, more than 125 skilled operators are expected to graduate from KVTC on an annual basis

Hideki Hattori, company president of Hitachi Construction Machinery Zambia, said, "This partnership will enable us to further contribute to the Zambian society as part of our CSR and skills development agenda and vision. We know that this will not only be a unique achievement but also a platform to continuously engage the cooperating partners in further improvements and opportunities as we continue to operate within Zambia. We hope other companies will emulate our example and consider similar projects in other sectors within Zambia."

CONTRACT FOR U.S. CONSULATE GENERAL BUILDING IN LAGOS

The U.S. Department of State has awarded Pernix Federal, LLC of Lombard, a US\$319mn design-build contract for the new U.S. Consulate General in Lagos, Nigeria.

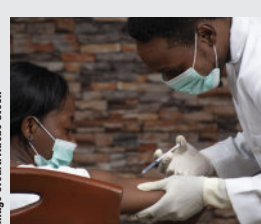
The 12.2 acre site for the new Consulate General is part of Eko Atlantic, a development led by South Energyx Nigeria Limited in collaboration with Lagos State.

The location will provide the future diplomatic campus and its neighbours with access to sustainable, modern infrastructure, including an 8.5 km seawall designed to protect the city from rising sea levels and coastal erosion.

The new Consulate General will provide a modern, resilient platform for diplomacy in Nigeria and is expected to be completed in 2027.

Ennead Architects of New York, New York is the design architect.

Image Credit: Adobe Stock

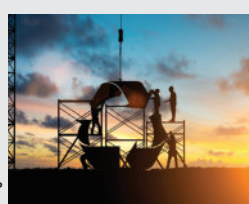


The new facility will increase capacity for vaccine distribution.

Moderna to build African facility

Moderna, Inc., has announced that it will build a state-of-the-art mRNA facility in Africa with the goal of producing up to 500 million doses of vaccines each year. The Company anticipates investing up to US\$500mn in this new facility which is expected to include drug substance manufacturing with the opportunity for fill/finish and packaging capabilities at the site. Moderna will begin a process for country and site selection soon.

Image Credit: Adobe Stock



Konecranes strives to make lifting and material flows more productive and sustainable.

Konecranes receives sustainability gold rating

EcoVadis has awarded Konecranes a gold rating for its ambitious sustainability work which has put it in the top 4% of all rated companies globally. Konecranes' rating improved from 2020 thanks to the additional policies, increased transparency and additional certifications

"Sustainability is at the core of our business. We strive to make a positive impact on society and the environment," said Rob Smith, president and CEO of Konecranes.

Infrastructure surge marks strong spell for construction industry

Rapid urbanisation, economic growth and regional integration are encouraging a wave of increasingly complex infrastructure projects which are rejuvenating the African construction industry.



According to a recent report on Mordor Intelligence, the African construction market was valued at around US\$5.4bn in 2020 and is expected to register a CAGR of 7.4% between 2021 and 2026. While Covid-19 did hamper development, Africa's construction market is rebounding better than most industries and owed, in part, to an abundance of infrastructure projects being undertaken across the continent.

The South African Government has placed infrastructure investment as a central pillar in its economic reconstruction and recovery plan. 88 projects valued at more than R2.3 trillion (approximately US\$155bn) have been planned, at the heart of which is the N2 Wild Coast Road project which will connect the Western Cape, Eastern Cape, Kwa-

Zulu/-Natal and Mpumalanga. The project is being developed by the SA National roads Agency (Sanral) and will lead to the creation of 8,000 direct full-time jobs and between 21,000-28,000 indirect jobs during the construction phase. Additionally, once completed, ongoing maintenance work is anticipated to create another 900 full time jobs and around 19,000 indirect jobs.

President Cyril Ramaphosa

recently visited the Msikaba Bridge, part of the project, commenting that construction is expected to be completed by the end of 2023 and that such works were a sign of an economy on the rise.

Elsewhere in the country, the Dysselsdop Development Project in Oudtshoorn was officially launched. This project is expected to create 534 housing opportunities upon completion in 2023 and will create a

minimum of 128 on site jobs for local residents as well as enlist 30 local subcontractors.

In Tanzania, the African Development Bank (AfDB) is stimulating the local construction industry by approving a US\$116mn loan to upgrade the southern road corridor. The five-year project will improve mobility and accessibility for around 1.1 million people within the country and neighbouring Malawi and Zambia and will include the upgrading of the 84-metre Mwiti Bridge to bituminous standards.

These are but a small selection that have made headlines in recent months and progress continues to be made on major infrastructure projects such as Egypt's New Administrative Capital, the Lekki Deep Sea Port, the Caculo Cabaça Hydroelectric Power Station, and

“Progress continues to be made on major infrastructure projects such as Egypt's New Administrative Capital, the Lekki Deep Sea Port, the Caculo Cabaça Hydroelectric Power Station, and more.”

more. Not to mention planned undertakings such as the Lagos-Calabar Railway or the Konza Technology City which are sure to ensure the construction industry is busy for years to come.

of projects to be distributed to three partner firms in each market it enters. In this way, and by championing a communications campaign to raise awareness of the challenges faced by African businesses, the company is

“Overall we are seeing the industry volumes coming back to pre-pandemic levels.”

TOLGA URAL, REGIONAL DIRECTOR AT LIUGONG DRESSTA MACHINERY, AFRICA, MIDDLE EAST, ASIA PACIFIC & AUSTRALIA

Africans to lead construction boom

In addition to this blossoming of activity, there have also been calls for increased involvement of African professionals and entrepreneurs. According to Deloitte, Chinese contractors alone constructed an estimated 30% of all major projects in Africa in 2020 and, according to the United Nations Economic Commission for Africa, only 16% of construction is accounted for by domestic private sector construction companies.

To further encourage the involvement of African entrepreneurs Khato Civils has announced a programme to mentor a new generation of African firms and has committed to giving 30% of the value

championing the cause for change across the sector and calling for African firms to lead in Africa's infrastructure rollout.

Normal business resumed

Speaking to African Review, Tolga Ural, regional director at Liugong Dressta Machinery, Africa, Middle East, Asia Pacific & Australia, described his company's experience on the continent over the last year.

Ural commented, “Despite the fact there is some turbulence due to political instability in some regions, overall we are seeing the industry volumes coming back to pre-pandemic levels. Projects are resumed and the trend to purchase new machinery has been restored. We have been seeing an upward



movement in North/West Africa as well as the Middle East.

“With the restrictions on travel being lifted, we got the chance to get back to the markets and meet the customers first hand after a long period of time. Being in the markets physically will enable us to support the dealers and the end users in a much productive way.”

Turning to the future of the African construction industry, and how his company fits within this,

Ural said, “As the African construction market keeps growing the markets are also becoming more competitive. There are many more OEM's present now compared to 10 years ago.

“With the age of technology, customers are able to reach any information they need within minutes. Due to this, the customers' demands have also changed. They require shorter lead times and immediate reaction. We as Liugong Dressta Machinery, have been successful in shortening our lead times during the high demand as well as setting up parts depots in Dubai and Johannesburg. This will give us flexibility in terms of reaching the markets and serving the end users in a fast manner.

“We have also introduced two new versions of our existing TD25M and TD15M with all new cab designs. The new cab has a functional design to keep the operator engaged on the job. Operators will enjoy the newly added features that allow exceptional in-cab comfort. The new ROPS/FOPS Integrated CAB, provides superior all round visibility which is essential for a safe and productive work environment on the jobsite.” ■



Telescopic handlers

The latest models and innovations driving African industry.

