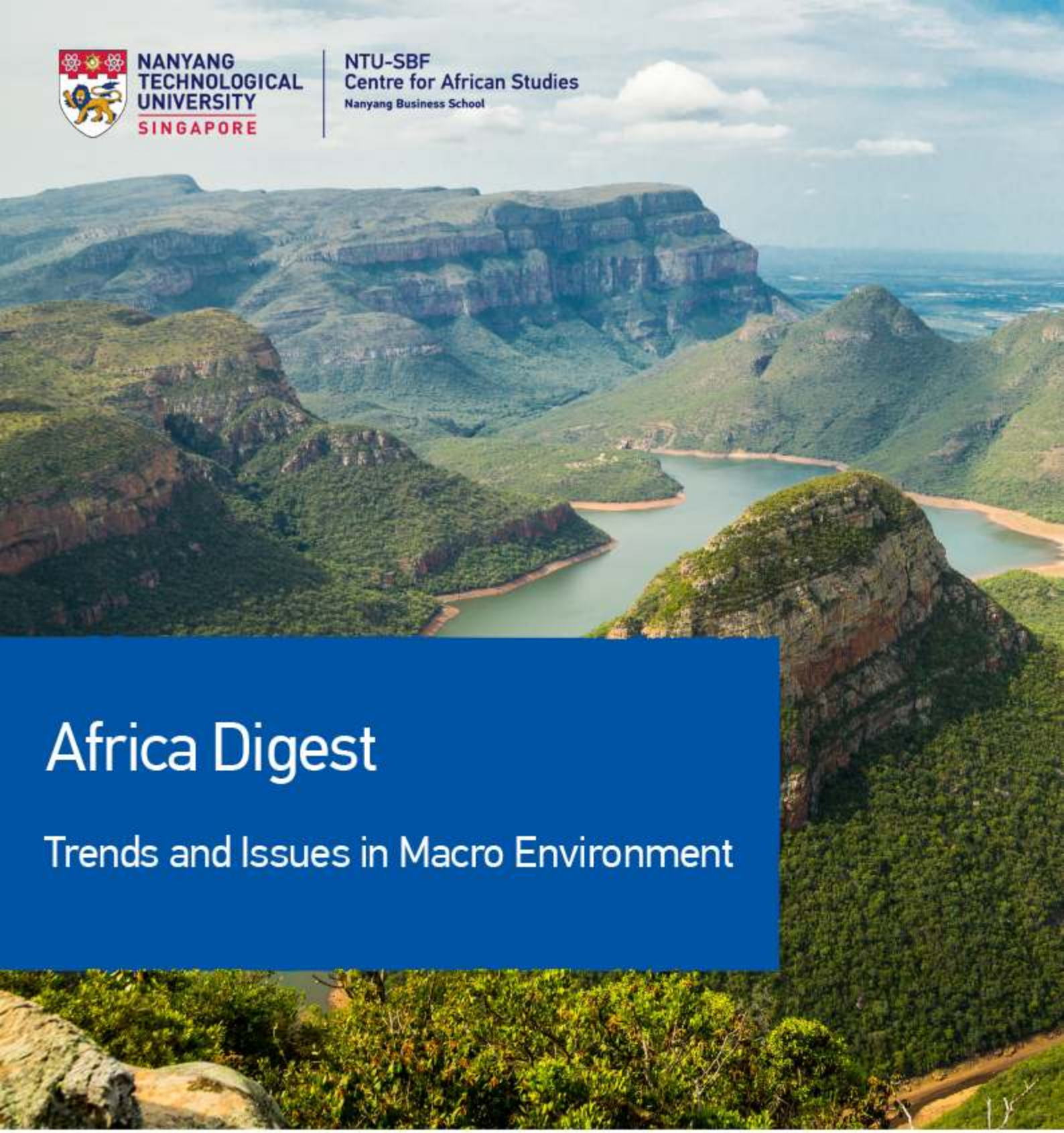

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

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Africa Digest

Trends and Issues in Macro Environment

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Contents

1. Developments in Agriculture

Agriculture remains important on the continent. The sector makes sizeable contributions to its GDP and provides many job opportunities. To support its growing population, Africa must increase productivity in this key sector. This will require embracing technology, encouraging import substitution and exports, and doing away with many nonsensical regulations. This report addresses recent developments in this sector.

TAPPING INTO TECHNOLOGY TO INCREASE FOOD PRODUCTION

The Pan-African telecoms group Liquid Telecom recently partnered with Twiga Foods to increase agricultural productivity through precision farming. Kenya's rapidly expanding Internet of Things (IoT) network will enable this initiative. The new system will initially be employed at Twiga's Takuwa farm.

The system applies four different types of agricultural sensors to capture data in the field and convert it to digital form. These sensors provide critical information to the Twiga agronomy team:

- A smart weather station that provides real-time data that helps farm managers deploy the most effective farming methods for irrigation and application of pesticides.
- The water quality sensors provide specific metrics to optimise fertiliser application, in addition to providing data on temperature, humidity, rainfall, and wind speed.
- The soil probes measure moisture levels and temperature to provide precise information of soil quality and irrigation needs at the roots of specific crops.
- Borehole water meters.

This IoT-based innovation is positioned to directly increase yield and productivity. It will benefit Twiga's food security efforts during and beyond Covid-19.

Applications of IoT have the potential to transform agricultural productivity, leading to greater food security and improved farmer incomes in Kenya. Numerous processes have already been automated across the farming production cycle.[1]

Africa should be in a good position to feed itself and play a significant role in feeding about nine billion people by 2050. Today, Africa is a net food-importing region, spending between US$35 and US$41 billion annually, with major parts of its populations still living in rural areas in extreme poverty. Agriculture in Africa faces a number of challenges. These include its great ecological diversity, with the subsequent difficulty in developing universal solutions to agricultural development problems across the continent. Throughout Africa, the development of subsistence farmers, addressing land ownership issues, developing skills, and enabling access to funding and markets are on-going challenges.

Agritech, including technologies such as drought management, crop protection and yield enhancement, can contribute substantially to employment (including jobs for youth) and wealth creation, as well as to the improved health and nutrition in Africa. The rapid pace of growth in the use of drones, automated tractors, artificial intelligence, robotics and blockchains is transforming agriculture. Smart farming and technological innovations are boosting productivity, but more education, connectivity and funding are required. Connectivity in the rural communities also needs to be enhanced by providing additional spectrum.

