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# Africa Digest

Trends and Issues in Macro Environment

Vol. 2019 - 07

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## 1. Trends in Agriculture

Agriculture is a sector of major importance in Africa, employing more than 70% of its population, and contributing approximately 15% to GDP. Although the continent has the potential to feed the world, it currently spends from US\$35 billion to US\$41 billion each year to import food, which will grow to US\$110 billion in the next decade or so if nothing is done. The past month manifested a number of emerging trends in the agriculture sector, with a wide range of players contributing to the initiatives in the sector.

### CHASING EXPORTS

Africa's agricultural players aggressively pursue increased exports. Egypt may soon overtake Spain to become the world's largest orange exporter, according to Hussein Hassan, director of the Egyptian Council of Agricultural Exports. Between 2013 and 2018, Egypt steadily increased its global exports of this popular fruit, supported by lower production costs, the problems of its competitors, the active support of the Egyptian government, and an 18% increase in land available for orange cultivation.

In recent years, Egypt entered and expanded its access to markets in South East Asia, China and Australia. Chinese consumers are willing to pay high prices for oranges. A disease impacting the fruit's ripening affected Chinese orange trees in 2019, boosting Chinese demand for Egyptian orange exports. Egypt also exploited the Russian veto, from 2017, on agricultural imports from the EU.<sup>1</sup>

### EXCHANGING SUSTENANCE FOR STIMULATION

A previous African Digest noted the growing production of khat in Ethiopia. In Kenya, we see a similar trend. Farmers there are abandoning maize, brans and even rice for muguka, a potent legal stimulant that relieves fatigue. They reveal that producing muguka produces far more revenue than did maize or beans. One farmer claimed he could make US\$300 in just one week selling muguka - five times more than by selling maize or beans.

A variety of khat, Muguka is fast-growing, making it less vulnerable to large swings in weather conditions, and uses about half as much water as maize. Given the high demand for muguka, smallholder farmers actually struggle to cultivate enough to keep up. Due to the higher revenues, khat and muguka farmers can now buy more nutritious food. Many farmers were able to upgrade from mud huts to modern stone houses. As such, the muguka boom changes livelihoods.

However, both the production of khat in Ethiopia and muguka in Kenya is bad news for food supplies. Agriculture experts and local politicians warn of potential food crop shortages, as farmers clear their fields of staple crops to make way for muguka and khat, leading to a risk of reduced food security.

Despite the lack of official records, an estimated 80% of the households in the Mount Kenya region, including in Embu County, farm the stimulant in some quantity.<sup>2</sup>

### LIMITING IMPORTS – GAINING SELF-SUFFICIENCY

An increasing number of African governments seek to increase food production in their countries. Their current approach to this goal combines limiting their food imports with raising the productivity of their agricultural sectors.

Egypt invests in this sector to support its aspiration to become a smart agriculture nation. Egypt's Agriculture Ministry will collaborate with the UN's FAO to develop a "digital agricultural guiding model" as part of a two-year project. Earlier in 2019, Egypt concluded another agreement with FAO to update the country's Sustainable Agricultural Development Strategy 2030. This entails the deployment of digital technologies to improve the decision-making abilities of the farming community, through which to improve the quality of its agricultural products.

Egypt will develop a database of food production facilities, and listings of water resources and irrigation areas. Farmers will have access to digital maps of Egypt that provide information ranging from locations



of food buyers (in urban areas), to desertification rates. Farmers will obtain access to newer markets and receive higher profit margins, as the program will increase the government's ability to regulate prices more effectively and monitor compliance with quality standards.

Agriculture is a core element of Egypt's economy. It provides a livelihood for 55% of the country's population, and also creates direct jobs for 30% of the labour force. In addition, its contribution to GDP is at 17%, and generates approximately 20% of Egypt's foreign exchange earnings.<sup>3</sup>

Zimbabwe is another country working to stimulate its agricultural sector. According to Industry and Commerce Minister of Zimbabwe, Mangaliso Ndlovu, the country sought to support agriculture and increase production, as it was the anchor of the Zimbabwean economy. Increased agro-production would ensure food self-sufficiency and boost import-substitution for the industry, thereby saving foreign currency for other essential goods such as drugs and retooling. He added that the link between the agriculture sector to the manufacturing sector makes agriculture output key to economic growth.

