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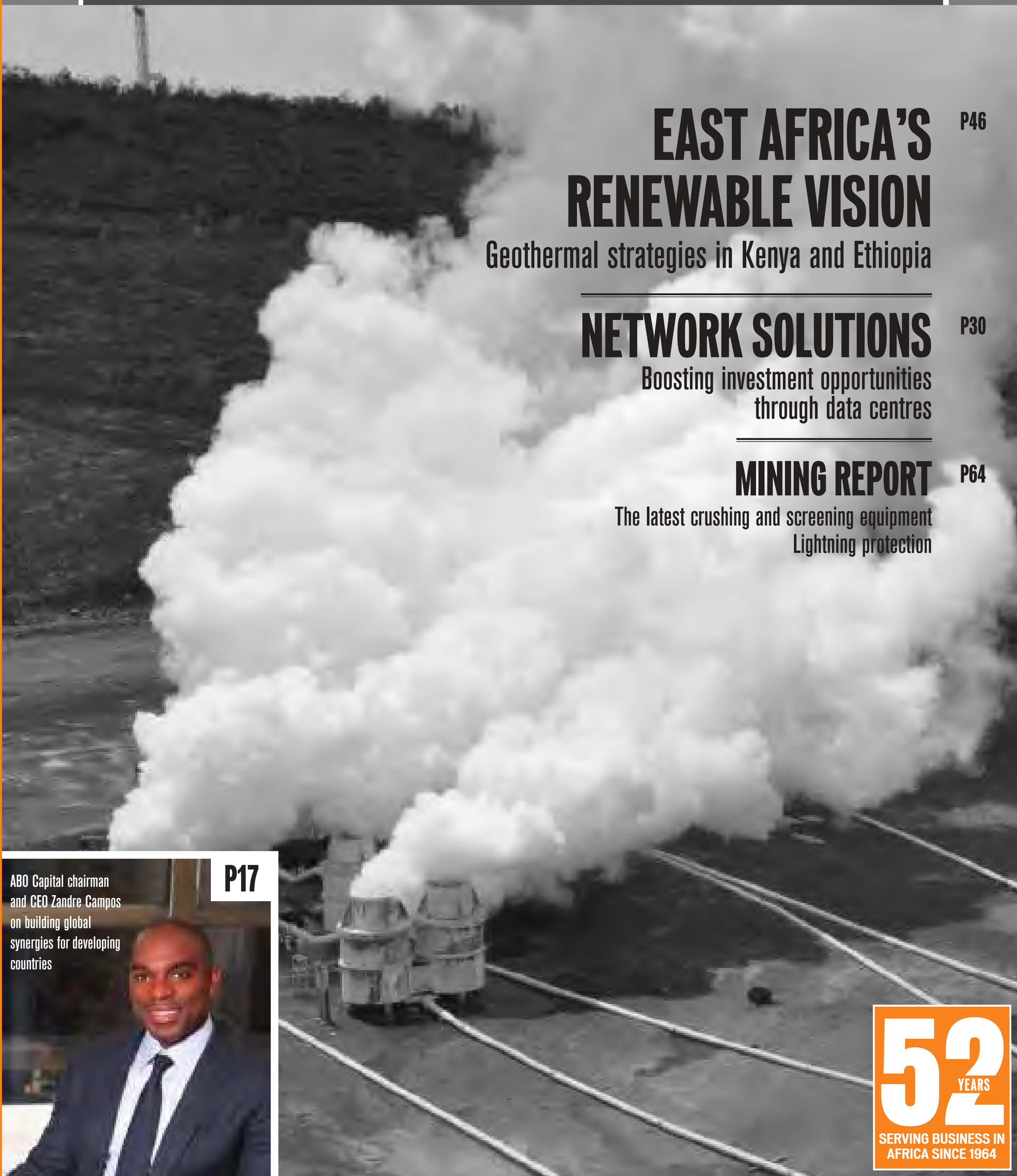

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Inset picture: ABO Capital

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Editor's Note

Welcome to the November issue of *African Review of Business and Technology*. In the last 10 years, African countries have experienced unprecedented levels of growth in global terms; Ethiopia, Ghana, Nigeria, Democratic Republic of the Congo, Mozambique and Tanzania are just a few to have turned investor heads. But an interesting dichotomy appears to be at play. Economic growth in sub-Saharan Africa is projected to dip to 1.6 per cent this year – its lowest in more than two decades – but GDP growth in around one quarter of the continent's countries is showing resilience, according to the *World Bank's* latest Africa's Pulse analysis. So why the economic slip? The World Bank says this can be linked to deteriorating performances in Nigeria and South Africa, which collectively account for half the region's output. In the case of the former, this can be linked to falling oil revenues and manufacturing output in H1, while in South Africa the economy contracted in Q1 before rebounding in Q2 as the pace of mining and manufacturing output increased. In this issue, *African Review* assesses the contribution of the service industries to Africa's GDP, and shines the spotlight on Zambia's recent macro-economic performance. In our profile interview, we speak to Zandre Campos, CEO of Angolan-based international investment firm ABO Capital, on inter-continental investment opportunities for developing countries. Plus, don't miss our report on geothermal energy development, a look at cement and concrete projects in East Africa, and a round-up of the latest crushing and screening news. The World Bank has forecast economic activity in sub-Saharan Africa to rise to 2.9 per cent in 2017. While the region's mature economies experiencing modest growth, other African countries are expected to expand at a "robust pace". Enjoy the issue.

Luke Barras-Hill, *Editor*

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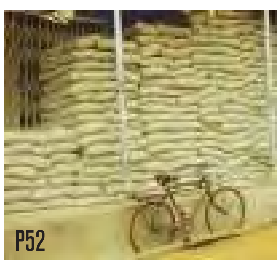

Mastercard and Tunisian Post partner on digital financial services

Mastercard will work with Tunisian Post to facilitate greater access to digital financial services in the country (Source: Valeri Potapova/Shutterstock)

Mastercard has signed a Memorandum of Understanding (MoU) with the Tunisian Post to develop and launch new digital financial services and promote the adoption of electronic payments in the country.

The collaboration allows Tunisian Post to introduce innovative and safe solutions for electronic payments and enable individuals and SMEs to use financial services round-the-clock through the Tunisian Post's electronic payment system and the prepaid e-Dinar smart card.

Under the agreement, the two companies will collectively work to facilitate improved access to digital financial services and decrease associated costs. It will also allow the Tunisian Post to contribute to a number of national projects in the field of e-government and digital management.

Commenting on the new deal, Tunisia minister of communication technologies and digital economy Mohammed Maarouf said, "Information technology and communication play a significant role in promoting social and economic integration by facilitating access for financial services, particularly for individuals and young entrepreneurs who are usually excluded from the formal banking ecosystem.

"The collaboration will help enhance their role in the economic growth of the country and promote financial education, especially among the unbanked segments of the society."

Mastercard division president for Middle East and North Africa Khalid Elgibali said, "Our collaboration with the Tunisian Post lays the framework for the launch of new electronic payment systems, which will allow individuals, governments and the economic bodies to take advantage of the many benefits of a 'World Beyond Cash'."

ALGERIA TO CONTINUE ENERGY TRANSITION AGENDA

Algeria will continue its energy transition plans - which consists of moving from a production process based on fossil resources to a hybrid production mechanism using renewable and fossil resources to maximise efficiency - the minister of energy Noureddine Boutarfa said at the International Energy Forum in Algiers.

Boutarfa said Algeria is ready to move ahead on the process of energy transition, underlining that photovoltaic plant projects totalling a capacity of 300MW were put into operation in 2016. He added that a programme of 4,000MW of photovoltaic generated electricity will be launched before the end of 2016.

In an international colloquium on, "the energy transition in Africa: Between economic challenges and environmental stakes", Boutarfa said the implementation of the national programme of renewable energies combined with a focus on energy efficiency will be the only guarantee of balanced and sustainable growth.

INTERNATIONAL BANKS SUPPORT ENERGY EFFICIENCY IN MOROCCO

The European Bank for Reconstruction and Development (EBRD), the Agence Française de Developpement (AFD) and the European Investment Bank (EIB) are teaming up to strengthen sustainable energy developments in Morocco.

The global financial institutions, together with the support of the European Union Neighbourhood Investment Facility (NIF), have announced their support for sustainable energy developments in the North African country ahead of the climate change seminar (COP22), to be held in Morocco in November.

EBRD has announced that the banks will be providing a US$38mn financing facility to BMCE Bank of Africa and its leasing subsidiary Maghrebail.

"BMCE Bank of Africa will on-lend to small and medium-sized enterprises and corporates in the commercial and industrial sectors, including commercial construction and energy service companies," EBRD said in a statement.

The proceeds of this EBRD-led facility are dedicated to financing energy efficiency and small-scale renewable energy investments. The finance line is the third under the Morocco Sustainable Energy Financing Facility (MorSEFF), which is a programme for sustainable energy investments through financial institutions.

EBRD director for financial institutions Mike Taylor noted that this is a very important initiative, which promotes best practice and raises awareness about the advantages of sustainable energy investment.

BMCE Bank of Africa Group chairman Benjelloun added:.

"In the context of COP22, it is with enthusiasm that we are renewing our partnership with the EBRD, AFD and EIB for a new MorSEFF programme to support companies in their environmental approach and position ourselves as the reference bank in these fields."

BRIEFS

Top bill of investors and developers to attend Africa Renewable Energy Forum

Chief architects spearheading Africa's renewable energy vision will attend The Africa Renewable Energy Forum, 2-4 November in Marrakesh, Morocco.

Developers contributing to the forum's sessions include Mustapha Bakkoury, chief executive officer, Masen; Badis Derradji, regional managing director, ACWA Power; Amine Homman Ludiye, regional manager Northern Africa, ENGIE; and Nabil Saimi, deputy chief executive officer, Platinum Power.

Investors contributing to the sessions include Kohei Toyodo, director of IPP/IWPPs EMEA, Japan Bank for International Cooperation; Lucy Chege, general manager, energy unit, Development Bank of Southern Africa; and Yasser Charafi, principal investment officer, International Finance Corporation.

Egypt and South Africa partner to boost investment

Egypt and South Africa have signed a Memorandum of Understanding (MoU) aimed at boosting investment between the two countries, according to the South African Department of Trade and Industry (DTI).

"The MoU is designed to conduct an effective and efficient programme geared towards the promotion and facilitation of cooperation of investment activity within high valued added sectors," said the DTI.

The MoU was signed between Investment South Africa and its Egyptian counterpart General Authority of Investment and Free Zones (GAFI).

Ambassador Sadick Jaffer and GAFI chief executive Mohamed Khodeir linked the agreement on behalf of the two organisations.

Ethiopia–Djibouti electric railway line opens

Ethiopia and Djibouti have launched a fully electrified cross-border railway line, connecting the capitals of the two countries.

The railway line links Ethiopia's capital, Addis Ababa, to the Red Sea port of Djibouti – a stretch of more than 750km. The railway will travel at a speed of 120km/h, cutting the journey time from three days by road to about 12 hours. It is the first standard gauge electrified railroad on the continent built with Chinese standards and technology.

The Ethiopia-Djibouti railway line is reported to be the first standard gauge electrified railroad in Africa (Source: Michael Gaida /Pixabay)

The US$3.4bn railway project was constructed by China Railway Group (CREC) and China Civil Engineering Construction Corporation (CCECC) and will have Chinese staff. The project was 70 per cent financed by China's Exim Bank.

"This train will speed up the development of our country's manufacturing industry and it will provide huge benefits to the industrial parks and modern farms that will be built in the future. It will give employment opportunities for our citizens," Ethiopian prime minister Hailemariam Desalegn said at the opening ceremony.

Running parallel to the abandoned Ethio-Djibouti railway, built more than 100 years ago, the new line is expected to provide landlocked Ethiopia with faster access to the Djibouti port.

Getachew Betru, chief executive of Ethiopian Railways, said the railway line will be much cheaper and more reliable than travelling to Djibouti by road.

"In Ethiopia, currently if you want to bring your container from Hong Kong to Djibouti it will take you maybe two, three weeks. But it will take you more than that to take it from Djibouti to Addis Ababa. It will now take us one day or more," he said.

The passenger trains – which will run daily each way – are to begin operations in three months' time. Ticket prices are yet to be announced.

The railway line is the first step in a vast 5,000km-long rail network that Ethiopia hopes to build by 2020, connecting it to Kenya, Sudan and South Sudan.

KOYO CORP TO OPEN ASSEMBLY PLANT IN TANZANIA

Japan-based Koyo Corporation plans to invest US$1bn in a gas power plant in Tanzania.

The company, which deals with renewable energy equipment, is also exploring the possibility of investing in solar power plants in the country, according to its Prime Minister.

The firm announced that it will start a subsidiary company under the name Koyo Bussan Tanzania Limited, through which it will increase access to solar power.

"Koyo brings state-of-the-art technology in renewable energy, thereby ensuring affordable access for both commercial and residential purposes," said Koyo managing director Tomokazu Hirayama.

The company plans to set up a solar panel assembly plant in Dar es Salaam that is expected to create employment for Tanzanians, as well as increase investment and government revenue.

Tanzania's energy ministry said in a separate statement that the country plans to build a 100 MW geothermal power plant within the next seven years. The country also aims to add about 2,000MW of new gas-fired electricity generation by 2018 to increase Tanzania's generating capacity to 10,000MW by 2025.

CHINESE FIRM TO BUILD KENYA - TANZANIA POWER LINE

The Kenya Electricity Transmission Company (KETRACO) has awarded a Chinese firm, North China Power Engineering Company, the contract to build a power transmission line connecting the country to Tanzania.

The 96km power transmission line running between Isinya and Namanga will be part of the Kenya–Tanzania interconnector line, which will hook Kenya's national electricity grid to the Southern Africa Power Pool. The high voltage transmission line has a total length of 510 km, of which 96 km are in Kenya and about 414km in Tanzania. The Kenyan component of the interconnector project is being financed by the Government of Kenya (GoK) and the African Development Bank (AfDB) and will be built at a cost of approximately US$22mn.

"Together with the completion of the Ethiopia–Kenya and the Lessos–Tororo lines, this regional interconnector, power evacuator and system strengthening line will certainly facilitate East and Southern African Power Pool exchange when Kenya and Rwanda receive 400MW and 200MW respectively in 2017 from Ethiopia," said KETRACO chief executive Fernandes Barasa.

With a capacity to transfer 2,000MW in either direction, the interconnector is expected to have positive impacts on the development of renewable sources of energy in Kenya and Tanzania because the interconnected system of both countries will result in a larger, more stable system.

The power transmission line is expected to enhance power trade in the region by facilitating the export and import of electricity. It will also feed into the Kenyan government's ambitious strategy of increasing the installed capacity to over 6,000MW from the current 2,333MW.

The interconnector line will also allow Tanzania to import hydropower from Ethiopia at a more competitive price.

BRIEFS

USAID awards Living Goods US$5mn to improve community healthcare

Living Goods has received a cash boost from USAID (Source: thestuff/Flickr)

The U.S. Agency for International Development's (USAID) U.S. Global Development Lab has pledged US$5mn to Living Goods.

The non-profit organisation, which is based in Uganda, builds local networks of health entrepreneurs who provide their communities with quality, low-cost healthcare.

Funded through the Development Innovation Ventures programme, the award will help expand Living Goods' community health service in Kenya while supporting USAID health programming.

Export credit agency ATI opens for business in Ethiopia

ATI CEO George Otieno (centre) says the company is ready to cover transactions in Ethiopia (Source: ATI-APO)

African Trade Insurance Agency (ATI) has announced it is ready to begin covering transactions in Ethiopia and Zimbabwe.

The announcement follows a year-long process supported by funds from the African Development Bank (AfDB).

ATI will help the country maintain its status as one of Africa's biggest success stories.

The $66bn economy has been expanding at a rate of as much as 10.3 per cent annually in recent years, says the International Monetary Fund.

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Arandis secures land for solar plant in Namibia

The solar power plant is expected to generate over 8.3mn KW hours of emission-free electricity per year (Source: Kletr/Shutterstock)

Namibian independent power producer Arandis Solar Energy has secured land for its solar project following the successful conclusion of a power purchase agreement (PPA) with Erongo Red.

The company signed a lease agreement for 12.5 ha of land for 25 years, with Arandis Town Council to start construction of the 3.4MW solar-powered plant in November. The project is expected to cost around US$250,000.

The lease agreement, which excludes the cost of utilities, is expected to generate about US$4,326 in revenue for the municipality per year. Arandis will construct and maintain the solar plant on behalf of Erongo Red. The solar-powered plant is to be connected to, and synchronised with, Erongo Red's transmission station. It is expected to generate over 8.3mn KW hours of emission-free electricity per year.

During the signing ceremony of the PPA in September, Erongo Red's CEO, Robert Kahimise, stated that the power plant will save the regional electricity distributor close to US$446,232 annually and an estimated total of US$9.4mn over a period of 25 years.

Commenting on the project, Arandis Mayor Risto Kapenda said, "We have prioritised renewable energy as one of the key drivers of the town's economy and solar energy is increasingly providing clean renewable sustainable energy. So, investing in clean energy is not a decision that limits our economic potential, but an opportunity to lead the global clean technology markets that are currently taking centre-stage."

PHOSPHATE MINING GETS GREEN LIGHT IN NAMIBIA

The Namibian environment ministry has approved an application by Namibia Marine Phosphate (NMP) to extract marine phosphate from the sea.

NMP, a joint venture between the Australian mining house UCL Resources Limited, Oman-based Mawarid Mining and Namibian company Havana Investments, posesses environmental clearance for phosphate mining for three years. Phosphate is expected to be extracted around 120km into the sea, south-west of Walvis Bay. Environmental commissioner Teofilus Nghitila said in a letter to the company that "this letter serves as an environmental clearance certificate for the project to commence".

In the letter, Nghitila said the environmental impact assessment and management plan submitted to him by the company is sufficient, as it made provision for environmental management regarding the proposed phosphate mining.

MAJOR THERMAL POWER PLANT TO BE BUILT IN ZIMBABWE

Bulawayo Mining District company Makomo Resources has obtained licence from the Zimbabwean government to build a 660MW thermal power station in Hwange.

Makomo Resources general manager Samson Mavhura announced during the company's 6th anniversary celebrations that the company would build two 330MW units.

The project is expected to take about two years from start to finish, and would be constructed at a cost of at least US$2bn.

"We got the licence from the government and we are looking at activating our financiers," said Mavhura.

The construction of the power plant is expected to be complete in two years. (Mikhail Starodubov/Shutterstock)

The project is to be financed by Makomo's mines in Hwange and unnamed Chinese investors.

Under the terms of Makomo's contract with the state-owned Zimbabwe Power Company, which operates a 920MW power plant at Hwange, Makomo supplies 60,000 tonnes of coal per month for the plant. It also supplies 10,000 tonnes per month for the nation's three smaller thermal power plants. Makomo has recently over taken Hwange Colliery Company as the country's largest coal miner and the company is currently looking at raising output to 300,000 tonnes per month.

BRIEFS

South Africa and Namibia sign aviation pact

South Africa and Namibia have signed a Bilateral Air Services Agreement (BASA) to strengthen the already existing civil aviation relations between the two countries. The agreement was signed between South African transport minister Elizabeth Dipuo Peters and the Namibian minister of works and transport, Alpheus !Naruseb in Pretoria.

Under the agreement, designated airlines may operate unlimited weekly passenger frequencies, unlimited overnight express cargo services with aircraft of up to 5,700kg, and exercise fifth freedom traffic rights for intra-Africa points. The fifth freedom allows an airline to carry revenue traffic between foreign countries as a part of services connecting the airline's own country. Some of the designated airlines include South African Airways, South African Express, South African Airlink, Comair, Fly Blue Crane and Air Namibia.