In addition, Africa should learn from countries such as India and in Latin America who have achieved success in agriculture. It is also important to recognise the successes achieved in country reforms. Ethiopia, for example, has been pursuing an agricultural-led industrialization strategy in the past two decades. The country's government believed that investments in agriculture and increases in land yields are preconditions for successful industrialization, urbanization and development.

A number of other African countries recently embarked on similar strategies, including Rwanda, Senegal and Tunisia.

These countries achieved their successes through the integration of technology in the value chains. Technological innovations in agriculture are crucial for developing productivity and scale, while at the same time optimising yield and reducing waste.[2]

BAN ON WINE EXPORTS IN SOUTH AFRICA

In South Africa, the government's renewed ban on wine exports, including transporting wine from cellar to ports, has confused, angered and despaired many wine producers in the country. After opening up wine exports on 9 April, the government did an about-turn on wine exports on 16 April, with the Minister for Co-operative Governance and Traditional Affairs, Nkosazana Dlamini-Zuma, announcing that the transportation of alcohol was prohibited, unless for the production of hand sanitisers and household cleaning products or industrial use.

The wine industry was hoping for further relaxation, such as exemptions for road exports and to be allowed to start bottling for exports.

As 98% of wine cellars are in the Western Cape, the Minister of Agriculture for Western Cape Government, Dr Ivan Meyer, immediately appealed to the national Minister of Agriculture. Dr Meyer stated that the government decision to stop the export of wine during the lockdown would be devastating and was a sign of bad judgment. It would impact the industry very negatively, with 300,000 jobs in jeopardy. The decision to stop wine exports would cost wine exporters R200 million (~US$11.6 million) per week, according to Phillip Retief, the CEO of Van Loveren Wines.

Apparently, the national government perceived a direct correlation between the export of wine on the one hand and the increase in burglaries and theft of alcohol from closed outlets on the other. It was not clear to the Western Cape provincial government how export wine in transit from a warehouse to a seaport could correlate with theft from a local liquor store.

South Africa's wine exports are reportedly the second largest agricultural crop after citrus. Wine exports totalled 320 million litres during 2019, during a severe drought. The 2018 exports were 420 million litres. South Africa is also the only major wine-producing country that is not able to export at all during the Covid-19 pandemic. Nearly 50% of South Africa's wine production is exported. Exporters now stand to lose space on overseas shelves.[3]

FOOD EXPORTS IN AFRICA UNDER THREAT

According to McKinsey, by the first week of June 2020, the Covid-19 pandemic may have cost the continent US$4.8 billion in crop exports, affecting the livelihoods of 10 million farmers. Agriculture is an important sector in the economy of Africa, contributing an average of 23% to the GDP of Sub-Saharan Africa. The sector is also one of the largest sources of employment in Africa.

Africa's annual exports of agricultural products are worth between US$35 billion and US$40 billion. A loss of US$4.8 billion represents a severe negative blow for the continent's economy. Also, the continent now faces a looming food insecurity crisis brought on by the pandemic.

Should such a crisis come to pass, countries in Africa that depend mainly on agriculture for their GDP and economic growth would be the first to feel the negative impact of the pandemic.

Reduced exports of a number of high value crops will potentially lead to severe impacts:

- According to McKinsey, a fall in demand for chocolate and the resulting decline in prices could reduce cocoa exports by as much as US$2 billion.
- A reduction in coffee exports could lead to a reduction of US$200 million. A large number of the 6.6 million jobs supported by the coffee industry could also be in jeopardy.
- Between US$500 million and US$2 billion could be lost in the export of fruits, vegetables and nuts.
- Between US$400 million and US$600 million in revenue from flower exports may be lost.

Food insecurity was a serious issue in Sub-Saharan Africa even before the coronavirus outbreak, with 239 million people in the region identified as undernourished as of 2018.[4]

COMMERCIALISING AGRICULTURE FACES CHALLENGES

In Malawi, poor infrastructure, bureaucratic delays and arbitrariness, difficulties in accessing land, ownership conflicts, and difficulties in accessing finance constrain agricultural investment, according to a recent working paper on Agribusiness Investment in Agricultural Commercialisation.

Malawi reportedly faces a volatile investment environment and low growth in agricultural productivity. Companies complain that regular electricity cuts force them to work below capacity, as do policy contradictions. For example, Malawi's National Export Strategy encourages production of crops such as rice and legumes for export. However, legislation enables the government to ban such exports at any time. A lack of transparency and arbitrary decision-making accompany many fiscal incentives. These factors lead to uncertainty, which discourages investment.

The paper notes that efforts to promote, support and speed up investment by the Malawi Investment Trade Centre (MITC) face the many challenges posed by land acquisition processes.

However, observers cite positive outcomes. Companies such as CDC Rice in Malawi benefited from duty-free imports of processing and irrigation equipment. This firm also benefitted from tax incentives that enabled them to purchase needed machines and equipment.

Agricultural Policy Research in Africa (Apra) published the working paper. The authors explore motivations for business investment, the effectiveness of government and donor policy incentives, and the relevance of such incentives along alternative commercialization pathways. They urge governments to take the following actions:

- Severely restrict fiscal incentives
- Make import duty exemptions more transparent and predictable
- Discourage the abuse of tax privileges
- Broaden the impact of investment promotion
- Provide support for and commitment to agribusiness development by well-resourced and coordinated institutions that can align policy incentives with national visions for agricultural transformation, balancing the competing demands on agriculture as an engine of growth and source of domestic food and nutrition security[5]

POINTS OF INTEREST

- Utilising technology such as IoT and automation to improve agricultural productivity is an important step towards improving food security, not only in Kenya, but all of Africa. Boosting yields through optimised production techniques is a well-understood path to this goal. Yet Africa's food import bills are shockingly high, and a largely unnecessary use of scarce foreign reserves, given the potential of the continent to produce its own food. Low yields are a severe constraint to achieving food security. Automation is not the only technology that will boost food security. Farmers should also reach out and embrace solutions such as better-quality seed and modern irrigation methods.
- It is no secret that Africa has the potential to feed the world. It is inexcusable that it imports food and a huge pity that its low level of exports is under pressure. The continent must expand its ability to add value to basic agricultural products and utilise frameworks such as the AfCFTA to incorporate the optimal number of countries in Africa to participate in the continental value chain. The enlarged value chain should increase the level of value-added agricultural exports beyond Africa's borders.