Underlying this initiative was the goal of implementing the country's National Industrial Development Policy and attaining the 2030 target to become an upper middle-income economy. The growth required to attain the latter will depend heavily on the mining, manufacturing and agriculture sectors.

Agriculture, accounting for 70% of the raw materials used in the manufacturing sector, is one of the most important sectors in the Zimbabwean economy. It currently contributes approximately 10% to the country's GDP (despite the recurring droughts in Zimbabwe), employing about 30% of the Zimbabwe's labour force and providing a livelihood for more than 80% of Zimbabweans.<sup>4</sup>

In Nigeria, the Central Bank of Nigeria (CBN) initiated a more directive approach to increase local food production. To stimulate local food production, Nigeria will restrict imports of some agricultural products that could be produced internally. As part of its overall initiative, CBN officials recently met with stakeholders in Osun State to facilitate increased domestic production to support self-sufficiency in local food production. The Bank also established the "Anchor Borrowers Programme" (ABP) to collaborate with individuals and companies to produce and process key agricultural products.

The ABP scheme will also increase the Bank's financing to the agricultural sector, and assist farmers to migrate from subsistence farming to commercial farming. Overall the ABP intends to help conserve foreign reserves, reduce commodity imports, increase agricultural productivity and reduce the level of poverty among farmers in Nigeria.<sup>5</sup>

## **PRODUCT INNOVATION AND VALUE ADDITION**

Africa's countries are known to be exporters of mainly raw commodities, be it from the agricultural sector or the mining sector. They would export crude oil and import refined oil products. Fortunately, we see a trend toward increased product innovation and value addition.

One such product development example is cassava, a product highly in demand by manufacturers around the globe. The markets for cassava outside of Africa include China (at US\$1.37 billion by far the largest demand), the United Kingdom (US\$114 million), the USA (US\$110 million), and the Netherlands (US\$89.9 million).

Cassava flour is an input in a wide range of processed products, including as a substitute for wheat flour, especially to make breads, cakes, pasta and dumplings. It is also used to make starchy custards and puddings. In countries where wheat has to be imported and is in limited supply, bread is made by mixing cassava flour with wheat flour.

In Uganda, Tropical Trade International is in the final stages of concluding a deal to supply 200 tons of cassava flour monthly to China, in spite of a much larger demand, as that is all they can currently produce. Industrialists in China use cassava to produce starch. There is therefore a need to mobilise the resources in Uganda to tap into this huge demand.

Industries other than food use cassava as well. In Uganda, Uganda Breweries Limited use cassava as inputs to some beer brands, while the ethanol processing plant in Lira uses dry cassava.<sup>6</sup>

Recent efforts to grow a Rwanda coffee culture struggle. Many Rwandan coffee farmers grow coffee only for export, as coffee costing more than a worker's daily wage is quite expensive to consume in local shops. Rwandan farmers are part of the 63% of the Rwandan population of 12 million who still earn less than US\$1.25 a day. They get 20 cents for a kilogram of green coffee beans, while prices for brewed coffee in urban coffee shops start at about US\$1.70 and can go as high as US\$2.60. As farmers have many other personal expenses, they do not drink their own coffee. Only 3% of the coffee grown in Rwanda is consumed locally.

To counter this trend, the Rwandan National Agricultural Export Development Board is attempting to introduce farmers to a coffee culture. The number of specialty coffee shops in Kigali has grown from just one – Bourbon cafe – to about ten new coffee shops, with the latest being Question Coffee ('Q-coffee').<sup>7</sup>

The horticulture sub-sector in Rwanda, with a greater focus on exports, shows steady growth. Currently, products packed for export purposes include avocados, beans, passion fruit, snow peas, broccoli, bell pepper, chilli pepper, eggplants, and banana. In earlier years, these crops were for subsistence use only.

Income from horticulture produce has increased from US\$0.300 million in 1994 to US\$27 million per annum in 2018. Floris, which exports horticulture products, started with exporting about 300 kilogrammes of Latundan banana per week in 2001. Currently it exports about 10 tons of various commodities, including avocados, eggplants, sweet potato leaves and banana to Europe. This is in addition to its exports to Congo-Brazzaville.