Vegetable oils explored as insulating fluid in transformers

South African electricity utility Eskom and the Industrial Development Corporation (IDC) have signed a MoU to conduct feasibility studies for the adoption and use of natural esters, or vegetable oils, as the insulating fluid in electricity transformers.

Eskom power delivery engineering general manager Prince Moyo said the agreement covers the testing, validation and development of standards for using vegetable oils in transformers. A full value chain, from agricultural production, agroprocessing, production, refinement and distribution for use in all size transformers, is also in development. A range of vegetable oils including rapeseed, canola, soya and sunflower oils will be tested for the project.

Nigeria Electricity Commission approves mini-grid licences

The Nigerian Electricity Regulatory Commission (NERC) has approved a new rule that gives power distribution firms licences to adopt mini grids in a move to boost electricity supply in the country.

The Draft Mini Grid Regulation 2016, passed by the NERC, states that electricity distribution companies can now use mini grids as a bridge technology to accelerate their electrification activities.

The regulation applies to participants in the private sector, local communities and NGOs. According to the commission, the development of mini grids will spread electricity access, particularly in rural or poorly-serviced areas, without causing excess strain on the national grid.

The NERC plans to introduce cost-reflective retail tariffs to encourage mini-grid development in the country (Image Source: GIRODJL/Shutterstock)

According to the draft regulation, a mini grid will include any system with an electricity generator of a 10kW and above capacity, which supplies electricity to a target set of consumers that can operate either in isolation or be connected to a distribution network. For distributed power of up to 100kW, a permit is optional for the operator, while systems between 100kW to 1MW will require a permit.

The commission has stated that cost-reflective retail tariffs would be utilised to encourage mini-grid development. The commission also said that the tariffs would be lower than any electricity supply of the same quality generated from conventional sources in such areas.

The commission said, "The Discos (distribution companies) stand to benefit from mini-grid operations and some of these benefits include the development of the Discos' licensing areas, which are not being exploited at no cost to the Discos pending when they are ready to extend their operations to such areas."

The African Development Bank (AfDB) has launched a Green Mini-Grid (GMG) Help Desk to facilitate the provision of renewable power to rural African communities as part of the larger Green Mini-Grid Market Development Programme implemented by the SE4All Africa Hub. The GMG Help Desk aims to provide online technical assistance on the myriad of activities important to the business cycle of developing and operating a clean energy mini grid.

CANON LAUNCHES OPERATIONS IN NIGERIA

Global imaging solutions vendor Canon has set another significant milestone in its overall growth strategy with the launch of operations in Nigeria.

The move is designed to enhance its business in the continent and strenghthen its in-country presence and focus. The dedicated entity in Nigeria has been set up to further reinforce the company's 'closer to customer' strategy in West Africa. Canon Nigeria Imaging Solutions Limited, to be located in Lagos, will provide value added on-ground marketing and sales support to new and existing partners and customers, meeting its demand in the rapidly evolving Nigeria market.

Canon stated that presence in Nigeria will also provide the company the opportunity to gain in-depth reach across Africa and to better understand the changing market dynamics and customer demand.

Canon sales development and marketing director Koji Sato said, "We have to succeed in Africa and we will not be able to do so without being in Nigeria."

ASANTE GOLD AND BXC ENTER JV TO DEVELOP KUBI GOLD PROJECT

Ghana-focused project developer Asante Gold Corporation has announced that it has entered a partnership with China-owned BXC to form the Kubi Gold JV, a 50:50 joint venture to develop the Kubi Mining Leases in Ghana to production.

BXC is a wholly-owned subsidiary of Beijing Fuxing XiaoCheng Electronic Technology Stock (BFXC). According to the agreement BFXC will provide US$15mn in funding to earn a 50 per cent stake in the Kubi Gold JV and a 30 per cent equity interest in Asante.

BXC will participate in a private placement, giving it a 30 per cent equity interest in the then issued capital of the company, at a price of US$0.15 a share.

Asante president and CEO Douglas R. MacQuarrie stated, "We are extremely pleased to welcome BXC as our JV partner and major shareholder to move Kubi forward to production. Its successful operating history in Ghana and strong balance sheet will complement our strengths in gold exploration, discovery and development. Its commitment to secure future debt funding for the joint venture gives Asante a non-dilutive path forward to fully develop the potential of Kubi."

Asante will apply 10 per cent of the proceeds of the Private Placement to its unallocated working capital, and the balance to complete its initial funding of the Kubi Gold JV. The agreement is subject to final due diligence and closing is expected by December 31, 2016.

Under the agreement, BXC has also committed to provide additional funding to the Kubi Gold JV for the construction of additional facilities such as a production shaft, full processing facilities, or expansion of the project.

BRIEFS

Nigeria targets 45,101 MW electricity generation by 2030

The Nigerian federal government has announced plans to meet the country's generation capacity through traditional and renewable energy resources. The government has unveiled a Sustainable Energy for All (SE4ALL) Action Agenda document, which states that it seeks to increase Nigeria's power generation from the current 3,000MW to 45,101MW by 2030.

Further to this target, the government also stated it expects renewable energy generation to reach 13,800MW within this time frame. The document says that by 3030, the country would be generating 13,000MW from gas, 3,200MW from coal, 2,000MW from nuclear, 5,000MW from solar, 1,000MW from solar thermal and 1,100MW from biomass.

Cameroon to address rising power demand

The iPAD Cameroon Energy Infrastructure Forum to be held next month will provide stakeholders with an opportunity to explore ways of addressing the continent's new appetite for different energy sources.

The forum is held on the back of a rise in demand for electricity by between seven and eight percent every year in the country, raising the important requirment for public private partnerships to fuel power infrastructure projects.

Commenting on the relevance of the forum, iPAD Cameroon director Elodie Delagneau said Cameroon has established itself as a main actor in the region for infrastructure development, as the most prosperous economy in the Central African Economic and Monetary Community.

Upcoming Events

NOVEMBER

8-10

SECUREXPO EAST AFRICA
Nairobi, Kenya
www.securexpoeastafrica.com

10-11

IPAD CAMEROON ENERGY INFRASTRUCTURE FORUM
Yaoundé, Cameroon
http://www.ipad-cameroon.com

14-17

ITU TELECOM WORLD
Bangkok, Thailand
http://telecomworld.itu.int

14-18

AFRICA COM
Cape Town, South Africa
https://tmt.knect365.com/africacom/

15-17

EAST AFRICA OIL & GAS SUMMIT (EAOGS)
Nairobi, Kenya
http://eaogs.com

15-17

TV CONNECT AFRICA
Cape Town, South Africa
https://tmt.knect365.com

17-18

16TH INTERMODAL AFRICA
Mombasa, Kenya
www.transportevents.com

21-22

PROJECT FINANCING IN OIL & GAS
London, UK
http://www.smi-online.co.uk

23-25

AGRA INNOVATE WEST AFRICA
Lagos, Nigeria
www.agra-innovate.com/westafrica/conference

28-30

AGRI INDABA
Cape Town, South Africa
http://www.agri-indaba.com/

30-1 December

GLOBAL AFRICAN INVESTMENT SUMMIT
London, UK
www.dmgevents.com

DECEMBER

4-6

ELECTRICX
Cairo, Egypt
http://www.electricxegypt.com

6-8

AFRICA ENERGY FORUM: OFF THE GRID
Dar es Salaam, Tanzania
http://www.energynet.co.uk

AFRICAN REVIEW / ON THE WEB

A selection of product innovations and recent service developments for African business
Full information can be found on www.africanreview.com

AECOM TO OVERSEE US$1.5BN TEMA PORT EXPANSION

The expanded Tema Port harbour (Source: Aecom)

Aecom will oversee construction of the Tema Port in Ghana for Meridian Port Services (MPS), operator of the container terminal.

Aecom will provide design and procurement management services prior to the award of construction contracts.

Afterwards, it will supervise the construction of all of the port expansion facilities.

The project commenced at the beginning of October 2016, with completion set for Q4 2019.

MPS is a joint venture between the Ghana Ports and Harbours Authority (GPHA) and Meridian Port Holdings, with Bolloré Transport & Logistics and APM Terminals as the two main shareholders.

MPS is building the project as part of the GPHA plan for the development of Tema Port. Funding for the project has been secured by MPS from the International Finance Corporation (IFC), a member of the World Bank Group, as well as from shareholders.

"Aecom is proud to manage this project on behalf of MPS," Aecom project director Ozgur Balaban explains.

"Due to the size and complexity of the project, our team includes highly-experienced port project management professionals who have come to Tema from Aecom's global organisation."

http://www.africanreview.com/transport-a-logistics

ETHIOPIA-DJIBOUTI RAILWAY OPENING 'TO BRING NEW SOCIO-ECONOMIC BENEFITS'

The opening of a new $3.4bn Chinese-built electrified railway linking Ethiopia to Addis Ababa is another step forward in improving the trans-African railway network, transport sources have said.

Ethiopia officially inaugurated the 756km stretch of line, which connects Addis Ababa to the major Red Sea portof Djibouti, on Wednesday 5 October in a ceremony attended by Ethiopia's Prime Minister Hailemariam Desalegn, Djibouti's Prime Minister Ismaïl Omar Guelleh and China's ambassador to Ethiopia La Yifan.

"We applaud this development as what will be part of a wider national and regional railway network; this will undoubtedly bring many benefits, such as congestion relief, economic development and improvements in air quality," press and media manager at the international organisation for public tranport authorities UITP Andrew Canning told African Review.

http://www.africanreview.com/transport-a-logistics

UK COMMITS TO KENYA'S RENEWABLE ENERGY DRIVE

Plans to stimulate investment by UK firms in the Kenyan renewable energy sector have been unveiled by the UK government and Barclays Bank at an event in Nairobi.

Bringing together 100 representatives from Kenyan and UK firms, the UK-Kenya Renewable Energy Conference (REC 100) hosted by the British High Commission in conjunction with Barclays Bank of Kenya, aimed at consolidating a pipeline of low-carbon deals to accelerate affordable electrification in the country.

Speaking at the conference, the British High Commissioner to Kenya Nic Hailey said, "The UK and Kenya are at the vanguard of renewable energy, clean technology and innovation. Kenya has one of the most active renewable energy sectors in Africa, and the UK is a global leader in many of the sectors for which Kenya has greatest demand.

"We are excited by this growing UK-Kenya partnership in renewables, working together to bring clean, sustainable energy to the Kenyan people and accelerate Kenya's development and economic growth."

The collaboration between the UK and Kenya is backed by a Memorandum of Understanding (MoU) signed by both parties in May, including a deal to develop strategic renewable projects in Kenya and promote opportunities for private sector trade and investment by the UK into the renewable energy sector.

http://www.africanreview.com/energy-a-power/renewables

INCLEDON HIGHLIGHTS FLUID CONVEYANCE SOLUTIONS

All products distributed by Incledon carry the correct approvals and certifications (Source: Incledon)

A growing trend towards the use of high-density polyethylene (HDPE) pipe solutions offers the water infrastructure sector a major boost, according to CMO Kelly Wilson of South African engineering supply firm Incledon.

The major benefits of HDPE pipe solutions are their corrosion-resistant and leak-tight properties.

Wilson says the heat-fused joints create a homogenous, monolithic system, with the fusion joints affording greater strength than the pipe itself.

The HDPE pipes also maintain optimum flow rates, do not tuberculate and possess a high resistance to both scale and biological build-up.

Another important feature is excellent water-hammer characteristics, in addition to being designed to withstand surge events. Potable water losses and groundwater nuisance treatment costs associated with traditional pipe systems are also eliminated.

http://www.africanreview.com/energy-a-power

XYLEM LAUNCHES NEW PUMP RENTAL AND SERVICES BUSINESS IN DUBAI

The expanded Tema Port harbour (Source: Aecom)

Global technology water company Xylem has announced the opening of a new pump rental and services business in Dubai to serve growing demand from the construction and infrastructure sectors, as well as municipalities, across the Middle East and North Africa (MENA) region.

This follows the company's announcement in January this year of a US$35mn investment in expanding its operations in the region. The investment, which will continue until 2018, will enable the localisation of products as well as building local capabilities, including a pump manufacturing facility, a pump rental and services operation, and offices in the UAE, Oman and Qatar.

David Flinton, senior vice-president and president of Xylem's Dewatering business added, "This new hub is part of a larger, significant investment we are making in the MENA region, as we work to solve our customers critical water challenges."

http://www.africanreview.com/manufacturing/


WORLDWIDE
14 BRANCH
OFFICES
EXPORTS TO
160 COUNTRIES
PRODUCTION
IN 3 CONTINENTS
SINCE 1984

"Adjustment to low commodities has been limited in several commodity exporters, even as vulnerabilities have mounted. Adustment efforts should include measures to strengthen domestic resource mobilisation, so as to reduce over dependence on resource-based revenues.

PUNAM CHUHAN-POLE

Lead economist, World Bank, on the challenges facing oil exporters responding to the collapse in commodity prices

"Trade is not just about statistics on goods and services, it is also about people, and for me, trade integration is most exciting when it creates more jobs.

MUKHISA KITUYI

Secretary-general, UNCTAD

"African airlines, the aviation industry, other stakeholders as well as African institutions have been consistently advocating a global solution under ICAO's leadership for several years.

DR. ELIJAH CHINGOSHO

Secretary-general, AFRAA, following the landmark signing of The Carbon Ofsetting and Reduction Scheme for International Aviation

"The European Investment Bank is committed to unlocking investment across Africa and we are pleased to build on past success to strengthen our partnership with UBA that will benefit projects across Nigeria.

AMBROISE FAYOLLE

Vice-president, European Investment Bank, following the signing of a $65mn deal with UBA to support private sector investment in Nigeria

"The growing suite of vehicle finance, business and lifestyle solutions that Uber Nigeria is making available to driver-partners and other business investors reaffirms our commitment to supporting and partnering with them to ensure their success.

EBI ATAWODI (ABOVE RIGHT)

General manager, Uber Nigeria, announcing that the company is now offering low-interest, used vehicle loans to its top-rated drivers

"WAIPEC has been created to specifically address Nigeria's national energy needs, highlight its challenges, and importantly, promote its continued development. The event will provide a platform for the many major oil producers, engineering companies, oilfield services and consultants operating in Nigeria and West Africa, to showcase their technologies and expertise, as well as work to attract international investment and create partnerships for the betterment of the sector.

BANK-ANTHONY OKOROAFOR

Chairman, PETAN, announcing the inauguration of WAIPEC, which takes place 21-23 February 2017 at the Eko Convention Centre, Lagos, Nigeria

"The Nigerian real estate investment market is experiencing a unique combination of the first economic recession in 25 years, a rapidly devaluing currency, and a retail and commercial development boom. This has led to an oversupply of prime real estate at a time when demand has fallen to its lowest levels in over a decade.

BOLAJI EDU

CEO, Broll Nigeria

"The AIF will coordinate with other Africa investment fora and work to strengthen collaborative efforts to crowd-in neccessary investment, and attract social impact financing in Africa. It will support AfDB regional member countries and potential investors through the provision of rigorous, authoritative and robust, business intelligence and analytical work on African's competitiveness.

DR. FRANNIE LEAUTIER

Senior vice-president, African Development Bank Group, on the launch of an Africa Investment Forum (AIF)

Africa's global pathway

Zandre Campos, chairman and CEO of Angola-based ABO Capital, describes how the company's energy, technology, transportation and healthcare investment trajectories are helping to boost Africa's global growth prospects


Zandre Campos, CEO of ABO Capital (Source: ABO Capital)

Equipped with an entrepreneurial wisdom and experience that permeates fast-growing sectors such as telecoms, healthcare and oil, Zandre Campos is well placed to describe the current challenges and opportunities facing Africa's economic growth path today. As chairman and CEO of international investment firm ABO Capital, de Campos Finda has held the position of CEO at Angola's Movicel Telecommunications and Nazaki Oil and Gas S.A, and executive in the office of the president of Sonair S.A, a subsidiary of Angolan state-owned oil company Sonangol. He has also been described as one of the most exciting and innovative business leaders on the continent.

His experience is indeed significant, as the Republic of Angola is considered the second-largest oil producer in Africa, with activities in this sector alone contributing around 45 per cent of the country's GDP and over 95 per cent of its exports, according to the Organisation of the Petroleum Exporting Countries (OPEC).

Formerly known as Angola Capital Investments, the name change of Campos' ABO Capital in August reflects the sizeable growth and evolution of the company over the last four years, with a reach expanding beyond Angola to the wider African continent and now, to the rest of the world.

Despite the change in name, Campos says ABO Capital is still following the same path.

"ABO Capital's mission actually remains the same as it always has been – to create global value for developing countries in Africa while contributing to international countries' economic development.

"When we started nearly three years ago the majority of our projects were here in my home country of Angola and now the firm's reach has extended beyond Angola to not only the entire African continent, but the entire world; we have operations in Portugal and Dubai in addition to Luanda."

Frontiers of change: energy, transportation and technology

ABO Capital's mission of creating global value for developing countries has seen it focus on a number of industry sectors.

In the case of energy, transport and technology, Campos acknowledges the importance of the sector to Africa's economic health and is actively investing in all three. However, he agrees that burdensome infrastructural and connectivity issues can often hold back growth, requiring focus before the continent is able to advance. This is particularly important in areas such as his native Angola.

"Investment in energy is important because more than 13 million Angolans, or about 26% of the population, have no access to electricity, according to the International Energy Agency (IEA). Rural areas, especially those in the rural south of the country, have no access to a grid. Cities and other areas that do have electricity can experience blackouts.

"There is also a need for renewable energy. Due to the exceptionally sunny climate, solar energy holds huge potential for Angola, especially in rural areas. The IEA notes in its Africa 2030 report that renewable energy on the continent has the potential to quadruple to 22% – renewable electricity may provide up to one quarter of electricity in Africa by 2040."

Local expertise, global appeal

On a broader scale, Campos says one way to breed global value for developing countries in Africa, while retaining important local expertise and appeal, is education.

> "ABO Capital's mission actually remains the same as it always has been - to create global value for developing countries in Africa while contributing to international countries' economic development
>
> ZANDRE CAMPOS,
> CEO AND CHAIRMAN, ABO CAPITAL

"Young people constitute at majority of the population, and a robust education will create a skilled labour force while encouraging them to remain in their native countries. Countries grow because of education, and a solid education system leads to economic opportunities."

It is these economic opportunities on a geo-local level that ABO Capital is focused on. As a major investor and board member of global healthcare giant Sphera, which develops and implements healthcare solutions for governments, corporations and institutions facing market-specific healthcare challenges, Campos' focus for the next year is providing solutions to enhance the paradigm of patient care and technology in a bid to "democratise" healthcare services for people in Angola.

He says technologies have already been developed including video conferencing, telemedicine, virtual platforms, apps and mobile health. Besides improving communication, the technologies will facilitate quality healthcare regimes by reducing hospital visits.

The firm also invests in ETG, an integrated agricultural supply chain that provides a link between farmers and consumers, with services including procurement, warehousing, processing and manufacturing of finished goods, transportation and distribution.

Boasting investments and interests worth a reported $100 million in a dozen or so companies, ABO Capital possesses a diversified business portfolio that continues to expand. At the time of writing, the firm was set to announce its first US investments, although Campos remained relatively tight lipped when pressed by *African Review*.