- South Africa's wine industry faces severe pressure with the recent ban on wine sales. The ban on wine sales has the potential to cause even more severe hardships for an industry that employs between 200,000 and 300,000 workers in the Western Cape Province, and about 1.5 million people across the country-wide extended value chain. Several wine estates in the Western Cape experienced financial distress even prior to the onset of the Covid-19-induced lockdown. Many stayed afloat by expanding their business models, opening restaurants, events and conference venues and accommodation facilities. All of these are now under serious threat, with all those jobs now in jeopardy. This outcome follows a lockdown of close to five months. The lockdown was initially implemented to provide authorities with the opportunity to get its health facilities in order before the pandemic reached its peak. It now seems the government wants to change the way the South African population consumes alcohol. South Africa at one stage was the only country in the world with an alcohol and nicotine ban. Botswana has now also joined South Africa by banning the consumption of liquor. In the recent weeks there seems to be an increasing push back from producers and workers, demonstrating against the blanket ban in the industry.

2. Developments in Digital Technology

A broad range of African industries embraced opportunities generated by the application of digital technology. These include the health industry, mining, financial services, and e-commerce, to name only a few. This report explores recent developments within Africa's expanding digital economy.

DIGITAL PLATFORM TO MANAGE HEALTH IN AFRICA

The Africa Communication and Information Platform for Health and Economic Action (ACIP) was launched on 23 June 2020. This digital initiative currently has 36 member states. According to Vera Songwe, Executive Secretary of the Economic Commission for Africa (ECA), ACIP is a mobile-based tool for two-way information and communication between citizens and governments. It provides user-generated survey data and health and economic insights to national and regional COVID task forces to improve their ability to analyse pandemic-related problems and implement appropriate responses.

The platform will reportedly offer a unique opportunity to transform disease surveillance, and will enhance Africa's ability to acquire good quality data in a timely manner.

President Alpha Condé of Guinea pledged to ensure that all 55 members of the AU become part of the ACIP. Songwe deplored the state and high cost of Internet access in Africa, which creates an access barrier for the poor. Despite this cost challenge, the ACIP is already able to reach over 80% of Africa's mobile users without increasing their cost burden. This translates into a user base of between 600 million and 800 million mobile subscribers.

According to Rob Shuter, CEO of MTN, operators can waive Internet access charges to provide airtime to many people battling the pandemic in some rural areas. MTN and its competitors subsequently agreed to collaborate and cooperate in the provision of airtime. As ACIP requires the support of telecommunication regulators from each country, African regulators and ICT ministers were therefore requested to also support ACIP.

The platform will also allow COVID-taskforces to deploy health and economic resources to mitigate the impact of the pandemic. This digital initiative has the potential to transform African health care.[6]

COMPETING FOR HEALTH INNOVATION

Kenyan health fintech company Mama Prime was among 11 start-ups selected for possible funding at global drug maker Sanofi's virtual AfricaTech Challenge 2020 on 11 June. The AfricaTech Challenge provides innovators in Kenya and other Africa countries with opportunities to create home grown tech-based platforms that address four specific local health challenges.

Sanofi is committed to encouraging innovation in Africa, improving access to healthcare and transforming the health ecosystem throughout the continent. AfricaTech Challenge 2020 is the third edition, and received 268 applications from 34 African countries. East Africa sent 22 applications, with 18 from Kenya, three from Uganda and one from Tanzania. All competed for the four winning spots.[7]

The winners of each challenge:

- **Challenge 1**: "How to support patients with a digital health book in order to access information and make decision." Winner: EYONE from Senegal.
- **Challenge 2**: "How to help healthcare systems leapfrog from manual to smart logistics solutions at point of care." Winner: Mobihealth from Nigeria.
- **Challenge 3**: "How to improve financing and impact of innovative health solutions in Africa." Winner: Mama Prime from Kenya.
- **Challenge 4**: "Sanofi Espoir Foundation: How to improve maternal and neonatal health in sub-Saharan Africa." Winners: Teheca, a Ugandan startup, and the University Agency Innovation from Cameroon.[8]

Mama Prime designed its automated financial planning platform to enable expectant mothers to raise money from themselves, relatives and friends to use for settling delivery fees.

BOOSTING E-COMMERCE IN KENYA

Globally, an increasing number of people turn towards e-commerce to escape the hassles associated with brick and mortar stores. One barrier to the growth of this trend is that individuals may not know how to use e-commerce sites nor trust them to handle their money. Africa's largest e-commerce company, Jumia dealt with this challenge in Kenya by establishing Pickup Stations. These are physical places where one can get information on how to use Jumia, and place and collect orders.

The business model enables existing shops in local neighbourhoods to become Pickup Stations. To qualify, a shop owner signs up on the Jumia platform. Selected based on their proximity to customers, they can offer the lowest delivery fee. The model appears to be successful as more small shop owners are signing up to become Jumia Pickup Stations.

Jumia benefits from their relationships with their neighbourhoods, which builds trust in Jumia. In turn, Jumia trains shop owners on e-commerce, customer service and bookkeeping.

The revenue model for these small businesses in their interaction with Jumia is twofold: they earn a fixed amount with every package collected and a commission for every order placed from their shop. This is in addition to the sales by the shop owner's own store.

Over the Covid-19 period, these pickup stations proved to be effective. They ensure contactless and cashless deliveries, thereby helping to reduce the spread of the virus. As most people have been at home the past few months, there has been an increase in uptake.

Currently, the model is restricted to Nairobi and Mombasa counties, which have over 200 pickup stations.[9]

The Covid-19 pandemic has disrupted the traditional supply chains in Africa (and elsewhere), which in turn has led to a mobile shopping-model platform, Copia Kenya, reporting an increased efficiency and growth. Copia allows people in rural and peri-urban areas to place and collect orders of products without travelling to large shopping centres.

After three years of operations, Copia Kenya has built a network of over 11,500 agents and processed over 4 million customer orders with delivery of the products made within two to four days to the agent's premises for the customer to collect. It has more than 650,000 unique customers across 15 counties.

Due to the global pandemic, people increasingly appreciate and adopt the service model. As a result, turnover more than doubled over the period. Copia has had to increase its delivery fleet by 50% to fulfil customers' orders.

Copia's model is designed to focus on low- and middle-income customers, a segment that has been underserved, without formal addresses and limited Internet. The platform also allows people living in the city to make orders on behalf of those in villages.

According to Tim Steel, the CEO of Copia Kenya, they have structured the model to fit their customers, allowing them to save time and money through good margins attained from the best price they could get from the manufacturers. There was subsequently no delivery costs or charges for orders, which helps customers see the value of ordering with Copia.