While tea and coffee have traditionally been the only cash crops for Rwanda, horticultural produce have also proven to be cash crops and have relatively higher returns. As prices for coffee, tea and pyrethrum are determined by international supply and demand, the Rwandan government decided to boost the cultivation of non-traditional export commodities, such as fruits, vegetables, flowers, roots and tubers, legumes and cereals, meat, eggs and dairy products, as well as live animals. The country aims at producing 46,314 tons of horticulture produce annually, and generating annual export revenues of US\$130 million by 2024.<sup>8</sup>

## **POINTS OF INTEREST**

- Global beer companies and companies such as Nestle are reportedly also interested in cassava to use in the place of cane sugar. The cassava flour or starch is converted into maltose, the demand for which is increasing as it is seen as healthier. Cassava flour has the additional benefit that it is gluten-free, which increases its attraction for those suffering from gluten-intolerance. The product is becoming increasingly attractive as a product with value-addition properties.
- Egypt's exploitation of the Russian veto on agricultural imports from the EU has an interesting counterpoint. Those countries that previously supplied fruit etc. to Russia, had to find alternative markets. This led them to approach markets that were not part of their normal basket, increasing the level of competition there. We therefore saw a knock-on effect that permeated the whole industry sub-sectors. Apples were another sub-sector (stone fruit) that experienced significant volatility due to the veto.
- Value addition has become an imperative for African countries. It is no longer a nice-to-have strategy, but an essential as it will increase jobs, preserve foreign exchange due to import substitution and even lead to export revenues, all of which could have positive benefits for the local currency. Some countries have actually gone so far as to ban the export of non-processed foods, for example Rwanda banning non-processed dairy products.
- As noted earlier, Africa imports food at great cost. However, banning the import of certain agricultural products is a harsh approach to increase local production. This is not the first time Nigeria has taken this kind of step, as it adopted a "ban list" a few years ago (2016) on which it identified a number of products (initially 41, now 43) for which no foreign currency (specifically dollars) would be made available for import purposes. The latest directive is basically an

extension of this ban list and not really new. The policy does have its opponents, who have stated it is “anti-people” and that it has led to smuggling activities from neighbouring countries. On the other hand, governments have to start taking more extreme measures to limit imports and boost local production. Continuing with the high level of food imports is totally unacceptable on a continent with such tremendous agriculture potential. The addition of financial and other support for farmers transforms the policy to an enabling one, adding a carrot to the stick.

- Export promotion is increasingly attractive, with its focus on beneficiation (value addition). To realise Africa’s potential, governments throughout the continent should embrace this policy.
- The replacement of food production with muguka has the potential to become a serious problem for Africa’s governments. In addition to the challenges of addiction and the resulting socio-economic problems, the trend has a negative impact on food production. The real driver of this move from producing food to drugs is the low income farmers earn for growing food, compared to drugs that sell at much higher prices, both locally and abroad. African countries struggle with the challenge of low prices for their agricultural products. In addition to coffee, cocoa is another product where low commodity prices lead to poor farmers. As is the case with coffee, chocolate sells for far more than the basic product, with very low percentages of the total value created coming back to the farmer.

## 2. Renewable Energy Trends

Renewable energy in Africa represents a major business opportunity. Whilst doing good for the climate and environment, and meeting the energy needs of Africa's population, of whom more than 60% are without access to electricity, renewable energy attracts investors from all parts of the world. Due to its unique configuration flexibility, it is ideal to provide individual households, small businesses and even larger villages with consistent and affordable energy. Africa taps all sources of renewable energy, i.e. hydro, geothermal, solar and wind.

### HYDRO ENERGY

In Ethiopia, the Chinese state-owned hydropower engineering and construction company Sinohydro, will start with the construction of 11 power units at the Grand Ethiopian Renaissance Dam (GERD) by next September. Two power units are being built by Alstom Company from France and are expected to generate 750 MW by 2021. The construction of the dam has reached over 67% and is expected to be completed in 2023. At completion it will be the largest dam in Africa with a total power generation capacity of 6,450 MW.<sup>9</sup>

In Southern Africa, General Electric (GE) from the USA and Power China will be implementing the Batoka Gorge hydroelectric project, which will provide 2,400 MW to Zimbabwe and Zambia and cost US\$4.5 million. The two companies will finance the project, with the World Bank and the African Development Bank (AfDB) ready to support the project. After completion, the project will be supplying 2,400 MW into the power grids of Zimbabwe and Zambia. The technical feasibility studies will be completed by September 2019 and it will take ten to thirteen years to complete the construction of the dam.

