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# Africa Digest

Trends and Issues in Macro Environment

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## Trends in Agriculture in Africa

Agriculture plays a significant role in the economy of every African country. Food security is a major objective of African governments, as well as the African Union and the African Development Bank. Despite continuous initiatives to improve the issue of poor food security, we see diversion from food cultivation to crops such as cannabis and other drug-related products (e.g. khat in Ethiopia). This is despite the fact that Africa's annual imports of food amount to US\$35 billion to US\$41 billion.

### IMPROVING CASSAVA YIELDS IN RWANDA

In Rwanda in 2014, the outbreak of Cassava Brown Streak Disease (CBSD), known locally as Kabore, had a devastating impact on the cultivation of cassava. It brought about serious damage on Rwanda's leading cassava-producing districts of Bugesera, Gisagara, Kamonyi, Nyanza, Muhanga and Ruhango. Cassava is important — it makes up nearly 25% of the production of staple food crops.

One key counter-measure was the introduction of CBSD resistant varieties. According to both farmers and cassava flour producers, the NASE14 variety is very productive. Farmers now produce double the yields on the same land. In 2018, the Kinazi Cassava Plant had the challenge of finding buyers for the produce after their production increased from 900 tons in 2017 to 180 million tons in 2018, and the price of flour was restored to RWFR 400 per kg.

Various new cassava varieties are being researched for yields and resistance to pests and diseases. The UN's FAO and the Rwanda Agriculture and Animal Resources Board (RAB) have committed themselves to strengthening awareness campaigns targeted at farmers on good agricultural practices and control and management of different pests and diseases.<sup>1</sup>

### CANNABIS REACHING NEW HIGHS IN AFRICA

In the town of Stellenbosch of the Western Cape Province of South Africa, cannabis producer Felbridge is the first company to receive a licence from the South African Health Products Regulatory Authority to grow cannabis in the province. In addition to police clearances, site plans and detailed company information, Felbridge also submitted an agreement from overseas buyers for its produce. Although South Africa has yet to issue licences to local manufacturers of cannabis products, four cultivation companies in other parts of the country received licences.

The commercial cannabis industry received a massive boost by the Constitutional Court's 2018 ruling that personal use of cannabis is no longer a crime. Earlier this year, Cannabidiol (CBD), a compound derived from dagga, was removed from South Africa's list of highly-controlled drugs, and it is now officially available on prescription. The South African domestic market for cannabis and related products, excluding consumer CBD products, will be worth around R27 billion (~US\$1.8 billion) by 2023.

The estimated cost of a setting up a facility and preparing an application will cost aspirant cannabis cultivators between R3 million (~US\$200,000) and R5 million (~US\$332,000).<sup>2</sup>

Druid's Garden, a licensed farm in the small town of Hennops near Johannesburg, conducts research and legally produces cannabis and other traditional medicinal products for sale in South Africa and international markets. Its founder Cian McClelland aims to help smaller-scale, black farmers to enter South Africa's potentially lucrative cannabis market. Rural black smallholders who have grown cannabis traditionally but illegally, now scramble to benefit from the recent relaxation of cannabis laws.

While South Africa's cannabis industry could be worth billions by 2023, there are concerns that black farmers, who have been working for decades in what has been an illegal industry, may miss out on the potential boom. Many smaller growers cannot afford to obtain the licenses needed to grow cannabis for medicinal and research purposes. The cost of establishing a legal marijuana farm is estimated to be \$200,000 to \$350,000. Agricultural experts say big pharmaceutical companies could soon control the new cannabis industry, cutting out long-time growers.

Due to the growth of the industry, cannabis conventions are becoming commonplace in the country. A recent cannabis expo held in the upmarket Sandton Convention Centre in Johannesburg, attracted



hundreds of marijuana activists, farmers, growers and exhibitors from across the world. The expo grew from 58 exhibitor stands in 2018 to more than 200 stands in 2019.

Even South African president Cyril Ramaphosa got on board the cannabis bandwagon by touting the country's cannabis industry as an important sector in the country's fight against unemployment.<sup>3</sup>

The South African Minister of Finance, Tito Mboweni, also seems to be an ardent supporter of the legal production of cannabis. He sees it as a valuable source of tax revenue. As he does not have a lot of fiscal space left in the face of looming rating downgrades and an economy that is barely growing at best, in addition to raising taxes on alcohol and cigarettes, he now apparently sees a tempting third category here.<sup>4</sup>

In Zambia, the government recently (December 2019) approved a proposal to legalize the production of cannabis. The production thereof, however, will be restricted for exports and for medical purposes only. Companies who want to trade in cannabis in the country, will have to bid for the opportunity and will have to acquire an annual licence costing US\$250,000. The Ministry of Health will issue the licence, while the production will be strictly supervised by the Zambia National Service.

Apparently some jockeying took place on the issue as to who would be controlling the issuing of licences as a number of rich organizations and companies had been promised licenses by various other departments.

According to research published by The African Cannabis Report, Africa's legal cannabis industry could be worth more than US\$7.1 billion annually by 2023, if enabling legislation is introduced in some of Africa's major markets.<sup>5</sup>

In the south of Senegal, in the village of Kouba, cannabis is reportedly the only crop that is commercially viable. While the production of cannabis it is not legal, the area is so remote that no police officer has set foot there since the 1980s, and recent crackdowns on cannabis cultivation passed them by.

The general perception in the area is that if one does not produce cannabis, one will not survive. According to Kouba villagers, cannabis fetches between 15,000 and 30,000 CFA francs (US\$25 - US\$50) a kilo — compared with just 500 CFA francs for a kilo of onions. AS 40% of the population in Senegal live below the poverty line, the money is quite attractive.

In the absence of other viable economic options such as tourism or conventional agriculture, the villagers have tended cannabis plantations many years. Vegetables are only grown for personal consumption.

However, according to the police, Senegal is stepping up controls, according to the police. Due to their secluded location, Kouba villagers still operate in peace.<sup>6</sup>

## **AQUACULTURE CONTINUES ITS GROWTH TREND**

Mauritius is empowering small-scale businesses along the fishing industry value chain, revamping the country's marine fish stocks, and promoting aquaculture through more public private partnerships by implementing a fisheries and aquaculture reform program. The country derives 1.5% of its GDP growth from the fishing industry. It has experienced a 6% growth in aquaculture fish production since 2003.

The Mauritius fisheries and aquaculture sector has in the last four years experienced an increase in exports of fisheries products to 119,500 metric tons in 2019 – valued at US\$407 million. It has also been successful in enforcing an annual two-month closure of the country's octopus fishery, allowing growth in the species' size and population.

Mauritius extended an SME financing scheme for three years, which includes small-scale fishing industry value chains and knocking out all trade fees for businesses that generate not more than US\$136. In addition, Mauritius wants to utilize its SME fisheries and aquaculture sector in the next year to enhance the its visibility in the global seafood market by using specially developed labels.

Mauritius also provides a US\$82 grant that will enable SMEs to subscribe to the e-commerce platform designed and operated by the Mauritius Chamber of Commerce and Industry.

However, Mauritius still faces a number of challenges. These include the negative impact of climate change on the country's marine ecosystem, illegal fishing and maritime piracy, a shortage of qualified and experienced technical personnel, and the lack of a harmonized regulatory framework to regulate ocean-related activities. According to the country's [2017-2020 National Export Strategy Fisheries and Aquaculture Sector](#) report, "biosecurity and supply of juveniles are also key aspects that need to be secured before developing aquaculture activities any further."<sup>7</sup>

## POINTS OF INTEREST

- Cassava is a much-underestimated crop in Africa. It serves as a food product, while it can also be transformed into a gluten-free flour. In addition to this, a number of entrepreneurs are looking at producing maltose and glucose from cassava. Some scientists have also been able to extract pharmaceutical grade starch from newly improved starch-producing cassava varieties. The scientists utilized the cassava starch in paracetamol and Flagyl tablet formulations. Countries such as Nigeria are also exporting vast quantities of cassava to China.
- The Digest has previously noted the move towards producing cannabis in South Africa and other African countries. The trend appears to have strong momentum. As stated in the introduction, a concern in Africa is the issue of food security. Moving towards the production of cannabis, with governments not only sanctioning it but also embracing it as an employment-generating opportunity, raises eyebrows. Why would farmers struggle to make a living producing food if they, by producing cannabis, can earn higher revenues? Undoubtedly a number of unintended consequences (mainly negative) will surface further down the line.
- Aquaculture in Africa is quite deservedly receiving increasing attention from governments in Africa. Protein is a scarce commodity in the diets of many Africans. Boosting aquaculture will not only contribute towards the daily protein-intake of the continent's population, but will also help to support entrepreneurs (mainly women and the youth) to make a meaningful living.
- Many African countries report illegal fishing by larger countries. They frequently do not have the naval projection power to address this issue with force and are relatively helpless to act against transgressors in their territorial waters. The outcome is depletion of their ocean fish stocks, leading to higher consumer costs, diminishing food supplies, higher food prices and job losses. Africa cannot afford this. Perhaps governments should request supra-national organisations such as the United Nations to take action to halt the "fish-piracy" phenomenon.