"We will be announcing our US investments shortly. We have invested in two companies, one is a for-profit social enterprise and the other markets an A.I platform for modern legal departments who want to take control of their data – that is all I am able to divulge at this time." ■

Planting Our Future

How a global brewery transformed an industry and helped thousands of farmers realise their ambitions.

My father is a sorghum farmer

Together with BARCLAYS in Ghana, Guinness gives them training, finance and equipment to expand

Production in Ghana is set to double to 10,000 tonnes

Which means most farmers are earning 50% more money


Before, he grew
just enough grain for us
Now he
sells it to
Guinness Ghana
Which plans
to buy half
its sorghum
from farmers
like my Dad
And my Dad
has been able to
send me to school
So that one day
I can run his business
More stories at www.cib.barclaysafrica.com

Spearheading future growth in Zambia

Zambia's development is premised on 'Vision 2030', a forward-looking agenda that seeks to achieve the nation "middle income status" by the year 2030

The Mongu-Kalabo Road (Source: Zambia News and Information Services)

Zambia shines brightly as a star of democracy and peace in South Africa. Since discarding the British colonial yoke in October 1964, the country has not known the type of strife that has afflicted its peers on the continent.

The country's economy was founded on the copper mining industry, but the government has now put in place a robust diversification programme encompassing agriculture, manufacturing, tourism, gemstone mining, energy and construction.

There is a need to rigorously embark on efforts to diversify the economy in a bid to continue to attract increased foreign direct investment (FDI).

Zambia's development agenda is premised on 'Vision 2030', an ambitious document that aims at achieving the country a prosperous middle-income status by the year 2030. In order to attain this benchmark, Zambia is working within successive national development plans, policies, programmes and strategies in the medium and long term.

Macroeconomic performance

Real GDP growth over the period 2011 to 2015 has been robust. Averaging 5.4 per cent, it is above that of sub-Saharan Africa, which averaged 4.6 per cent during the same period. However, Zambia's economic growth slowed down to 3.5 per cent in 2015 and is projected to improve to 3.7 per cent in 2016. This projection is still higher than the IMF forecast for sub-Saharan Africa, which averages 3 per cent for 2016. This positive trend will be driven largely by growth in agriculture, construction, accommodation and food service sectors.

Over the last five years, the performance of the local unit, the Kwacha, against convertible currencies, has been relatively stable on account of the general good performance of the external sector. Following austerity measures undertaken by the Bank of Zambia (BoZ) in conjunction with the Treasury, the Kwacha is now stabilising.

"The central bank continues to monitor domestic and external developments closely with a view to taking appropriate monetary policy measures to support price and financial system stability," Dr. Denny Kalyalya, BoZ governor, said recently.

The economy continues to experience significant external and domestic shocks that have had an adverse effect on fiscal policy. This has posed challenges to the maintenance of price and financial system stability.

Investment

As *African Review* went to press, Patrick Chisanga, director general of the Zambia Development Agency (ZDA), said a total of US$2.6bn investment pledges were recorded between January and September 2016 in different sectors of the economy.

"The manufacturing sector is top of the chart with 43 licences issued and $525mn of pledged investment," said Chisanga.

The energy sector contributed $870 million worth of investment.

"The agency is resolute in building and enhancing the country's investment profile for increased capital inflows, capital formation and employment creation and promoting the growth of the micro, small and medium enterprise (MSME) sector.

This year, Zambia has hosted high-profile business events such as the Zambia International Investment Forum (ZIIF), Zambia International Energy Conference, Copperbelt Mining, Trade Expo and Conference (CBM-TEC), World Farmers Organisation Conference and the African Development Bank (AfDB) Annual Meetings. Zambia is an attractive investment destination due to, among other factors, its stable political system; a positive and investor-friendly environment; investment guarantees and security; progressive banks; an abundance of natural resources; access to regional, European Union and US markets; and a thriving private sector.

Mining

The mining sector has expanded significantly in the past few years. This is evidenced by projects such as the Kalumbila Mine and the Konkola Deep Mining Project (KDMP), with a combined potential for 2mn metric tonnes per annum; the Mulyashi Mine; the Mopani Mine expansion, which adds another 25 years to its lifespan; and the expansion of the Non-Ferrous Metals Africa Mining's south-east ore body.

The mining sector has accounted for the largest share of FDI into the country targeted at greenfield projects and expansion of existing projects. Since 2011, the sector has attracted over US$5bn in investment, or over 60 per cent of total FDI stock, pointing to a climate that continues to beckon capital injection into the country.

The cabinet recently approved a new tax regime "to sustain continuous operations of existing mining companies and avert the continuation of suspension of mining operations and job losses".

One contentious issue in the sector has been the lack of a stable and consistent policy. The Zambia Chamber of Mines says the country's geology shows great potential for further investment in mining, but there is a need to create a stable mining policy, internationally competitive rates, and an investor-friendly environment.

Infrastructure development and transport

Upon assuming office in 2011, the Patriotic Front (PF) government prioritised infrastructure development as a key strategy for attaining sustainable development. The main thrust of this intervention was the Link Zambia 8000, Lusaka 400 and, more recently, Copperbelt 400 road programmes. These are transforming the country from land-locked to land-linked, thus enhancing trade within the country and the region.

Apart from creating jobs, road projects have been instrumental in contributing to the opening up of new markets in the country, lowering the cost of doing business, and ensuring the general public save on the cost of travel and purchasing goods and services.

Landmarks completed include the Mongu-Kalabo Road; the Lubosi Imwiko II Bridge across the Zambezi River; the Michael Chilufya Sata Bridge across the Kafue River; the Sioma Bridge across the Zambezi River, and Mufuchani Bridge on the Copperbelt. One major project under implementation is the construction works on the Kazungula Bridge on the Zambezi River, which connects Zambia and Botswana, expected to be completed in 2018.

Construction works to improve the Harry Mwaanga Nkumbula International Airport (HMNIA) in Livingstone have been finalised, while the upgrading of the Kenneth Kaunda International Airport is underway. On top of this, the construction of the US$$397mn new Ndola International Airport on the Copperbelt is scheduled to commence soon. This airport, to be located on a 2,000 hectare site northwest of Ndola, will replace the current Simon Mwansa Kapwepwe International Airport (SMKIA).

Energy

Load-shedding due to a power deficit has ravaged the country in recent times. The government has made impressive strides to ameliorate the situation by making operational a number of projects. New capacity has been derived from the 120MW Itezhi Tezhi hydro power station and more recently the 300MW Maamba Collieries thermal power plant, which has since added 150MW to the national grid. In November 2015, the 750MW Kafue Gorge Lower was commissioned. Zambia and Zimbabwe are also jointly developing the 2,400MW Batoka Gorge hydro power station.

The government has prioritised the expansion and diversification of energy production, involving both public and private sector investment in hydro, coal-powered and solar to meet the growing demand for power.

A diversified mix of energy is the surest way to meeting the ever-rising demand, and the government has shown immense will to solve the power deficit with the recent presidential launch of the first ever solar power stations in Lusaka. The involvement of the private sector and other independent power producers (IPPs) should shine a ray of hope in the 'dark corridors' of power.

Manufacturing

In line with the government's Industrialisation and Job Creation Strategy, the growth of the manufacturing sector remains key to efforts to diversify the economy.

The manufacturing sector grew by 5.4 per cent in 2014 from 4.9 percent in 2013. Growth in the sector has largely been driven by the agro-processing (food and beverages), textiles and leather sub-sectors.

The strategy reads, "Sustainable job creation will require the increased production of value added products and the exploration of export markets, in which Zambia has a competitive advantage. The manufacturing sector will need to play a key role in this process and four core sub-sectors have been identified as having the best potential to achieve this objective, namely: agro-processing, wood products, engineering and pharmaceutical subsectors."

The government has also put in place a sustainable enterprise development programme, which is being implemented through various initiatives such as linkage programmes between SMEs and larger corporations and establishing Multi-Facility Economic Zones (MFEZs). Zambia's manufacturing sector is a pivot of economic development, from its backward and forward linkages to economic growth, exports and employment creation.

Telecommunications

Vodafone Group of the UK recently entered the sector and will provide mobile data solutions and internet services. Zambia has recorded a significant increase in the number of mobile phone subscribers, from 2.6mn in 2007 to 11.5mn, due to increased investment in the sub-sector by mobile services providers.

The number of internet users increased from 2.3mn in 2012 to 5mn in 2015, with the majority utilising mobile cellular networks (Airtel, MTN and Zamtel), which account for 99 per cent. This increase represents a 32.2 per cent rise in 2015, compared with 17.3 per cent in 2012. ■

Nawa Mutumweno

Building prosperity from professional Services

The flourishing services industry has made a tangible contribution to GDP growth and job creation in sub-Saharan Africa, but regulatory hurdles and cross-border trade restrictions are holding it back

Empirical studies point to the transformational nature of the services sector in raising labour productivity and providing new avenues for export diversification.

"Both formal and informal trade in services create an opportunity for growth and poverty reduction in Africa," says Nora Dihel, senior economist at the World Bank. Informal services range from hairdressing, cosmetics, construction and housekeeping to education, health and micro finance.

Employment data from the International Labour Organisation (ILO) show that post-2005, services jobs are predominant in several sub-Saharan African countries, particularly in Gabon, Mauritius and South Africa, where services account for over three-fifths of jobs in the economy (Table1). In terms of GDP, Mauritius and South Africa are the most service-based economies, followed by Botswana, Rwanda and Kenya, respectively (Table2, pg23).

Services are key inputs into the production of other goods (including food staples) for domestic consumption and exports.

Efficient telecommunications, public utilities, transport, financial, and information services generate 'nation-wide' gains by reducing transaction costs and transfers of skills/technology to other sectors. Transport services affect the costs of shipping goods and mobility of workers and services providers within the country and cross-borders. Trade and wholesale distribution channels are a vital link between producers and consumers. But poor services can lead to higher prices.

Services liberalisation helps stimulate higher growth through open competition, better technologies and access to foreign capital, thereby boosting the productivity of firms, while providing 'welfare enhancing' gains. Research suggests that growing prosperity from service trade also uplifts living standards via trickle-down effects. The services sector is highly 'labour-intensive' – a marked contrast to 'capital-intensive' extractive industries (mining and petroleum).

Table 1.Employment Share by Sector, 2005-12

	Employment shares in (percent)		
COUNTRY	**Agriculture**	**Industry**	**Services**
Botswana	29.9	15.2	54.9
Congo, Rep.	35.4	20.6	42.2
Gabon	24.2	11.8	64.0
Ghana	41.5	15.4	43.1
Kenya	61.1	6.7	32.2
Mauritius	7.8	27.6	64.7
Namibia	27.4	13.8	58.7
Rwanda	78.8	3.8	16.6
Senegal	33.7	14.8	36.1
South Africa	4.6	24.3	62.7
Tanzania	76.5	4.3	19.2
Uganda	65.6	6.0	28.4
Zambia	72.2	7.1	20.6

Source: World Development Indicators.

Modern services

Africa's potential in traditional services, such as tourism and transport, is widely recognised, but recent growth of non-traditional businesses, chiefly professional business services, is often overlooked. These include mostly 'uncharted' services:

- Technical functions such as legal, accounting, engineering, agricultural, mining and on-site processing.
- Royalties and licence fees, covering payments and receipts.
- Public relations, advertising, research and development (R&D).
- Insurance and banking, comprising trade-related services such as operational leasing (rentals).
- Information and communication technologies (ICT) and courier services.
- Education, healthcare and recreational services.

Sub-Saharan Africa ranks low in regulatory independence across all sectors and many African regulatory bodies remain at fledgling stages of development. Furthermore, regulators lack adequate budgets and qualified staff members, according to the United Nations Conference on Trade and Development (UNCTAD) 2015 report. Available evidence on the restrictiveness of explicit trade policies is, however, unclear. The World Bank's database on the Services Trade Restrictiveness Index covering five key sub-sectors: financials, professional, retail, telecom, and transportation – shows that sub-Saharan Africa is quite restrictive in professional services. However, financial, transport, and retailing businesses in Africa are, in fact, much less restrictive compared to peer developing regions.

Positive spillovers

The use of professional services is associated with higher labour productivity in several African countries; firms that deploy internal or external professionals, on average, perform better compared with nonusers. The wider economy benefits from availability of commercial services. For instance, accountancy is critical for transparency, prudent financial management and good corporate governance, while effective legal and justice systems improve the business environment, ensure contract enforcement and help mitigate investment risks.

Engineering and ICT services are knowledge-intensive functions, which are key to the sustainability of other economic activities. Hence, civil engineering is pivotal for the development and maintenance of a country's physical infrastructure; electrical engineering is critical for the operation of public utilities and communications networks. Finally, good healthcare and education services (including vocational training) are key inputs for nurturing a skilled and healthy workforce.

However, the continent's potential to engage in innovative 'knowledge-intensive' activities remains neglected. Few people are aware of trade in educational and health services being provided via ICT channels. Some private hospitals in sub-Saharan African countries are treating foreign patients by using Tele-medicine or providing medical advice over videoconferencing; such trade flows in medical tourism remain unrecorded. In higher education, the delivery of lectures through distance learning programmes is gaining popularity.

Sophisticated communication and transport technologies have driven the 'servicification' of manufacturing (defined as increased use of services as traded inputs and bundling into composite products, such as business functions) in production process and final sales, leading to their incorporation into regional and/or global supply chains. Findings show that firms participating in agribusiness and apparel global value chains (GVCs) rely heavily on services as intermediate inputs. In Ethiopia, access to more efficient services (including air cargo) along the whole value chain has boosted cut flower exports. The services industry also leads to structural transformation (moving-up the value chains from lower to higher productivity functions for example), hence the importance of various services in enabling GVCs.

Challenges

While trading in services offer scope

Table 2. Suppliers of Professional Services in Selective African Countries, 2013

COUNTRY	Services as % share of GDP	Number of licensed engineers	Number of engineers per 100,000 people	Number of licensed accountants	Number of accountants per 100,000 people	Number of licensed architects	Number of architects per 100,000 people
Botswana	61.0	**	---	1,016	50.8	150	7.5
Kenya	51.0	1,400	3.6	11,800	30.6	1,400	3.6
Mauritius	72.0	1,100	84.6	2,620	201.5	171	13.1
Rwanda	52.0	150	1.4	248	2.3	36	0.34
South Africa	70.0	41,125	77.6	37,820	71.4	8,919	16.8
Tanzania	47.0	3,625	8.1	2,793	6.3	349	0.78
Uganda	49.0	302	0.92	1,700	5.2	209	0.64

***A new Engineering Registration Board was recently formed in Botswana and is devising a new registration process.*

Source: World Bank 2013 (country professional institutes).


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for sustainable growth, problems of regulatory and trade barriers (including cross-borders), plus higher transaction costs continue to hinder the sector. Tanzania recently levied VAT (value added tax) on the financial services and tourism industries. There are obstacles to trading in services among African countries. Education and health services in East Africa are hindered by restrictions on using tele-medicine or e-learning. Restrictions on the legal forms of entry to hospitals in Tanzania and Uganda, or limits on the repatriation of earnings in Kenya and Uganda, constrain the establishment of foreign hospitals in the region. Medical tourism remains restricted by the non-portability of insurance policies.

Finally, higher costs of visa and work permits in many countries impose stringent restrictions on the movement of professionals to provide cross-border services. The World Bank notes: "The extent and volume of such trade is diminished. Without such burdensome regulations, the government, the suppliers and the consumers could all be better off. What can policymakers do to address these challenges? Concrete, sector-specific guidance to improving regulatory frameworks and minimising restrictions to trade are needed to deepen regional co-operation on trade in services in Africa."

Solutions

Some countries and regional economic blocs are trying to improve regulations, facilitate services flows, and ultimately, make services more competitive. "Co-operation initiatives are necessary to increase the regulatory capacity that African governments need to build over time to engage in meaningful liberalisation efforts," argues Dr. Alemayehu Geda, Professor of Economics at Addis Ababa University.

Recently, the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC) and the Southern African Development Community (SADC) have taken steps to lower trade barriers and to discuss practical solutions to trade impediments, especially addressing excess transaction costs. Knowledge- sharing platforms on professional and tourism services are good examples of tools for translating policy recommendations into concrete actions. For instance, the East Africa Tourism Platform has taken a lead in championing a co-ordinated approach to enhance the region's travel and tourism competitiveness.

Such platforms were designed for practitioners, policy makers, and regulators to engage in meaningful dialogue about the critical issues that are currently transforming these services in Sub-Saharan Africa.

In sum, the potential of services in trade diversification is now beginning to emerge. Innovative regional institutional arrangements and technological progress are creating new commercial outlets. These include tele-medicine and distance education programmes, which boost possibilities for further expansion and increased foreign participation in the provision of modern services. But data on such flows remain scarce on the African continent. Amid weak energy and metal prices causing a severe downturn in extractive industries, diversification into service exports is paramount for maintaining future growth. Africa is a minor player in global invisible trade; in 2012, sub-Saharan Africa accounted for only 2.2 and 4 per cent, respectively, of global total exports of services and services imports according to the World Bank. There's more to Africa than just supply of primary commodities. ■

Moin Siddiqi, economist

Commercial drones can help play a major role in improving African infrastructure projects (Source Shutterstock concept w)

Flying robots disrupt 'business as usual' operations

Drone technology is being deployed to create a better economic future for Africa, and even save lives

It is true that drones may have received something of a bad press early on, with unmanned military aircraft laden with missiles sent to hunt targets in trouble spots around the world. But that does not rule out a brighter future, as drones transition from war machines to agents of hope in poor and under developed areas in sub-Saharan Africa.

After this somewhat inauspicious start, there are now countless and far more benign applications for drones – for instance, unmanned aircraft systems (UAS) or unmanned aerial vehicles (UAV) – in other key areas of the economy, from agriculture to infrastructure development. That is not to forget the weekend hobbyists who now fly their machines around parks and fields the world over.

Of course, it is nothing new for a cutting-edge technology to make its debut in the military. Indeed, the defence and aerospace industries are forever pushing the boundaries of technology to gain advantage.

Now, the technology is starting to make an impact. For Africa, most obviously, it is a means to survey a lack of infrastructure in certain areas of the continent, which has left many communities isolated, and for years has hindered development.