BOBCAT LAUNCHES NEW GENERATION



Bobcat is launching a new generation R-Series telehandler range providing a choice of 12 models powered by Stage IIIA engines. The new telehandlers cover lifting heights from 6 to 18 m with maximum lifting capacities between 2.6 and 4.1 tonne. The new R-Series range of telehandlers from Bobcat comprise:

Compact telescopic loaders - TL26.60, TL30.60 and TL30.70 Middle range telehandlers - TL35.70, T35.10S, T35.10SL and T36.120SL High lift telehandlers - T35.130S, T35.130SLP, T35.140S, T41.140SLP and T40.180SLP.

The new R-Series telehandlers offer agility on demand, through a newly configured transmission system, the Boom Positioning System, the updated ultra-accurate joystick, the inching function and the improved visibility from the cab. These are complemented by an enhanced inching pedal design, a higher engine brake and a new cab designed around the operator, offering optimised 360° ergonomics. Protection is assured through a protective shielding of vital components, a rigid boom structure and a robust frame with box section layout.

LIEBHERR PLACES SAFETY FIRST

Liebherr telescopic handlers boast the latest innovations to ensure that operator safety is secured. Included in these latest additions are:

Auto Power Function – automatically adjust the engine speed to the total power requirement when the operating hydraulics joystick is deflected, increasing the speed of loading time and eliminating the fatigue factor.

Programmable Bucket Return – allows specific tipping angle of working equipment to be saved removing the need for readjustment.

Load Moment Plus – provides a full 25% of load capacity when the boom is fully extended.

Overload Warning Device – measures the current load situation and can intervene to prevent unsafe manoeuvres.

Eco Motion – uses gravity to lower the telescope without assistance from the motor, thus saving fuel and reducing noise level.

Comfort Functions – differential lock, disengage all-wheel drive and electronic selection of four steering modes allow the machines to be manoeuvred safely on any terrain.

Auto Hill Assist – acting as a drive-off to enhance safety on steep slopes, particularly if transporting loads off-road or towing a trailer.



MANITOU'S MODELS STILL GOING STRONG

Manitou has maintained a strong suite of telehandlers for the African market, with the MXT 840 a firm customer favourite. This model can perform a vast array of jobs, thanks to a wide range of attachments made for construction such as forks, bucket, winches and platforms. With a 7.60 m height, a maximum 4 ton lifting capacity and a range of attachments available, the MXT 840 model is well suited for the construction, agriculture and plat hire industries. The high ground clearance of 39 cm of the MXT 840, coupled with the torque converter transmission, is especially good for working in difficult terrain. In the cab, the controls are intuitive enough to allow users to become proficient and productive for maximum efficiency on any work site.

Manitou's ambition is to develop the African market through models that are user-friendly, robust and that have a total cost of ownership that gives Manitou a competitive edge.

The company has also, more recently, launched the MXT 1740 telehandler. A versatile, robust model that combines agility and safety through features such as four wheel steering, hydraulic movement to prevent the machine tipping over and ROPS/FOPS level 2 cab. The lifting boom is up to 17 m that enables you to lift up to 4 tons up to the 5th floor.



The MXT 840 can perform a vast array of jobs.

This year, to bring clarity to its range of rotating telehandlers, the company decide to rename its two ranges under the new names VISION and VISION+. The VISION range, which has incorporated two new models in the MRT 1645 and MRT 1845, offers a wide selection of 14 models with heights ranging from 16 m to 25 m, for a load capacity of up to 4.5 tons. Meanwhile the VISION+ boasts the highest capacity models and features 12 models including six new products: MRT 2260, MRT 2660, MRT 3570, MRT 2570 and MRT 3060. Models in this range offer a lifting height of 22 m to 35 m and a capacity of up to 7 tons.

Linnhoff TSD1500 MobileMix asphalt plants were supplied to develop the Ethiopian road network.



Tony Chakra, regional sales manager (Middle East and Africa), Lintec & Linnhoff.

Supporting major projects in Africa

Tony Chakra, regional sales manager (Middle East and Africa), Lintec & Linnhoff, discusses how the African continent continues to be a rich source of opportunity for his company.

African Review: How important is the African market for Lintec & Linnhoff?

Tony Chakra: Africa has always been one of our key markets due to its potential in the asphalt and concrete sectors, driven by the extensive programme of construction planned for roads, airports, housing and other construction and infrastructure projects across the region.

In more recent years we have seen work really gathering pace as countries in Africa implement more ambitious projects and continue to catch up with global counterparts. There are several countries in the continent that really stand out. Ethiopia, for example, is predicted to be one of the world's most rapidly developing countries. Estimates suggest 25% of the state's infrastructure budget is currently earmarked for road building as the plan to extend the nation's road network to 20,000 km rolls onwards.

Angola is another country where we see great scope for progress, as the road network undergoes extensive upgrading, with more than 13,000 km slated to be asphalt covered.

Nigeria is also becoming an increasingly important market for us, with several large-scale projects in the pipeline as part of the Nigerian Government's infrastructure drive.

For our range of concrete plants from our Lintec and Eurotec brands, we have recognised Ghana as a key market. Here, demand for cement is expected to rise from 8.8 million tons in 2017 to 12.5 million tons this year, which should result in increased demand for ready-mix concrete and consequently concrete plants.

Similarly, in Algeria, the once prominent oil industry is in decline, and this has prompted the local government to encourage individuals and businesses to explore opportunities in other sectors, such as construction. Although impacted by the Covid-19 pandemic, the industry is expected to bounce back and we will be following this progress closely to identify future opportunities.

AR: What products do you distribute on the continent?

TC: Over the past 30 years, we have provided plants for numerous projects across Africa. One of our installations was a Linnhoff TSD1500 MobileMix asphalt plant delivered to a customer for use on a grade separation project on the Tema Intersection in Ghana. We've also supplied several plants of the same model to major Ethiopian Roads Authority projects, where they have

helped to develop and upgrade the road network.

The Linnhoff TSD1500 MobileMix asphalt plant is a perfect option for our African customers as it is designed to provide a high asphalt production and optimal mobility, which is a great combination for large-scale road projects in landlocked countries.

In terms of concrete plants, we've provided a Eurotec Smart45 concrete plant to a customer in the Nigerian state of Abia. The Eurotec Smart45 is also a perfect choice for Africa as it offers a 45m³ an hour output whilst occupying a relatively small footprint on site. The plant's compact and modular engineering allows it to be deployed quickly and cost-effectively. In Tanzania, a customer selected our Eurotec 3ECO50 concrete plant along with the Eurotec Pan Planetary concrete mixer, to build the Tazara Overpass, the first flyover in Dar es Salaam. In addition, a number of Lintec asphalt plants have been involved in major projects in Africa. These include a Lintec CSD4000 containerised asphalt plant that was involved in the Yaounde-Douala highway project in Cameroon; and a Lintec CSM4000 that worked on the Addis Ababa-Adama Expressway project in Ethiopia.

AR: What makes Lintec & Linnhoff unique?

TC: Lintec & Linnhoff has always focused on the quality and reliability of our equipment. In terms of products and service we are undoubtedly a market leader that strives to deliver highly efficient, reliable and cost-effective plants to customers. We are proud of the strong relationships we have with our customers, and it is often this that has allowed us to gain the confidence of new clients.

AR: Do you regularly participate in exhibitions in Africa?