## Digital Trends in Africa

The Brookings Institution hails the Fourth Industrial Revolution as both a threat and an opportunity for Africa.<sup>8</sup> We have seen a huge impact on the continent from phenomena such as mobile money, increasing the level of financial inclusivity of previously unbanked populations at an unprecedented scale. In addition, e-commerce shows steady growth, although not as rapidly as some hoped for.

### NIGERIA FOCUSING ON THE DIGITAL ECONOMY

Nigeria must achieve digital literacy in 10 years, says Nigeria's Minister of Communications and Digital Economy, Isa Pantami. The country has sufficient digital skills, equipment, Internet connectivity and digital identity. His ministry has developed plans to start a comprehensive digital literacy training and skill acquisition program in the country in 2020, to reach at least 95% of the population.

The training targets several categories of Nigerians, with programmes for women, journalists, unemployed youths, unemployed graduates, civil servants, chief executives, people with disabilities and for children. It is to be taken to all corners of the country. However, availability of funds is one of the current constraints.<sup>9</sup>

The Minister more recently announced Nigeria would cease to engage in manual operations by 2030. The country drafted its National Digital Economy Policy and Strategy, which envisions a digital Nigeria in which there would be no manual operations in the next decade — a digital Nigeria.

The minister subsequently appealed to states and local governments to buy into the policy. He also stated that the price of data and mobile devices must be reduced. Increasing broadband penetration by just 10% could increase Nigeria's GDP, promote digital innovation, and digital entrepreneurship.<sup>10</sup>

### KICKSTARTING MOBILE DIGITAL ACCESS IN RWANDA

Rwanda's "Connect Rwanda" campaign, launched in December 2019, hopes to put a Mara and other smartphones in the hands of every household in the country. The programme relies on donors pledging either approved smartphones or the money to buy them, to bridge the digital gap for the country's 2.9 million households. Currently less than 20% of Rwanda's households have smartphones, with the majority of citizens using the government's Irembo platform to access services.

The campaign is spearheaded by telecom MTN Rwanda and the government's Ministry of ICT and Innovation. MTN is loading 1GB of data monthly for the first three months to get it started, and support and public education are part of the deal with a special emphasis on women entrepreneurs and underserved communities.

Local Rwandans, Rwandans abroad living in Switzerland, Belgium and Holland, as well as the Rwanda Defence Force, the Rwanda Development Bank and prominent artists are challenging each other to donate as many phones as possible. President Paul Kagame made a donation pledge of 1,500 Mara phones to kickstart the program.<sup>11</sup>

### USING DIGITAL PLATFORMS TO ATTRACT CHINESE TOURISTS

Tanzania intends to use digital technology to attract more Chinese tourists to the country. As Chinese tourists utilise the online platform extensively, the Tanzanian embassy is creating an online booking platform, using 5G technologies, to promote Tanzania's tourism services in China. It will specifically promote Tanzania's tourist attractions to Chinese tourists. WeChat is China's top social media platform. Tanzanian companies will therefore be expected to have WeChat QR codes on the website.

The platform will host a reservation and booking app, Chinese social media apps and offer marketing and advertising space. All tourism players in Tanzania are expected to market themselves through the website. They will also be paying for the platform for at least six months

The embassy is also working with a marketing firm in Shanghai to promote the website on the Chinese social media platforms.<sup>12</sup>

## DIGITALISATION AND THE HEALTH INDUSTRY

The Future Health Index (FHI) 2019 produced by Philips surveyed more than 15,000 adults and 3,100 healthcare professionals across 15 countries, including South Africa. The 2019-report focused on exploring the impact of digital health technology on healthcare professionals and patients. According to the MD of Philips South Africa, Romulen Pillay, three clear themes emerged from the FHI 2019 for South Africa:

- Engaged and digitally enhanced healthcare professionals: more healthcare professionals are using technologies such as digital health records (DHRs) and telehealth, obtaining better results and having higher job satisfaction.
- Empowered patients — access to data and more control: individuals with access to their own health data are far more likely to engage with that information in ways that improve the quality of care and their overall experience.
- Learning from forerunners: The experiences of digital health technology forerunners such as China, Saudi Arabia, India and Russia provide valuable lessons that all countries can apply.

The following are some of the opportunities FHI identified for both healthcare professionals and patients:

- Being able to access patients' full medical histories helped 75% of South Africa's healthcare professionals to be better in their profession over the past five years.
- Patients were empowered by the use of digital health technologies to take control of their own health. Having access to their own health data make South Africans more likely to engage with it in a way that will improve the quality of care they receive.
- Telehealth emerged strongly as an untapped tool for healthcare professionals. It can bridge the gap for the 74% of South Africans who did not visit a healthcare professional when they had a medical reason to go.
- It has the power not only to drive greater access to care, but also to improve the patient experience by cutting down on the amount of time they need to wait to see a professional.
- AI also has an important role to play, with the majority of South African healthcare professionals feeling comfortable using AI to treat patients, despite low levels of adoption.<sup>13</sup>

## DIGITALISATION AND THE MINING INDUSTRY

"Optimising Growth and Investment in the Digitised Mining Economy" is the theme for the 2020 African Mining Indaba. According to Tom Quinn, Head of Content at Investing in African Mining Indaba, the concept of the Fourth Industrial Revolution (4IR) has entered the mainstream. This can be seen in the mining industry from "automated mines, blockchain incubators securing the transparency of mined materials, safety technologies to reduce accidents, and the ongoing interaction with data in which to grow mining in a more efficient and sustainable way." Digitisation is no longer just a technology issue, but has challenges and opportunities throughout the natural resources value chain.

The impact of digitisation on the mining industry is massive, with the mining industry generating more than US\$425 billion of value. This creates huge potential investment opportunities in digital optimisation for the mining industry.<sup>14</sup>

## JUMIA REPOSITIONING ITSELF FOR PROFIT GENERATION

Africa's one-time e-commerce unicorn Jumia announced it would focus on the services sector to generate a profit, following its poor 2019 performance. Its third-quarter adjusted EBITDA loss increased to €45 million, up nearly 27% from a year earlier. During the latter part of 2019, Jumia exited a number of countries in Africa and downscaled its operations in Kenya.

According to founder Jeremy Hodara, Jumia intends to capitalise on its payment platform and infrastructure network and boost revenue from services to third-party sellers on its online marketplace.

According to Hodara, scaling up the business will reduce costs, assisted by its improved algorithms. He envisions JumiaPay, the company's online payment platform, as a key part of the growth plan. Jumia is interested in making JumiaPay and its logistics network available to third-parties, including those not currently selling on its e-commerce platform.

In the short term, Jumia will be looking at generating fees by increasing the extra services it offers to sellers, in addition to the warehouse space, marketing services and search engine optimisation it already offers.<sup>15</sup>

## ETHIOPIA COOPERATING WITH ALIBABA ON DIGITAL ISSUES

The Ethiopian Ministry of Innovation and Technology announced plans to cooperate with China's Alibaba Group to grow its digital economy. Minister Getahun Mekuria shared that the Government placed a huge importance and "highest priority" on investments to boost digital transformation. Former Alibaba chairman Jack Ma confirmed the vital strategic partnership between Ethiopia and Alibaba. Ma noted that he had been inspired by the reforms that have been undertaken in Ethiopia.<sup>16</sup>