The dam has created opposition from the local population, who live mainly from tourism. The site is also classified as a UNESCO World Heritage Site, which could be affected by the construction of the dam.<sup>10</sup>

### SOLAR ENERGY

In the DRC, Hanergy Thin Film Power Group, a multinational clean energy company, has secured the contract to set up the country's first solar power plant, which will have a capacity of 400 MW. It will cooperate with the DRC Government and its National Power Company to consolidate and increase cooperation in the fields of electricity, water, renewable energy and fuel to reduce the energy deficit faced by the mining industry in the country. The project will begin in December 2019 and will generate approximately 10,000 jobs and train 100 technology specialists. The DRC views this as an important project to meet the country's original target of 65% electrification by 2025 and to provide universal electricity access for its citizens by 2030.<sup>11</sup>

Eswatini (formerly Swaziland) has taken the step to reduce its dependence on South Africa's Eskom for its electricity. Eskom currently provides 80% of Eswatini's power. It will develop a 10 MW solar power plant at a cost of US\$16 million. The plant will be installed by the Consolidated Infrastructure Group (Conco) from South Africa. Due to power cuts by Eskom, Eswatini has suffered a loss of approximately US\$35 billion.

Eswatini currently has 60 MW to provide electricity to the whole country. It wants to focus on renewable energy to satisfy at least 50% of the demand by 2030. The country wants to achieve a universal electricity coverage rate by 2034.<sup>12</sup>

The EU recently announced it would invest €165 million to promote renewable solar energy in Nigeria. It believes this will make a significant contribution to solving the lack of reliable and affordable energy in Nigeria. As Nigerians frequently have to use generators at their businesses, the cost of electricity production is higher than it should be and reduces their competitiveness.

Electricity supply in Nigeria has been abysmal. While Nigeria has the combined capacity to generate 11,165.4 MW of electricity, it only generates about 4,000 MW daily. To meet the national power needs, it needs a minimum of 40,000 MW of electricity.

Compared with many other countries in Africa, Nigeria looks bad, ranking in 2017 as the second worst supplier of electricity when its power generation dropped to 3,851 MW. South Africa, with 56 million people, generates as much as 51,309 MW, while Egypt, with about 100 million people, generates about 24,700 MW.

To address this sad state of affairs, the Nigerian government privatised the power sector in September 2013 by licensing 14 power generation and distribution companies. Unfortunately, the situation has not changed significantly as electricity supply has remained problematic. The end result of this lamentable situation is that businesses are collapsing, poverty remains problematic, while the economy at large, especially the manufacturing, agricultural, and mining sectors, has been negatively affected.<sup>13</sup>

## **WIND ENERGY**

Morocco will have Africa's largest wind tower at 144 metres high in early 2020, built by Nabrawind Technologies from Spain. The tower will have a production capacity of 3.6 MW. Nabrawind is using new technology that requires only 80 m<sup>3</sup> of concrete (instead of 500 m<sup>3</sup>) and 10 tons of steel (instead of 60 tons). This configuration costs 60% less, but guarantees the same result.

Morocco would like to obtain 42% of its internal energy needs from green energy by 2020, and 52% by 2030. In 2018, African and Middle Eastern countries installed 962 MW of wind power capacity. Morocco ranks third in this geographical area, with an installed capacity of 120 MW, just after Egypt (380 MW) and Kenya (310 MW).<sup>14</sup>

In South Africa, the Enel Group has started construction on the 140 MW Garob wind farm located in the Northern Cape province, at an estimated cost of US\$226 million. This is the third renewable energy project Enel has started building in South Africa in 2019. The other projects are the Nxuba and Oyster Bay wind farms of 140 MW each, with all three projects adding up to 420 MW.

The Garob wind farm is expected to generate around 573GWh per year, avoiding the annual emission of around 600,000 tons of CO<sub>2</sub> into the atmosphere. Enel will launch development initiatives in the communities living in the proximity of the wind farm once Garob is operational. The company has already installed an artificial turf football field that captures and stores rainwater. A water purification facility is used to clean the rainwater, addressing water shortages and providing clean drinking water. Another initiative involves the provision of free Wi-Fi to local communities.<sup>15</sup>

## **GEOTHERMAL: KENYA MOVES AHEAD**

Kenya ranks third in terms of renewable energy financing in Africa and the Middle East, according to data from the United Nations Environment Program, behind South Africa (US\$ 4.1 billion) and Morocco (US\$ 3.1 billion). "Kenya has invested \$ 1.4 billion in 2018, a record that has never been reached in its history. These funds went up to US\$486 million for geothermal, US\$476 million for wind and US\$467 million for solar," according to UNEP. Of this amount, US\$366 million funded the Olkaria I Geothermal Plant Unit 6 (83 MW) project. As of December 2018, the Kenyan energy mix relied only 9.6% on coal. Geothermal energy was the dominant source of electricity, accounting for 44.6% of national production.