A number of other large players are gearing their operating models for increased resilience in the growing market. This will involve extending the areas they cover, as well as the scope of products and services on offer, from current stocks of food and groceries to include alcoholic beverages and pharmaceuticals.

Delivery companies such as Uber Eats and Glovo have also reported a spike in demand at the platforms, which may push the companies to expand their reach.[10]

NEW PARTNERSHIP BETWEEN VODACOM AND ALIPAY IN SOUTH AFRICA

In South Africa, Vodacom recently announced its plan to launch a super-app in partnership with Alipay from China. The app will allow South Africans to use their smartphones to shop online, pay bills, and do money transfers. This app is expected to launch in 2021 and will also cater to SMEs with bespoke programmatic advertising and real-time and direct marketing solutions.

According to Vodacom Group CEO Shameel Joosub, the partnership between Vodacom and Alipay will boost financial inclusion in the communities in which they operate, thus accelerating their financial services aspirations in Africa. Vodacom sees its technology partnership with Alipay as an enabler to bring them up to the level of leading global digital counterparts at a faster pace and more efficiently. It is viewed as an opportunity for them to reinvent the mobile fintech ecosystem for both consumers and merchants in South Africa.

Beyond banking and payments, the super-app is expected to also offer what Vodacom calls "digital lifestyle solutions" such as streaming music, playing games and watching videos, e-news, cab-hailing and much more.[11]

POINTS OF INTEREST

- Digital technology increases its footprint in Africa in leaps and bounds. As stated in previous African Digest reports, online health applications can greatly benefit the African health sector. This is especially true for segments of the population living in rural and remote areas, and in in towns far from the main urban centres. The life expectancy of people is increasing due to access to expert medical advice, lower costs and the greater availability of bandwidth. This development is especially valuable for Africa, given its high disease burden.
- Jumia is an interesting case study. Its history up to the start of the pandemic was a story of a slow start and then a much-publicised listing on the New York Stock Exchange with a very high stock price. It then fell from grace, just to be “saved” by the strong increase in e-commerce transactions brought about by the Covid-19 pandemic. It seems that the e-commerce business model for Africa needs to be adjusted for success. Delivery and trust have always been a problem. Copia Kenya addressed these challenges through the extensive employment of agents to facilitate delivery and the placement of orders. Jumia has used Pickup Stations to do the same.
- Vodacom has twice failed to successfully launch M-Pesa in South Africa. This is apparently a case where it is hoped that the third time will be lucky. It seems that Vodacom is betting that by collaborating with Alipay (a subsidiary of Alibaba), the chances of success will be increased significantly. This is no longer just a mobile money app, but has developed into a multipurpose entertainment and lifestyle app. This approach has long been a focus of mobile telecoms companies since voice has become a mature sub-sector and data has been on a race to zero, with margins on data being reduced on a constant basis. The latter situation has been brought about, amongst others, by government pressure on telecoms companies to reduce the cost of data and increase the availability of bandwidth. The steep increase in the number of smartphones in Africa, many of them acquired at a low cost, provides impetus to the increasing presence of entertainment applications.
- The Alibaba footprint in Africa is increasing significantly. In addition to partnering with South Africa, it also partnered with Rwanda in an eWTP (Electronic World Trade Platform) that will allow Rwandans to participate on that platform for a number of business transactions, including tourism. Alibaba will reportedly collaborate meaningfully with Ethiopia to the benefit of both parties. In addition, other reports reveal that Alibaba hosted 89 entrepreneurs from 14 African countries: Algeria, Botswana, Cameroon, Chad, Egypt, Ethiopia, Ghana, Kenya, Nigeria, Rwanda, South Africa, Tunisia, Uganda and Zambia. Given its financial muscle, Alibaba will pose a significant threat to African e-commerce companies such as Jumia.

3. Developments in Infrastructure

Africa's well-known infrastructure challenges remain an on-going headache for most, if not all, African governments. These challenges span a broad range of industries: transport (rail, road, ports, airports), water, energy and housing. It does not appear that the annual investment required to meet these challenges is falling. Investment needs amount to of billions of dollars. Chinese construction companies continue to increase their footprint on the continent. This report addresses some of the more recent developments in this sector.

MAJOR AFRICAN INFRASTRUCTURE PROJECTS WITH CHINESE SUPPORT

Chinese construction companies are taking a lead role in developing some of the more ambitious infrastructure projects in Africa. The sites for these projects range from the Horn of Africa to the Gulf of Guinea. China invested US$380 billion in African infrastructure between 2005-2018, mainly in road, rail, concrete production, and electricity projects. This section addresses five lesser known but important infrastructure projects currently underway in Africa, where Chinese construction companies play a dominant role.

- Trans-Maghreb Highway: When complete, this one 3200km highway will connect 55 major North African towns and cities, 60 million people (of the region's 100 million), 22 international airports, and the region's chief universities, hospitals, and research centres.
- Mambilla Power Plant (Nigeria): This will be Nigeria's largest power generator. To be completed in 2030, it will cost US$6 billion. The project on the Dongo River will comprise four dams and two underground powerhouses with 12 turbine generators. These will produce 3,050 MW of energy, and nearly double Nigeria's total electric power production.
- Nairobi-Naivasha Railway in Kenya: The East Africa Master Railway Plan will link Kenya, Tanzania, Uganda, Zambia, Rwanda, Burundi, and South Sudan. The central artery will be the Mombasa-Kigali line that will link Kenya's largest port with the Rwandan capital, the seat of East Africa's second-fastest growing economy. Important progress was made this year on the Nairobi-Kampala line, which will link these two capitals.
- Walvis Bay Container Terminal (Namibia): With US$300 billion in funding from the AfDB, the China Harbour Engineering Company was set to open a brand-new state of the art container terminal in Walvis Bay by the end of July 2020. The new terminal will increase the total storage capacity from 350,000 to 750,000 containers per annum.
- Caculo Cabaca Hydropower Project (Angola): the Gezhouba Group (CGGC) from China will build this plant at a cost of US$4.5 billion. It will produce 2,172 MW of energy upon completion in 2024, thus meeting more than 50% of Angola's electricity needs. The project will create 10,000 local jobs at the peak of its construction.[12]

INFRASTRUCTURE DEVELOPMENT IN SOUTH AFRICA

The South African government recently informed asset managers and banks that it would invest R1.5 trillion (US$85 billion) in infrastructure over the next decade. Planned projects range from water and sanitation to energy and digital infrastructure. President Ramaphosa launched a drive on 23 June 2020 to attract private investment into infrastructure. The five months preceding the launch saw the development and evaluation of more than 276 infrastructure projects, of which 55 were considered viable and ready for presentation to funders. The initiative was driven by the need to significantly expand South Africa's national economic infrastructure to address the demands of a growing economy. The government also seeks investment in agriculture and housing.