TC: Exhibitions are always an important element of our business strategy and offer opportunities for us to develop and maintain our solid reputation in Africa. Among the exhibitions we have attended in the past is the LIGHTEXPO event in Kenya as well as bauma Conexpo South Africa in Johannesburg. We have even continued to maintain a presence at exhibitions against the Covid-19 backdrop by participating in digital events. Last year we took part in the Big5 Digital Festival Africa, which helped us to maintain links with our existing customers and network with potential new clients during these unprecedented times of disruption. ■

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Dealer Name



MANITOWOC SHOWCASES SCD15 CARRYDECK CRANE

Manitowoc showcased the Shuttlelift SCD15 carrydeck crane at The ARA Show, which took place from October 17-20, 2021 in Las Vegas.

Michael Heinrich, Manitowoc's vice president of sales for boom trucks and industrial cranes, said the 15 USt capacity carrydeck crane is in high demand by rental house customers.

"The SCD15 has become one of the most popular cranes in the industrial crane rental market," he said. "We've made a number of enhancements to the crane that make it easier to use and provide more comfort for operators. Also, the redesigned platform makes the machine lighter, which enables for greater maneuverability and easier transport. Its combination of maneuverability, convenient storage and lower acquisition costs will help a lot of rental companies improve their fleets' capabilities."

The SCD15's cab is now wider and includes more operator-focused features.

The SCD15 has a standard, three-section 41 ft boom, with the option of a four-section, full-power 50 ft boom. A 15 ft fixed swingaway extension is also available for a maximum tip height of 69.5 ft. It features an exclusive pivoting boom nose.

The carrydeck is available with two engine options: a Tier IV final Cummins QSF 3.8-liter engine that does not require DEF or a 4.3-liter dual-fuel version running on either propane or gasoline. It comes with three steering modes.

The crane is ideal for automotive and general manufacturing plants, refinery work, laydown yards, steel mills, or any other application where mass production and continuous maintenance are important.

Volvo CE introduces three new electrical compact machines



Image Credit: Volvo CE

The five electrical compact machines.

Volvo Construction Equipment (Volvo CE) is introducing three new electrical compact machines to the market, bringing the total number of such models it offers to five.

These latest innovations are the next step forward in Volvo CE's ambition to reach net zero value chain greenhouse gas emissions by 2040 and is part of Volvo Group's target to have at least 35% of its total range of vehicles fully electric by 2030.

The L20 Electric compact wheel loader and EC18 Electric and ECR18 Electric compact excavators join the already launched L25 Electric and ECR25 Electric.

The L20 Electric is based on the larger L25 Electric model, while the short but tough ECR18 Electric with its ultra-short tail radius is ideal for confined spaces. The nimble EC18 Electric is a compact excavator working in 1.8-ton applications and can squeeze into the tightest of areas. All three machines come with an integrated on-board charger allowing them to

charge from 0 to 100% in under six hours and an optional fast off-board charger.

Customers of any of the five electric models will also soon be able to take advantage of a new fleet management solution designed specifically for the remote monitoring of electric machines. The Electric Machine Management Application (EMMA) will provide valuable insights into battery level and remaining working hours, charging status, geographic location and more.

Melker Jernberg, president of Volvo CE, said, "We are proud to be leading our industry's fight against climate change as the manufacturer with the world's largest range of electric machines. Not only are we delivering real-world solutions for a more sustainable way of working but we are also adding further power to our customers' business with the widest possible range of choice to best fit their needs."

Volvo CE has available a reservation tool for customers to order one of these new machines.

PIPE HANDLING MADE SIMPLE

B&B Attachments, which specialises in the design, manufacture, and supply of forklift truck attachment solutions, has introduced a chamber ring/pipe clamp forklift truck attachment specifically designed to handle a wide range of concrete pipes and manhole chamber ring diameters and lengths safely and securely.

Concrete chamber rings are used to provide manhole access to sewer and drainage systems. They are made from strong, dense concrete, capable of withstanding corrosive environments which are regularly experienced underground, while concrete pipes are normally used for drainage purposes by highway agencies, in agriculture and for water wells.

The correct handling of these concrete products is essential to ensure a safe, fast operation and avoid damage to the pipes and chambers, while also providing maximum operator safety during the handling process.

The chamber ring/pipe clamp handler manufactured by B&B Attachments, has a dual clamping mechanism which is activated by hydraulic cylinders. The large rubber grippers prevent slippage and damage to the concrete.

By means of the clamping mechanism, the pipes are tightly held to enhance accurate material placement. The clamp is adaptable, with several different designs available to cater for various pipe depths and wall



Image Credit: B&B Attachments

The chamber ring/pipe clamp handler is designed to handle a wide range of concrete pipes and manhole chamber ring diameters.

thicknesses. This easy-to-install attachment can be fork or jib mounted to any forklift or tele-handler, and can rotate partially, or up to 360 degrees.

Established in 1980, B&B Attachments is committed to providing bespoke attachments for customers with specific material handling requirements, including a full range of attachments specifically designed for the construction industry.






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MHS Plant & Equipment facilitates disposal of repossess equipment

Specialising in the import and export of mining and construction equipment, MHS Plant & Equipment of Midrand, Johannesburg, has an extensive international network covering Africa, Australia and the Americas.

Apart from supplying both new and quality used equipment, the company also assist banks in both the valuation and disposal of any repossessed equipment and has developed turnkey solutions for construction companies and mine closures.

Conrad Smith, owner and founder of MHS Plant & Equipment, explained how a typical process worked noting that the company is initially approached by a seller like a mine, whereupon it pays a visit to the client's site in order to best understand its specific requirements. Here the client has the choice of opting for a physical inspection or a desktop valuation.

An important first step is to request full information for each asset to be disposed of, including a component and maintenance history and the number of hours worked. The site visit involves physical inspection of the assets themselves, including verification that the full inventory is accounted for.

In order to determine a fair market-related value for every asset, supply and demand factor (the quantity of similar equipment available on the global market, which influences the value) and the actual replacement cost of the asset (the dollar-based value) have to be taken into account. Another important factor is the build specification of the asset.

MHS will research the current used asset availability worldwide in order to check the overall values. The final factor that influences these values is, of course, the location. "We then take into consideration the cost of dismantling the asset and transporting it to the nearest port," said Smith.

"Once we have the above information, we give our clients a market-related value for their approval. After this we then approach our extensive international client base to offer the said equipment. We also have the option of marketing the specific equipment to the specific region that we know where that particular asset is popular and in demand," concluded Smith.



Image Credit: MHS Plant & Equipment

MHS Plant & Equipment specialises in turnkey solutions for construction companies and mine closures.

MALI MINE SHOWS ENORMOUS PROMISE

African Gold Group, Inc. has announced the results of the Definitive Feasibility Study for the Kobada Gold Project, situated adjacent to the Niger River in Southern Mali.

Highlights of the results include an average gold production of 100,000 ounces over the first ten years and payback of 2.3 years upon production commencement.

Danny Callow, CEO of African Gold Group, commented, "Over the past two years we have worked tirelessly to demonstrate that the Kobada Gold Project has the potential to be one of the largest new gold projects in West Africa. Since the implementation of management changes in August 2019, and with new drilling campaigns totalling around 18,000 metres, we have managed to increase our reserve base by 144%.

"With our updated 2021 DFS we have shown that Kobada has the potential to produce over 1.2 million ounces of gold over a 16 year mine life while delivering solid economics with post-tax NPV5% of US\$355mn and an IRR of 38%."