## POINTS OF INTEREST

- The examples above indicate that a range of industries is being impacted upon by digitalisation, such as mining, banking, e-commerce, tourism and the health industry. Given the low level of penetration of the technology, the opportunity for further developments in Africa are huge. Previous reports have addressed the opportunities and developments in the agriculture sector.
- Not all initiatives are success stories. Some entities are also hitting a number of headwinds as they probably overestimated the speed of adoption. One specific example reported extensively on in a previous report, is the example of Jumia, Africa's once-unicorn in the e-commerce sector. In this issue we are seeing Jumia expanding upon its services in an attempt (some would say desperate) to achieve a position of profitability. One needs to remember, as stated previously as well, that giants such as Amazon were unprofitable for many years before break-even occurred. Unfortunately Africa's population at large does not have the purchasing power of the USA population. In addition, Amazon, and Alibaba, managed to hit the global scene from where they generated significant amounts of revenue, something that Jumia has not been able to do.
- With Alibaba entering into agreements with African governments, such as Ethiopia, but also with others such as Rwanda, it makes it more difficult for Jumia to solidify its position on the continent. With access to a massive Chinese population, these African governments are clearly indicating where their interests lie. For example, Rwanda (Alibaba) and Tanzania (WeChat) are using social media platforms in China to raise the interest of Chinese tourists in Africa's tourism hotspots.
- We are seeing an expansion of the use of digital platforms in the health industry. While the trend is growing with an increase in both the countries adopting telehealth and digital health platforms, within the countries we are also seeing the number of platforms increasing. In some countries we see that the regulatory environment is still acting as a constraint and where reforms will have to take place to allow for the extension of health services to the poor and remote rural populations. It reminds one of the resistance in some countries against the adoption of mobile money in the early years of the new millennium. Just as mobile money has become commonplace as central banks have come to realise the benefits thereof when properly regulated, we should see the same route being followed with the health industry. Digital health has just too many benefits for Africa's population with its high burden of disease for it to be limited by visionless regulatory bodies.
- The mining industry has long been a sector where new technology has been embraced to improve the efficiency and safety of mining. Anglo American was already looking at the opportunities for utilising nano-technology in its operations as far back as the late 1990's. With





safety being an issue, and where there is a perpetual drive to minimise costs in order to remain profitable, one can expect this phenomenon to keep on growing.

## Manufacturing Trends in Africa

Africa often talks about increasing the productivity of its manufacturing sectors. Yet we hear far too much talking and see not enough doing. In Kenya, the president adopted his Big 4 Strategy, which included boosting manufacturing as one of the strategic legs. The Ghanaian President adopted a policy of one district, one factory. In spite of this focus, a lot of work remains to be done. Below we are reporting on initiatives aimed at developing the manufacturing sector of Africa's countries.

### INCREASING OUTPUT OF THE TEXTILE SECTOR

Towards the end of 2019, Uganda developed a strategy to boost its cotton, textiles and apparels sector. The aim is to generate 50,000 new jobs and US\$650 million in additional export revenues over the next eight years. In addition to increased fibre cotton production, the strategy will also scale up domestic value addition and create employment opportunities. It will also address structural and policy bottlenecks that currently constrain the development of the cotton value chain, and establish five new vertically integrated textile mills. The factories will increase the value of Uganda's cotton output and employ 50,000 workers, who will be earning a combined US\$50 million annually. These factories will initially rely on imported fabric.

The strategy turns around eight key action points. It aims to stimulate large-scale commercial cotton production, and improve the country's textile-related infrastructure and business climate. It also "aims to attract FDI into the sector while supporting existing industrial players to develop into integrated value chains that export full value apparel products."

Only 10% per cent of the 30,000 tonnes of cotton lint produced is currently processed into fabric, with production mainly serving the domestic and regional markets. Under the new strategy, this percentage will be raised to 75% of lint production.<sup>17</sup>

### BOOSTING VEHICLE MANUFACTURING IN AFRICA

Jilani Aliyu, Director-General of Nigeria's National Automotive Design and Development Council, NADDCC, announced that the NADDCC would work toward discontinuing the practice of importing fully-built vehicles from abroad. Instead, Nigeria will promote and sustain the production of vehicles at home. This strategy would provide Nigerians with fuel-efficient and modern new vehicles, and create thousands of employment opportunities. It would also stop the practice of using Nigeria as a dumping ground for old and dilapidated vehicles and give the economy a much-needed boost.

Plans were also underway for these locally-made vehicles to be readily available for Nigerians to buy. NADDCC was negotiating with banks in Nigeria to provide financing at low interest rates for made-in-Nigeria vehicles. Repayment would be in at least five-year instalments

To make Nigeria a prominent African vehicle-manufacturer, the NADDCC encourages the private sector to produce vehicles through the National Automotive Industrial Development Plan, NAIDP. The vehicle production element of the plan entails five cardinal elements: investment promotion (encourage and support the private sector to set up their factories in Nigeria); infrastructure development (provide the necessary infrastructure for the industry to set up and be sustained); meeting minimum global standards in vehicle components; training thousands of Nigerians on mechatronics to understand the new automotive technology; and market development.<sup>18</sup>

Nigeria's government plans to collaborate with and support Hyundai to build a car plant. It will also rehabilitate petroleum refineries in the country. According to President Buhari, Nigeria was committed to ensuring energy security, and was striving to "achieve self-sufficiency in the supply of petroleum products within the next three years."<sup>19</sup>

In Ghana, the local Kantanka Automobile Company announced in October 2019 it would start producing electric cars in December 2019. It would be targeting the local market and look abroad for other markets as well. These cars would be able to travel between the cities of Accra and Kumasi (a distance of 248km) before they would need to be recharged.

Kantanka today mainly produces off-road cars, including a range of pick-ups and SUVs. A recent client includes the Ghanaian government, who acquired 500 4x4 vehicles for the Ministries of Agriculture and Trade. In 2018, the Ghanaian police also equipped themselves with Kantanka pick-ups.<sup>20</sup>

In Rwanda in October 2019, Volkswagen partnered with Siemens to launch a pilot project to test the feasibility of electric mobility in Africa. During the pilot phase, four e-Golfs and one charging station will be introduced in Kigali. The plan is to increase the number of electric vehicles (EVs) to 50 units and the charging stations to 15 locations, depending on the outcome of the pilot project.

Siemens will provide the charging infrastructure for the EVs. Rwanda is now the first African country to introduce a Volkswagen electric car. Volkswagen intends making the e-Golf pilot project in Rwanda a blueprint for electric mobility in Africa.”

According to the CEO of VW South Africa, Rwanda has the potential to leapfrog the internal combustion engine into electric cars. The drivers and technicians who will be working with the EVs have received specialised training in preparation for the pilot project.

The electric mobility project was developed within the Moving Rwanda Initiative, which was reported on in earlier trend reports.<sup>21</sup>

In Kenya, according to Hezekiah Okeyo, the director of industries with the Ministry of Trade, Industry and Cooperatives, Kenya plans to promote the local content of the automotive sector to boost the industrial sector. Vehicle assemblers in Kenya are currently heavily dependent on imports. Increasing the use of locally produced parts by the local automotive sector, would boost employment opportunities.

The Kenyan government was also working on developing a new national automotive policy in order to boost local manufacturing and to discourage used car imports. Local vehicle assemblers would receive incentives to operate local vehicles assemblies at full capacity.<sup>22</sup>

## **BOOSTING THE LEATHER PRODUCTION INDUSTRY**

Rwanda announced in December 2019 that it was looking at manufacturing leather products for use in the assembling process of Volkswagen cars. The project, unveiled by the National Industrial Research and Development Agency (NIRDA), targets big and small innovators who can use science and technology to turn everything on and inside a cow, besides hides and skins, into a finished product. The project wants to reinvent the industrial sector through the improvement of the animal products value chains.

According to Pitchette Sayinzoga Kampeta, the NIRDA Director-General, the program is in line with supporting the private sector, including young innovators, to use their ideas in science and technology to add value to a cow alive and after it is dead.

Rwanda wants to use the animal products to make materials that can be used on a car assembly line. This could include animal fat for car tires or lubricants, horns for dashboards and car decors, and medication from animal internals to treat Rwandan drivers, among others.

NIRDA also opened the call for applications for existing businesses and start-ups to apply for the funding that will be offered at 0% interest and without loan service fees. According to Rwandans who have tried to use cow horns and skin for manufacturing leather products, the project would help them finance their challenges, especially the lack of machinery and the high cost of importing skins and hides from Kenya and Tanzania.

There are over 1.3 million cows in Rwanda, with an average of 462,000 cows slaughtered every year. Resources are therefore not a challenge.<sup>23</sup>

In Malawi, according to the Minister of Industry, Trade and Tourism, Salim Bagus, the high demand for footwear is an indication of the huge potential contribution the industry can make to the country's economic growth. Despite its estimated production of 300 000 bovine hides and skins per annum, Malawi currently lacks capacity to process its raw materials due to the absence of a tannery. With an annual demand of 16 million pairs of shoes, the country in 2018 produced only approximately 300,000 pairs. The demand was projected to reach 18 million pairs per annum in 2019.