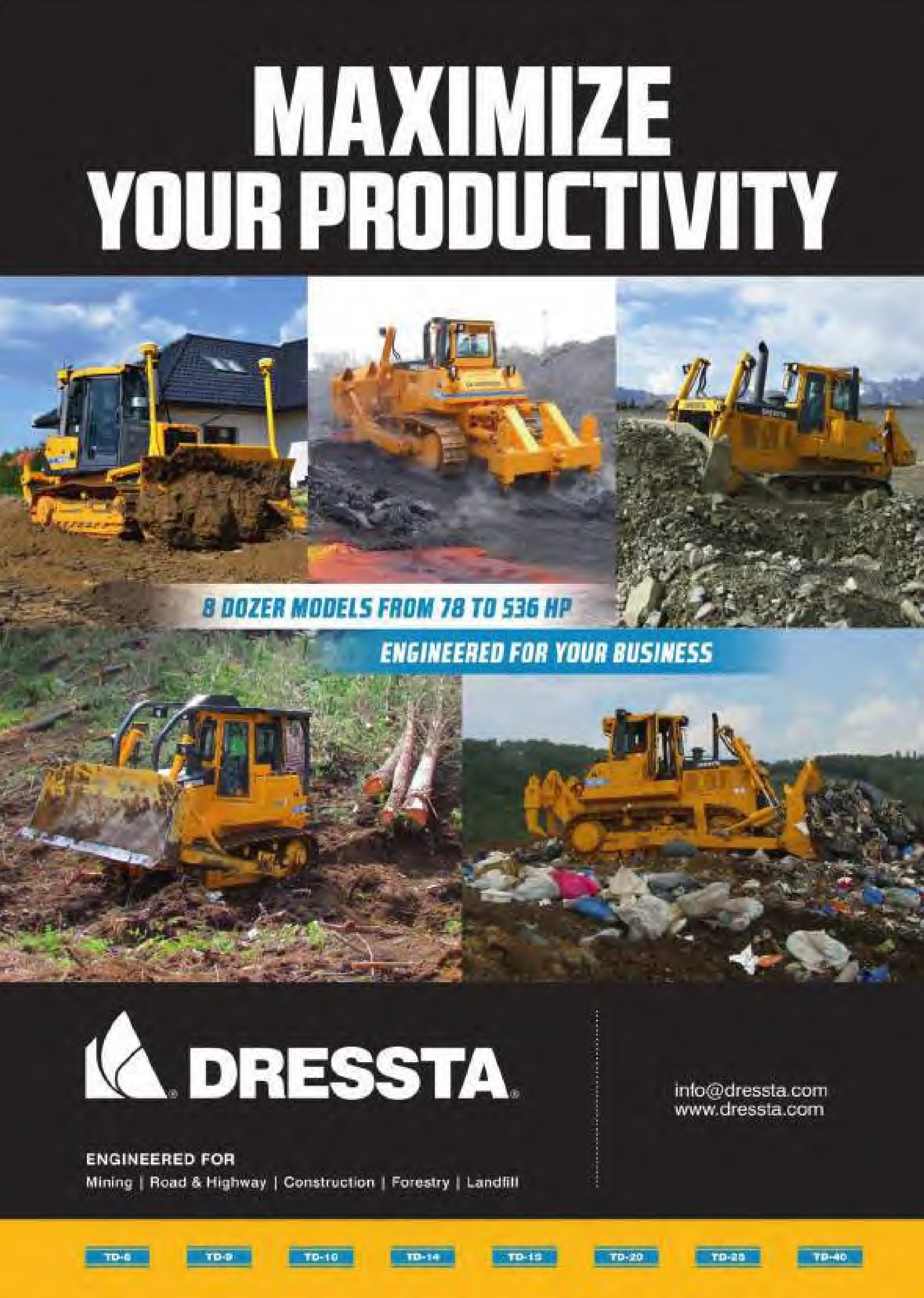
The telecommunications industry has already latched on to this, deploying drones for visual inspections of remote cell and radio towers. It allows office-based personnel to work out what, if anything, needs fixing, before sending an engineer to the scene. Likewise, oil and gas companies and electricity producers can monitor remote installations and facilities, including miles of transmission and distribution network or pipelines, for a quick visual check of any damage. Drones are able to take high resolution images, capture video, or do laser scanning to deliver vital operational information in a flash. Not surprisingly then, experts believe spending on drones in the commercial sector will soar. In a recent report, PricewaterhouseCoopers (PwC) estimates the global market for commercial drone technology at over US$127bn. This figure is dominated by the infrastructure and agriculture sectors, worth a combined US$77 bn. Clearly, it is a market ready and waiting to happen.

> "What drones can do is offer a much quicker way of capturing different types of data, digitising it, and making it something you can analyse right now"
>
> COLIN SNOW, CEO AND FOUNDER, SKYLOGIC RESEARCH

Aid to infrastructure

The huge range of applications could potentially make a dent in Africa's infrastructure shortage. Goldman Sachs estimates over 10 per cent of global drone commercial spending will come from the construction industry, with UAVs set to become a key tool for surveyors. Here, drones can improve accuracy and hasten work in assessing buildings by shortening the time for producing 3D renderings of a property. According to Colin Snow, founder of research firm Skylogic Research, UAVs can be tools for design, site monitoring and asset maintenance, performing key tasks that could potentially fast track projects, large and small.

There are time and cost benefits to be achieved across the entire lifecycle of a project, he says, from initial design through to construction and, eventually, demolition. In terms of inspection, there are similar benefits for monitoring key transport infrastructure such as bridges, highways and other assets. Snow, who compiled a report into the use of drones for construction and infrastructure inspection, says he expects to see more activity in this area from civil and public entities that perform asset management on a large scale. However, while there is a clear role for drones and the data services they produce, it does not provide a complete solution, he believes. Ultimately the goal is to provide valuable information for users, but drones alone cannot do all the work.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"What drones can do is offer a much quicker way of capturing different types of data, digitising it, and making it something you can analyse right now," he says.

Regulatory hurdles

The regulatory challenge is another important consideration. Kabelo Ledwaba of the South African Civil Aviation Authority (SACAA) agrees that the usage of such remotely piloted aircraft systems (RPAS) are now limited only by one's imagination – but it has caught many authorities by surprise.

"Usually, the International Civil Aviation Organization (ICAO) would take the lead in terms of developing standards and recommended practices, which regulators would then translate into legally-enforceable local civil aviation regulations," he says. "The ICAO process is still unfolding."

In the absence of guiding documents from ICAO, some regulators such as the South African Civil Aviation Authority (SACAA) have had to swiftly derive measures to address the deficiency in response to a growing demand to integrate RPAS into the mainstream aviation sector. Last year, South Africa became one of the first countries to legitimise RPAS operations by introducing a comprehensive set of rules, thought to be among the most advanced in drone legislation around the world. But that is not the case for the rest of Africa. Ledwaba says RPAS are still categorised as "aircraft" across the world and, as such, must integrate with the existing – and highly-organised – manned aviation sector. However, this presents problems.

"Given the low cost and easy availability of RPAS, it is possible that errant individuals may easily obtain and utilise these aircraft in an unsafe manner, thus presenting a risk to other airspace users and the public," says Ledwaba.

Crucially, UAVs use the same airspace as other aircraft.

"As such, it is of the utmost importance that aviation safety is upheld at all times and prioritised ahead of commercial gains," Ledwaba adds.

Drone rangers

Nonetheless, it is hard not to get excited about the sheer potential and possibilities of this new and rapidly advancing technology.

Like infrastructure, farming is also expected to reap huge benefits. Many farms are now using drones to monitor crop health and identify potentially problematic areas in a field, often using thermal cameras mounted on the UAV.

South African-based company UAV and Drone Solutions (UDS) is using UAVs for aerial anti-poaching work – so-called 'drone rangers' – across Kruger National Park and KwaZulu-Natal province, two of the country's prized natural and environmental assets. There are countless other innovative applications too, from search and rescue work onshore and offshore, to customs and border surveillance.

All could be readily adopted across many parts of Africa, subject to cost as well as regulatory hurdles.

Indeed, cost effectiveness has been flagged up in the case of Rwanda, which now successfully deploys drones to carry urgent medical supplies to remote patients.

And yet the roll out of this game-changing technology continues. Rwanda is also the base for the first prototype 'droneport' designed by eminent British architect Sir Norman Foster. Like a modern motorway gas station, it foresees multiple users and shared facilities to include not only a landing site for drones in a densely packed area, but also a health clinic, a post and courier room, an e-commerce trading hub and other community services. Long term, there are hopes to create over 40 drone ports across the country, with Rwanda's central location allowing reach into other neighbouring states such as the Democratic Republic of Congo.

Flying doctors

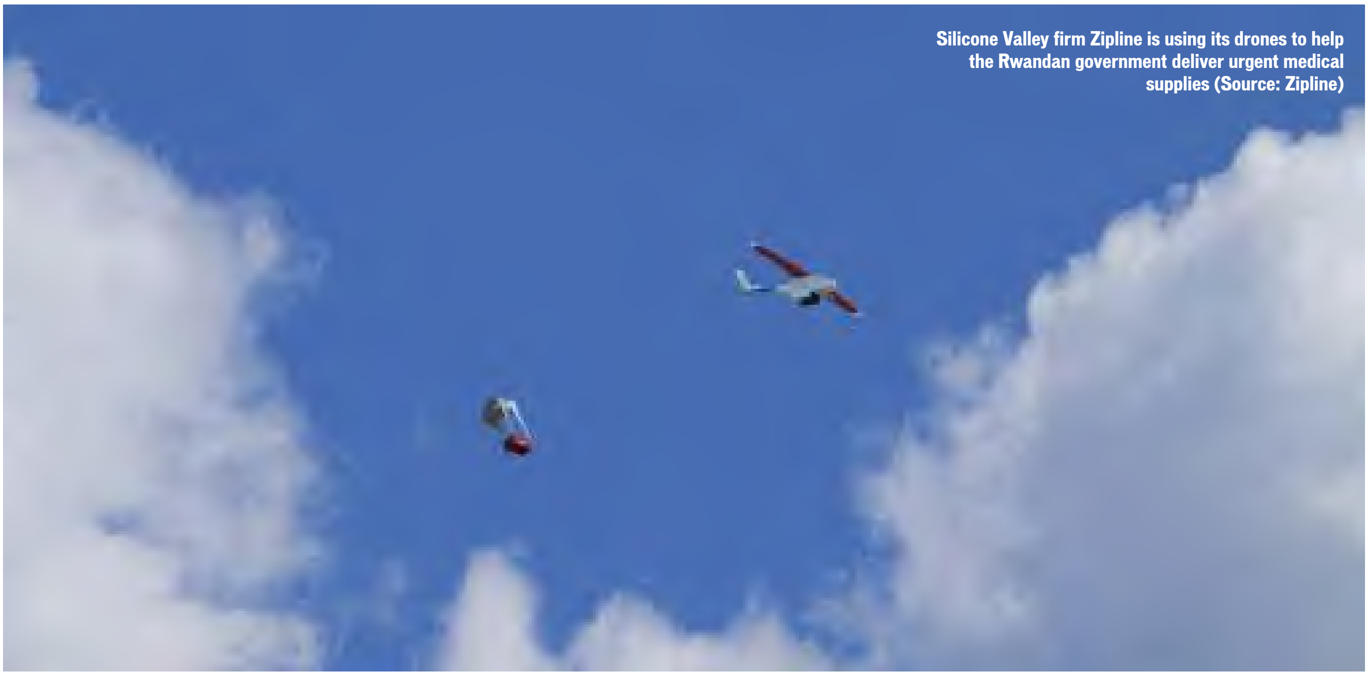
Drone delivery of urgent medical supplies to remote areas is a clear example of where the technology is playing an almost instant – and life saving – role. In a recent speech, Dr. Margaret Chan, the director-general of the World Health Organisation, identified this potential.

"The use of drones to deliver life-saving medical products can overcome the lack of road infrastructure," she told a recent conference.

She also urged the healthcare sector and drone technology specialists to let their imaginations fly in the quest for new solutions.

Some notable projects are already underway in sub-Saharan Africa. In Rwanda, a US robotics company is working with the government to help deliver essential medical supplies, including blood stocks, through the use of drones to previously inaccessible areas.

Zipline, a Silicon Valley firm, uses its drones to drop small boxed parcels by parachute to where they are urgently required. The drones



Silicone Valley firm Zipline is using its drones to help the Rwandan government deliver urgent medical supplies (Source: Zipline) can cut a four-plus hour delivery time down to just 15 minutes, avoiding Rwanda's dirt roads and hilly topography.

"Today, if a mother is giving birth and suffers from post-partum haemorrhaging, her life is dependent on getting a blood transfusion," says Zipline's chief executive Keller Rinaudo.

The challenge, of course, is that when you need blood, you need it immediately. The Zipline team includes expertise from blue chip names like Boeing, SpaceX and Google. In Rwanda, a hub stationed next to a medical facility and storehouse can make hundreds of deliveries a day. Once the drone is on its way, people awaiting supplies receive a text message saying the aircraft is two minutes away and to wait outside for delivery. The package is dropped safely and accurately by parachute to precisely where it is needed. The Rwandan government eventually hopes to put all of its people, about 12 million, into about a 15-20 minute delivery time; a revolutionary concept for any country in the world, says Rinaudo.

"This isn't a small step forward, this is a transformational step to how we provide medical care to people across the world."

Once the Zipline drone is in the air, a text message is sent to notify people awaiting the delivery of supplies (Source: Zipline)

U.S. beefs up Niger drone base

The US military has been flying drones out of Niger, where it shares an airbase in the capital Niamey with France's anti-Islamic force Operation Barkhane, for some years. Its MQ-9 Reaper drones are stationed there and can be deployed for surveillance or for air strikes across a range of almost 2,000km. Now, the Pentagon has confirmed that it is to pay for a new runway and other facilities and infrastructure, with reports estimating the cost at around $100mn. This would mark one of the biggest US military investment projects in Africa.

Washington hopes to up its capacity to use drones against Islamist extremists in neighbouring countries like Mali, Libya and Nigeria.

Work is scheduled for completion in 2017. ■

The Sudatel Data Centre (Source: Sudatel Telecom Group)

Advancing data centre services

The African data centre market has recently experienced increased levels of growth. Built at a cost of $45mn, the Sudatel Data Centre (SDC) is one of just five tier IV data centres in Africa. Tarig Hamza Zain el Abdin, CEO of leading Sudanese telecoms company Sudatel Telecom Group (STG), says the main sectors benefitting from the SDC include banking, content providers, governments, companies and SMEs. Services are available not only in Sudan, but in any neighbouring country able to access the SDC through Sudatel's fibre network.

"For SMEs to grow, they need access to services such as web hosting and collaboration services that relieve them of the financial burden of traditional, fixed IT costs," Zain el Abdin tells *African Review*.

"The SDC is the first company in Sudan and the region to provide exactly that."

Zain el Abdin says that prior to the SDC opening, companies ran their own server rooms, but struggled to maintain a high availability and reliability of IT services due to insufficient infrastructure. Today, the SDC hosts IT infrastructure for larger companies, providing connectivity into branches that reduce the total cost of ownership and capital expenditure. This enables corporations to focus on their core businesses. While companies can host their data outside the continent, bandwidth, Zain el Abdin says, is a continuing issue. As a result, the SDC encourages overseas companies to operate in Sudan, by providing them with modern telecommunications infrastructure.

Moreover, the SDC allows the government to roll out e-services and an e-government platform. It is also preparing to extend cloud services to include Government Resource Planning (GRP), unified communication, workflow automation and collaboration services. Approximately 1,500 schools and 150 universities currently receive SDC services through cloud software to enable students to share information and develop e-learning programmes.

"As well as providing extensive cloud connectivity services, the SDC team is also very aware of its role as educators and run an extensive programme for the business and decision makers of Sudan covering the benefits of cloud computing," Zain el Abdin adds. ■

A new dawn for locally hosted content

Since the East Africa Data Centre first opened its doors to businesses three years ago, service quality and standards have risen across the region. The facility is staying ahead with a series of refinements that will ensure its customers have a world-class home to host local content

The East Africa Data Centre started operating in 2013 (Source: Liquid Telecom)

Growing demand for IT services and locally-hosted content is prompting businesses across Africa to intensify their search for reliable and secure data centre space. The Middle East and Africa region is expected to have the highest cloud traffic growth rate globally through to 2019, during which it is expected to increase by a compound annual growth rate (CAGR) of 41%, according to the Cisco Global Cloud Index. Spotting cloud looming on the horizon in Africa, the East Africa Data Centre (EADC) begun operations in 2013, emerging as the first facility of its kind to serve east and central Africa. This head start has helped position the data centre as the perfect hosting location for African and international companies looking to protect their business-critical applications and data in Africa.

Located at Sameer Industrial Park in Nairobi, the facility offers excellent access across Kenya and beyond to Uganda, Tanzania, Rwanda, Burundi, Ethiopia and Somalia,, as well as diverse fibre routes to cable landing stations in Mombasa.

Maturing with the market

Three years may not seem much in the business world, but for Africa's youthful data centre market, EADC is entering a period of relative maturity. Setting out with a vision to help keep African content local, EADC has already accomplished much during its first few years of operation. It has become home to Kenya's Internet Exchange Point and has been credited by the Internet Society as playing a major role in driving down internet prices in Kenya. More recently, the Technology Service Providers Association of Kenya (TESPOK) in partnership with the African Union Commission have announced they are launching Africa's first GSM Global Roaming Exchange (GRX) at the EADC. GRX will help cut costs for mobile operators in the region by removing the need for a dedicated link between each mobile service provider. It will also help reduce roaming charges as well as facilitate easy connectivity to the exchange.

Developments such as these are creating a more advanced ecosystem for digital business to thrive across Africa. But in turn expectations have been raised, and businesses in the region today are on the lookout for data centres that comply with the very latest international standards.

A powerful proposition

Data centres have a fantastic appetite for power. In fact, the amount of energy consumed by the world's data centres is set to treble in the next decade, putting an enormous strain on energy supplies. A lack of reliable power infrastructure across Africa presents an even tougher challenge for the region's data centre operators, which sometimes have to contend with rolling blackouts and service outages. That is why EADC has taken a major step to ensure it has a more reliable and efficient power source by constructing a new power plant. The power plant consists of two substations that supply two lines of power to the EADC, significantly increasing redundancy while improving power availability to the site from 85% to 97%. Like other data centre facilities across Africa, EADC mitigates the risk of service outages by reverting to costly back-up diesel generators. However, since completing the power plant, the facility is effectively no longer reliant on back-up generators, which translates into serious operational savings for EADC and its customers. The new power plant also brings EADC further in-line with international standards. EADC has been designed to Tier III specifications as certified by the Uptime Institute, which is recognised worldwide for certifying data centre design, construction and operational sustainability.

EADC is currently undergoing further review by the Uptime Institute to qualify for both Tier III facilities and operational certification, with approval for the first expected before the end of the year.

Further certification from the Uptime Institute will reiterate EADC as a world-class data centre facility for businesses in the region, as well as provide a platform for locally-hosted content to flourish. ■

For further information about the East Africa Data Centre, visit www.eastafricadatacentre.com


www.liquidtelecom.com

MAN power at IAA

At the 66th International Motor Show Cars (IAA) Commercial Vehicles show in Hanover, *African Review* spoke exclusively to MAN Truck & Bus Company on its diversifcation plans to grow business on the continent

The MAN Truck 2016 fleet (Source: MAN Group)

As one of the world's most revered showcases for automotive vehicles, a visit to IAA offers vehicle enthusiasts the latest information on mobility, transportation and logistics. The event is attended by a comprehensive array of suppliers, manufacturers and supply chain partners involved in the international commercial vehicle industry. During the event, African Review was given the opportunity to speak to some of the main players responsible for growing leading international commercial vehicle provider MAN Truck & Bus Company's business in Africa,

African Review (ATR) initially asked MAN to discuss the heavy truck assembly plant that opened in Mek'ele town in Tigray region, Ethiopia, in March 2016. It is operated by Mesfin Industrial Engineering in partnership with Kaleb Services Farmers' House PLC.

Nobert Schwer (NS), MAN Group manager and local assembly support for the Middle East and Africa:

We started in September to view the environment. By November we had signed all the appropriate contracts and we could start. I reported back to say what tools and equipment we needed, and then we could go about clearing the field to begin operations. In early January, we started to set up the line and to manufacture the required equipment for the line. In the first week of February the container with the TiB sets arrived, and the purchased tools from different suppliers came to our place. We started with the first vehicle online on 15 February.

Through maximum contributed efforts from all those involved, we held the opening function on 10 March.

Tesfaye T/Haimanot (TH), Ethiopian dealer for MAN: MAN started in Ethiopia and continued to expand, and this is why the rest of Europe should follow the African way. In Ethiopia, Mr Brandstätter had tried to start operations for the last three or four years. That was when MAN came to me. We were successful together, even though not everyone expected MAN to be successful in Ethiopia. We did have the full support from the importer for north, west and central Africa for MAN – that was a big help.