Callow continued, "Kobada is a predominantly free-dig operation, requires limited blasting, and processing of ore will be through a very simple and proven gravity plus CIL plant with recoveries over 95% in both oxides and sulphides. The inclusion of sulphides in this updated DFS, which are free milling and easy to process, opens significant future opportunities within the sulphide resource as well as continuing growth possibilities in the oxides.

"On only 4 km of our 55 km of identified shear zones we believe that there continues to be significant potential to increase our 3.1 million ounce total resource substantially further. Kobada is now positioned as a great construction opportunity, in a prolific gold-producing area," concluded Callow.

The Kobada Gold Project deposit is planned to be mined utilising standard open-pit mining methods using articulated trucks and a hydraulic loader (hydraulic shovel or excavator). Approximately 66% of the raw material to be mined is contained in the saprolite and laterite ores, and the vast majority will be free digging with no blasting required.

FORTUNA GIVES SÉGUÉLA PROJECT GREEN LIGHT

Fortuna Silver Mines Inc. has announced that the board of directors of the company has made a decision to proceed with the construction of an open pit mine at the Séguéla gold Project in Côte d'Ivoire.

The company is ready to immediately commence construction with long lead items procured, and development teams established on the ground.

Jorge A. Ganoza, president and CEO of Fortuna, commented, "With a nine-year mine life in reserves, 130,000 ounces of annual gold production in the initial six years, and compelling economics, Séguéla is planned to become our fifth operating mine with first gold by mid-2023."

The updated Séguéla Project total initial capital investment is US\$173.5mn. US\$11.5mn of this amount has previously been approved by the board for early works items. The anticipated construction schedule is approximately 20 months, with ramp-up to name plate capacity expected in Q3 2023.



Image Credit: Adobe Stock

Construction works are slated to begin in Q4 2022.

Pele Green Energy and EDF Renewable South Africa will build a 100 MW solar park for Anglo American Platinum at its Mogalakwena mine in South Africa's Limpopo province. "We are particularly excited about the prospect of using plentiful solar energy to produce green hydrogen at Mogalakwena, as part of a broader project to convert our mine haul trucks to run on zero emission hydrogen fuel cells," said Natascha Viljoen, CEO of Anglo American Platinum.

Gladiator to explore Tanzania



Image Credit: Adobe Stock

Gladiator Resources recently acquired Zeus Resources.

Gladiator Resources (Gladiator) has announced that all seven exploration licenses applied for by Zeus Resources Ltd. Covering 1,764 sq km of prospective tenements have been granted by the Tanzanian Mining Commission. The Tenements, which are prospective for several commodities including Gold and Uranium, have previously been owned by Uranium One, Uranex, Mantra Resources, Western Metals and Uranium Resources and substantial data is believed to exist.

Water management in mining

Water plays many key roles in the mining industry and is used for a broad range of activities including mineral processing, dust suppression, slurry transport, as well as meeting the potable water needs of employees. Tim Guest reports.



Image Credit: Adobe Stock

Mining companies across Africa face a variety of mine water challenges.

Mining companies across Africa face a variety of mine water challenges, often depending on their location (e.g. isolated, or near population centres) and type (e.g. surface/open cast versus underground, etc). From the production of potable water using processes such as desalination in remote locations, to the processing and treatment of wastewater both from human activities, as well as wastewater from mining, whether hard and soft rock mining or solution mining, each require the use of water treatment methods of one sort or another.

With so many factors involved, mining companies outsource such requirements to specialist players like Veolia Water Technologies and SGS SA. Companies such as these provide a range of mining water treatment and filtration


services like preliminary and detailed engineering, standard and custom water treatment equipment, project management, cyanide detoxification, effluent treatment, high-density sludge processing, as well as full maintenance and support on a long-term basis to ensure all aspects of water at a mine are handled properly.

This allows the operator to remain focused on its core mining activities in the knowledge that such things as proper water treatment and discharge compliance are in line with respective national environmental protection effluent discharge requirements, and are in the hands of experts.

A crucial undertaking

Many mines in Africa face climate fluctuations


“When seasonal patterns provide very high rainfall for only a few months, water must be managed cautiously to avoid flooding of operations which could lead to water contamination and potential health and safety issues.”




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with high seasonal temperature variations and the alternation of dry and wet periods. When seasonal patterns provide very high rainfall for only a few months, water must be managed cautiously to avoid flooding of operations, which could lead to water contamination and potential health and safety issues, as well as local environment pollution, particularly when such activities as gold extraction require the use of cyanide to dissolve and separate gold from ore.

This makes effective water management crucial, as not only does it help improve productivity and manage environmental risks by treating contaminated water, such treatment can also achieve water quality suitable for re-use, or for safe discharge into the environment.

It can also help add value to the mine operator's bottom line by treating sludge streams to recover valuable suspended and dissolved constituents. And, importantly, compliant mine water treatment processes will help an operator ensure its local, social licence to operate is not jeopardised through neglect of any aspect of water management.

“Transparent reporting is important so that stakeholders have greater line of sight over mining companies' water management practices and related data.”

AIDAN DAVY, COO, ICMM

ICMM on Corporate Water Reporting

In August, the International Council on Metals and Mining (ICMM) published updated guidance to improve the quality and consistency of corporate water reporting in its latest: Water Reporting: Good Practice Guide, in order to improve the quality and consistency of corporate water reporting to enhance stakeholders' understanding of, and ability to use, water reports and associated data. The ICMM, which has 28 members operating in 50 countries, including throughout sub-Saharan Africa, said the guidance broadens its minimum reporting commitments to include new metrics for disclosure, such as

holistic reporting of how water is used to meet operational demands and how it is actively managed.

The update includes reporting of aggregated water metrics for all sites within a company, as well as a separate aggregated total for all sites situated in water-stressed areas, such as some remote regions in Africa. It supports mining companies to disclose water data in a consistent way for easier comparison of performance by interested stakeholders.

The updated ICMM guide builds directly on external reporting guidance and definitions, including CEO Water Mandate, GRI, CDP Water and the MCA Water Accounting Framework.

It captures practical experience from companies operating in

diverse geographies, commodities and regulatory systems, and was developed in consultation with industry experts and investors, ensuring its relevance as a global tool for all mining sites across Africa and beyond.

In a statement, Aidan Davy, COO, ICMM said, “Transparent reporting is important so that stakeholders such as investors, government, local communities and civil society have greater line of sight over mining companies' water management practices and related data.”

The external reporting landscape is evolving, according to Davy, and ICMM's updated Water Reporting: Good Practice Guide should help companies strengthen their management of what he calls 'this precious and shared resource' for the benefit of all users, while reducing corporate risk exposure.

ICMM members, of which African Rainbow Minerals, Anglo American Mining, Glencore and Sibanye-Stillwater are just some with interests across Africa, can also call on the ICMM's 'A Practical Guide to Consistent Water Reporting', in their water management activities. ■



Image Credit: Anglo American Plc

Water testing at Der Brochen Platinum mine, a platinum project in South Africa owned by Rustenburg Platinum Mines Limited (RPM), a wholly-owned subsidiary of Anglo American Platinum (AAP). RPM is in the process of amending the mine's approved Environmental Management Programme and associated Environmental Authorisation, as well as updating its existing Water Use Licence.

Terex MPS provides complete range of crushing and screening equipment

The equipment of Terex Minerals Processing Systems (Terex MPS) is most commonly set up in primary, secondary, tertiary and quaternary crushing positions. Units are available with numerous options and can be integrated with almost any portable crushing system.