In addition to satisfying local demand, additional production capacity will enable Malawi to meet demand in the region.<sup>24</sup>

## POINTS OF INTEREST

- Uganda is not the only African country attempting to grow its textile industry. Other East African countries on this track include Ethiopia and Kenya. Should Uganda (or the others), succeed, the benefits, such as job opportunities, import substitution and export revenue would be significant.
- On the one hand, the textile industries in Africa have the benefit of being able to tap the benefit stream from the USA's AGOA. On the other hand, with the exception of Rwanda, the textile industries of the other East African countries such as Uganda, Kenya and Tanzania have to compete against the importation of cheap second-hand (frequently highly branded) clothing from the USA. Rwanda raised its tariffs on the importation of second-hand clothing from the USA to protect its local industry, and subsequently lost its ability to export textile products tariff-free to the USA.
- All of these countries are also competing against cheap imports from China. In Kenya, for example, instead of supporting the local textile producing factories, entrepreneurs prefer to import low-cost products from China. The end result is then quite clear as far as the viability of the local textile industry is concerned. South Africa gave up the battle against cheap imports from China in the early 2000's and subsequently lost most of its textile companies and the job opportunities that went with it. Singapore's Tolaram Group, for example, closed its South African subsidiary due to the high costs and the battle against cheap imports.
- It is interesting to see the developments in the motor vehicle manufacturing sectors of Africa. On the one hand, the governments of Africa are going out of their way to entice the large manufacturers such as Volkswagen, Toyota, Hyundai and Ford to develop manufacturing and/or assembly plants in their countries. This is due to the benefits of creating meaningful job opportunities and import substitution. On the other hand, an increasing number of governments are also looking at developing a local motor vehicle brand. Hopefully this paradox will not work against the development of the local brands. Another competitor in the market, probably the main competitor in Africa's markets, is the importation of second-hand cars. In a sense we can see this as an analogy to the importation of second-hand clothing. Cheap cars from abroad do not necessarily have the same attraction for the African consumer, as the roads in Africa require robust vehicles that can endure the poor conditions of many roads.
- The leather industry in Africa is in need of much development. While using local leather products for value addition in the motor vehicle industry has a lot of potential, we still see the importation of cheap shoes from abroad as a main competitor for Africa's local production. This is in spite of the large cattle herds to be found on the continent. We see this not only in Rwanda and Mozambique as mentioned above, but also in countries such as Kenya.



## Strong Growth of Mini-Grids in Africa

Africa's growing need for electrical power attracts international companies to the renewables sector. Foreign companies are active in the production, sale, and installation of mini-grids and smaller-scale solar home systems. They also participate in the development of financing models tailored to the African consumer.

### SOLAR PV BECOMING INCREASINGLY VIABLE

Solar PV system costs have significantly decreased over the past few years, due to rising demand and technological advances. SME's find that use of a solar PV system can save up to 33% of their electricity costs, with payback averaging three to eight years from installation. Installing the PV system reduces their exposure to energy price increases while increasing the value of their property.

Technology costs decline annually, a continuing trend. One development set to be a game changer is for battery energy storage to become a more cost-effective investment for businesses.

Various factors determine the financial feasibility of solar systems. These include the design of the solar PV system, the value of the technology procured, professional engineering sign off on the system, and costs related to the financing model.

Installation is a significant cost. In addition to self-funding, businesses can approach banks for loans, or a Power Purchase Agreement (PPA). In the case of the latter, the PPA provider owns the system and provides the capital to install the solar PV system. It then sells the electricity to the client, at a rate usually below the current tariff paid by the business.<sup>25</sup>

### ATTEMPTS AT ADDRESSING FINANCING CHALLENGES

The Africa Energy Forum, held in June 2019 in Lisbon focused on Africa's power, energy, infrastructure and industrial sectors. At the opening, a group of investors noted that while mini-grids can help Africa achieve universal electrification, the sector requires more appropriate financing methods. They proposed results-based financing, with financing linked to the achievement of goals. They also observed that solar energy costs have fallen over the years. In 2000, 1.3 GW of solar was operating globally, and solar PV panels cost US\$3 per watt. Two decades later, more than 400 GW is operating globally and modules cost less than US\$0.4 per watt. McKinsey puts the cost of a rural grid connection at US\$2,300 versus US\$1,000 for a mini-grid serving 100 or more connections.<sup>26</sup>

The world is committed to provide universal energy access by 2030. By this date, 8% of the global population will still lack access to electricity unless the global energy landscape changes. Sadly, 90% of this un-electrified population will be in sub-Saharan Africa.

In Africa, mini-grids are an attractive option for electrification in rural, hard-to-reach areas as they accelerate economic development and offer other important benefits such as system resilience and carbon emission reductions. While there were over 2,000 mini-grids in Africa in 2018, funding remains a challenge. Most funding sources for mini-grids are from donors and developmental finance institutions (DFIs), while private financing is scarce as they are deterred by the perception of higher risk and subsequently require higher returns before investing.

Green Aggregation Tech Enterprise (GATE) is a risk-pooling initiative aimed at removing barriers to private investment in mini-grids. It aims to prepare and provide financing for off-grid systems, including commercial lending. The latter is currently unwilling or unable to perceive mini-grids as an asset class. If the project is successful, mini-grids could become a far more common investment.

GATE will assure commercial lenders that there is sufficient revenue to service their debt. They will address revenue risk, demand risk, and payment risk. GATE will secure compensation for investors in such grids, opening up a pathway for commercial capital to safely enter the world of mini-grids in sub-Saharan Africa.

To mitigate demand risk, GATE will provide revenue guarantees for mini-grids. Mini-grid operators would pay GATE a premium, and if a mini-grid's revenue fell below the guaranteed threshold, GATE will pay the developer the difference between the actual revenues and the guaranteed threshold.<sup>27</sup>

### **DEVELOPING MINI-GRIDS IN TANZANIA**

Crossboundary Energy Access (CBEA) is a funding facility established in January 2019, through large investment contributions from Rockefeller and Shell Foundations. CBEA claim to be Africa's first financing facility set up to develop mini-grids. The fund strives to unlock US\$11 billion to advance electrification of 100 million people in Africa. It announced in July 2019 it had invested US\$5.5 million to support development of 60 mini-grids in Tanzania. These will serve approximately 34,000 people in rural areas.

CBEA signed a US\$3 million loan agreement with the Renewable Energy Performance Platform (REPP), a UK government-backed funding platform. REPP will provide a long-term senior loan. As part of the joint financing scheme, PowerGen Renewable Energy in Tanzania will develop the 60 mini-grids. PowerGen will sell the mini-grids to CBEA following completion, but will continue to maintain and operate the systems.

According to CBEA, its initial focus will be on markets with supportive regulatory frameworks, such as Tanzania, Nigeria, and Zambia.<sup>28</sup>

### **MINI-GRID DEVELOPMENT IN TOGO**

The West African Development Bank (BOAD) announced in October 2019 the financing of a project to deploy solar mini-grids to provide electricity to rural communities in Togo. This project will cover 45,000 people and generate 11,000kW. The project entails the development, co-financing, construction, and maintenance of the mini-grids and distribution networks. Distribution will require 480km of distribution lines. It also includes the distribution and sale of power to customers and the transfer of the grids after expiry of the related license.

This project will consist of five phases, covering 317 rural communities. The project will support Togo's drive to achieve universal electrification by 2030.<sup>29</sup>

In Togo, the Council of the Entente announced in October 2019 the funding of installation of individual household solar kits in 14 villages in Kara, the savannas and the central region. The project will provide electricity to about 1,000 households.

Togo plans to provide electricity access to 2 million people with the installation of domestic solar kits, thereby increasing the rural electrification rate (currently at 8%) to 50% in 2022 and 100% in 2030.<sup>30</sup>

### **MINI-GRID DEVELOPMENT IN BURKINA FASO**

Vergnet Burkina is a subsidiary of the French group Vergnet Hydro, and Sagemcom Energy & Telecom (both from France). The company will connect five mini solar photovoltaic power plants in five villages in the northern and central-northern regions of Burkina Faso. They will supply electricity to at least 120,000 people in five villages.

Each power plant consists of solar panels and inverters with 117.5 kWp capacity. In all, the five plants consist of 1,820 solar panels with a combined capacity of 587.5 kWp. The electricity will flow into the grid of the National Electricity Company of Burkina Faso (Sonabel). These installations will provide electricity to the homes and provide a continuous source of energy for local mills, mechanical welding workshops, ice production, etc.

The government intends to eventually provide a total of 12 mini solar power plants. The other seven plants (with a capacity of 2.6 MWp) will supply the facilities of the National Water and Sanitation Office (Onea). This eco-electrification project in Burkina Faso is supported by the European Union with a loan of €8 million.<sup>31</sup>

## MINI-GRID DEVELOPMENT IN MOZAMBIQUE

Fenix International, a subsidiary of ENGIE, opened its sixth market in Mozambique. Fenix expects to reach 200,000 households with clean energy and inclusive financial services within three years. It is the first solar company in Mozambique to use a pay-as-you-go (PAYGO) business model and Internet of Things (IoT) technologies to reduce costs and bring high-quality, affordable electricity to rural, last-mile customers.