ATR: Talk us through the project and how you got things off the ground?

TH: The MAN centre importer north, west and central Africa was dedicated to the work in Africa. Both Thomas Brandstätter and I said that was good for the assembly. Everyone said that we could not start assembly within a year – we started within four or five months. This is a good example of how European companies can use great management to excel in the African market.

NS: Normally it takes one to one-and-a-half years to construct this kind of assembly line, minimum. The head of the centre importer north, west and central Africa, Adel Lünz said that we could start soon, which meant now. We had to organise everything in the local market and the local market did not expect it. Everything that goes into our trucks needed approval. For example, we don't just put any coolant in our vehicles, we use MAN-approved coolant. We worked twenty-four-seven to make sure that we could organise everything in time for the assembly to open. No one would believe it. It was against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the odds. We did have to modify our line to make it work, but we did it with determination and a great work ethic.

Thomas Brandstätter (TB), representative for Rwanda and Burundi, Petrocom, which represents and imports MAN trucks: In this market we were a latecomer and we had to first set up a new sales structure in Ethiopia, before being able to serve our customers. The new management recognised the market and Lünz, new [at the time] head of the centre, also recognised this. For the first time in four years, we actually appreciated the market situation and we acted on this. We had no problem convincing the local market that our activity there would be positive. In addition to the assembly of the trucks, we are also developing body manufacturing so everything can be done on site, we can employ more local people and also deliver spare panels for repair locally and more economically.

NS: One point to notice is that everything was new, even for existing companies. Some people who we worked with literally came from the streets. This was the first time they had seen an impact driver, the first time they had seen a torque wrench, the first time they had seen a truck being programmed with a laptop. But they were hungry for knowledge. They could not understand our technical drawings, but we overcame this by developing new learning techniques. But for me, this was not hard work. Everyone was such a pleasure to be around as we all had the same goal. Also, everyone was happy to be learning, happy to be there. People were proud of their own work. We now have students from universities visiting our lines in order to assist with their own educations.

ATR: How is MAN growing the business to stake its claim in Africa?

TH: From gold mining to sugar transportation, MAN is becoming known. I have established relationships with other companies to buy our buses and trucks over the next two years. But this relationship has to be two way. It was not done just by the Europeans, but by MAN specifically pursuing the continent and having belief in us in Africa. I am selling buses to Uganda and Rwanda currently. The reason for this is that Africa wants European technology. It is the best. We do not just want Chinese technology because it is cheap, we want the best value and that is European; the European companies should not be afraid of Africa.

We really appreciate the work with MAN because they share their expertise with us. This is how the Indian and Chinese have gone in the past – look at the rise of Tata. This is a win-win for MAN and our citizens for their sales and technology. Twenty seven engineers are now employed in Ethiopia. We can now transfer their talents to employ more and more assemblers.

(Left to right) Thomas Brandstätter, Petrocom; Tesfaye T/Haimanot, Ethiopian dealer for Man; and Norbert Schwer, MAN Group at IAA Hannover 2016 show. (Source: Kestell Duxbury)

NS: Our trucks that are assembled in Ethiopia are almost identical to those that are built in our European production plants. In fact, the only difference is that the chassis is bolted in Africa, whereas the European chassis is riveted. In Africa, they are thankful of what we are doing in their countries.

ATR: What's the key to staying competitive in the African market?

TB: Compared to Asia we are not competing against local players who want to protect their markets. If we manufacture in Africa we quickly become the local player, and are more than welcome. If we align our strategy with the industrialisation plans of a country, and are willing to create value and jobs there and allow locals to acquire know-how by assembling trucks, we are perceived as an appreciated partner rather than a foreign competitor. We believe that in Africa, success will only come with a long-term commitment and now is the time to build the base for the success of tomorrow. There is great demand for our products in Africa, but there is also need for know-how to establish a manufacturing sector. ■

First truck off the assembly in Ethiopia (Source: MAN Group)

The World Bank initiative forms an important part of the Liberian government's post-Ebola Economic Stabilisation and Recovery Plan (Source: Shutterstock Riccardo Mayer)

Liberia's roadmap to improving water access

A World Bank-funded project is helping to improve urban water supply services in Monrovia, as the Liberian government aims to provide its entire population with improved water and sanitation by 2030

After Australia, Africa is the second driest continent on the planet with some 66 per cent of its land mass classed as arid or semi-arid, according to the UN. Of sub-Saharan Africa's circa 800mn population, 300mn live where water is scarce. In urban scenarios where slum populations are projected to exceed 400mn by 2020, there are pressures to deliver clean and safe water supplies. In Liberia, a World Bank-funded project is set to improve urban water supplies in the capital, Monrovia, as part of several wider initiatives.

Liberia is one of the world's poorest countries, despite it making great strides since the end of the civil war in 2003. GDP per capita is now more than US$460, but is still well below the sub-Saharan average of US$1,774. Almost 50 per cent of the population is urban-dwelling, with 1.2mn living in the capital, Monrovia. Here, sprawling, unplanned slums have led to overcrowded and disease-prone communities where water supplies and formal sanitation are all but absent. In 2013/14, the Ebola outbreak crystallised these major failings in basic water and sanitation services. It infected more than 10,000, killed 4,806, and seriously impacted the already shaky economic recovery. As a result, the Liberian government drew up its Economic Stabilization and Recovery Plan (ESRP) detailing steps that would help move on from the impact caused by the disease outbreak. One area emphasised in the ESRP is the urgent need for structural deficiencies in 'service delivery systems in the water and sanitation sector' to be addressed, which came to light during the Ebola epidemic. The World Bank project aims at supporting this ESRP area. That said, it faces a daunting task. According to the bank, less than 17 per cent of the population has access to improved sanitation and while water supplies are improving, only three per cent of people benefit from piped water. That leaves huge numbers exposed to contaminated supplies – over half the population continues to practice 'open defecation'. In Monrovia itself, 80 per cent of people obtain their water from basic sources such as hand-dug wells. Most of these are contaminated and unsafe, making the need to extend the range of safe piped water, crucial.

> "This latest World Bank initiative will improve drinking water and hygiene for around 50,000 people"

A Project with Merit

In the context of Liberia's high Water, Sanitation and Hygiene (WASH)-related disease rates, this latest World Bank initiative will improve drinking water and hygiene for around 50,000 people. Moreover, it will lay the technical and institutional groundwork for future improvements of these services. Much time and economic loss can be put down to poor urban water supply. Family members – predominantly women and girls – are tasked with fetching water, and often take time off school and other work tasks to fetch water for the household. Improving this area of 'loss' would help the economy.

One organisation that will benefit from the injection of funding is the Liberian Water and Sewer Corporation, which will be at the centre of infrastructure improvement work to deliver sustainable water and sanitation services. This is in line with the bank's earlier pledge to help the country recover from the lingering effects of the Ebola outbreak.

The project fits with the Liberian Government's 'Agenda for Transformation'. This aims to increase the supply of water, sanitation and hygiene to communities and organisations in a bid to achieve the population middle-income status by 2030.

Other Players on the Case

While the World Bank's contribution to the improvement in Liberia's water, sanitation and hygiene infrastructure is a major part of the country's economic-recovery roadmap, many other organisations are actively involved in funding and

The European Union and Unicef are also involved in funding and supporting improvements (Source: Shutterstock TonelloPhotography)

supporting the same improvements. These include the European Union and UNICEF, which are helping to fund urban water supply and sanitation infrastructure, as well as promoting hygiene education and the delivery of basic services to refugee camps in the country. The African Development Bank is also supporting similar initiatives.

Overall, Liberia has not been forgotten by the international community in its quest to progress from the ravages of its civil war and the more recent Ebola crisis. Improving its urban water supplies, not only in Monrovia but in other urban settlements, is one of the most important parts of the process. Thankfully, it is an area that is being supported by several key players on the international scene. ■

Tim Guest

INAUGURAL INTERSOLAR MIDDLE EAST SHOW REPORTS SUCCESS

More than 4,000 visitors and 260 conference attendees from all GCC countries gathered for the first Intersolar Middle East exhibition and conference, which took place 19-21 September in Dubai.

The show covered the complete value chain of the photovoltaic business, with 100 international exhibitors congregating, including companies such as Centrotherm, Schmid, Solarworld, Canadian Solar, Sharp, Fronius, Kaco and Microtron Technologies.

Topics related to the photovoltaic and concentrated solar power sectors were discussed in a co-located conference, with 80 renowned speakers sharing insights in all MENA country markets on perspectives in PV development, as well as policies and regulations.

The need for local manufacturing was highlighted, as well as the importance of innovative and reliable technologies.

In two open rooms, 17 free of charge, CPD certified workshops from IRENA, RENAC and Solar Energy International focused attentions on the international audience, with high attendances underlying the interest in content and the desire for information to grow the region's solar business.

The Intersolar Study programme on the last day of the exhibiton provided insight for the next generation into the future of renewable energy. Following were presentations of the "Young Leader's Innovation Challenge" winners, who received their awards during the conference opening.

H.E. Saeed Mohammed Al Tayer, managing director and CEO of Dubai Electricity and Water Authority (DEWA), and H.E. Dr. Matar Al Neyadi, under secretary of the UAE Ministry of Energy, opened the Global Solar Leader's Summit and Intersolar Middle East conference.

More than 4,000 visitors attended the debut Intersolar MIddle East exhibition and conference 2016 (Source: DMG Events)

A highlight of the conference was the keynote speech by Ben Hill, vice president of Tesla Energy Europe and Africa, about energy storage.

Meanwhile, Intersolar also hosted an official technical tour to "Dubai Sustainable City", a project by Diamond Developers.

Faris Saeed, CEO and co-founder of Diamond Developers said, "Our technical tour of The Sustainable City at this year's Intersolar Middle East Exhibition and Conference has provided us with an opportunity to showcase our sustainable community as a model in development, and to discuss innovative solutions with engineers, solar experts and energy specialists.

"This will help us continue our work for sustainable development and encourage other developers to be part of this green economy."

The second edition of Intersolar Middle East will take place in Dubai at the DWTC from 25-27 September 2017.

Siemens mulls bid for US$3.7 bn SA power project

Siemens AG is considering a bid for a significant LNG-powered project at two ports on the east coast of South Africa, *African Review* can confirm.

The engineering giant has been linked to a contract to develop 3,000MW of gas-fired generation at the ports, telling *Bloomberg* that "significant discussions" had taken place with potential partners to bid for the contract.

Engineering giant Siemens is planning a bid for a South African gas-to-power project (Source: Shutterstock ricochet6)

Confirming the news to *African Review*, a spokesperson from Siemens said the company would not comment further on the matter at this stage.

Siemens has already stated its committment to supporting gas-to-power generation in South Africa through its supplier and enterprise development initiative, through which it has invested in excess of US$14mn over the past two years.

Adding gas-to-power generation to the South African energy mix will be a major driver of economic prosperity, adding billions of rands to GDP and thousands of new jobs, Sabine Dall'Omo, CEO of Siemens had previously said.

Generating clean and efficient power from gas will help boost South Africa's power-generating capacity, improve grid stability and increase revenue through energy exports to other African countries.

"Gas-to-power is a globally proven energy generating technology that presents new and exciting opportunities for South Africa. It holds the potential to attract billions in foreign direct investment, in addition to creating thousands of jobs throughout the entire energy value chain," Dall'Omo said.

"It is about more than just financial investment: we nurture and develop black-owned partner businesses from grassroots level, and incorporate our global good governance, compliance and ethical business mentoring into the programme, to give rise to a new and empowered generation of entrepreneurs."

Siemens says a gas-fired combined cycle using a 600MW plant runs at more than a 60 per cent efficiency rate, whereas a new coal-fired power plant runs at around 43 per cent efficiency. It adds that A 600MW gas-fired combined cycle power plant can also produce its first power within 18 months and is completed in up to three years, compared with over five years for the coal-fired power plant.

RWANDA'S PUBLIC-PRIVATE PARTNERSHIP TO HELP ACHIEVE POWER TARGETS

Rwanda's Ministry of Infrastructure (MININFRA) has announced that partnership mechanisms between the public and private sectors will enable government to achieve its 2017/2018 electrification targets.

Following the signing of agreements between Energy Development Corporation Ltd (EDCL) and 13 companies to provide off-grid solutions country wide, the government said that the 2017/2018 electrification target is to make sure that 48 per cent of households are supplied by the national grid. Within this, 22 per cent will be electrified with off-grid solutions such as mini-grids (small hydro, solar and hybrid systems) and standalone photovoltaic (PV) systems.

"Cooperation agreements with off-grid independent power producers (IPPs) for providing access to electricity in off-grid areas of Rwanda were done and government encourages the private sector to participate in implementing the energy programmes," added MININFRA.

According to the agreement, IPPs will be responsible for supplying, installing and providing maintenance services of installed systems, while EDCL will be responsible for the project supervision and coordination with beneficiaries and other government institutions.

GAP LOAN ACTIVATES SOLAR PLANT IN SENEGAL

A US$22mn loan from Private Infrastructure Development Group (PIDG) company Green Africa Power (GAP) has kickstarted energy generation at a 20MW photovoltaic solar power plant in Senegal's Bokhol, Dagana department.

The first-of-a-kind plant opening named Senergy 2, the work of which had previously stalled, will provide renewable electricity to an estimated 160,000 people.

As the sole debt provider at this stage, GAP will reduce financial risk by allowing for long-term senior debt to be put in place.

GAP executive director Peter Hutchinson said: "This is a red letter day for GAP and Senegal; 45 per cent of the country's people have no access to power and this is holding back economic development. Senergy 2 will make an important contribution to the national grid."

GAP is funded by the UK's Department for International Development, the UK Department for Business, Energy and Industrial Strategy, and the Norway Ministry of Foreign Affairs.

Built in partnership with French construction group Vinci, the project is owned by Greenwish Africa REN, an investment vehicle that brings together international and local private investors. This includes Caisse des Dépôts et Consignations of Senegal.

"The plant symbolises the dawn of a new era," said Charlotte Aubin-Kalaidjian, CEO of Greenwish. "We chose Senegal, not only because the country has an exceptional sunshine rate, but also for the leadership's involvement in implementing the project."

The project's cost per kilowatt-hour is 40 per cent lower than the Senegalese energy mix and does not require subsidies.

The plant consists of 77,000 solar panels that represent a cumulative length of 20km.

BRIEFS

Eskom is building new power stations and high voltage power lines to meet South Africa's growing energy demand (Photo: Leszek Kobusinski/Shutterstock)

SA exceeds electrification target

South African power company Eskom has exceeded its electrification target for Q2 of this financial year. The group executive for Eskom distribution, Mongezi Ntsokolo, said 101,067 connections, with 99,991 connections energised have been achieved to date. He said this means people are already using electricity against a target of 97,513 connections year-to-date. "At this rate, we are gradually moving towards our target of 207,332 connections by 31 March 2017."

At the US-Africa Business Forum, US President Barack Obama spoke about the importance of doing business in Africa (Source: Frederic Legrand - COMEO/Shutterstock)

USA to aid Kenya power projects

At the recently held US-Africa Business Forum in September, the U.S. Trade and Development Agency launched its largest single investment in Kenya's power sector to date. Leocadia I. Zak, USTDA director, announced support for six projects at a ceremony witnessed by deputy president of Kenya, William Ruto, and Power Africa coordinator Andrew Herscowitz. The projects will identify solutions that can help increase access to affordable, reliable electricity across Kenya and help diversify the country's energy mix.

Using M2M monitoring technology to mitigate against the risk of copper theft

Copper earthing remains a critical part of electricity substations' infrastructure, with intelligent safeguards necessary to protect against the risk of component theft

From petrochemical plants and hospitals to ports and airports, the maintenance and protection of on-site electricity distribution substations is important not only to the site owners and electrical distribution companies, but associated utility companies such as water treatment plants that possess electricity infrastructure.

Cresatech, specialists in continuous and real-time machine to machine (M2M) communications technology and service solutions, says sensing or alerting when theft of copper earthing at power substations occurs, through advancements in the Internet of Things (IOT) monitoring technology, allows energy providers to maintain infrastructure and manage issues when site safety is compromised.

IOT monitoring technology can sense and alert energy providers to copper theft at electricity substations (Source: Cresatech)

How can M2M monitoring technology help prevent issues associated with on-site copper theft?

Simon Nash, CEO, Cresatech: What IOT monitoring technology can do is allow you to monitor remotely placed assets out in the fields; the problem with something like electricity distribution infrastructure is it's not easy to get at – it's spread around the countryside in remote locations, with many hundreds or thousands of sites you have to monitor, so it's impractical to monitor these in any physical capacity. You can talk about security products that reduce instances of theft because you have bigger locks on the gates, security patrols or cameras, but all they do is alert you to the site having been compromised.

What monitoring does is allow you to know that something has happened to the integrity of that earthing infrastructure and that's absolutely key. By using an IOT-type platform you can monitor potentially thousands of sites from one central platform and automate the entire process, so that you know if you hear nothing your entire system is fine, but the moment something happens you are alerted to that at an early stage. That might be a theft, the erosion of joints due to the weather or an engineer accidentally running a digger through something onsite.

Mark Cowan, head of sales, Cresatech: We deliver our platform sitting in the clouds through the mobile phone network. Certainly in the African subcontinent and Middle East everyone has a mobile phone. What they don't have is landline connectivity, so most devices will have to be M2M or IOT to make a connection. Devices on remote sites are connected through the mobile phone back to the on-cloud platform; any engineer with access can drill into any individual site.

Nash: "If you go back 15 years, copper was about US$1,000 per tonne and over the last seven years it's gone up to about US$7,000 per tonne due to demand outstripping supply. It has eased back to around US$6,000 per tonne, but projections for the next 10-15 years are that it will remain around US$5-8,000 per tonne. It's become quite an attractive commodity and in the US, UK and Europe that is attractive enough for people to start raiding substations for hauls of copper. In Africa, the ratio of the copper price to the average wage is that much greater, so the incentive (to steal) is there.

How have you seen M2M technology evolve in the African markets given the problems of often irregular power supplies?

Cowan: In South Africa and other parts of the continent you frequently come across rolling power cuts because the supply of electricity doesn't meet demand so there's already a stress in the system. If you lose a substation because someone's stolen the copper infrastructure, you're putting even more stress on the network.

Nash: When things go wrong on substation sites and you get an outage – particularly in Europe and the US – you'll get fines kicking in from the government as you're not supplying the public, but most importantly you've got operations thrown into chaos because they have to send out emergency teams to deal with problems. If your monitoring the infrastructure and you know when something has been interfered with, you're able very easily to schedule in maintenance to deal with it in a rapid but non-emergency way, which keeps the site up and running.

Aside from copper theft, are there any other major challenges energy substations in Africa are facing, and how can your technology serve to help alleviate some of these problems?

Nash: "There are other technologies that come into play here that suit themselves to IOT applications in utilities really well. One of which is power quality monitoring because if you're looking at the outputs of these substations you can tell how much stress these substations are under. What you tend to find is that as communities develop, a substation put in five years ago may find itself under stress because it's not up to the job, but you can only monitor those if you have some sort of power monitoring at the substation.

If you're looking at where to upgrade substations and put greater capacity in, without monitoring you're having to make those decisions based on which are the oldest and that might not be the best reason.

On the power (technology) side, it could be a peak demand indicator to demonstrate what the maximum peak of the site is.

> "By using an IOT-type platform you can monitor potentially thousands of sites from once central platform and automate the entire process
>
> **SIMON NASH, CEO, CRESATECH**

Access to real-time data is gold dust for those using M2M technology. Is there much more that can be done?