The MJ55 Modular Jaw Crusher has been created to meet a wide range of crushing and screening applications. All modules are pre-engineered and pre-built to operate on a small footprint with low civil work and operating costs and easy on-site assembly. The modules and components can be easily transported in standard shipping containers or by road, enabling customers to quickly mobilise on site. The Modular range is designed for large quarries or contractors that want a stationary type design without the complexity of a normal stick-built plant.

Terex MPS also leads the industry with the most advanced portable plants, which now include the all new WJ3042 and WC1150S high-capacity, all-electric wheeled crushing systems. They're quick to set up and dismantle, as well as easy to operate. The Terex WJ3042 is a high-

Image Credit: Terex MPS



The Terex WJ3042 is a high-performance wheeled jaw crusher plant.

performance wheeled jaw crusher plant, incorporating the aggressive Terex JW42 jaw crusher and a heavy duty vibrating grizzly feeder, enabling optimum production. Its compact size, quick set up times, ease of transport and simple maintenance make it ideal for quarrying, mining, demolition and recycling.

The Terex WC1150S Cone-Screen plant is a high performance, medium-sized wheeled crushing-screening system. At the heart of the plant is the 225 kW Terex TC1150 cone crusher with a modern automated control system. Its crushing action provides excellent capacity, high reduction and good product cubicity for the

production of high-quality aggregate and sub-base materials.

The WJ3042 and WC1150S are available as stand-alone plants or as part of a multi-plant system with product conveyors for a complete crushing and screening solution. All plants and conveyors are designed to fit in standard containers for easy transport overseas or on the road. The entire system with conveyors can be transported in nine containers. Once on site, each assembled plant can be transported in a one-piece tow.

Simplicity SI screens

Equipped with many new features, the latest series of Simplicity Standard Incline (SI) screens from Terex MPS' Static solutions are designed for heavy duty, medium and fine screening applications. The SI screens are built with a robust drive mechanism to handle large tonnages and a wide variety of applications. Utilised as wet or dry screens, these units have adjustable stroke and speed combinations to fit a variety of applications and are available in 2- or 3-deck configurations.

BKT SOLUTIONS FOR THE MINING SECTOR

SPONSORED CONTENT

Severe mining operation, rough terrain and longer operating hours are all real challenges for the machines working in the mining sector and, above all, for the tires fitted to them. It is therefore essential for operators to be able to count on reliability and the least down time from tires that can withstand cuts and tears. This guarantees a prolonged product life cycle, while also providing traction and stability. Machine down time due to tire damage during service would not only mean extra cost, but would also impact on productivity.

That is why BKT wished to pay particular attention in developing tires suitable for this type of application, studying them closely in minute detail.

BKT's EARTHMAX range

The tires in BKT's EARTHMAX range are designed for the toughest operations. They are a broad range of radial solutions designed to facilitate the best possible ground load distribution for dump trucks, wheel loaders, dozers, and graders.

All EARTHMAX tires are distinguished by their All Steel structure which provides resistance to the casing and so against impacts. These are essential features when faced with particular obstacles on the ground which could expose the tire to serious risk of puncture or damage to the casing.

In particular, this range includes three models which, thanks to their large size, are particularly suitable to handling mining operations under the toughest conditions:

- **EARTHMAX SR 46:** Developed for large rigid dump trucks which operate in severe mining operation. This tire guarantees a high level of resistance to cuts thanks to its casing with a steel belt. The specific design of the tread with blocks and grooving on the circumference



Image Credit: BKT

guarantees reduced damage to the surface of the product and improved performance on bends.

- **EARTHMAX SR 45:** Designed for rigid dump trucks and has a specific design of blocks and a deeper tread, which renders high traction in specific mine operation and extend tire life.
- **EARTHMAX SR 53:** Classified L-5, this tire has been designed for loaders operating in difficult conditions. The tread consists of a compound which is particularly resistant to cuts. In addition, it is designed to offer extraordinary self-cleaning properties, which facilitate the expulsion of stones and other foreign bodies.

Giant tires

In response to market demand, BKT has also launched a Giant version of EARTHMAX SR 46 for rigid dump trucks operating at mines, dams and large worksites. This solution is available in the largest size which BKT has ever made: 33.00 R 51. With a diameter of over three meters, this tire weighs 2,400 kg.

For more information, visit the BKT website: www.bkt-tires.com

Pushing ahead with digital transformation

According to a new study by Axora, the metals and mining sector is driving forward with digital transformation, but there is still more to be done ahead of the energy transition.



Image Credit: Adobe Stock

The 'Axora 2021 Innovation Forecast: Metals and Mining' report, which was based on a survey of 150 senior decision makers worldwide, states that historically metals and mining has adopted digital technology at a slower pace than many other industries.

Ritz Steytler, CEO of Axora, said, "The highly variable nature of mining is partially responsible for this reticence, as are the remote and heavy environments in which companies operate. Additionally, the industry is still at a nascent stage when it comes to bringing digital skills to mine sites."

"But although digital deployment has historically moved at a measured pace, there's now a growing need for companies to unlock its benefits through a more coordinated and strategic approach. As the industry emerges from the Covid-19 pandemic, digital transformation is necessary to boost production efficiency and reduce costs across operations."

Key findings from the report include:

Meeting the rising demand from the energy transition

99% of decision makers now believe technology and innovation are critical to their organisation's survival and 94% of respondents said their deployments were advanced or intermediate.

Those in North America, the UK and South America saw themselves as most advanced, whereas South Africa saw itself as least advanced.

Digital solutions and AI

There is more focus on using technology to boost direct productivity, foster a better working environment and improve ROI than to prevent downtime and companies are taking a longer-term view when it comes to cost savings from digital transformation. In the next two years, 24% of respondents anticipate saving 1-5% from digital technology. Within five years, just 3% of respondents anticipate that level of savings, with

most predicting 11-15%. More than three-quarters of respondents prioritised the value of digital technology over its cost.

57% of decision makers said their organisation had deployed AI to some extent and 59% ranked it first for growth potential in the next year, followed by robotics at 45%.

Analytics, semi-autonomous equipment and remote operations

73% of respondents said they had deployed analytics and semi-autonomous equipment to some extent with the latter the most likely to be 100% deployed across the organisation. 73% of organisations have deployed remote operations technology and 72% of respondents said their company had implemented a remote operations centre, with a further 15% saying they are planning to do so in the next year.

Drivers for change

82% of respondents said a partner had the biggest influence on their digital technology adoption, with the preference being for generic rather than industry-specific ones and 99% said they would benefit from a digital transformation community where they could learn from peers' experiences with different technologies and applications. ■

“Digital transformation is necessary to boost production efficiency and reduce costs across operations.”

RITZ STEYTLE, CEO OF AXORA

CAT D11 XE DOZER HARNESSSES THE POWER AND EFFICIENCY OF ELECTRIC DRIVE



Image Credit: Cat

The Cat D11 XE Dozer.

Leveraging 20-plus years of Cat electric drive experience and field application, the new Cat D11 XE dozer's electric drive system delivers constant power to the ground, continuous pushing and greater manoeuvrability for faster cycle times and improved fuel efficiency. It was previewed at MINExpo 2021.

The D11 XE delivers the lowest cost per ton operation in dozing applications and, when in production, the model will be the world's largest, most powerful and efficient electric drive dozer with high drive.