However, a number of factors constrained the South African government's ability to fund projects:

- South Africa's increasing debt levels

- The loss of South Africa's investment-grade rating on its debt.
- The coronavirus outbreak, which limited revenue collection.
- The prospect that the South African economy will contract by 7% in 2020

South Africa currently experiences backlogs in the provision of everything from power generation to water supply. Key state-owned entities, such as power utility Eskom, are riddled with debt.

Despite this, it does seem that the private sector in South Africa is ready to fund the stated projects if they are well structured and managed, and compensate investors for the risks that they shoulder.

In addition to banks and asset managers, pension funds could also play a role.

One of the proposals reportedly under consideration is a listed security that would cover multiple projects, which would be suitable for money managers that need more liquidity to access their funds.[13] [14] South Africa hopes that infrastructure-led recovery will lift it from its Covid-19 slump.

At the end of July 2020, it was reported that private sector investors committed R340 billion (US$19.3 billion) to 62 of the infrastructure projects announced on 23 June 2020. The projects are expected to create 290,000 potential jobs.

The projects, which will be fast-tracked, include the following:

- Water and sanitation (R106 billion - ~US$6 billion),
- 15 transport sector projects (R48 billion - ~US$2.7 billion)
- An emergency power programme to deliver up to 2,000 MW of new generation capacity from independent power producers

A major source of concern is the potential for corruption. One potential solution is to designate a single point of entry for all infrastructure projects across the country, through Infrastructure South Africa (ISA). This would increase transparency, given the number of projects currently in play in different spheres of government. There is currently no such integrated record. The public will also be able to scrutinise companies that bid for tenders under the Strategic Integrated Projects.[15]

PROGRESS ON THE UGANDAN OIL PIPELINE PROJECT

Total Oil recently completed its acquisition of 33.334 % of Tullow Oil's stake of the East African Crude Oil Pipe-line (EACOP), paving the way for it to own 66.7% of the upstream value chain of the project. This will lead to the soon-to-start negotiations for a Host Government Agreement (HGA) for the EACOP project. This agreement will reduce financial and political risks posed to Total Oil by sudden changes in Kenyan national laws. It also provides Total with legal ownership and the right to fast-track execution of the project.

More specifically, the HGA outlines the following:

- Issues pertaining to tax and other revenues to be accrued from the project
- Participation of Tanzanians in the project
- How to deal with challenges that might arise during implementation of the project.

HGA talks with Tanzania will reportedly open after talks between Total Oil and Uganda conclude, and following the completion and issuance of an environmental impact assessment certificate by the National Environment Management Council (NEMC).

Tanzania's preparations for the HGA negotiations are apparently at an advanced stage, and talks are impending. Upon completion of HGA negotiations, the focus will shift to other aspects of the project, including Land Lease.

The Ugandan Parliament recently received notice that the project was expected to commence in April 2021 after the finalization of the Final Investment Decision.[16]

AIRPORT EXPANSION AT DODOMA, NEW TANZANIAN CAPITAL

At the end of June 2020, Tanzania's government announced a major upgrade to the airport at their new capital, Dodoma. According to Tanzanian Minister for Works, Transport and Communications, Eng Isack Kamwelwe, the expansion would lengthen the runway by 250 meters, thus enabling operations by mid-sized commercial and private aircraft. The plan is to ensure the airport will be able to offer services to aircrafts carrying more than 200 passengers.

The airport is seen as important to residents of Dodoma and in the neighbouring regions. With the move of the capital from Dar es Salaam to Dodoma, the number of daily landings at Dodoma increased from three to nine.[17]

REGIONAL RAIL INFRASTRUCTURE IN THE HORN OF AFRICA

In mid-June 2020, Ethiopia unveiled a US$3.4 million feasibility study for a new standard gauge railway (SGR) project that would link Addis Ababa with Khartoum, Sudan. The new SGR project is intended to open a new trade route through the Port of Sudan. The funding of the project will happen as follows:

- The AfDB will provide a grant of US$1.2 million grant.
- The NEPAD Infrastructure Project Preparation Facility will provide a US$2 million grant.
- The remaining US$200,000 will be funded through contributions from Ethiopia and Sudan.

Ethiopia is currently struggling to repay its borrowings from the Chinese used to build the US$4.5 billion railway line from Addis Ababa to Djibouti. This SGR carries 98% of Ethiopia's international trade, but is hit by recurring power outages and other technical problems.

The feasibility study will assess the technical, economic, environmental and social viability of the project, as well as explore financing options. The targeted duration for this study is up to 24 months.

The SGR is intended to improve regional integration by improving transport infrastructure to increase trade between the two countries. It will also improve the transport system serving Sudan and Ethiopia and other countries in the Horn of Africa region, including Kenya and South Sudan.

In addition, the SGR project is linked to the planned development of SEZ's in the border regions of the two countries. These SEZ's are intended to enhance production of local goods, industrialisation and agro-processing, thereby increasing existing trade between Ethiopia and Sudan.[18]

POINTS OF INTEREST

- Africa's need for infrastructure development faces a huge financing gap. The continent is able to attract less than half of the estimated US$130-170 billion annual investment it needs to bring its infrastructure up to par. China's role as a major investment partner is driven by geo-political motives. This relationship does not always serve the interests of the African region.
- African nations have also not always been prudent in selecting large projects. This has led to cautions from even the Chinese president who stated that the continent's leaders should refrain from launching vanity projects. Some leaders exhibited good sense in scrapping seemingly unnecessary projects, such as a second airport for Sierra Leone. Now we see an airport expansion project for Tanzania during a global pandemic. This could surely have been pushed to the back burner. In some cases, governments embrace infrastructure development mainly to stimulate their economies and create jobs. The challenge they will soon face is finding the financial means to pay off the loans. Africa is already heavily indebted.
- Transport infrastructure development can benefit regions such as the Horn of Africa by stimulating regional integration. It will enable landlocked countries such as Ethiopia to reduce

their dependence on one port for imports and exports. No country can tolerate such vulnerability. Ethiopia has been heavily dependent on Djibouti and now has various options, such as in Sudan and also Eritrea after the conclusion of a peace treaty between the two countries. Ethiopia has also reached out to the Port of Berbera in Somaliland. These developments, in addition to the development of various SGR's in East Africa, will hopefully also stimulate trade and support the continental dream of an AfCFTA.