Nash: There's a huge amount more (that can be done). If you look at the African, European and U.S. networks, generators pump electricity into the supply grid with no idea of where it's going, how many megawatts are supplied, and where it's dissipated. By using IOT technology you begin to bring intelligence into the electricity distribution network. We're at the beginning of a massive growth in the Internet of things.

Everyone has been talking about IOT for the past couple of years, but certainly the industrial Internet of things is now coming to the fore. Cresatech will be building out from initial applications to generally broadening the horizons of industrial monitoring,

and this is the first of a number of difficult-to-solve problems in industry that we will bring intelligence. ■

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Powering Africa: global technology, local knowledge

Guillermo Elum, sales and marketing director at Himoinsa, tells African Review how the company is bringing its global power generation expertise to each of Africa's markets in a bespoke, local way

One of Himoinsa's generators in Himoinsa Towers, Angola (Source: Himoinsa)

We are an international company working with customers in 130 countries, so we handle totally different projects and markets each with their own different needs. This allows us to transfer our know-how from one end of the world to the other. Energy solutions that are common place in one continent are just beginning to penetrate elsewhere. We have developed 'Capacity Market' projects in the UK, for instance, and we are beginning to see interest in other countries. Similarly, telecommunications companies that operate in several continents are demanding energy solutions that can be implemented elsewhere. It's all about experience and knowledge that is being fed back to us: Himoinsa possesses nine engineering centres throughout the world. Each regional team develops products that are adapted to their markets, yet they are all constantly exchanging information.

Regional expertise

We have a top quality distribution network, meaning local companies know the realities of their markets and transfer information to our production centres so that the product meets the requirements of each project. Africa is a huge continent. East Africa has nothing to do with the Maghreb or with South Africa. Our dealers in each country are the link between the market and our factory.

But as we listen to our distributors in Africa, we also listen to our dealers in Asia, Europe and America. There are energy solutions that can be shared and that can enhance each project. The same thing happens between different sectors and applications. For example, we transfer all the technology that we have developed in hybrid power generation and energy efficiency for the telecommunications sector, to consumers of generator sets in isolated areas in Africa. How are we able do this? Not only because we have interconnected engineering teams but because we have distributors in every region of the African continent who give us details of the latest trends and how legislation is evolving. Plus, the fact is we are a vertical manufacturer, which allows us to respond rapidly to the client. As we manufacture all the components of the generator set ourselves, we don't have to depend on suppliers and therefore we can reduce and control delivery times.

> "Our dealers in each country are the link between the market and our factory"

Similarly, Himoinsa has increased its staff across Africa. Due to our proximity to North Africa, part of our team works in Spain. Our subsidiary in Dubai covers East Africa, with engineers and sales people dedicated to that market. We are also about to open a new subsidiary in South Africa that will cover the whole of southern Africa.

The global diesel genset market is expected to reach US$21.4bn by 2022 with the combined Africa and Middle East region accounting for more than US$2.8bn. The demand in each market tells us where we need to be active. South Africa, Nigeria, Egypt and Algeria, are among the largest importers of generator sets in the entire continent. Therefore, Himoinsa has been working hard to occupy a good position in each of these territories.

Distributor networks

Every equipment manufacturer has to have a really good distribution network. It is not enough just to find someone to sell our products, what we're looking for are consolidated companies in each country that are well known, with a professional team of technicians and sales people, capable of maintaining a good stock to provide a rapid response. We are currently working on developing technical seminars for our distribution network and are inviting engineering companies, which are working on important projects in the continent. This is where our distributor has a key role to play. Its staff are trained by the Himoinsa team and they can then contact the consultants who take decisions on important projects. They present our products to the decision makers and advise them on our equipment.

We place great importance on staff training and on being able to offer a fast service. Our distribution network works in the after-sales service area, it oversees maintenance and it provides solutions to our end customers. Both the manufacturer and the distributor must maintain contact with the customer in the after-market service. It's essential to give warranties and answers to any problems as quickly as possible. For this reason, we have developed an online system for replacement parts that works 24/7.

This is why not every company can distribute our products. We only work with those that prove they have sufficient technical capacity, that provide their staff with ongoing training and that ensure the end customer receives high quality after-sales service. It's because Himoinsa does not just sell generator sets; we want to provide continuity for the

The Himoinsa Towers, Angola (Source: Himoinsa)

"In recent years, we have delivered numerous turnkey projects. Among other projects across the African continent, I recall the work we recently carried out on the Loanda Towers residential and shopping complex in Angola"

life of our equipment.

In this way, we develop competitive generator sets, which can now include kits that allow for longer maintenance intervals up to 1,000 hours. Among other improvements, the kit includes a larger tank, which supplies extra oil to the engine. While fuel and oil consumption remains the same, the cost of filters is significantly reduced. Also, some generator sets can incorporate a fuel tank of 1,000 litres, 10 times bigger than standard, which translates into fewer trips for refuelling. Considering that the genset works eight hours a day, this new feature guarantees up to 70 days' running time.

There are some countries where we do not yet have a distribution company that meets the HIMOINSA requirements, but we are now entering into relationships with major companies and are always open to new proposals.

Large-scale projects

Himoinsa has experience in implementing turnkey projects; we have sufficient capacity at the engineering, consultancy and design level, and in production, installation and commissioning. It is worth mentioning the role played by our distributors. Normally when we carry out analysis of a project, we do so in tandem with our distributor. Himoinsa manufactures the equipment and the distributor is responsible for installing it. Our role is to be in each project, from the start to the end. We work on the commissioning together with our distributor and we even offer a period of training to the technicians who are going to be managing each plant.

Turnkey projects tend to be large-scale projects and to ensure the full efficiency of the plant, we believe it is essential to make sure the technicians who are going to work in the power generation plant are properly trained. The added value is our willingness to share our know-how, for it is not enough to design a good project; we have to ensure the machines are operated correctly.

In recent years, we have delivered numerous turnkey projects. Among other projects across the African continent, I recall the work we recently carried out on the Loanda Towers residential and shopping complex in Angola. Not only did Himoinsa look after the installation of the gensets, we installed three 10,000-litre fuel tanks and all the connections between them, not to mention other project requirements such as the installation of air intake and outlet attenuators for the rooms that house the equipment.

As in our other projects, turnkey projects value the fact that we offer an after-sales service that is close at hand and accessible. We all know that remote management of the equipment makes it possible to anticipate any failure of the power generation equipment and to carry out preventative maintenance.

Even so, the presence of our local distributor in each African country guarantees a large stock of replacement parts are available. This is not to mention technicians in situ, who are able to detect any manner of alteration and to provide an immediate solution. ■

Renewables steam ahead

The International Energy Agency forecasts that Africa's electricity demand is set to triple by 2040. Meeting that demand is a heady task, but a number of East African countries are rising to the challenge

Utilising natural gas as a feed stock for generating electricity remains the number one focus as a power generation source – for example, South Africa has selected the ports of Richards Bay and Coega to build infrastructure for a US$3.7bn 2,000MW gas-to-power programme to reduce its reliance on coal-fired generation.

However, renewable energy will continue to grow strongly, with its share in electricity generation projected by the International Energy Agency (IEA) to almost overtake natural gas as the main source of electricity. Power sector trends in Africa differ significantly by country, and indeed by region, reflecting different stages of economic development, natural resource endowments, institutional frameworks, demographic trends and prospects for economic growth. The geothermal capacity across Africa has been calculated at about 15GW of potential. The Great Rift Valley, running north from Mozambique to the Red Sea and beyond, offers a huge opportunity to tap geothermal energy.

In September this year, at a meeting of African heads of state on the Africa Renewable Energy Initiative, Ségolène Royal, the COP21 president, presented specific renewable energy projects for Africa without delay. On the basis of her visit to 17 African countries, and discussions with African leaders and analysis by groups of experts, a list of 240 projects accounting for more than 45GW of renewable capacity was drawn up. This includes 13 geothermal energy projects in Africa totalling 7,000MW.

There are three main types of geothermal turbines: binary, flash, and dry steam. In dry steam, steam is withdrawn directly from an underground geothermal reservoir and used to run the turbines that power the generator. In flash plants, high-pressure and high-temperature geothermal water begins to separate into steam and water as it rises to the surface. The two-phase mixture of steam and liquid is separated, or "flashed", in a surface separator. The steam is delivered to a turbine that powers a generator and the resulting liquid is re-injected to the reservoir.

In binary plants, geothermal water is used to heat a secondary liquid called a working fluid, which boils at

> "The geothermal capacity across Africa has been calculated at about 15GW of potential"

The 30MW well discharing at the Menengai Geothermal Development Project (Source: Geothermal Development Company)

a lower temperature than water. Heat exchangers are used to transfer the heat energy from the geothermal water to vaporise the working fluid that turns the turbines to power the generators.

Ethiopia

Toshiba Corp. has entered into a partnership with the Ethiopian power utility, the Ethiopian Electric Power Company (EEP). This follows similar partnership arrangements with Uganda, Tanzania and Djibouti. The company signed a comprehensive agreement with EEP to collaborate on geothermal power generation projects and personnel development. Through the partnership with EEP, Toshiba will draw on its longstanding experience and expertise in geothermal systems to contribute to projects in Ethiopia, developing and manufacturing major equipment, creating operation and management guidelines.

Ethiopia plans to increase its current installed generating capacity from 2,268MW to 37,000MW by 2037, and the development of geothermal power that will drive economic growth – currently, increasing at about 10 per cent per year.

In the African market, Toshiba has delivered four geothermal turbines to Kenya that started commercial operation in 2015. The company has also concluded MOUs with geothermal power development companies in Tanzania in 2015 and Djibouti in August this year.

Kenya

Kenya's Geothermal Development Company (GDC) recently announced a milestone. For the first time, it posted a US$15.5mn net profit in the full year ending June 2015, after signing a deal to sell steam from its Olkaria wells to the government. GDC sold steam equivalent to 320MW, helping tilt Kenya's energy mix in favour of geothermal power that is greener and cheaper compared to thermal power. With African Development Bank (AfDB) support, Kenya has received approval from the Climate Investment Fund's Clean Technology Fund (CIF-CTF) for a near US$30mn concessional loan to co-finance additional geothermal projects drawing on untapped geothermal resources in the Rift Valley. The programme will build on the energy advancements already underway in the successful development of the country's showcase Menengai Geothermal Field.


The Olkaria II geothermal power plant in Kenya (Source: Shutterstock Byelikova Oksana)

In Kenya, geothermal represents 51 per cent of intra-country power supply, and is credited with reducing consumer bills by around one third. Kenya is building a 140MW geothermal power plant with US$408mn of funding from Japan. Transformation of the geothermal energy sector is a core part of Kenya's economic growth plan for its expanding and increasingly urbanised population. In its "Vision 2030" the country identified energy and electricity as a key element of its economic transformation, with geothermal as the lead technology. It is estimated that by 2020 the country's projected installed energy capacity will triple from 2,177MW to 6,766 MW, with geothermal contributing around 2,000MW.

> "Ethiopia plans to increase its currently installed generating capacity from 2,268MW to 37,000MW by 2037"

Earlier this year, in May, Baringo in Western Kenya granted GDC access to its land, paving the way for the commencement of the first phase of the Baringo-Silali project, which seeks to generate 800MW by early 2017. The first phase of the Baringo project that straddles the Bogoria, Paka, Chepchuk, Korosi and Silali areas will cost around US$3.1bn and supply 2000MW to the national grid: 800MW by 2017, 400MW by 2019, another 400MW by 2021 and the remaining 400MW by 2023. The project will supply power to Kenya, Uganda, Rwanda, Burundi and South Sudan.


One of the discharging wells at the Menengai Geothermal Project (Source: Geothermal Development Company)

Tanzania

Geothermal Power Tanzania Limited plans to invest as much as US$350mn to drill steam fields in the south of Tanzania and build its first geothermal plants with the capacity to generate up to 140MW by 2018. After some preliminary exploration, Geothermal Power Tanzania Limited identified three potential geothermal fields. Two are found in the Mbeya region and one is southeast of Dar es Salaam.

Furthermore, Tanzania introduced new policies creating a highly attractive climate for foreign investment. This has spurred major interest in Tanzania's energy sector from companies around the world. The government strongly encourages foreign investment, and the latest reports say Japanese and Icelandic companies are involved in developing geothermal prospects in Tanzania. Additionally, the AfDB is planning a major geothermal development support programme for the region. ■

Stephen Williams

Power in numbers

Turkey's Aksa Power Generation is targeting a place in the top three power generation manufacturers in the world, says CEO Alper Peker

Alper Peker, CEO, Aksa Power Generation (Source: Aksa Power Generation)

Please provide a background to Aksa Power Generation and your activities...

Aksa Power Generation is the market leader in Turkey and we are situated in the top five global power generator manufacturers.

We manufacture power generators that use petrol, diesel and natural gas as fuel. Power options range from 1 kVA to 3,000 kVA . We also manufacture marine power generators and other products relating to all needs in the energy field. We transport our products to 160 countries in seven continents by means of our commerce network, and possess manufacturing plants in Turkey, America and China. Our China plant, which is our largest, serves China and Asian-Pacific countries. Besides our commerce network existing in large markets such as the US and Russia, we have sales offices in the UAE, Vietnam, Dubai, China, Iraq, Kazakhstan, England, Algeria and Singapore. We are also present in Brazil, Argentina, Chile, South Africa and Egypt. We have started a business in Ghana, and have a very large office and warehouse inside Jebel Ali Free Zone in Dubai. We continue to grow in the Philippines and are also selling power generators to Indonesia and Australia.

Our biggest objective is to increase the number of countries we export to in 2016. In accordance with these objectives, we are going to maintain our growth by making investments in India and Africa.

Tell us about your presence in the African market?

We have been selling in the African market for 20 years. In this period, we have had high market shares in several countries such as Egypt, Algeria, Libya, Nigeria, South Africa, Ghana, Kenya, Ethiopia and Angola. However, we believe that Africa has much more potential. Therefore, we are going to enhance our activities in the region. In 2004, we set up an office in Algeria and in 2015, our branch offices in South Africa and Ghana became active. Moreover, our branch office in Dubai continues its sales activities in Africa.

The African economy is growing consistently, with Ghana showing up-and-coming potential. We feel ready to make new moves in the region, particularly in South Africa and Ghana, by engaging our organisations.

Our business plan for the African market focuses on the petrol, gas and mining sectors.

Are there any ongoing projects you can share?

Our offices in Africa continue their work in supporting all projects taking place in the region. We are going to provide 4,000 kVA of total power supply within seven power generators located at a new plant for Willowton Group in Zimbabwe.

Moreover, we are providing total power of 3,000 kVA within four power generators at Sheraton Hotel in Mali, which is planned to open next year.

How important is renewable and sustainable energy sources for Aksa Power Generation?

Renewable energy sources form part of our R&D. Sustainability is also on our agenda as a priority issue. We transport environmentally-friendly fuel-saving products all around the world. This year, we add a hybrid power generator to our product range as a consequence of the successful work conducted with our R&D team on renewable energy sources.

How will future investments buoy your position in the global markets?

Our growth around the world is based on a rapid adaptation to different markets. Strategic decisions are made by properly analysing market trends and R&D investments. We predict our current return of US$400mn will exceed US$1bn in 2025.

What is your assessment of the current crop of power generation trade fairs that cover developments in Africa?

Improvements in our efficiency are achieved by activating the pulse of international attendees to the trade fairs in which we participate. Recently, we were platinum sponsor to Powerelec Ghana, which draws governments and companies involved in the energy sector. We also attended The African Energy Forum, Bauma Conexpo, Electricx and Electra Mining Africa.

Attending these fairs allows us to take new opportunities in foreign markets by understanding the current conditions. ■

Plans for 'Rwanda's first pharmaceutical plant' underway

Moroccan pharmaceutical company Cooper Pharma has signed a Memorandum of Understanding (MoU) with the Rwanda Development Board (RDB) to construct the first pharmaceutical plant in the country, African Review has learned.

The 10,000sqm plant, which is reportedly being built in the Kigali Special Economic Zone and set to be operational in early 2019, allows Cooper Pharma to manufacture Beta-lactam antibiotics to provide the Rwandan population easy access to high-quality, affordable medicines.

It will also produce non beta-lactam drugs on a second site that addresses local market needs while meeting international manufacturing standards.

Cooper Pharma has signed a deal to build a manufacturing plant in Rwanda (Source: Cooper Pharma)

The MoUwas signed during a recent delegation visit to Rwanda of His Majesty King Mohammed VI of Morocco.

It is the second MoU of its kind for Cooper Pharma, following one previously signed in Abidjan, Ivory Coast, and "strengthens its industrial footprint in Africa" the company said.

"Through this new industrial unit, Cooper Pharma will continue to serve its mission, which consists in increasing the accessibility of all African patients to quality drugs at an affordable price," a press statement read.

"Cooper Pharma also intends to share its expertise in the production and quality control, and to contribute to the training of the region's local resources and health professionals.

"The Cooper Pharma plant project in Rwanda conforms to the Rwandan policy of developing local production and promoting foreign direct investment (FDI). It will also allow Cooper Pharma to access the markets of six East African Community (EAC) sub-region countries."

INDUSTRY TO DISCUSS WATER AND CONSTRUCTION ISSUES

The latest trends in water supply and sanitation, construction and housing are set to be revealed at the Water Africa and West Africa Building and Construction Exhibition and Seminars, which takes place in Abuja, Nigeria, 8-10 November.

More than sixty companies are due to exhibit at the event, which includes an information packed seminar programme. The event is set to return to the Accra International Conference Centre, Ghana from 14-16 June 2017.

"Participation at the Water Africa and West Africa Building and Construction exhibition in 2017 will ensure that all exhibitors reach the key decision makers from Ghanaian Ministries as well as engineers, architects, contractors and consultants, NGOs investors and developers involved in either or both sectors," said event organisers Ace Event Management.

NEW VÖGELE INNOVATIONS THE "JACK OF ALL TRADES"

Vögele has combined two technologies to assist the rehabilitation of roads.

The InLine Pave train is designed for "hot-on-hot" compact asphalt paving, while the Super 1800-3i Sprayjet paver is utilised for paving thin overlay on spray seal.

The InLine Pave Train comprises a Vögele MT 3000-2i offset power feeder, a super 2100-3i IP for placing binder course, and another Vögele paver for the surface course.

A partnership with Rask Brandenburg, a customer that has specialised extensively in modern methods of rehabilitation, resulted in the emergence of the solution.

"With our InLine Pave train and the Super 1800-3i SprayJet as the surface course paver, we really have a jack of all trades in our machine fleet," says Bernd Malcharek, president of Rask Brandenburg..

Vögele has launched a combined solution for road rehabilitation (Source: Vögele)

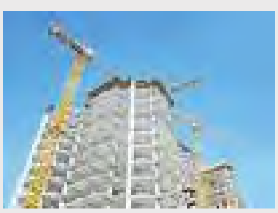
In many countries, construction companies are tasked with rehabilitating existing roads more frequently than they are asked to build new ones.

Aside the conventional process of milling off the surface and replacing the asphalt pavement, the two other methods of paving thin overlay on spray seal and the "hot-on-hot" paving of compact asphalt pavements were made possible by Joseph Vögele and its specially developed machine technologies.

"The future belongs to this process, construction projects can be completed quickly, and that benefits traffic flows," added Roland Schug, head of marketing, Vögele.