Fenix partnered with Vodacom and Vodafone M-Pesa SA to address the challenges of distribution, connectivity and mobile payments that have left rural Mozambicans underserved by affordable energy products in the past.

Fenix Power is a GSM-enabled power delivery system that enables the company to determine product usage and potential technical issues remotely, improving the customer experience.

This initiative by Fenix will support Mozambique to achieve its target to provide 100% of the population with electricity by 2030. Currently only 27% of households are connected to electricity. Fenix's operations here will focus on providing solar energy to those most in need of energy access. Part of this market consists of those "who are using expensive, polluting, and dangerous methods such as kerosene and candles to light their homes."<sup>32</sup>

## POINTS OF INTEREST

- It is good to see countries "off-the-beaten-track" such as Togo, Burkina Faso and Mozambique embracing solar mini-grids as a solution to achieve the objective of universal electricity supply by 2030. The normal countries hogging the limelight include Egypt, Kenya, Morocco and South Africa, although Nigeria has recently come to the fore as a strong adopter of solar mini-grids as well. This includes the installation of solar home systems.
- The benefits of solar PV systems, such as low costs and fast and easy implementation, make them valuable to countries that have low levels of electricity supply and are poor countries to boot. Many more countries in Africa should embrace solar energy as the business model of the future. It is not that solar is an unattractive option. Past editions of this report have mentioned countries, in addition to those mentioned in the paragraph above, such as Ethiopia, Rwanda, Zimbabwe, Namibia, Ghana, etc., that have adopted solar and other renewable energies.
- Given the benefits of solar mini-grids, it is not always clear why small African countries would embrace the much more expensive nuclear option, a technology currently being pushed by countries such as Russia. I do understand that industry requires a certain base load capacity. With solar, wind and hydro, in addition to geothermal energy, Africa has the ability to create a hybrid model that has the capacity to act as a base load function.
- In Africa, as far as the rural and difficult to reach places are concerned, nothing beats solar PV mini-grids as a relatively cheap, efficient and fast-to-implement technology. As the efficiency of technology increases, the cost-effectiveness of solar mini-grids will become more pronounced. We have already seen battery factories being developed in Kenya, in addition to well-established factories in South Africa.
- It is clear that mini-grids are increasing in popularity on the continent, with good reason one might add. The sky is literally the limit.

## Sustainability Trends in Africa

Waste disposal and deforestation have become important policy issues in Africa. More governments ban plastic bags, while entrepreneurs and other institutions are using plastic and other wastes to create value added products.

### ADDRESSING DEFORESTATION IN AFRICA

The Ivory Coast has of the highest deforestation rates in the world. Its state of vegetation cover has become a cause for concern. From 16 million hectares of forest in the 1960s, less than 2.5 million hectares, only 11% of its territory, remains. The Ivorian government hopes to increase its forestation level, from a low of 11% of its land, to 20% of reforested land by 2040.

Researchers report that a number of factors contribute to deforestation in Ivory Coast: agriculture (62%), logging (18%) and infrastructure expansion (10%). The recommended solution to this situation was to raise people's awareness of the practice of zero deforestation agriculture, a solution to which the government is also turning.<sup>33</sup>

### BUILDING HOUSES WITH PLASTIC WASTE

In Kenya, mountains of plastic buckets, bottles and jerry cans are reportedly discarded by residents, hotels, shops and schools, and subsequently dumped in a landfill site. Hope Mwanake and her business partner and fellow environmental scientist Kevin Mureithi founded "Eco Blocks and Tiles" in 2016. It is the first company in Kenya to manufacture roof tiles and other construction materials from plastic and glass waste. These products represented a value-added product with market demand that would also help to reduce all the plastic in the environment."

Kenya has banned plastic bags; other countries target straws or styrofoam - yet environmentalists say much more is needed. With Kenya producing more than 3 million tons of waste, of which only 8% is recycled, scientists-turned-entrepreneurs Mwanake and Mureithi felt something had to be done.

The tiles are more durable, lighter and easier to transport and install than concrete or clay tiles. They are also safer for rainwater collection, but are available at a similar cost. The ecotiles also help Kenya's construction industry cut its carbon emissions by providing more green and sustainable alternatives to concrete tiles. So far, they have turned more than 56 tonnes of plastic waste into 75,000 tiles for 30 homes and businesses.

The Kenyan government is promoting the use of sustainable greener materials as part of efforts to reduce carbon emissions generated from Kenya's construction industry. It is therefore supporting the company.<sup>34</sup>

### BUILDING SCHOOLS WITH PLASTIC BRICKS

In Abidjan, the commercial capital of the Ivory Coast, almost 300 tons of plastic is discarded every day, of which only 5% is recycled. Conceptos Plásticos, a Columbian company that produces plastic bricks from plastic trash, has in partnership with UNICEF supplied enough bricks to make 9 new classrooms in Abidjan. This will make a contribution to address the critical shortage of classrooms in the city.

Conceptos Plásticos is building a new factory in Abidjan to manufacture its plastic bricks in the country locally. At full capacity, the factory will produce 9,200 tons of plastic bricks a year — enough to build more than 1,800 classrooms. UNICEF will buy enough bricks from Conceptos Plásticos for over 500 classrooms.

The bricks have several advantages over traditional bricks or concrete blocks:

- They are much lighter, which makes them easier to transport to remote locations.
- Mules or humans can carry them to places inaccessible to wheeled vehicles.
- They cost about 33% less than bricks or cinder blocks.



- They don't need repointing regularly the way traditional bricks and concrete blocks do because they do not use mortar.
- As they are better insulators, classrooms stay cooler.
- As no PVC is used in the production process, they are non-toxic.

The recycling of plastic waste itself has benefits:

- The waste plastic is a breeding ground for mosquitoes, which can transmit various diseases. Recycling plastic trash therefore has positive benefits for the health of local residents, especially children.
- Recycling plastic trash is creating opportunities for local women.<sup>35</sup>

### **BOOSTING ECO-TOURISM WITH PLASTIC**

French entrepreneur Eric Becker built floating island resort, L'île Flottante, in a lagoon just off the Ivory Coast. The resort floats on 700,000 bottles and other plastic waste. The island, weighing 200 tons, houses a hotel, a restaurant, a karaoke bar, and two swimming pools. It grows its own herbs and plants.

Becker wants to promote green tourism. Guests pay \$100 to stay the night. Day trips cost \$25, and include a meal. The island attracts around 100 tourists a week, which include both locals and ecotourists from abroad.

The facilities have solar-powered electricity and receive freshwater supply from the mainland. To deal with waste guests leave behind, Becker is testing a technology that converts waste into compost for the plants on the island.<sup>36</sup>

### **USING BIOMASS TO GENERATE ELECTRICITY**

The government of the Ivory Coast recently signed a concession contract with the consortium in charge of the project to build the Biovéa biomass power plant in Ayebo. Biovéa will produce electricity from oil palm waste. Its two units, collectively generating 46 MW, will eliminate 480,000 tons of oil palm waste, and will require an investment of €200 million.

Biovéa is 40% owned by Électricité de France (EDF) and 36% by Meridiam, a French company specialising in the development, financing and management of infrastructure projects. Biokala, a subsidiary of Sifca, a large Ivorian industrial group, and holds the remaining shares (24%).

EDF is responsible for the construction of the installation. Biokala will be responsible for managing the biomass supply chain, sourcing its supply of oil palm waste from 12,000 farmers. In addition to buying the waste of the farmers, Biokala will improve oil palm yields, as they will be producing nearly 13,500 tons of potassium-rich ash as a fertiliser to be redistributed to growers.

Meridiam's role is to ensure the financial stability of the project.

Construction of the plant will start in mid-2020 for delivery in 2023. The generated electricity will be sold to the Electricity Company of Ivory Coast (CIE) for a period of 25 years under the power purchase agreement.<sup>37</sup>

Kenya's Bamburi Cement has been using biomass to generate electricity for its cement production plants in Kenya and Uganda. It is a power generation process in which waste is burned to produce heat, which is then recovered to produce electricity. It was reported in November 2019 that they were using used engine oils instead of oil and gas. The process reduces pollution and landfill space, thus contributing to reducing the ecological footprint of energy-intensive cement plants

To reduce cement production costs in Kenya, the company recently signed an agreement with the Kenya Ports Authority to get access to the seized and confiscated cargoes at the port of Mombasa. This will then be burned to generate electricity.

Currently, Bamburi Cement uses biomass to produce 12% of its electricity in Kenya. The objective of the new strategy is to reach 30%. The company is currently suffering losses partly due to high electricity rates.