Targeting up to 25% less fuel costs per BCM, the D11 XE targets up to 20% longer engine rebuild cycles than mechanical drive models, while 60% fewer moving parts translates to better machine uptime availability.

The D11 XE fully integrates Cat powertrain, Cat electronics, Cat software and Cat controls for

optimised performance. Inherent machine protection reduces component damage for improved reliability and its updated electronics architecture allows the dozer to take advantage of proven Cat technologies like MineStar Command for dozing, which offers both remote control and semi-autonomous dozing.

With a powertrain life targeted to deliver longer rebuild intervals, the simple machine design delivers less major component rebuilding and/or replacing. Longer rebuild cycles, lower fuel consumption and less maintenance come together with higher machine efficiency to give owners the lowest cost of bank cubic meters (BCM) of material moved ever.

Currently operating at one of Caterpillar's dozer proving grounds, the D11 XE will complete an extensive field validation plan before entering full production.

FINANCIAL SOFTWARE SOLUTION FOR GOLD MINERS

Nordgold plc, the internationally diversified one million ounce gold producer and global IT consultancy Columbus has launched, "CN Planning Analytics for the Mining Industry", an innovative corporate finance software solution tailored specifically to meet the challenges of the resources industry, in particular the gold sector.

CN Planning Analytics is a software-based tool which provides a user friendly interface that facilitates the transparent planning, measurement, monitoring and reporting of gold mining companies' financial and operating performance.

CN Planning Analytics was designed to address gold miners' common challenges when planning, measuring, monitoring and reporting their activities.

The software includes preconfigured budgeting and management reporting models based on industry-specific KPIs. It is designed to work with different types of mining methods including open pit, underground and mixed as well as gold processing technologies (CIL, CIP, heap leaching and BIOX). CN Planning Analytics also allows data from mine planning IT platforms to be integrated into the gold mine's financial models, which, among other things, streamlines and facilitates long-term strategic financial planning.

Andrey Yudaev, business development director for information and analytical systems at Columbus, said, "Partnering with Nordgold to develop CN Planning Analytics was a unique collaboration that allowed us to combine the practical business experience of a mining company with the industry and product expertise of a consultancy. The solution's functionality has been proven by IBM and by its high performance in automating Nordgold's real-world business processes."

Metso Outotec boosts iron ore pelletising plant performance

Metso Outotec is launching leading-edge digital solutions to ensure the optimal operation and maintenance of iron ore pelletising plants over the entire plant life cycle. Leveraging the company's extensive experience as the original inventor of the pelletising process, Metso Outotec has developed a suite of solutions that will improve process performance, production capacity, and product quality while at the same time reducing energy consumption, environmental impact, and operation and maintenance costs.

The new digital solutions include the Metso Outotec Optimizing Control System OCS-4D and the Planet Positive Optimus advanced process control system for ensuring a stable and efficient process, the VisioPellet pellet size-control system for

Image Credit: Metso Outotec



The M1700X was featured alongside the FM120 C-25, which allows sand to be recovered when both machines are connected.

optimising the pelletising process, and the pallet car condition monitoring system for improving preventive maintenance planning and execution.

In addition, Metso Outotec is launching a unique

operator training with advanced simulation technology in a risk-free virtual plant environment. The training can be tailored to simulate different operating conditions, standard procedures, emergency situations, and any other operational scenarios that are deemed to be beneficial.

"We are really excited about these new digital products. Based on pilot tests/reference cases, we know that they can make a true difference for our customers' processes. These solutions can be implemented in all iron ore pelletising plants delivered by Metso Outotec. Our experts are happy to give more information on how each of these would benefit and work in individual plants," said Olavo Nolasco, director, product competitiveness, ferrous & heat transfer at Metso Outotec.

MRTA offers training beyond own facilities

The Murray & Roberts Cementation Training Academy (MRTA), in a quantum leap for training in the underground mining sector, is strategically positioning itself to take its world class learning systems to customers on their own sites.

This move, according to Murray & Roberts Cementation education, training and development (ETD) executive Tony Pretorius, incorporates the use of remote e-learning solutions coupled to Dover Assessment for psychomotor skills, VR Simulation, mass assessment tools and classroom response systems.

Image Credit: Murray & Roberts



The academy's new age of training systems will also be rolled out within the projects of Murray & Roberts Cementation itself.

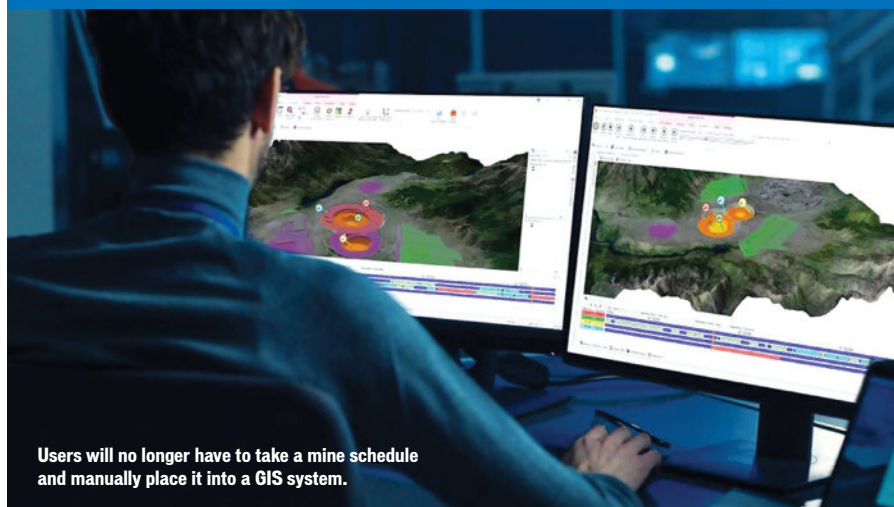
"It is an exciting step beyond the MRTA's industry-leading facilities at Bentley Park near Carletonville, and opens doors for companies to generate and upgrade skills even during the Covid-19 pandemic," Pretorius said.

"Making use of the latest technologies – such as interactive touchscreens – we can now offer two-dimensional and three-dimensional training interventions," he continued. "This can be deployed with virtual reality (VR) training modules, including the use of VR simulators that we are developing with our strategic technology partner, Simulated Training Solutions (STS)."

Among the high-tech advances being driven by the academy is a portable VR drill rig. The portfolio of ground-breaking training tools will be easily transported in a purpose-designed trailer to sites convenient to the customer – even on mines themselves.

In addition to regulatory restraints, this new training infrastructure could also reduce the cost of having staff attend off-site training for extended periods – where costs are raised by travel and accommodation.

RPMGLOBAL LAUNCHES ENVIRONMENTAL DISTURBANCE REPORTING CAPABILITY



Users will no longer have to take a mine schedule and manually place it into a GIS system.

Image Credit: RPMGlobal

RPMGlobal has introduced an environmental disturbance modelling and reporting functionality into its leading mine scheduling products, XPAC Solutions

Unlike a simple reporting tool, XPAC Solutions has the capability to restrain a mining schedule based on pre-set limits associated with both water catchment and flora and fauna zones. For example, users can request a reduction in an environmental distance of some type and the software will then proceed to find a different schedule that honours that restriction.

This new module is required because organisations now need to plan and report how much environmental disturbance has taken place in specified areas, allowing organisations to plan better when applying for, and receiving ground disturbance permits.