- South Africa's development dreams have become somewhat of a national embarrassment. This is due to the large-scale corruption that has taken place over the last decade or so, and especially since the announcement of the lockdown in March 2020. Political leaders of the ruling party, their family members and senior government officials have reportedly stolen and embezzled so much money that the ANC apologised for the phenomenon. The irony in this is that the same people who were stealing the money were apologising for the thefts and corruption, and promising to prosecute those who were guilty of corruption. The resulting lack of any prosecution contributes to a culture of lawlessness. The end result is that nobody is certain that investments in public projects will reach their intended destination or that the proposed costs are realistic, based on evidence from current practices. Should the country continue on this track, it will lead to disinvestments with potential investors looking elsewhere.

4. Developments in Renewable Energy

Renewable energy in Africa provides a sound cornerstone for the energy business model of the continent. Africa has vast natural energy resources, from wind to solar, hydro and geothermal energy. As upfront costs decline, the efficiencies of the enabling technologies continue to increase. Yet the optimal business model for the African renewable energy sector remains somewhat elusive. This report addresses some of the latest developments in this sector.

NEW BUSINESS MODEL FOR AFFORDABLE RENEWABLE ENERGY IN AFRICA

Renewable energy in Africa is seemingly the beneficiary of a new and relatively risk-free business model. Financiers are encouraged to provide solutions that do not require users to pay deposits. These rest on advanced delivery models and links with mature global providers.

The status quo model entailed solution providers procuring a customer who then repaid the entire project through profits. This model is difficult to finance.

The new business model, one that is seemingly favourably viewed by banks and other institutions, entails the following:

- Solution providers use their own equity.
- Providers then establish maintenance and operations agreements with customers to look after the investment.
- Customers in turn then procure customer agreements of their own.
- Adding to the viability of the model, reinsurers now provide exceptionally good yield cover.

This model has had several positive implications with wider market ramifications. In addition to liability cover, people can also get yield cover for failure of plants to deliver for any reason. There is an increasingly strong driver for better quality equipment; although the kits will cost more, they tend to last longer and are more efficient.

Progress is underway in mitigating many of the remaining risks. Amongst others, this includes the establishment of standards for operational asset maintenance.

The solution providers use their own equity, indicating a high level of trust that eases access to loans. It also means local partners are dealing with an established business. Combining these factors with commitments from governments to provide financing greatly reduced the challenges associated with launching and delivering renewable power projects.

Banks are quite willing to become involved. They now realise that the agreements among suppliers, solution providers and customers are key, and that there is a great deal of value in their viability.[19]

GROWTH OF THE MINIGRID MARKET IN AFRICA

A recent report by the Mini-Grid Partnership (MGP) proposed adoption of solar minigrids as a critical technology to bring electricity to the 789 million people globally who still lack access. As of March 2020, there are 7,181 minigrid projects throughout Sub-Saharan Africa, Asia, and a number of small island nations, with some installations in Latin America. About 5,545 of those projects are operational. Around 63% are powered either by solar, or solar hybrids that use another source (often diesel) to fill gaps in solar supply. About 39% of these projects are in Sub-Saharan Africa.

From a financial perspective, solar and solar hybrid minigrids are now more attractive than diesel generators or centralized grid connections for electrification of rural communities. A growing number of solar minigrids also feature battery storage. Costs for solar panels and batteries continue to fall.

Other generating methods, such as hydropower stations or diesel and heavy fuel oil generators, account for just 21% and 11% of all minigrid projects, respectively. Solar will likely maintain its lead in this

application in the future. The solar minigrid markets in the countries studied by MGP expanded from 60 installed solar-backed grids in 2010 to 2,099 by February 2020. The most common productive-use cases are light manufacturing, agro-processing, illumination, and service provision.

Governments and utilities can pursue a least-cost-approach, with solar minigrids deployed as cheaper alternatives. This could connect 111 million households across Sub-Saharan Africa by 2030. That would be nearly half of the 238 million households that still need electricity throughout the region. The potential cost of this course is estimated at US$128 billion.

The renewable energy investment domain is no longer dominated by small startups, with international power companies entering the sector. These include big players EDF, Enel, Engie, Iberdrola, Shell and Tokyo Electric Power Co. These companies want to minimize investment risks by requiring governments to create a relatively safe business environment for minigrid investments. There are needs for streamlined regulations, clear subsidies, licensing procedures, and tariff-setting policies.[20]

MORE HYBRIDISATION IN KENYA

The Kenya Electricity Generating Company (KenGen) reportedly requested research assistance to determine the potential for several floating solar power plants in the basins of three of its hydroelectric dams. Multiconsult, a Norwegian company, will conduct the studies. They will assess the social, environmental and climatic aspects, and determine the risks of operating floating solar power plants in the basins of the dams. The reservoirs of these three dams are huge, which facilitates the installation of solar panels. Installed solar PV panels can also reduce water evaporation.

This clearly indicates that hybridisation of large hydropower dams is an increasingly serious consideration in Kenya. Observers view it as an “appropriate and cost-effective management of electricity and water.” As Kenya has abundant solar energy resources, this energy source can be used during the day with the hydroelectric power stations taking over during the evening peak hours. This way Kenya can reduce its dependence on conventional power plants and oil/coal-fired plants, in the process reducing its carbon emissions.

KenGen has sought alternatives to hydropower due to declining water levels in Kenyan rivers, caused by the drought that affected eastern and southern Africa over recent years.[21]

ORGANISATIONS WITH HUGE CARBON FOOTPRINTS MOVING TOWARDS CLEAN ENERGY

In South Africa, coal-producer Exxaro embarked upon a journey to support its transition into a low carbon future. It endeavours to implement a strategy that will meet the demands of an expanding population while remaining conscious to climate change and addressing the emerging risks. The company understands the problem. While greenhouse gas emissions released through fossil fuel generated power are one of the biggest contributors to increased global temperatures; the world needs a stable power supply. There was an increasingly urgent need for a reliable and sustainable solution to the problem of providing power without causing further harm to the environment.

Exxaro therefore adopted a strategy to develop the required policies and programmes to start its transition to a low carbon future. As such, Exxaro wants to be carbon neutral by 2050. It believes that renewable energy resources can play a significant role in meeting power needs in Africa.

Exxaro’s strategy is to future-proof its business and communities so that they can adapt to impending physical and transitional changes due to energy transition and rising global temperatures. They will transition to energy that is less reliant on coal, enabling a low-carbon economy while still meeting the current energy demand. They subsequently developed a new vision statement: “Resources powering a clean world.”