The company is encouraged by its results in Uganda, where its local subsidiary Hima Cement already produces 70% of its electricity from biomass. Bumbari Cement also plans to use waste collected in cities, and recycle used tires.<sup>38</sup>

### **FROM PINEAPPLE WASTE TO ORGANIC FERTILIZER**

Ekumfi Fruits and Juices Company Limited in Ghana will generate tons of waste. The firm seeks an industrial investor who will process its tons of pineapple waste into organic fertilizer for agricultural purposes.

The investor will be funding an Integrated Recycling and Compost Plant (IRECOP) with the ability to recover waste materials. This facility would generate and process the waste into poultry feed and organic fertilizer for use in agricultural activities.

The project will not only save the environment from pollution, but save space needed for expansion. The recycling and compost project will further improve the socio-economic activities around the plants, while enhancing the greens and climate resilience of the catchment areas in which they operate. This project would provide a strong boost to government revenue, create employment, reduce social vices and lower the poverty rate in the district for years to come.<sup>39</sup>

### **POINTS OF INTEREST**

- Ivory Coast is not the only country addressing the issue of deforestation. Others, such as Uganda, have been using bamboo as a product to address the challenge of deforestation. Bamboo has the benefit that it is fast-growing. In all probability the causes mentioned by the report on deforestation in Ivory Coast are also relevant for most African countries. We have also seen that a number of large MNC's have been blamed, at times unfairly, for the increasing trend of deforestation. When there is potential economic growth, African governments seem quite willing to look the other way at times.
- However, it is not necessary to see economic growth and the development of agriculture as opponents for the maintenance of a healthy ecological environment. It does take careful planning, a strong political will and a commitment from MNC's to contribute towards reforestation. Given the threat of climate change and global warming, Africa cannot afford to be apathetic towards this issue.
- As mentioned in the introduction, we are seeing many entrepreneurs in a variety of industries using waste to develop a business opportunity. In addition to the case studies mentioned above, we have earlier reported on roads being built using plastic as a component in the material used. The use of plastic is cheaper, more environmentally friendly, and apparently makes the end product hardier.
- There are those that state that not enough research has been done on the effect of substituting plastic derived from waste for other products in asphalt.
- It is difficult to find fault with the use of pineapple waste to produce fertilizer or to use other waste, such as old engine oil, tires and oil palm waste, to produce electricity. Many of these waste products would have been dumped in landfill sites with all the negative impacts associated with such choices.
- In addition to the benefits for the environment, the jobs created are a major boost for the economy.

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## ADDITIONAL READINGS

### Trends in Agriculture in Africa

Anon. 2019. Zambia legalises Marijuana growth for exports and for medical purposes only. *Lusaka Times*. 16 December 2019. Available at <https://www.lusakatimes.com/2019/12/16/zambia-legalises-marijuana-growth-for-exports-and-for-medical-purposes-only/>. Accessed 9 February 2020.

APO Group. 2019. Restoring cassava farming in Rwanda. *CNBC Africa*. 16 September 2019. Available at <https://www.cnbc africa.com/apo/2019/09/16/restoring-cassava-farming-in-rwanda/>. Accessed 9 February 2020.

Di Roma, C. 2020. Senegal's remote cannabis growers evade crackdown. *Macau Business News*. 10 January 2020. Available at <https://www.macaubusiness.com/senegals-remote-cannabis-growers-evade-crackdown/>. Accessed 9 February 2020.

Magome, M. 2020. South Africa's black farmers fight to enter marijuana market. *Star Tribune*. 8 January 2020. Available at <http://www.startribune.com/south-africa-s-black-farmers-fight-to-enter-marijuana-market/566804852/>. Accessed 9 February 2020.

Oirere, S. 2020. Mauritius charts growth path for fisheries and aquaculture sectors. *SeafoodSource*. 9 January 2020. Available at <https://www.seafoodsource.com/news/supply-trade/mauritius-charts-fisheries-and-aquaculture-growth-path/>. Accessed 9 February 2020.

Stoddard, E. 2020. Tito cuts through purple haze of SA cannabis policy, advocates legislation on Twitter. *Business Maverick*. 10 January 2020. Available at <https://www.dailymaverick.co.za/article/2020-01-10-tito-cuts-through-purple-haze-of-sa-cannabis-policy-advocates-legalisation-on-twitter/>. Accessed 9 February 2020.

Wasserman, H. 2019. Stellenbosch dagga farm gets go-ahead. *Fin 24*. 14 October 2019. Available at <https://www.fin24.com/Companies/Agribusiness/stellenbosch-dagga-farm-gets-go-ahead-20191014>. Accessed 9 February 2020.

### Digital Trends in Africa

Agbabiaka, A.M. 2020. Nigeria to stop manual operations by 2030 – Pantami. *Blueprint*. 8 January 2020. Available at <https://www.blueprint.ng/nigeria-to-stop-manual-operations-by-2030-pantami/>. Accessed 7 February 2020.

Anon. 2020. Pantami explains reasons for digital economy drive in Nigeria. *Premium Times*. 5 January 2020. Available at <https://www.premiumtimesng.com/news/more-news/371215-pantami-explains-reasons-for-digital-economy-drive-in-nigeria.html>. Accessed 7 February 2020.

Anon. 2019. Shaping the digitised mining economy. *ESI Africa*. 27 November 2019. Available at <https://www.esi-africa.com/industry-sectors/business-and-markets/shaping-the-digitised-mining-economy/>. Accessed 8 February 2020.

Anon. 2019. Ethiopia to cooperate with Alibaba to promote digital economy. *African Review: Communications Africa*. 22 August 2019. Available at <http://www.communicationsafrica.com/commerce/ethiopia-to-cooperate-with-alibaba-to-promote-digital-economy>. Accessed 8 February 2020.

AT Editor. 2020. MTN, Mara advance the Connect Rwanda digital access challenge. *Africa Times*. 11 January 2020. Available at <https://africatimes.com/2020/01/11/mtn-mara-advance-the-connectrwanda-digital-access-challenge/>. Accessed 7 February 2020.

Magubira, P. 2020. Tanzania goes digital to woo Chinese tourists. *The East African*. 14 January 2020. Available at <https://www.theeastafrican.co.ke/business/Tanzania-goes-digital-to-woo-tourists/2560-5417588-ny2bsb/index.html>. Accessed 7 February 2020.

Pillay, R. 2019. The future of health in South Africa. *Mail & Guardian*. 22 November 2019. Available at <https://mg.co.za/article/2019-11-22-00-the-future-of-health-in-south-africa/>. Accessed 8 February 2020.

Reuters. 2020. African unicorn Jumia looks to service, platforms to halt slide. *The East African*. 22 January 2020. Available at [https://www.theeastafrican.co.ke/business/Jumia-looks-to-services-platforms-to-halt-slide/2560-5427844-13qkrf0/index.html?utm\\_source=newzmate&utm\\_medium=email&utm\\_campaign=2318&tqid=jK7jaGB.DRMBubJfTFQPRFzE99GfbRNlv8ZMu14Epg](https://www.theeastafrican.co.ke/business/Jumia-looks-to-services-platforms-to-halt-slide/2560-5427844-13qkrf0/index.html?utm_source=newzmate&utm_medium=email&utm_campaign=2318&tqid=jK7jaGB.DRMBubJfTFQPRFzE99GfbRNlv8ZMu14Epg). Accessed 78 February 2020.

Udegbuma, O. 2020. Minister sets 10-year 'digital economy' goal for Nigeria. *Premium Times*. 4 January 2020. Available at <https://www.premiumtimesng.com/business/371189-minister-sets-10-year-digital-economy-goal-for-nigeria.html>. Accessed 7 February 2020.

### **Manufacturing Trends in Africa**

Anon. 2019. Hyundai to set up car plant in Nigeria. *Daily Trust*. 17 December 2019. Available at <https://www.dailytrust.com.ng/hyundai-to-set-up-car-plant-in-nigeria.html>. Accessed 11 February 2020.

Anon. 2019. Kenya to promote automotive sector. *Xinhua Africa*. 3 December 2019. Available at [http://www.xinhuanet.com/english/2019-12/03/c\\_138600574.htm](http://www.xinhuanet.com/english/2019-12/03/c_138600574.htm). Accessed 11 February 2020.

Chilundu, S. 2019. Ministry sees potential in leather, footwear production. *The Nation*. 13 December 2019. Available at <https://mwntation.com/ministry-sees-potential-in-leather-footwear-production/>. Accessed 11 February 2020.

Ramalan, I. 2019. Made-in-Nigeria vehicles ready soon, Nigerians can buy, pay in 5-year instalments – Jelani Aliyu. *Daily Nigerian*. 8 October 2019. Available at <https://dailynigerian.com/made-in-nigeria-vehicles-ready-soon-nigerians-can-buy-pay-in-5-year-installments-jelani-aliyu/>. Accessed 11 February 2020.