## **MINI-GRIDS: A GROWING TREND IN AFRICA**

A minigrid (or microgrid) is a small-scale electrical power system, consisting of electricity generators and a network to distribute electrical power to users, often enhanced by energy storage capability. In Namibia, more than 50% of the rural population has no access to electricity. Extending the national grid to connect all households is technically or economically impractical in many parts of the country. IBC SOLAR and German universities plan to collaborate to expand the energy supply into rural Namibia, based on renewable energy and mini-grids. Germany will fund the research, with approximately €1.24 million in the next three years.

According to project stakeholders, solar power is now cheaper than electricity from the grid and the PV market in Southern Africa has significant growth potential. The project technology could potentially also be used to improve the energy supply in the rural areas of other countries in Africa cost-effectively and efficiently.<sup>16</sup>



In Rwanda, NOTS Solar Lamps recently signed a deal with the government of Rwanda to provide electricity to the lowest income families in the country. NOTS will invest US\$70 million over five years in a manufacturing facility for solar homes systems (SHS), a microloan credit scheme and marketing infrastructure and programmes.

The NOTS 'Mutimax' SHS is priced at US\$56, half that of competitive products, making it affordable for the lowest income families. In return, the government of Rwanda will purchase 100,000 units valued at US\$5.6 million. NOTS plans to make and sell 900,000 SHS' in Rwanda over the next four years, providing electricity to approximately 4.2 million people. Families can use a microloan (mobile money) to buy the SHS outright, making 100 equal, weekly payments. NOTS has partnered with Airtel Money Rwanda to provide the mobile money platform for repayments in three Rwandan districts.

NOTS will use the Rwandan initiative as proof of concept to address Africa's electricity crisis, which has hardly improved in the last 10 years. From 2022, the factory will manufacture at least one million additional units per annum for export to the rest of Africa.<sup>17</sup>

In Tanzania, Cross Boundary Energy Access (CBEA), Africa's first project financing facility for mini-grids, recently announced its first transaction of US\$5.5 million to finance 60 mini-grids in Tanzania, providing grid-quality electricity for the first time to 34,000 people in rural homes and businesses in the country.

To execute the project, CBEA has partnered with PowerGen Renewable Energy, a leading mini-grid developer and operator. To fund the project, CBEA obtained a long-term loan from the Renewable Energy Performance Platform (REPP), a UK government-backed funding platform managed by Camco Clean Energy.

Mini-grid developers, like PowerGen, typically struggle to attract long-term financing for their projects as each mini-grid is too small to be individually financed. CBEA subsequently created a special purpose vehicle in Tanzania to purchase PowerGen's existing and future operating mini-grids in Tanzania. PowerGen itself will continue to provide long-term customer and asset management services to the mini-grid customers. This minimizes transaction costs and allows investors and lenders to provide long-term financing based on the cash flow generated by the assets themselves. The sale of the mini-grids to CBEA soon after completion allows PowerGen to recycle capital and focus on developing more projects.<sup>18</sup>

## **POINTS OF INTEREST**

- Ethiopia's hydro energy is already highly in demand, as the GCC states have contracted with the country's government to provide them with electricity generated by its hydro stations. Ethiopia is also attempting to position itself as a major regional hub for the provision of electricity and has already signed contracts with various neighbours in this regard. All of Ethiopia's energy is from renewable sources, although Russia is doing its best to sell Ethiopia a nuclear plant. It has the potential to generate more than 60,000 MW of electricity from its renewable sources, although it currently only has approximately 2,300 MW of installed generation capacity to serve a population of over 100 million people.
- It is encouraging to see neighbours collaborating to generate energy for their respective countries, i.e. Zambia and Zimbabwe. They are at times in conflict with one another in trade matters, but have fortunately been able to set aside petty differences to focus on electricity generation, which is of great importance to both.
- It is also interesting to note the participation in the dam-building project between GE (USA-based) and Power China. Given the current trade war between the USA and China, this comes as somewhat of a surprise.
- Once again, there are clear signs of a strong growth in the adoption of mini-grids in Africa. Primarily based on solar energy, they are easier, faster and cheaper to erect than the complicated technology and infrastructure associated with national grids based on coal and oil, etc. They also provide the authorities and private sector companies with the flexibility to adapt to local conditions. Due to improvements in technology, renewable energy is now cheaper and



more efficient. With many African economies struggling with inconsistent, unreliable and expensive electricity, renewables can make a significant contribution.