BRIEFS

Construction fund created for South Africa



The SA construction industry has reached a 'transformative' agreement with the government (Source: Shutterstock Hellen Sergeyeva)

Seven companies will collectively contribute R1.5bn (US$108mn) over 12 years into a funding pot to speed transformation in the South African Construction Industry, the government and the South African Forum of Civil Engineering Contractors have announced. WBHO, Aveng, Murray & Roberts, Group Five, Basil Read, Raubex and Stefanutti Stocks were selected as companies with combined annual revenues of R45bn ($US3.2bn).

Aecom names Darrin Green as MD for Africa post

Darrin Green, Aecom's new MD for Civil Infrastructure in Africa (Source: Aecom)

Global engineering firm Aecom has appointed Darrin Green as its new managing director for Civil Infrastructure in Africa, effective January 2017.

As a professional engineer, Green has 26 years' experience in civil engineering and management and joins from WSP Parsons Brinckerhoff.

He has extensive knowledge working across Africa, including in South Africa, Lesotho, Ghana, South Sudan, Namibia, Botswana, Mozambique, Angola, Zambia, Guinea, Kenya and Rwanda.

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Addressing cement demand in East Africa

A swathe of new road, real estate and industrial construction projects across East Africa means demand for cement is soaring

Cement packets outside a hardware shop in Kitengela Township, Kenya (Source: Mwangi Mumero)

Over the last couple of years, Dr. David Maina has been constructing rental units in Kitengela Township, one of the booming satellite estates near Kenya's capital Nairobi. Each unit comprises self-contained houses for sale or rent to the burgeoning middle class that has become the driver of East Africa's real estate growth.

"Demand for self-contained houses and other rental units in areas surrounding major cities has been rising," observes Dr. Maina, a private medical practitioner, who has ventured into the real estate development business.

"Investors in real estate have moved in to fill the gaps."

Massive infrastructure works such as Kenya's Standard Gauge Rail (SGR), road and energy projects, coupled with growth in real estate, have helped spur the cement sector across East Africa.

In 2014, cement consumption in the East African nations of Kenya, Tanzania and Uganda stood at 10.16mn tonnes, according to a report from the Nairobi-based Standard Investment Bank (SIB). Analysts estimate that cement consumption will reach 17.5mn in 2019 – riding on a sustained boom in the construction and real estate sectors. According to the report, the region's installed cement capacity stood at 15.6mn tonnes, with Kenya producing the lion's share of 8.6mn tonnes. Tanzania, Uganda and Rwanda followed at 4.9mn tonnes, 1.95mn tonnes and 0.15mn tonnes, respectively. The region's clinker capacity is estimated at 5.98mn tonnes. Kenya contributed 3.18mn tonnes. Tanzania, Uganda and Rwanda followed at 1.87mn tonnes, 0.86mn tonnes and 0.07mn tonnes, respectively. Key projects occupying local cement production include the 609km Mombasa-Nairobi Standard Gauge Railway (SGR), currently in its final phase. Funded by the Chinese Government, the US$3.8bn project is due for completion in mid-2018. By mid-2015, the project had consumed over 150,000 tonnes of cement – hardly a year after its inception.

> "Demand for self-contained houses and other rental units in areas surrounding major cities has been rising"
>
> **DR. MAINA, PRIVATE MEDICAL PRACTITIONER**

Road construction has also increased pressure on cement firms as demand soars. Kenya's road network expanded by 16 per cent in 2014, with the paving of around 1,800km of new roads as the government continued to open up in rural areas. According to the Central Bank of Kenya's Economic Survey 2015, total paved roads reached 13,000 km in 2014, up from 11,230 km in 2013.

Production boomtime

One major road project is the ongoing 507km Isiolo-Marsabit-Moyale road in northern Kenya. Expected to cost more than US$1.63bn, the project will connect Kenya to Ethiopia and open up the region to trade and business, according to the Kenya National Highways Authority. It is funded by the African Development Bank and the Kenya government.


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Masons and other workers on a construction site in Kenya (Source: Mwangi Mumero)

Cement producers in Kenya, namely the East African Portland Cement Company, Bamburi Cement, Athi River Mining (ARM) and Savannah Cement, have been the immediate beneficiaries of these projects. Other leading cement producers in East Africa are Twiga Cement and Tanga Cement – both of Tanzania – and Tororo Cement of Uganda. In Tanzania, work on the US$10bn port and special economic zones in Bagamoyo has started generating demand for cement in the country. It is set for completion in 2025. Billed as the largest port in East Africa, the Bagamoyo project is expected to consume huge amounts of cement over the next few years. The ongoing Arusha-Mombasa highway in northern Tanzania, which is expected to cost more than US$800mn, has been one of the major cement consumers in Tanzania.

"Despite the increase in cement plants in Tanzania and other countries in the region, there is still huge demand for cement to cater for increased investment in infrastructure projects," notes Reinhardt Swart, Tanga Cement managing director. In Uganda, the expansion of the Kampala-Entebbe road into a dual carriage will put pressure on existing cement production in the region. The carriageway will connect Entebbe International Airport with the capital Kampala, easing the incessant gridlock currently being experienced.

> "The Garden City mall is an exciting development that has the potential to be an enduring landmark in East Africa"
>
> **KOOME GIKUNDA, INVESTMENT PRINCIPAL, ACTIS**

Real estate – driven by the private sector – is also credited for the rising demand in cement. A housing boom is currently being experienced across East Africa, especially in urban centres. Coupled with this has been the construction of shopping malls, supermarkets, banking halls, offices and gyms, among other facilities. Foreign firms have invested heavily in this real estate boom, especially in malls and business parks.

Among them is Actis, a London-based private equity firm that has developed a business park among other investments. The private equity firm is also behind the iconic Garden City mall – a real estate investment in Nairobi.

"This is an exciting development that has the potential to be an enduring landmark in

East Africa. A combination of world class designs, acres dedicated to public green space, and a value focused tenant-mix will draw visitors from all over Nairobi as well as the region," observes Actis investment principal Koome Gikunda. Renaissance Group has also invested US$100mn in developing residential housing, private schools, shops, offices and a hospital in the outskirts of Nairobi.

However, experts believe that future growth in the cement industry will still mainly depend on government-led projects.

"While we expect the private sector to continue driving consumption, realisation of forecast growth remains heavily dependent on timely execution of government-led infrastructure projects," SIB analysts note in the East Africa Cement Sector report released early this year.

"We also assume key economic drivers will not deteriorate further."

Construction underway at a site in Kenya (Source: Mwangi Mumero)

Demand and Dangote

With the huge growth prospects in the cement industry, investors have been trooping to the East Africa region.

Among them is Nigerian-based cement manufacturer Dangote Cement, which has constructed a US$500mn plant at Mtwara in Southern Tanzania. With a capacity of 3mn tonnes, the plant comes at a time of increased cement demand in the country; the construction sector grew from seven per cent in the 2005/6 period to 12.5 per cent in 2014/15, according to government reports.

The Nigerian firm also plans to invest US$300 mn in its 1.5mn tonne capacity Kitui factory in Eastern Kenya to increase its stake in the region's cement production.

Last year, Rwanda unveiled a new US$170mn Cimerwa cement plant with a capacity to produce 600,000 tonnes.

Constructed in Muganza sector in Western Rwanda, the plant is expected to meet the country's annual cement demand of 450,000 tonnes, and export the surplus to neighbouring countries, notably Burundi and the Democratic Republic of Congo.

The foundations of an ongoing project (Source: Mwangi Mumero)

"Cost of construction is high due to high prices of raw materials such as cement," observes Anastase Murekezi, Rwanda's Prime Minister, during the inauguration.

"The new cement plant offers affordability, propelling growth in construction."

Indian firm Cemtech Sanghi Group is constructing a US$120mn cement processing factory in West Pokot County near the Kenya-Uganda border. It is expected to have an annual capacity of 1.2mn tonnes.

Existing cement firms have also been expanding their operations as demand rises. Kenya's Savannah Cement previously announced an investment of US$200mn in a new factory to manufacture clinker – part of a US$300mn investment required in scaling up the production unit.

Currently, Savannah Cement controls 98 per cent of the South Sudan cement market.

Another firm, National Cement Company – part of the Devki Group – has partnered with the International Finance Corporation (IFC) in injecting US$70mn to expand its Nairobi factory and boost production fivefold to 1.7mn tonnes annually. Analysts predict that the increase in cement-grinding capacity between 2015 and 2018 of approximately 5.2mn tonnes in the regional countries will mean the reliance on imports will be less.

Cheap cement imports, especially from China, have in recent years been blamed for negatively impacting the regional cement industry. Global mechanical and plant engineering companies are also becoming attracted to the expanding cement business in the East African region. Among them are German and Chinese firms seeking business with cement companies in the region, in areas such as packing, logistics, storing and processing technology.

Bernhard Pagenkemper, head of sales of the Germany-based Haver & Boecker, notes recently, “East Africa is developing and the cement producers need good equipment to serve the country."

> “East Africa is developing and the cement producers need good equipment to serve the country”
>
> **BERNHARD PAGENKEMPER, HEAD OF SALES, HAVER & BOECKER**

According to Pagenkemper, the ongoing and planned expansion needs comprehensive evaluation to cater for the needs of the cement producers. Haver & Boecker has many years’ experience in the African market. Its Haver-Roto-Packer is a rotating machine for packing loose, bulk materials at various stages at a high-speed range of up to 5,600 bags per hour, and is capable of handing cement, minerals, mortar and other building industry chemical products. Chinese firms involved in the local cement industry include the China Railway Construction Corporation, Jidong Development Group, Northern Heavy Industries Group, and the China National Building Material Group Corporation.

Another category of businesses that has benefited immensely with the increased cement demand have been hardware operators and retailers of all construction materials.

“Cement has been one product that is easy to sell – always in demand, especially in areas where the middle class has been building," observes Harrison Mungai, a hardware operator in Kitengela, near Nairobi, who has been in the business for the past 15 years.

Hardware operators and retailers have benefitted from the increased demand for cement (Shutterstock: Tapat.p)

"Areas on the outskirts of major cities are always good for the cement business."

In most peri-urban townships in East Africa, shops selling cement are to be found in every street. ■

Mwangi Mumero

Flexible racking solutions

Recent installations completed by Stodec Trading Limited in Namibia, Mauritania and Ghana have used purpose-designed cantilever units to deal with a wide range of long, odd sized, and difficult to deal with components and crates.

Modern warehouse and logistics centres now have to deal with an amazing variety of products, all needing safe storage in the smallest footprint. The products stored have to be readily accessible by forklift or crane as they are generally too bulky or heavy for manual handling

Conventional pallet racking cannot be used for most of these items as bay widths are designed for standard size pallets on standard size beams.

New cantilever racking designs that have no front uprights to restrict the length of item stored are being used increasingly as part of the warehouse storage fixtures for any item not capable of fitting onto a standard pallet. The racking can be designed with adjustable arms and comes in many load-carrying configurations, from light duty to extremely heavy external units supporting many tons of material.

New cantilever racking systems from Stodec can accomodate a variety of loads (Source: Stodec Trading)

Particular uses are for the storage and handling of pipes, shafts, long steel sections, timber and sheet materials. Special installations have been installed in light duty cantilevers for the hanging of machine belts, drive chains and gaskets, which cannot be effectively stored on flat shelving.

Other designs can store steel sheet stocks, roofing materials, cable drums and even home and office furniture all benefitting from the open front access.

The loads imposed on racking units can be high, and it is important that they are designed to meet FEM, EN and SEMA standards to prevent any risk to staff or products.

The cantilever racking supplied by Stodec Trading Limited meets fully all these standards, and is supplied from the UK in ready to assemble component form. ■

Advancing Chinese steel fabrication

Injecting new global supply and demand impetus into the Chinese steel fabrication industry through a suite of services is the aim of Shanghai Liyu Steel, *African Review* learns

The Shanghai Liyu Steel 'Liyucsf' information platform gathers China's top 20 steel fabricators together, providing relevant fabricators with professional technical preparations for QMS certification on an annual basis.

As a project management company, Shanghai Liyu Steel provides a host of services such as qualification assessments, coordination, cooperation, technical support and supervision for steel structure projects.

"Our main service is international marketing and our customers are China steel fabricators that have great capability in structure steel fabrication," comments a Shanghai Liyu spokesperson.

"We are helping them to promote their products in international markets, helping them find programmes in North Africa where there are many infrastructure (projects) like bridges, buildings and travel resorts."

According to the company's website, its major services comprise of introducing and spreading China's steel infrastructure industry to the world, promoting Chinese steel fabricators holding certifications and releasing real-time information of steel structural projects at home and abroad.

"With accurate marketing positioning, abundant marketing resources, powerful hardware support and professional service, www.liyucsf.com is willing to build up a global platform of supply and demand for steel infrastructure in domestic and global markets," the website says.

As a third party, Shanghai Liyu Steel serves its Chinese steel fabricator clients via profiles on the Liyucsf website, with the hope that this will attract interest from overseas projects with an interest in Chinese fabricator services. Its website boasts fabricator clients including China Construction Steel Structure Corp in Shenzhen, Guangdong; Zhejiang Southeast Space Frame Company in Xiaoshan, Hangzhou; Baosteel Construction Company in Baoshan, Shanghai; and Jiangsu Zhongtai Bridge Steel Structure Company in Jingjiang, Jiangsu. In China, Shanghai Liyu is working on Beijing's iconic China Zun Tower. Inspired by the shape of a Chinese water vessel, 'Zun', the building measures 528 metres high and once completed, will become the tallest building in China's capital. The mixed used development includes seven levels of basement and a 108-metre mega-tower, providing an office space, private club and observation deck with a gross floor area of 350,000sqm.

The Shanghai Liyu Steel 'Liyucsf' information platform gathers together China's top 20 steel fabricators (Source: Shanghai Liyu Steel)

The company has also worked on a project with the 45-metre high National Grand Theatre, which spans an area of 118,900sqm, and features supporting facilities such as an opera house, concert hall, art gallery, art exchange centre and video store. Meanwhile, the company was also involved in the National Aquatics Center, known as the 'Water Cube', located in Beijing Olympic Park and a landmark for the 2008 Beijing Olympic Games.

In Africa, the spokesperson identifies many infrastructure projects such as buildings, bridges and travel resorts that require steel fabrication operators.

"All of our clients are famous Chinese steel fabricators," comments the spokesperson, when asked what differentiates Shanghai Liyu Steel's services from its competitors.

"They have a lot of experience in steel fabrication and they have fabricated many well-known projects all over the word such as the Shanghai Tower, the Malabo International Airport terminal in Equatorial Guinea and the Chinese Embassy in the Republic of Namibia."

According to a metal fabrication in China market research report from Ibis World published in December, growth in the industry has correlated with development in the construction and manufacturing sectors.

A report sample reveals revenue from the metal fabrication industry in China has been rising at an annual rate of 11.8% in the five years to 2015, reaching US$163bn. There are 8,201 enterprises operating in the industry, up from 6,287 in 2010, with many metal fabricators involved in bridge, building and tunnel construction.

It notes that improvements in production techniques have increased technological barriers for new players entering the industry, with many large steel fabrication manufacturers upping levels of investment in technology and systems to improve efficiency and productivity levels.

International frontiers

For Shanghai Liyu Steel, its experience extends beyond China and Africa. One example is fabrication services such as arches and ring beams fabricated by a client for the American Dream Meadowlands retail and entertainment complex located in New Jersey.

"The total quantity of steel the project consumed is 1,192 tonnes; our client is in charge of purchasing and machining the raw materials for this project," the spokesperson continues.

"The materials for the components of this project are all Q345B and spatial ring beams structure. The cover plate thickness for the steel columns is 50mm, while the web plate thickness is 20mm.

"The project is connected by box bracket and ring-beam flange and it is divided into two sections. The joints are connected by 128 M28.6-A490 high-strength bolts with the web plate combined with a 25mm double clamp plate, and cover plate combined with 40mm double-clamp rate." ■

The Dangers of a Strike at the Mine

Africa is a global hotspot for lightning strikes. The mining industry needs to be aware of the serious risks posed by lightning, not only to a business's bottom line, but to the safety of the workforce

Mine operators should be taking more seriously the need to implement lightning protection measures, says the NLSI (Source: Shutterstock Denis Rozhnovsky)

After Mexico and Thailand, South Africa has the highest average annual death rate caused by lightning strikes. The mining sector is one of the country's most crucial industries, with South Africa today being a leading global supplier of chrome, manganese, platinum, palladium and zirconium, as well as coal and iron ore. Such valuable resources underpin much of the country's economy, making it imperative that the industry takes risk management seriously in relation to both environmental and social factors. One such factor is the potential impact of lightning strikes on mine infrastructure, production and worker safety.

According to the National Lightning Safety Institute (NLSI) in the US, which monitors lightning and its effects around the world, recent mine-related incidents in South Africa's mining sector include one occasion when lightning caused the failure of a primary water pumping system. This resulted in underground flooding and the closure of that particular mine for 45 days. In another incident, two electricity substations near an underground mine were disabled by a direct lightning strike. This stopped the lift from operating and trapped 275 workers 2km below the surface for a prolonged period of time. Production was also suspended until the damage was rectified, causing significant monetary losses. The curious thing, according to the NLSI, is many mine operators around the globe do not take seriously the issue of putting lightning safety measures in place. Instead, they seem to believe the chances of a lightning strike are rare. This, however, is far from the case and the potential for serious damage, economic and personal losses is very real. This makes it imperative that mine operators put in place what the institute calls a 'Lightning Hazard Mitigation and Safety Planning Process'.

Mitigating risk

An approach to protection should be site-specific and systematic. Attention to details of grounding, bonding, shielding, air terminals, surge protection devices, lightning detection, personnel notification, safe shelters, personnel education, together with the adoption of risk management principles, must all be considered. Typical areas of vulnerability at mines include critical systems such as site security; communications and radio towers; IT infrastructure; automatic entry gates; conveyors and crushers; explosives and fuel stores; air compressors and pumping stations; mine-shaft lifts; generators and sub-stations.

Professional organisations such as lightning specialists' Dehn, Pontins, Surgetek and SME help companies review and draw up a strategy. They will conduct risk analysis in line with South African National Standards (SANS) and only then advise on the installation of a lightning protection system; the analysis will determine if it's required in the first place, including the level of protection needed to avoid damage to equipment and installations.

Such protection is not a 'nice-to-have' option at a mine: it's an absolute necessity. This is particularly important when considering the low cost of some of the basic level mitigating devices, such as surge protectors, which can be deployed on all types of equipment and installations. Compare those outlays to the huge potential losses that would be incurred if a site were put out of action by a direct hit on sensitive or critical systems.

Speaking to *African Review*, Dr. Michael Gnoth, general manager at Optimal Connectivity – a long-time provider of lightning protection devices in the Middle East and Africa region from players such as Huber & Suhner – drives the comparative cost-rationale argument.

"Consider the US$50-500 cost of some surge arrestors, such as the H&S Semper family, ideal for protecting communications systems at mines. They have a gas capsule that expands when a surge or strike takes place and then self extinguishes. This ensures they remain effective for multiple strikes over prolonged periods, though we still recommend they are replaced every year. With several required per communications installation – not to mention other infrastructure at the mine – that does increase the cost of implementing lightning protection measures.

"Nevertheless, it is the high-value nature of the equipment, the business being protected and the potential impact on the mine's activities that simply make it cost-effective and good business sense to install such devices at each critical part of any active system or equipment." ■

Tim Guest

Charting the sub-Saharan growth curve

The slow recovery in minerals prices is putting strain on metal producers in the sub-Saharan region, a new report from BMI Research shows

While the mining sector in Africa can "expect some growth bright spots", it will continue to face significant operational and regulatory challenges over the coming years (Source: Shutterstock iurii)

A new report from BMI Research forecasts subdued growth for the mining industry in Africa through 2020. The report says sub-Saharan Africa's mining sector growth will remain slow, as the muted recovery of minerals prices continue to put pressure on the profit margins of metal producers.