To support its target of being carbon neutral by 2050, Exxaro began to incorporate small-scale renewable energy solutions in its existing portfolio. They recently acquired the remaining 50% of Cennergi, which owns and operate the Tsitsikamma Community and Amakhala Emoyeni wind farms in the Eastern Cape.[22]

Another company in South Africa with a huge carbon footprint, chemicals producer Sasol, wants to reduce its carbon emissions. It has taken the decision to power its operations in two towns in the provinces of Mpumalanga and the Free State with two 10 MW solar projects. It has published an RFP to get independent power producers for these two plants.

This strategy forms part of Sasol's greenhouse gas (GHG) emission reduction aspiration and to achieve their target of a 10% GHG emission reduction by 2030. The winning IPPs will own and operate the plants. They will sell power to Sasol under long-term PPAs. This strategy has the additional benefit of reducing their dependence on troubled electricity utility Eskom.

In mid-July, ArcelorMittal South Africa invited independent power producers to submit proposals for solar systems at six sites in four provinces throughout South Africa, with a minimum project size of 10 MW each. The company wants to introduce renewable energy into its energy mix to significantly reduce the price of electricity and ensure a stable and secure supply of electricity for its operations.[23] [24]

POINTS OF INTEREST

- Renewable energy is now widely adopted throughout the African continent. Installations range from large-scale plants with a base-load capacity to micro-grids serving a few houses. There are proposals for more nano-grids to provide electricity to a single house or small building. This term differentiates between systems that provide electricity to a single house and those that generate electricity for a few houses and even a village. We also see growth in the number of hybrid renewable energy projects. With the huge availability of solar, wind, geothermal and hydro potential, these developments can only be good for Africa. Tweaking business models to reduce the costs of acquisition and ownership and to facilitate maintenance programs should provide a further boost to the diffusion of renewable energy.
- The moves of organisations with huge carbon footprints towards adopting a renewable energy business model (Exxaro) and renewable energy plants (Sasol and ArcelorMittal) are quite interesting. This is not the first time this phenomenon has appeared. In January 2019, mining companies were urged by the South African Mining minister to embrace renewable energy, as it could provide greener electricity at a lower cost. Many organisations in South Africa that turned toward renewable energy had additional motives, due to the inability of a shaky Eskom to provide dependable electricity at affordable rates.
- The developments in Africa provide many business opportunities throughout the value chain, ranging from the manufacturing of panels, inverters and batteries to the building, implementation and maintenance of the systems. Currently, most of the hardware is imported from countries such as China and Germany. It is time for Africa to step up and start manufacturing its own components. This will benefit import substitution, boost the contribution of the manufacturing sector to GDP, create many meaningful employment opportunities and even create opportunities for exports.

5. Developments in Sustainability

Africa appears to be increasing its operational capability to respond to sustainability issues. Several African governments banned the use of single-use plastic bags. Other entities convert plastic waste into bricks to build schools, and use this waste as an ingredient to build better, cheaper and longer-lasting roads. We also see a transition in transportation from internal combustion to electric motors to reduce carbon footprints. This report addresses some of the more recent developments in this sector.

THE TRANSITION TO E-BIKES AS TAXIS

Motorcycle taxi drivers in Uganda's capital Kampala are testing "e-bikes." They use them to transport passengers on electric bicycles powered by solar energy. This is a part of trends towards the adoption of environmentally friendly technology and a greener environment. The adoption of the technology leads to more environmentally friendly operations and lowers operating costs.

Currently, electric mobility is still a relatively new phenomenon in Uganda. Electric energy powers fewer than 10% of vehicles in Kampala. While a long road lies ahead for this innovation, some local companies in Kampala already participate in this trend. Zembo is an importer of custom-made electric bikes and a supplier of solar energy, while Bodawerk specializes in converting conventional motorcycles to electric power.

The aims of the e-bike campaign that supports the test project in Uganda are to help the country make the transition to electric mobility and to raise awareness of green technologies.

Two organisations that contribute towards this e-bike campaign are the International Climate Initiative of the German Environment Ministry and the UNDP. The project is part of a US$34 million initiative by the United Nations Environment Programme (UNEP) and the International Energy Agency (IEA). Ultimately, the initiative will support the transition to electric mobility in 17 developing countries.[25]

BOOSTING RECYCLING IN AFRICA

Recyclan, a tech-enabled recycling company based in Nigeria, established operations across Africa collecting waste and exporting it globally. Established in 2018, the company aims to reduce Africa's carbon footprint and make the world greener by recycling plastic waste.

Recyclan's mobile app and SMS service incentivises people to recycle their waste by offering rewards such as access to health insurance, sanitary towels, and schools fees in exchange. It processes and packages this waste to customer specification and then exports it to North America, Europe and Asia. The effect of these actions is to reduce plastic waste on beaches, landfills and in the ocean.

Africa has the highest rate of inadequately managed plastic waste in the world. By harnessing this waste for export to the rest of the world, Recyclan is filling a sizeable gap, as there are not enough companies that recycle plastic.

Recyclan is self-funded and is operating in Nigeria, Ghana, Togo, Benin, Cameroon, Burkina Faso and Kenya. They intend to use technology to scale their recycling model across Africa, creating a recycling culture that currently doesn't exist in Africa.

Recyclan recently set up a hot washing factory in the United Kingdom. From there it processes its own product, increasing its revenues. It has reportedly already generated more than US$1.1 million in revenue, at a margin of 40%.[26]

COPED Rwanda, a company specializing in waste management and transport in Rwanda, is exploring the transformation of single-use plastic into construction materials (tiles, roof tiles and paving stones of different colours) as a new solution for plastic waste management in the country. The waste is collected in Kigali from beverage suppliers.

The Rwandan government allocated about US$80,000 for the establishment of waste collection centres in Kigali. Equipment needed to produce the construction materials using the collected plastic bottles cost US$2 million.

COPED Rwanda's initiative follows the passing of a bill on 12 June 2019 to ban the manufacture, import, use and sale of single-use plastic in Rwanda. Companies were given a 3-year grace period to explore and adapt to other packaging alternatives. COPED Rwanda also intends to produce new plastic bottles from recycled plastic.[27]

FROM AGRICULTURAL WASTE TO PAPER PULP

In Ethiopia, entrepreneur Bethelhem Dejene Abebe co-founded Zafree Papers to introduce a paper pulp made from agricultural waste such as wheat and barley straw instead of wood. The process uses waste that smallholder farmers normally burn, thereby reducing air pollution. The processing facility is currently under construction in Debre Berhan, about 120km northeast of Addis Ababa.