Sabiti, D. 2019. Rwandans encouraged to establish leather factories for Volkswagen cars. *KT Press*. 11 December 2019. Available at <https://www.ktpress.rw/2019/12/rwandans-encouraged-to-establish-leather-factories-for-volkswagen-cars/>. Accessed 11 February 2020.

Takouleu, J.M. 2019. Ghana: Kantanka will start manufacturing electric cars in December. *Afrik 21*. 10 October 2019. Available at <https://www.afrik21.africa/en/ghana-kantanka-will-start-manufacturing-electric-cars-in-december/>. Accessed 11 February 2020.

Venter, I. 2019. Volkswagen launches pilot electric mobility project in Rwanda. *Engineering News*. 20 October 2019. Available at [http://m.engineeringnews.co.za/article/volkswagen-launches-pilot-electric-mobility-project-in-rwanda-2019-10-30/rep\\_id:4433](http://m.engineeringnews.co.za/article/volkswagen-launches-pilot-electric-mobility-project-in-rwanda-2019-10-30/rep_id:4433). Accessed 11 February 2020.

Wakabi, M. 2019. New strategy to revamp Uganda's textile sector. *The East African*. 13 August 2019. Available at <https://www.theeastafrican.co.ke/business/New-strategy-to-revamp-Uganda-textile-sector/2560-5233668-avir9pz/index.html>. Accessed 10 February 2020.

### **Strong Growth of Mini-Grids in Africa**

Akoda, S. 2019. Togo: A total of 317 communities will have access to light using solar mini-grids. *Togo First*. 15 October 2019. Available at <https://www.togofirst.com/en/energy/1510-4152-togo-a-total-of-317-communities-will-have-access-to-light-using-solar-mini-grids>. Accessed 7 February 2020.

Anon. 2019. A new partnership to bring solar power solutions to Mozambican homes. *ESI Africa*. 18 September 2019. Available at <https://www.esi-africa.com/industry-sectors/future-energy/a-new-partnership-to-bring-solar-power-solutions-to-mozambican-homes/>. Accessed 7 February 2020.

Anon. 2019. Solar PV: The solution for businesses. *ESI Africa*. 27 June 2019. Available at <https://www.esi-africa.com/industry-sectors/renewable-energy/solar-pv-the-solution-for-businesses/>. Accessed 7 February 2020.

Dhingra, R. 2019. Risk-pooling initiative strives to unlock commercial investment in African mini-grids. *Power for All*. 17 June 2019. Available at <https://www.powerforall.org/news-media/articles/risk-pooling-initiative-strives-unlock-commercial-investment-african-mini-grids>. Accessed 7 February 2019.

Dossavi, A.R. 2019. Rural electrification: The Council of the Entente to fund the installation of solar kits in 14 villages. *Togo First*. 14 October 2019. Available at <https://www.togofirst.com/en/energy/1410-4138-rural-electrification-the-council-of-the-entente-to-fund-the-installation-of-solar-kits-in-14-villages>. Accessed 7 February 2020.

Takouleu, J.M. 2019. Burkina Faso: Vergnet and Sagemcom to connect 5 min I solar power plants in the North. *Afrik 21*. 16 October 2019. Available at <https://www.afrik21.africa/en/burkina-faso-vergnet-and-sagemcom-to-connect-5-mini-solar-power-plants-in-the-north/>. Accessed 7 February 2020.

Willuhn, M. 2019. CBEA lets loose first \$5.5 million for 60 minigrids in Tanzania. *PY Magazine*. 18 July 2019. Available at <https://www.py-magazine.com/2019/07/18/cbea-lets-loose-first-5-5-million-for-60-minigrids-in-tanzania/>. Accessed 7 February 2020.

Wood, E. 2019. Investors call for results based financing of minigrids in Africa. *Microgrid Knowledge*. 10 June 2019. Available at <https://microgridknowledge.com/minigrids-africa-electrification/>. Accessed 7 February 2019.

### **Sustainability Trends in Africa**

Ankel, S. 2019. A floating resort island off the Ivory Coast was built out of 700,000 plastic bottles, and you can stay there for \$100 a night. *Business Insider*. 22 November 2019. Available at <https://www.businessinsider.com/floating-resort-island-made-of-700000-plastic-bottles-and-waste-2019-11?IR=T>. Accessed 12 February 2020.



Bhalla, N. 2019. Kenyan scientist builds with bottles to beat plastic pollution. *Reuters*. 13 December 2019. Available at <http://news.trust.org/item/20191213073025-1rxgu/>. Accessed 11 February 2020.

GNA. 2019. Ekumfi fruits factory to convert waste into fertilizer – Director. *Ghana Business News*. 28 November 2019. Available at [https://www.ghanabusinessnews.com/2019/11/28/ekumfi-fruits-factory-to-convert-waste-into-fertilizer-director/?\\_cf\\_chl\\_jschl\\_tk=\\_\\_348e746fafeb0b3a33f3d40bd5d14e2ca19cd28b-1575034214-0-AWfCCrnR-NgJzPQvTMT-khf\\_s3qlpY1KELoSu5qmEu7dyGx\\_zH0aSuCv5CW7nDuBHX6KO\\_oZaprizh1eQtHEkmoFiPnH4\\_yUGzCawx3hR0MMKvsa55XbZ\\_jAMAPguFE0OilxcVQU6u\\_UeR7I2iic3KfpVRmG4pKzWcKHnzfmOmZSiQdmReD7MtJEeSmONQ4GbLCdkcxjU\\_H5qbwSWgETRPX5WhBNT0oPkf0HfvmOvAcPr8h0sgrV7GJpbtwiK4vdNKA6nGyCUiUaWkgRnOx3c4TnEP0yqR4lrq2YBNYLvG\\_Pm7Z5Y4OMo\\_v6jAZDfBbX1tRH\\_xvmqfS3r5MD4JYwocjwygCdDPgWLDwMmASh30f](https://www.ghanabusinessnews.com/2019/11/28/ekumfi-fruits-factory-to-convert-waste-into-fertilizer-director/?_cf_chl_jschl_tk=__348e746fafeb0b3a33f3d40bd5d14e2ca19cd28b-1575034214-0-AWfCCrnR-NgJzPQvTMT-khf_s3qlpY1KELoSu5qmEu7dyGx_zH0aSuCv5CW7nDuBHX6KO_oZaprizh1eQtHEkmoFiPnH4_yUGzCawx3hR0MMKvsa55XbZ_jAMAPguFE0OilxcVQU6u_UeR7I2iic3KfpVRmG4pKzWcKHnzfmOmZSiQdmReD7MtJEeSmONQ4GbLCdkcxjU_H5qbwSWgETRPX5WhBNT0oPkf0HfvmOvAcPr8h0sgrV7GJpbtwiK4vdNKA6nGyCUiUaWkgRnOx3c4TnEP0yqR4lrq2YBNYLvG_Pm7Z5Y4OMo_v6jAZDfBbX1tRH_xvmqfS3r5MD4JYwocjwygCdDPgWLDwMmASh30f). Accessed 12 February 2020.

Hanley, S., 2020. Using plastic waste to build schools in the Ivory Coast. *CleanTechnica*. 26 January 2020. Available at <https://cleantechnica.com/2020/01/26/using-plastic-waste-to-build-schools-in-the-ivory-coast/>. Accessed 12 February 2020.

Ngounou, B. 2019. Ivory Coast: Authorities strive to reforest 20% of land by 2040. *Afrik 21*. 21 August 2019. Available at <https://www.afrik21.africa/en/ivory-coast-authorities-strive-to-reforest-20-of-land-by-2040/>. Accessed 11 February 2020.

Takouleu, J.M. 2019. Ivory Coast: Concession contract signed for the Ayebo biomass power plant. *Afrik 21*. 13 December 2019. Available at <https://www.afrik21.africa/en/ivory-coast-concession-contract-signed-for-the-ayebo-biomass-power-plant/>. Accessed 12 February 2020.

Takouleu, J.M. 2019. Kenya: Bamburi Cement relies on biomass to reduce costs of production. *Afrik 21*. 4 November 2019. Available at <https://www.afrik21.africa/en/kenya-bamburi-cement-relies-on-biomass-to-reduce-costs-of-production/>. Accessed 12 February 2020.