While the authors of the report "expect some growth bright spots", the region will continue to face significant operational and regulatory challenges over the coming years.

The subdued recovery in metals prices will result in further divestment of assets, output cuts and bankruptcies, and mergers and acquisitions as mining and metals companies remain under significant stress.

The report mentions that both operational challenges (illegal gold mining in South Africa, Ghana, Nigeria and elsewhere) and regulatory uncertainty in countries including South Africa and Zambia, will pose the greatest challenges to miners operating within the region over the coming years. Chinese (mostly copper) and Indian (primarily coal) outbound mining investment will remain resilient due to sub-Saharan Africa's vast mineral reserves and low production costs.

But South Africa's investment attractiveness will decrease in favour of markets like the DR Congo, Mozambique and West African states.

Miners operating on the continent will have to get used to a "lower for longer" commodity price environment. Using a basket of eight metals, (namely, aluminium, copper, iron ore, lead, nickel, steel, tin and zinc) BMI forecasts annual average price growth of a moderate 3.2 per cent from 2017 to 2019. That compares with a fall in prices of 5.4 per cent in 2016 .

A report from BMI Research released earlier this year had already indicated strong "pipeline" prospects for copper and nickel, due to "significant investment" in both brownfield and greenfield projects, aided by a gradual recovery in prices, low production costs and favourable regulations.

> "Miners operating on the continent will have to get used to a 'lower for longer' commodity price environment"

In the case of South Africa, BMI says in its South Africa Mining Report released last month that the industry "will face persistent headwinds due to labour unrest, mineral price weakness, further divestments and retrenchment".

However, gold price forecasts for 2016 have grown from US$1,150 per ounce to US$1,275 per ounce; "a recalibration of expectations for the global monetary policy trajectory by investors and equity market turmoil has combined to create a more positive environment for gold prices than we previously anticipated", the report states.

Likewise, iron ore prices were revised upwards to 2020, expected to average US$53 per tonne this year and US$45 per tonne in 2017 – up from US$48 per tonne and and US$43 per tonne, respectively. ■

Mobile solutions grasp the imagination

Mining and construction activities in emerging markets - supported heavily by mobile equipment - are helping the crushing and screening market plot a course towards US$2,550mn by 2022

The developmental roadmap of the global mobile crushing and screening equipment market is being influenced steadily by growth in urban infrastructure and the construction industry in the Asia Pacific, Latin America, Middle East and Africa regions (LAMEA), according to a recent report from Allied Market Research (AMR).

Market revenues are forecast to hit US$2,550mn by 2022, according to the "Mobile Crushers and Screeners Market – Global Opportunity Analysis and Industry Forecast 2014 – 2022". Mobile crushing is expected to maintain its position throughout the period as crushing and screening operations can be performed at the site, reducing the costs of transporting materials. The report notes urbanisation in emerging countries as a catalyst for infrastructure growth, with governments propelling forward investment in roads, railways and airports that heightens the need for mobile equipment.

Construction, estimated to grow at a CAGR of 6.3% over the period 2016-2022, is the fastest growing

The market for mobile crushers and screeners is growing (Source: MB Crusher)

application sector for mobile crushers and screeners. Stone quarrying, projected to grow at a CAGR of 4.1%, remained the most dominant market for application use, the report continues. Mobile crushers' share of the overall market was approximately 73.8% in 2015, as mining and construction activities in emerging countries rise. Jaw crushers were the most popular application in a segment including impact and cone crushers.

Vibratory screeners – due to their high capacity and efficiency – accounted for the lion's share of the global screeners market at 70% in 2015, and is forecast to continue its leading position over the analysis period.

Acknowledging the rise in construction and mining activity in emerging countries as a key contributor to growth in the mobile crushing and screening market, AMR manager Deepanker Bose stated: "Development of new mobile crushers offering high efficiency and flexible configuration will also have a substantial impact on the growth of the market. The growth in need for equipment that offer better operational efficiency also affects the market for mobile crushers and screeners."

MB Crusher equipment on a Volvo excavator (Source: MB Crusher)

However, the report adds that market growth is also being hindered by inadequate infrastructure facilities required for the operation of equipment, due to high carbon emissions, alongside power supply irregularities, poor rail and airport links, and water supply problems.

A selection of companies specialising in crushing and screening equipment share their latest news with *African Review*, including updates on products and services and perspectives on the key trends, opportunities and challenges of operating in the market.

MB Crusher

Building on its launch of third generation crushing and screening buckets at the beginning of this year, Italy's MB Crusher says its goal is to increase its presence in the important African market by strengthening its dealer network, while eyeing opportunities to take part in large future projects.

"We are working to inform our potential clients about a completely new concept of crushing, never seen before, and to make people understand the great advantages in terms of saving time, money and staff, without forgetting environmental sustainability," a spokesperson comments.

The company offers a wide range of crusher buckets – from the MB-C50 for mini excavators, the MB-L series suitable for wheel loaders, skid steer loaders and backhoe loaders, to the BF150 suitable for larger 70-tonne excavators. It also merchandises a comprehensive range of screening buckets, rotary grapples and drum cutters. The infrastructure segment appeals as an area of growth and investment, according to the company.

"We think that the construction and mining industry is on the rise and this would have a significant impact on crushing and screening equipment," the spokesperson adds.

"MB Crusher offers solutions for every need, starting from the small work in a city centre where a flexible machine reduces costs and

staff necessity, to big piping works or mines where working on site is the main requirement. That's the reason why we're sure that Africa will be one of the highest potential markets for our products."

Nuba Screening Media

Nuba Screening Media says its latest update is relevant for new modular screening systems in two different materials, such as polyurethane and rubber, which it has developed to ensure greater efficiency and ease of installation.

Founded in 1968 in the mettalurgical sector, Nuba Screening Media is one of Europe's most recogniseable manufacturers of screening media and accessories for the mining and aggregate industries, including a leader in product classification.

"Although we manufacture all types of screening surfaces and products made of steel and they continue to have an important weight in the sector, we believe the sector tends to modular systems made out of rubber and especially polyurethane, due to its advantages of durability and effectiveness in time screening," comments a Nuba Screening Media spokesperson.

Fieldwork and exploration projects are enabling the company to secure its status in Africa, as it negotiates what it sees are challenges rooted in cultural differences and different ways of working, continues the spokesperson.

Supporting its approach is investment in research, design and improvement of its products according to customer requirements. This is coupled with establishing common standards and traceable processes that help leverage its position in the international markets, including in Africa.

"In terms of machinery, the African market is tending to the use of mobile groups because they have more versatility than fixed machines, for which our company has all the resources to supply them," adds the spokesperson.

Powerscreen

Finance remains one of the biggest challenges facing Powerscreen in the African market.

"It can be difficult to finance from the banks to purchase new machines, or banks want a larger deposit on loans – sometimes up to 50%," a Powerscreen spokesperson tells *African Review*.

"There are also issues with logistics as some areas are so remote and therefore difficult to get equipment into. Import regulations and duties can also have an impact on holding consignment stock due to legal restrictions."

Powerscreen, part of the Terex Corporation, manufactures equipment for the construction, quarrying, recycling, shipping, transportation, refining, utility and maintenance industries.

The company possesses a global network of more than 120 dealers, selling over 50 product lines.

"Powerscreen has a successful track record selling equipment in Africa with a strong dealer network, which continues to grow today," the spokesperson continues.

"With a wide range of mobile crushing and screening equipment, all of which are available for sale into the African market, Powerscreen is a world leader in the industry."

McCloskey International

McCloskey International is set to showcase how its crushing and screening solutions are boosting productivity for its customers in Ethiopia.

The firm is hosting its first open day, In association with Ries Engineering, in November.

"Our mobile product range, including crushers, screeners and stackers, are able to withstand any climate, and suit industries looking for equipment that can optimise the quality of the materials produced," says a McCloskey International spokesperson.

"Our recent introduction of dual power scalping screeners and new features for our crushing product line are particularly suited to the projects currently being undertaken in Africa."

The continent remains an important and emerging market for McCloskey, with demand for durable, reliable equipment for use across all applications, including infrastructure, mining and aggregates driving its growth.

Customer feedback, which helps the company understand how to maximise clients' production and delivery success by adapting products, remains vital for the African market.

New dual-power products, suitable for both electric and diesel, evolved from this feedback, and the company says it is this aspect that allows it to overcome competition in the marlet.

The company echoes the aformentioned trend towards mobile crushing and screening equipment, as the often short term length of new infrastructure and construction projects warrant more mobile solutions.

"The mobility of the product line facilitates the aggregate being produced locally to the project, and reduces the need for expensive haulage costs,"the spokesperson adds,

"Also, because of the commodity slump worldwide, many mining companies in Africa are looking for ways to make their operations more competitive and are now implementing a sub-contractor system to first produce the particular ore and then operate the 'load and haul' to the processing plant, therefore controlling the cost per tonne and reducing manpower."

The company manufactures a complete line of equipment, such as cone and jaw impact crushers, vibrating screeners, trommels and stacking conveyors.

Industries served include aggregates, landscaping, infrastructure and road building, construction and demolition, mining, waste management and recycling.

Headquartered in Ontario, Canada, its manufacturing facility covers 38,000sqm, while it also boasts a secondary facility in Co. Tyrone, Northern Ireland. ■

McCloskey International is hosting its first open day with Ries Engineering in Ethiopia this month (Source: McCloskey International)

Digitisation: revitalising mining operations and communities

The technologies to make mining great again already exist, but are mining firms ready to adopt them? Wipro's Gavin Holme and Louise Steenekamp ask the question

A raft of highly-matured existing technologies are now available to miners in their quest to transform their operations, enhance efficiency and productivity, improve safety levels, and revitalise a struggling mining industry.

Much has been spoken and written about technology's role in rescuing the mining industry, which continues to suffer volatile labour conditions and rising input costs, combined with soft commodity markets worldwide.

But, while the technology is available, South African mining organisations are largely not ready to embrace it. The time has come for bold, visionary leadership, for new organisational processes and new cultures that will enable new technology to flourish.

Climbing down from the ivory tower

We believe that for digitisation to truly take hold within South African mining, we need to look beyond just technology gadgets and buzzwords. It's essential to understand the challenges and the needs of every member in the mining value chain – from the staff at the rock face, to the engineers, managers, and executives in the boardroom. For mining organisations, this means having a strategic IT partner that progresses through various 'deep discovery' phases to architect a digital mining canvas with a broad range of staff (rather than just rushing to implement the latest shiny technology).

Through these consultations, an authentic picture emerges of where IT can be deployed to solve the most critical problems staff are facing, which, depending on the return of investment, may be segmented into starter initiatives, leading or trendsetting in the industry. This is a far cry from the 'Ivory Tower' consulting that characterised IT projects in days' past. Having connected people, processes, technology and ways to re-architect their operations where necessary, mining organisations can move onto the next step.

This involves embedding new solutions into the organisation and any broader stakeholder groups. Again, the dominant theme is one of collaboration between different role players and different users of the technology solutions. For instance, mineworkers and unions may initially baulk at the idea of sensor-based wearable technology, rebelling against this form of surveillance. But if the rules around data usage and privacy are crafted by multiple parties and agreed upfront, then that same technology takes on a different appearance. Now, it's transformed into a simpler way for miners to perform clock-ins and better ensure their safety.

The bigger picture

It's easy to get swept away by the new technology. From sensors and big data, to predictive maintenance, drones, wearables, robots, artificial intelligence systems – there is a vast trove of new tools and approaches.

But the bigger question is where all of this is leading us. The mining industry, for all its controversies, was traditionally the bedrock of South Africa's economic development. Communities – even entire towns – grew up and drew life from the local mine operations. For mining firms, their responsibility extends well beyond their own business into local economic development programmes, skills development, sustainable farming initiatives, tourism ventures, and other community endeavours. By passing on some of the technology-enabled efficiency gains into the communities that are affected by new styles of mining, the net effect will be a positive one. Towns will reduce their dependence on mining, as the nation's economy-at-large modernises and diversifies. Outcomes like this can become more than just an ideal. With the right incentives, and some visionary leadership, mining organisations can link the various elements of their digital journey in a way that all role players can recognise and benefit.

It will take the same visionary leadership to inspire workers and leaders on all levels to step up, keep themselves relevant, and bring all of their essential knowledge and experience to the fore. This is the only way to ensure that this digital journey adds value to every stakeholder, and ultimately benefits the mine and the mining industry in general. ■

Wipro's Louise Steenekamp & Gavin Holme (pictured) say many South African mining companies are not yet ready to embrace new technologies available to them (Source: Wipro)

"For digitisation to truly take hold within South African mining, we need to look beyond just technology gadgets and buzzwords"

LOUISE STEENEKAMP & GAVIN HOLME, WIPRO

Louise Steenekamp, director, Energy & Natural Resources - South Africa, Wipro Limited; and Gavin Holme, business head - Africa, Wipro Limited


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Leading from the front

Panafrican Group managing director Scott McCaw talks products, trends and strategic priorities for Africa

Scott McCaw, Panafrican Group managing director, says customer solutions support remains a major focus for the company

Tell us about your key markets in Africa – where do you operate and what are your main products and services there?

Panafrican Equipment Group has been doing business in Africa since its commencement in Kenya in 1997 and now operates in a number of African countries including Kenya, Tanzania, Uganda, Rwanda and Burundi in East Africa, as well as Ghana, Nigeria and Sierra Leone in West Africa.

The head office and group logistics, international sales and inventory management are based in Dubai. Our three principal premiere brand groups include Komatsu, Wirtgen (Wirtgen, Hamm, Vögele, Kleemann, Benninghoven and Ciber) and AGCO (Massey Ferguson, Valtra and Challenger). These three core brand groups are supported by after-market consumable, attachment and implement lines such as Hensley (GET, buckets, breakers), Pirtek (hose and fittings), Vacuworx (specialty lifting and material handling), Baldan (planters, seeders, disc plows) and Jacto (sprayers), which are designed to specifically support applications for core industries in our markets.

This product range has been selected to enable Panafrican to provide complete product solutions to the heavy mining, light and alluvial mining, civil and infrastructure, cement and aggregates, agriculture and forestry and power and energy markets.

Utilising our large project-based experience from the heavy mining industry, Panafrican offers full range support for multiple industries. These range from fleet recommendations for production optimisation, application support and life of asset costing in support of project budgets and financing. This complements complete after sales support solutions ranging from technical support to full MARC contracts, parts supply, extended warranty and technical and operator training.

What trends are you seeing in the African markets at present?

Generally, East Africa is seeing more broad-based optimism, with opportunity in mining through the gold price recovery and mineral price stabilisation, civil and infrastructure funded by international agencies and buyers credit, cement and aggregates to meet the growing civil and infrastructure demand, and power and energy fuelled by the need to develop sustainable and dependable low-cost energy.

Ghana is seeing a rebound off the back of gold and mineral prices, which is positive for that market, however the upcoming election will have implications (as they normally do) as the incumbent government directs focus towards re-election and the business community suspends any new activity while awaiting the outcome. Nigeria (business) remains exceptionally low currently as a result of government revenue shortfalls due to low oil prices and production, low duty and taxation inflows due to declining business activity and importation, alongside the currency crisis. These are limiting investment and inflows by the international community pending some form of stabilisation. Sierra Leone remains low in terms of activity largely due to the lower level of mining activity and, in particular, iron ore, which was to be the catalyst for growth.

Across all markets, however, there remains the key challenge of funding for projects and companies. This is a combination of current strains on the African financial community due to the level of economic activity, lack of access to hard currency, as well as foreign investor and financial market confidence. As always, the financial community remains slightly behind the markets, so we do not expect this to change in the near future and will rely on some sustained increase in economic activity or sectoral activity over the next six to twelve months to see any real improvement.

Furthermore, government taxation agencies continue to challenge the business community as governments seek to try and raise internal funding.

What makes Panafrican different from a sales perspective?

Certainly we believe we represent the top manufacturers in their respective fields and offer market leading support. Notwithstanding this, we attempt to differentiate through a solutions-orientated mind-set. This sounds a bit like a buzzword, but in reality we have actually tried to shape our business around this. This starts with the sales process. We have made significant efforts to move away from "product" sales and focus on the customer's project and what they need to deliver in terms of production or productivity. Then we can better assist in creating a fleet and support solution that meets need in their industry for projects.

What are your strategic priorities in Africa for the next 12 months and are there any key developments or plans coming up?

The focus remains on continuing to execute customer solutions' support.

We have focused this on the broader operations, but now we continue to fill in areas of a niche nature. One of the areas where the market needs and approach is different is the Chinese clientele. They represent a large portion of our markets, ranging from large FDI civil and locally tendered government or county-funded projects, to smaller SMEs. We are building a dedicated team to target and support this important market segment ranging from sales, parts personnel and technical support. We believe we can improve their support experience through local on-the-ground support, while adapting for our markets.

For example, the specifications of the machines for the African market differ from those required in China. By working with these customers, we can address these specific needs. Furthermore, these customers may bulk buy parts purchases from China, rather than rely on local supply. This approach increases their capital requirements (through higher inventory levels) and can often delay critical parts requirements given the longer lead times. We can alleviate this requirement through our local parts stocking. The key however is we need to work with them to ensure we have the parts in stock for their particular makes and models.

This goes to our point and strategy targeting industries or segments, in a way as to address their own unique needs and requirements, be it machine requirements, application, project related, language or culture. One shoe size does not fit all, and the African market is much more diverse and complex than many give it credit. We try and develop each of these markets focusing on their own unique and multi-faceted needs. The Chinese segment is just one example. ■

CARRYING THE LOAD

In today's competitive world, the ability to be more productive can be a real advantage.

Manufacturers have been integrating on-board technologies into the machines they build, to help managers and owners improve productivity on a job site or quarry. At job sites and quarries in Africa and around the world, different work methods, processes, operations and production cycles are used, and managers must gather data consistently and accurately to reliably measure productivity values.

Each machine has been designed to work at an optimal payload target: load too much and the fuel/tonne ratio increases and load too little, capacity is wasted. In addition, when a machine is overloaded, brakes and tyres wear more quickly and downtime and owning and operating costs increase.

Caterpillar Production Measurement (CPM), allows customers to measure productivity to enable a decision making process based on data. That data can be used to track an evolution over time and to apply changes. It is a tool that is

Caterpillar Production Management (CPM) allows customs to measure the productivity of on-site machines (Source: Caterpillar)

now increasingly used to improve efficiency in construction, earthmoving and quarrying, and is available on Cat medium and large wheel loaders, articulated and rigid trucks, as well as on a range of excavators.

CPM is a dynamic and integrated payload measurement system that accurately measures the payload of a machine without interrupting the loading cycle. It brings payload weighing to the cab, so operators can work more productively and deliver accurate loads with confidence. The information is relayed graphically and/or via audio alarm to the operator, so that immediate action can be taken to ensure the machine is working at an optimum level. Operators, regardless of their ability, can track daily production from the cab – weights, load and cycle counts, and totals.

The system is part of Cat Link and includes two components: Cat Product Link and VisionLink. Product Link is the hardware component of the technology and VisionLink is the software interface. Product Link grabs data from machine sensors and control systems and transmits it to VisionLink, which lets customers view the data on any web-enabled device.

Managers can quickly and easily view production totals such as daily production tonnage and cycle counts, as well as calculate tonnes per hour and tonnes per fuel burned to manage the business, optimising efficiency and increasing job site productivity.

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