Having started with recycling paper waste from her own household, Bethelhem progressed to producing wood-free paper pulp for paper manufacturers, using agricultural waste without sacrificing the quality of the eventual end product.

Financing the project was difficult and she eventually received some project finance from the Development Bank of Ethiopia and procured land in Debre Berhan's industrial park. She also completed entrepreneurship training offered by the Entrepreneurship Development Centre in Ethiopia. In 2018, Zafree Papers obtained seed money from Blue Moon, an incubation programme for start-ups in Ethiopia. In 2019, Bethelhem was selected for the Tony Elumelu Foundation Entrepreneurship Programme, obtaining US$5,000 and nine months of training and mentorship. In addition, she received the Seedstars DOEN Land Restoration Prize of US$10,000.

A range of customers have agreed to purchase pulp from Zafree Papers, with some even willing to pay 50% or 100% upfront before delivery. Ethiopia has seven paper manufacturing companies and Zafree Papers obtained commitment letters from all seven. The company also has customer commitments in Nigeria, Eritrea, Kenya and Tanzania. Zafree is conducting feasibility studies in Zambia and in Nigeria for possible future expansion.

To enable procuring the agricultural waste as an input, Zafree Papers forged agreements with more than 8,000 smallholder farmers from the area surrounding the plant.

Construction of the new factory is currently under way and the plant will start production early in 2021.

Despite a global trend towards digitalization, Bethelhem's experience is that the demand for paper pulp is increasing in Africa, as demand grows for products such as packaging, sanitary products and tissue paper.[28]

RECYLING PLASTIC WASTE

Start-ups in Nigeria and Côte d'Ivoire show that private sector initiatives can make a significant contribution to waste management.

In Nigeria, Saviour Anyanwu founded OkwuEco and built an app to get households and waste collectors working together. The app educates households about recycling, and links them with merchants who can trade their waste for cash credits or mobile data transacted through the security of an online platform. The app's GPS facilitates logistics, directing merchants to various households' sorted waste. The solid waste is then traded in recycling centres, helping to establish a circular economy in metals, plastics, paper and glass.

In 2019, the Nigerian government strengthened its ban on single use plastic bags by introducing huge fines and potential jail sentences for stores found to be giving the banned item to customers. In addition, more local businesses are attempting to monetise the growing waste.

OkwuEco will charge a US$9.99 monthly subscription fee for traders. Challenges to scaling the business include Nigeria's low rate of broadband penetration and high illiteracy rate.

In Côte d'Ivoire, Coliba collects plastic bottles to convert into pellets or granules at its recycling plant in Abidjan. The washed and fragmented plastic is sold to local companies to be remade as tables, chairs, or exported abroad to businesses in Ireland and China. The company partnered with MTN Côte d'Ivoire to exchange plastic bottles for airtime and data. Coliba plans to double its existing 24,000 users by the end of 2020, then to expand into new markets in West Africa.

Côte d'Ivoire generates more than 5 million tons of solid waste each year . Less than half of the current waste is collected, and only about 3% is being recycled. Coliba recycled 5,000 tons in 2019, and the company plans more recycling plants at home and in Nigeria, Benin and other regional countries.[29]

Also in Cote d'Ivoire, the Envipur Association and the Abobo town launched a new environmental project called "my commune without plastic waste" in Abobo, a commune in the district of Abidjan on 3 July 2020. The initiative will be financed by Nestlé Côte d'Ivoire, and will enable the collection of 30 tons of plastic waste from the uncontrolled landfills in Abobo thanks to pre-collectors. It is also an opportunity to raise awareness among the people of Abobo about the dangers of pollution from throwing plastic waste in the streets and the importance of recycling. The initiative will last six months.

Abidjan, the district where Abobo is located, produces 288 tons of plastic waste every day, 95% of which ends up in the pipes and the lagoon. It is this debris that causes pollution and flooding, as only 5% is recycled.

The plastic collected will be used to produce paving stones, which has the advantage of being stronger, more environmentally friendly and less expensive than conventional paving stones.

A previous project funded by Nestlé Côte d'Ivoire made it possible to collect and recycle twelve tons of plastic waste in Côte d'Ivoire during six months in the Treichville and Belleville markets.

Nestlé Côte d'Ivoire aims to make 100% of Abidjan's plastic packaging recyclable or reusable by 2025.[30]

POINTS OF INTEREST

- The development of e-vehicles is gaining ground in Africa. An increasing number of governments have come to realise the growing danger of high carbon footprints. Countries such as Egypt, Ethiopia, Kenya, Nigeria, Rwanda and Uganda are amongst those that encouraged the emergence of motor vehicles, including buses, with electric and hybrid engines. Charging stations remain a challenge, however, given the long distances in many countries and the lack of sophistication. Over time, technology development will increase the efficiency and lower the costs to the extent that electric and hybrid vehicles will become commonplace in Africa.
- Recycling is also a growing phenomenon on the continent. Recycling water and the recycling of plastic are the two elements most reported on. Plastic has been converted into many value-added products for commercial and personal use, including roads, bricks and tiles, and even clothes. Many start-ups emerged to develop the recycling of plastic as the core of their business models. Given the huge reservoirs of plastic waste in Africa, this is unfortunately likely to be a viable business model with a lot of traction for years to come.
- While most of the plastic recycled in Africa is currently converted into products used locally, it is interesting to see recycled plastic being exported abroad - an ironic turn of events. Africa has been a dumping ground for the world's waste, with advanced countries such as the USA, Canada, Britain and other European countries dumping their waste on the continent. In a 2016 report by When on Earth on the Top 20 countries globally that had become the dumping grounds for waste, nine are in Africa, namely Ghana, Nigeria, Somalia, Cote d'Ivoire, Kenya, Guinea, Zimbabwe, Guinea-Bissau and South Africa. The waste sent to these countries also included hazardous components such as electronic waste and even toxic waste. It is time we stopped this practice.

- We see yet again the transformation of waste into something useful in society, i.e. transforming agriculture waste into paper pulp. This is in line with other processes in Africa, such as turning harmful hyacinth pests into livestock feed and even biofuel, household waste into biogas, mango waste into biogas, wastewater into biogas, and pineapple waste into organic fertilizer, to name but a few examples. Other examples include recycling used engine oil to generate electricity instead of polluting the environment, as well as using bamboo for furniture and bicycle frames and biogas instead of wood, thereby slowing the deforestation plaguing Africa.

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