With RPMGlobal's automatic environmental disturbance reporting functionality, users will no

longer have to take a mine schedule and manually place it into a GIS system to build environmental reports.

RPMGlobal's head of ESG, Ngaire Tranter, said the environmental disturbance capability would be critical for companies operating in jurisdictions that have stringent environmental restrictions.

"Across many jurisdictions, policy makers and regulators are strengthening environmental disclosure requirements which underpin the importance of innovative software solutions that help mining companies navigate this evolving space."

The development project follows the completion of the company's electric vehicle simulation capabilities which sit inside the company's vehicle simulation suite of software. Separately, development has commenced to also include hydrogen-powered haul trucks.

CHRYSOS INSTALLS FIRST INTERNATIONAL PHOTONASSAY UNIT

Mining technology company Chrysos Corporation has achieved a significant milestone by installing its first international PhotonAssay unit at Barrick Gold's Bulyanhulu mine in Tanzania.

Originally developed at Australia's national science agency, CSIRO, Chrysos PhotonAssay delivers faster, safer and more accurate gold analysis, and is an environmentally friendly replacement for fire assay on-site and in the laboratory. Hitting samples with high-energy X-rays, the technology causes excitation of atomic nuclei allowing enhanced analysis of gold, silver and complementary elements in as little as two minutes.

Dirk Treasure, CEO, Chrysos Corporation, enthused, "We are confident that PhotonAssay's faster, safer and environmentally-friendly process

not only aligns with Barrick's focus on operational excellence through technology adoption, but also reflects and enhances its global reputation as a leader in sustainable mining and exploration."

Continuing the ESG theme, Treasure added, "Our ambitious plan is to deploy 80 PhotonAssay units over the next five years. At that point, with each unit capable of processing up to 480,000 samples per annum, we will be helping our customers reduce CO₂ emissions by an estimated 18,000 tonnes and decrease hazardous waste by approximately 12,000 tonnes every year."

Market enthusiasm for these operational and environmental benefits has endowed Chrysos with a strong sales pipeline and new contracts for a further nine units; representing 150% growth on its current deployments.



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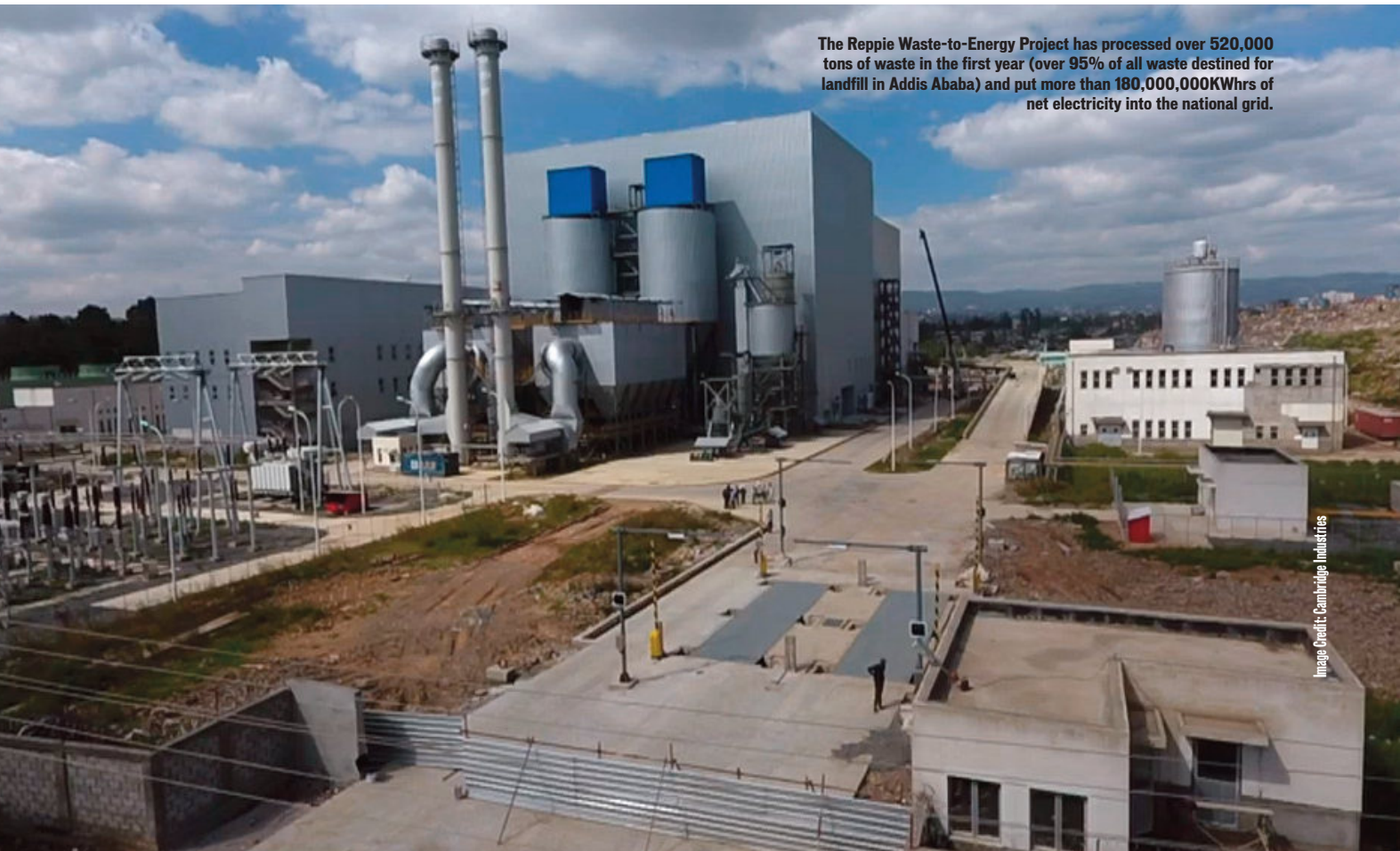
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Waste-to-power projects gather momentum

Across the continent, waste-to-power projects to curb solid waste issues and produce energy are becoming more popular. Mwangi Mumero reports



The Reppie Waste-to-Energy Project has processed over 520,000 tons of waste in the first year (over 95% of all waste destined for landfill in Addis Ababa) and put more than 180,000,000KWhrs of net electricity into the national grid.

Image Credit: Cambridge Industries

With its mounting solid waste issues, Nairobi Metropolis is one of many African cities that has been attracting investment in projects that use biomass to produce energy.

The city produces about 3,000 tons of solid waste per day. Already, preliminary works for the Kibera waste-to-energy project have been completed for construction of the 10 MW plant which will convert municipal solid waste, crop residue and livestock waste to biogas and fuel ethanol for the generation of electricity. Kibera is Kenya and Africa's largest informal settlement

and receives approximately 1,000 tonnes of solid wastes per day and the project, to make use of this resource, is expected to cost US\$197mn upon its completion.

Four years ago, Asticom Kenya

Ltd, the firm behind the project, received US\$995,000 from the African Development Bank's (AfDB) Sustainable Energy Fund for Africa (SEFA) to conduct a full detailed environmental and social impact

assessment, detailed engineering designs and provide project-related legal and advisory services as well as financial and transaction advisory services.

"The planned diversion and use of municipal solid waste is set to have significant health, social and development outcomes, and will be of benefit to the inhabitants of Kibera, a community that receives 1,000 tonnes of municipal solid waste daily from the Nairobi County," said AfDB at the time.