### 3. Sustainability in Africa

Africa needs to find solutions to a number of challenges, sooner rather than later. More than 600 million of its people do not have access to electricity. The UN's Sustainable Development Goals, the AU's Agenda 2063 and the African Development Banks' High 5 Priorities all connect with this challenge in one way or another. Africa also has severe waste problems to deal with. Currently, approximately 40% of its population is urbanised, a figure that will grow to 50% in the immediate future. With its population also set to grow by 2050 from the current 1.2 billion to 2.4 billion, the pressure on the management of waste will be tremendous. An earlier edition of African Digest dealt with the management of plastic waste. This paper complements the content of the earlier article.

#### MANAGING WASTE

According to the Institute of Waste Management of Southern Africa (IWMSA), unless Africa manages its landfill sites on a more sustainable basis, a waste tsunami is on its way. The challenge is severe as 50% of Africa's population live in urban areas and their waste will double to 225 million cubic tons by 2025. Africa needs to move to engineered landfills and address entering the circular economy to exploit the opportunity offered by waste.

Some dump sites are potential environmental disaster areas. The site in Lagos, Nigeria, Africa's largest dump site, caught fire in March 2018 when unstable methane gas ignited. Unfortunately the Nigerian government has yet to take appropriate action, and the site continues to receive 10,000 tons daily. The waste crisis in South Africa is just as serious. The city of Johannesburg will run out of landfill space within 5 years.

IWMSA proposed engineered landfills as the optimal solution to the problem, as they provide barrier protection to prevent leachates of contaminating groundwater, noxious leachates are capped so they don't pollute the air, and they offer separation of wet and dry waste so that organic material can be anaerobically broken down by bacteria. In addition, dry materials can be recovered and recycled and they typically involve a recapture of methane gas for energy.

According to Leon Grobelaar, President of the IWMSA, should all 876 sites in South Africa, for example, be configured to harvest landfill gas-to-energy and fed into the grid, landfill-to-gas projects, capable of producing about 1-2 MW per site, could generate enough electricity to offset the building of a new 1600 MW power station.<sup>19</sup>

#### WASTE-TO-ENERGY

In Cameroon, Africa Waste Energy, a subsidiary of the Hygiene and Sanitation Company (Hysacam), plans to provide households with electricity at affordable costs through the waste-to-energy conversion process. A project is therefore underway to develop a waste exchange mechanism, which will act as a platform for exchanging waste and creating wealth. The National Waste Exchange will link the supply and demand for waste, the latter for use by Africa Waste Energy after recycling. Households will be encouraged by means of a tax incentive mechanism to provide their waste for recycling. The project looks promising given the high waste production of Cameroon on the one hand, and the need for waste on the other (for conversion into electricity). According to 2016-statistics, Cameroon produced approximately 6 million tons of solid waste, more than 2 million tons of non-domestic waste and 3 million tons of liquid waste annually.<sup>20</sup>

In Ghana, the government recently signed a US\$5.7 million contract with the German government to develop a waste-to energy plant (WTE) for the production of 400kW of electricity. The project, stretching over four years, will utilise a hybrid solar PV, biogas and a pyrolysis plant, using waste as a fuel to generate the electricity.<sup>21</sup>

## **BIOFUEL GENERATION**

In Addis Ababa, the capital of Ethiopia, four entities recently signed an agreement to implement a system for the production of biomethane from waste water treatment plants. Gaia, 4 R Energy, Lem-Ethiopia and Addis Ababa Water and Sewerage Authority will cooperate in a PPP to recover the sludge from waste water for conversion to biomethane for use by the households in Ethiopia. The prognosis for the success of the endeavour is bright as there is a huge demand for affordable renewable energy in Ethiopia.<sup>22</sup>

In Kenya, there are plans underfoot to harvest water hyacinth as a source for energy. This will enable the country to generate electricity whilst getting rid of a threat that chokes dams and rivers. Fishing boats now struggle to navigate the clogged waters. However, a renewable solution appears to be readily available. The foliage of the hyacinth contains a high ratio of carbon to nitrogen, and therefore offers a huge potential as a biofuel. Early predictions suggest that 4kg of the dried plant is enough to provide a large family's daily energy needs.