## REFERENCES

### *Trends in Agriculture in Africa*

- <sup>1</sup> <https://www.cnbcafrica.com/apo/2019/09/16/restoring-cassava-farming-in-rwanda/>
- <sup>2</sup> <https://www.fin24.com/Companies/Agribusiness/stellenbosch-dagga-farm-gets-go-ahead-20191014>
- <sup>3</sup> <http://www.startribune.com/south-africa-s-black-farmers-fight-to-enter-marijuana-market/566804852/>
- <sup>4</sup> <https://www.dailymaverick.co.za/article/2020-01-10-tito-cuts-through-purple-haze-of-sa-cannabis-policy-advocates-legalisation-on-twitter/>
- <sup>5</sup> <https://www.lusaketimes.com/2019/12/16/zambia-legalises-marijuana-growth-for-exports-and-for-medical-purposes-only/>
- <sup>6</sup> <https://www.macaubusiness.com/senegals-remote-cannabis-growers-evade-crackdown/>
- <sup>7</sup> <https://www.seafoodsource.com/news/supply-trade/mauritius-charts-fisheries-and-aquaculture-growth-path>

### *Digital Trends in Africa*

- <sup>8</sup> <https://www.brookings.edu/research/the-fourth-industrial-revolution-and-digitization-will-transform-africa-into-a-global-powerhouse/>
- <sup>9</sup> <https://www.premiumtimesng.com/business/371189-minister-sets-10-year-digital-economy-goal-for-nigeria.html>
- <sup>10</sup> <https://www.blueprint.ng/nigeria-to-stop-manual-operations-by-2030-pantami/>
- <sup>11</sup> <https://africatimes.com/2020/01/11/mtn-mara-advance-the-connectrwanda-digital-access-challenge/>
- <sup>12</sup> <https://www.theeastafrican.co.ke/business/Tanzania-goes-digital-to-woo-tourists/2560-5417588-ny2bsb/index.html>
- <sup>13</sup> <https://mg.co.za/article/2019-11-22-00-the-future-of-health-in-south-africa/>
- <sup>14</sup> <https://www.esi-africa.com/industry-sectors/business-and-markets/shaping-the-digitised-mining-economy/>
- <sup>15</sup> [https://www.theeastafrican.co.ke/business/Jumia-looks-to-services-platforms-to-halt-slide/2560-5427844-13gkrf0/index.html?utm\\_source=newzmate&utm\\_medium=email&utm\\_campaign=2318&tqid=jK7jaGB.DRMBubJfTFQPRFzE99GfbRNlv8ZMu14Epg](https://www.theeastafrican.co.ke/business/Jumia-looks-to-services-platforms-to-halt-slide/2560-5427844-13gkrf0/index.html?utm_source=newzmate&utm_medium=email&utm_campaign=2318&tqid=jK7jaGB.DRMBubJfTFQPRFzE99GfbRNlv8ZMu14Epg)
- <sup>16</sup> <http://www.communicationsafrica.com/commerce/ethiopia-to-cooperate-with-alibaba-to-promote-digital-economy>

### *Manufacturing Trends in Africa*

- <sup>17</sup> <https://www.theeastafrican.co.ke/business/New-strategy-to-revamp-Uganda-textile-sector/2560-5233668-avir9pz/index.html>
- <sup>18</sup> <https://dailynigerian.com/made-in-nigeria-vehicles-ready-soon-nigerians-can-buy-pay-in-5-year-installments-jelani-aliyu/>
- <sup>19</sup> <https://www.dailystar.com.ng/hyundai-to-set-up-car-plant-in-nigeria.html>
- <sup>20</sup> <https://www.afrik21.africa/en/ghana-kantanka-will-start-manufacturing-electric-cars-in-december/>
- <sup>21</sup> [http://m.engineeringnews.co.za/article/volkswagen-launches-pilot-electric-mobility-project-in-rwanda-2019-10-30/rep\\_id:4433](http://m.engineeringnews.co.za/article/volkswagen-launches-pilot-electric-mobility-project-in-rwanda-2019-10-30/rep_id:4433)
- <sup>22</sup> [http://www.xinhuanet.com/english/2019-12/03/c\\_138600574.htm](http://www.xinhuanet.com/english/2019-12/03/c_138600574.htm)
- <sup>23</sup> <https://www.ktpress.rw/2019/12/rwandans-encouraged-to-establish-leather-factories-for-volkswagen-cars/>
- <sup>24</sup> <https://mwnation.com/ministry-sees-potential-in-leather-footwear-production/>

### *Strong Growth of Mini-Grids in Africa*

- <sup>25</sup> <https://www.esi-africa.com/industry-sectors/renewable-energy/solar-pv-the-solution-for-businesses/>
- <sup>26</sup> <https://microgridknowledge.com/minigrids-africa-electrification/>
- <sup>27</sup> <https://www.powerforall.org/news-media/articles/risk-pooling-initiative-strives-unlock-commercial-investment-african-mini-grids>
- <sup>28</sup> <https://www.pv-magazine.com/2019/07/18/cbea-lets-loose-first-5-5-million-for-60-minigrids-in-tanzania/>
- <sup>29</sup> <https://www.togofirst.com/en/energy/1510-4152-togo-a-total-of-317-communities-will-have-access-to-light-using-solar-mini-grids>
- <sup>30</sup> <https://www.togofirst.com/en/energy/1410-4138-rural-electrification-the-council-of-the-entente-to-fund-the-installation-of-solar-kits-in-14-villages>
- <sup>31</sup> <https://www.afrik21.africa/en/burkina-faso-vergnet-and-sagemcom-to-connect-5-mini-solar-power-plants-in-the-north/>
- <sup>32</sup> <https://www.esi-africa.com/industry-sectors/future-energy/a-new-partnership-to-bring-solar-power-solutions-to-mozambican-homes/>

### *Sustainability Trends in Africa*

- <sup>33</sup> <https://www.afrik21.africa/en/ivory-coast-authorities-strive-to-reforest-20-of-land-by-2040/>
- <sup>34</sup> <http://news.trust.org/item/20191213073025-1rxgu/>
- <sup>35</sup> <https://cleantechnica.com/2020/01/26/using-plastic-waste-to-build-schools-in-the-ivory-coast/>
- <sup>36</sup> <https://www.businessinsider.com/floating-resort-island-made-of-700000-plastic-bottles-and-waste-2019-11?IR=T>
- <sup>37</sup> <https://www.afrik21.africa/en/ivory-coast-concession-contract-signed-for-the-ayebo-biomass-power-plant/>
- <sup>38</sup> <https://www.afrik21.africa/en/kenya-bamburi-cement-relies-on-biomass-to-reduce-costs-of-production/>
- <sup>39</sup> [https://www.ghanabusinessnews.com/2019/11/28/ekumfi-fruits-factory-to-convert-waste-into-fertilizer-director/?\\_cf\\_chl\\_jschl\\_tk\\_=348e746fafeb0b3a33f3d40bd5d14e2ca19cd28b-1575034214-0-AWfCCmr-NgJzPQvTMT-khf\\_s3qlpY1KELoS5qmEu7dyGx\\_zH0aSuCv5CW7nDuBHX6KO\\_oZaprijzh1eQtHEkmoPnH4\\_yUGzCawx3hR0MMKvsa55XbZ\\_jAMAPguFE0OilxcVQU6u\\_UeR7I2iic3KfpVRmG4pKzWckHnzfmOmZSiQdmReD7MtJEeSmONO4GbLcdKcxjU\\_H5qbwW5WgETRpx5WhBNT0oPkf0HfvmOvAcPr8h0sgrV7GJpbtwiK4vdNKa6nGyCUiUaWkgRnOx3c4TnEP0yqR4lrq2YBNYLvG\\_Pm7Z5Y4OMo\\_v6jAZDfBbX1tRH\\_xvmqfS3r5MD4JYwocjwygCdDPgWLDwMmASh30f](https://www.ghanabusinessnews.com/2019/11/28/ekumfi-fruits-factory-to-convert-waste-into-fertilizer-director/?_cf_chl_jschl_tk_=348e746fafeb0b3a33f3d40bd5d14e2ca19cd28b-1575034214-0-AWfCCmr-NgJzPQvTMT-khf_s3qlpY1KELoS5qmEu7dyGx_zH0aSuCv5CW7nDuBHX6KO_oZaprijzh1eQtHEkmoPnH4_yUGzCawx3hR0MMKvsa55XbZ_jAMAPguFE0OilxcVQU6u_UeR7I2iic3KfpVRmG4pKzWckHnzfmOmZSiQdmReD7MtJEeSmONO4GbLcdKcxjU_H5qbwW5WgETRpx5WhBNT0oPkf0HfvmOvAcPr8h0sgrV7GJpbtwiK4vdNKa6nGyCUiUaWkgRnOx3c4TnEP0yqR4lrq2YBNYLvG_Pm7Z5Y4OMo_v6jAZDfBbX1tRH_xvmqfS3r5MD4JYwocjwygCdDPgWLDwMmASh30f)



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