SEFA is a US\$90mn facility funded by the governments of Denmark, United Kingdom, United States and

“ The planned diversion and use of municipal solid waste is set to have significant health, social and development outcomes.”

AFRICAN DEVELOPMENT BANK

Italy. Established in 2012, the facility supports the sustainable energy agenda in Africa through grants to facilitate the preparation of medium-scale renewable energy generation and energy efficiency projects.

Currently, the necessary approvals from the Nairobi County government to develop, construct and operate the Kibera facility have been obtained by the developers. Once completed, the facility will have a capacity to process 250,000 tons of soil waste per year and produce biomethane, ethanol and electricity.

The plant will be connected to the national transmission grid located within 0.4 km from the project site. A preliminary tariff Power Purchase Agreement (PPA) with Kenya Power, the national power distributor has settled on US\$0.10/kWh.

Another waste-to-energy project will be located at the Dandora landfill, Nairobi's largest dumpsite. Already, the Kenya Electricity Generating Company (KenGen), the country's largest power generator, is planning to build a waste-to-energy plant at the site, located east of the city. Feasibility studies are currently ongoing.

KenGen has signed the necessary agreements and contracts with Nairobi Metropolis Services (NMS) to launch the project.

Under the terms of the



The Marie Louise site, part of the Joburg Waste to Energy Offset Project.

agreement, the NMS will make available land around the Dandora landfill site to Kengen for the solid waste energy project.

KenGen will finance, develop and operate the power plant to supply the national grid.

"The capacity of the power plant and its total cost will be determined after the feasibility study and ongoing discussions with Kengen," said Stephen Nzioka, the environment, water and sanitation manager of the NMS.

The waste-to-energy plant will allow KenGen to diversify its capacity from hydro, thermal and geothermal sources.

Emerging projects across Africa

Nairobi is not alone, as East Africa's biggest city is emulating other cities across the continent in curbing solid waste and, as a result, waste-to-energy projects are increasingly taking root in Africa. Most of the projects are at different levels of development.

Addis Ababa's US\$120mn Reppie Waste-To-Energy Project, currently operational, is Africa's biggest and is designed to convert 1,400 tonnes of waste per day generating 185 GWhr of electricity per year. Commissioned in 2018, it was developed by Cambridge Industries

and is fed by the Koshe landfill site, located south-east of the city.

Other examples include the Joburg Waste to Energy Offset Project, intended to produce 19 MW of energy per year from five landfill sites, and the food waste-fed Ketu Biogas project in Lagos Nigeria.

As urbanisation, population growth, and globalisation continue, waste generation in Africa will increase significantly in the upcoming decades and could become a decisive factor to combat the energy deficit on the continent.

Despite the region's immense potential for energy wealth, with renewable sources such as solar in abundance, installed capacity remains far below levels required to meet demand and sub-Saharan populations have the lowest electricity access rates in the world.

According to a report presented at the G20 conference last year, electricity access has an important influence on the well-being of a population and improves access to education, communication, and quality health care. Additionally, the weakness of sub-Saharan power grids represents a significant cost for national economies.

Waste-to energy plants, the report observed, while effectively dealing with waste management can also help to bridge this gap to electricity access. ■

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Investing in West Africa's textiles industry

Bernardo Bruzzone, regional editor for Africa at Oxford Business Group, explores the private sector initiatives supporting the textile industry in West Africa.

In a region where just 2% of cotton produced is processed locally, a lot of investment has been focused on developing cotton processing capacity to capitalise on the added value that comes from selling finished goods. While West Africa is the sixth-largest cotton-growing region in the world (Benin, Côte d'Ivoire and Burkina Faso the sixth, seventh and eighth-largest cotton-exporting countries, respectively), a lack of processing capacity has resulted in dependence on imported goods.

For example, although Benin, Burkina Faso and Mali export 1.8mn tonnes of cotton worth US\$922mn per year, they import US\$2.8bn in cotton textiles and apparel. Indeed, 90% of the region's cotton is exported to Asia for processing.

Bolstering local processing

One of the most prominent developments to this end was the opening of Togo's Plateforme Industrielle d'Adetikopé Textile Park in June.

A public-private partnership (PPP) between the government of Togo and Arise Integrated Industrial Platforms (itself a partnership between the Singapore-headquartered agriculture company Olam International and the African Finance Corporation) the textile park aims to transform the textile industry by increasing processing and exports of finished garments.

In a signal of its potential economic impact, the project aims to convert 56,000 tonnes of cotton fibre worth US\$73mn into clothes and apparel worth US\$1.5bn. The park is expected to create 20,000 direct and 80,000 indirect jobs, and those involved in its development estimate that it could contribute up to 21% to GDP.

A separate special economic zone in Glo-Djigbé – around 45 km from Benin's economic capital, Cotonou – was announced in February, focused on the processing of cashews, cotton, shea, pineapples and soybeans. Operated as a PPP between Arise and Benin, the facility will have the capacity to process around 100,000 tonnes of cotton fibre a year, and house up to 30 factories for clothing production.

It is estimated that the project, which is currently under construction, will create 300,000-350,000 jobs by 2030, including 200,000-250,000 related to cotton spinning, weaving and clothing manufacturing.

Elsewhere, in 2019 Ghanaian fabric product manufacturer DTRT Apparel, West Africa's largest apparel manufacturer, received an undisclosed sum from investment firm Verod Capital Management and energy drink maker Red Bull to expand its production to take on work that traditionally goes to cotton and garment processing facilities in Asia.

Sustainability and social impact

Given the global textile industry's emphasis on reducing its carbon footprint, some private investors are prioritising sustainable investment in particular.

The region's first organic cotton ginning plant was inaugurated in Burkina Faso in January last year. The US\$7.1mn, 5000 sq m facility operated by the Organic Cotton Ginning Company, a joint venture between the National Union of Cotton Producers of Burkina and the Burkina Company of Textile Fibres, has a ginning capacity of 125 tonnes per day.

In February it was announced that

West Africa is the sixth-largest cotton growing region in the world.



Image Credit: Adobe Stock

the West Africa Trade and Investment Hub, which is funded by the US Agency for International Development, would establish a new model factory in Ghana. The US\$1.4mn project seeks to boost women's economic empowerment in apparel manufacturing and create 800 fair-wage jobs, with women to make up more than 50% of the factory's middle-management roles.

Modernising production and logistics

While much of the focus has been placed on value-added cotton processing, a series of other initiatives are also benefitting the region's textile industry.

Intercoton, an interprofessional association representing cotton growers, crushers, ginners and spinners in Côte d'Ivoire, has helped to increase cotton production through modernisation. Strategies have included developing new seed varieties and techniques, such as spraying phytosanitary treatments using drone technology. The use of drones has reduced the treatment time of such treatments from more than one hour to less than 15

minutes per ha.

In recent years tech start-ups have similarly sought to provide solutions to logistics challenges such as poor roads and a lack of infrastructure, which have long posed obstacles to the development of cotton production, processing and trade in West Africa.

Public support remains crucial

While some private enterprises have taken a central role in developing the textiles industry, governments and regional bodies also have an important enabling part to play.

For example, private efforts to improve logistics and boost inter-regional trade will be supported by the African Free Trade Area (AfCFTA) agreement, which officially launched on 1 January 2021.

While a number of cross-border restrictions remain in place due to the Covid-19 pandemic, AfCFTA obliges members to remove 90% of tariffs on goods, facilitate the movement of capital and people, and take steps to create an Africa-wide customs union – all key facilitators of trade. ■

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