Mixing the plant with sanitised animal manure produces even higher yields of the gas. Not only does this deal with the challenge to navigation posed by the hyacinth, but also addresses the need for fuel for cooking, and the concomitant health problems.

Currently, about 50 biogas digesters, fed by hyacinth and cow dung, are in use in Kenya. In Dunga, a Kenyan village, digesters feed a network serving multiple family stoves, collectively generating sufficient gas to serve about 60% of the village's population.

Although the project is still in a very early stage, anecdotal evidence suggests that it will be a technical success. One challenge is the relative high cost of the digester, at approximately US\$750.<sup>23</sup>

## **FROM WASTE TO PRODUCTS**

Zoomlion, waste manager in Ghana, will increase recycling of the waste it collects and plans to set up a waste processing plant in each region of the country. The company hopes in the future, this strategy will allow it to recycle much more of the waste produced in Ghana. Ghana generates 12,710 tons of solid waste on a daily basis. Accra, the capital, on its own produces 26,000 m<sup>3</sup> of liquid waste daily.

Currently Zoomlion processes a mere 400 tons of the waste collected per day. Amongst others, Zoomlion wants to treat the waste and produce organic fertiliser to replace part of the US\$38 million of imported fertiliser. In addition, plastic is sold to private operators who then produce chairs, buckets or bowls.

The lack of waste recovery infrastructure represents a shortfall of US\$300 million per year for Ghana. As such, this represents an attractive opportunity to push ahead with the installation of the waste processing plants.<sup>24</sup>

## **FROM WASTE TO INFRASTRUCTURE**

Africa continues its efforts to deal with plastic as a major source of pollution. The United Nations Children's Fund (UNICEF) recently launched a project to build 500 recycled plastic brick classrooms in Ivory Coast, in collaboration with Conceptos Plásticos from Columbia. The latter will set up a brick manufacturing plant, recycling plastic waste as a primary input to make bricks, in Ivory Coast. Raw material will not be a problem as plastic pollution in Ivory Coast is a major challenge for municipalities. This initiative will have three benefits for the country: 1) more classrooms for children in Ivory Coast; 2) less plastic waste in the environment; and 3) additional income sources for the most vulnerable families.

The intended plant in Ivory Coast, at full capacity, will use at least 4,800 tons of plastic waste per year. This is not seen as a challenge as the city of Abidjan generates 280 tons of plastic waste per day, of which only 5% is currently recycled. The plastic bricks are 40% cheaper and 20% lighter than clay bricks and will last hundreds of years longer than many conventional building materials.<sup>25</sup>



In South Africa, Shisalanga Construction was due to start on 10 September with the construction of a plastic road using 200 tons of plastic. The project is in the province of KwaZulu-Natal and is on the N3-highway. It is said the recycled plastic is used as a binder ingredient in the asphalt and replaces a percentage of bitumen (which is much more expensive), while also diverting waste from landfill sites.

Shisalanga has already paved an 80-meter section of road using a mixture containing the equivalent of 6,770 milk bottles of locally recycled plastic. This project was completed in August 2019 and also took place in KwaZulu-Natal. It is believed that this project is the first part-plastic road paved in Africa.

The government will monitor these “plastic roads” to ascertain the impact of South Africa’s weather conditions, ranging from extremely hot summer to very cold winter temperatures. The logic underpinning the use of plastic matches the poor conditions of many roads in the country to the high availability of plastic waste.<sup>26 27</sup>

## POINTS OF INTEREST

- It is clear that comprehensive and well-managed waste strategies have the potential to create wealth whilst dealing with carbon challenges facing the continent. The opportunity is not only for the large corporations of the world, but can be tapped into by SME’s as well.
- Utilising waste for infrastructure-building purposes has a major cost impact and should be emulated by as many countries as possible. As a matter of fact, there is no reason why developed countries such as the USA, which incidentally has a massive plastic waste challenge, should not adopt a similar approach. In addition to cost, durability is another significant benefit of using plastic for roads and buildings.
- The use of trees for cooking purposes has a number of problems. Firstly, the deforestation of large tracts of land is highly problematic, for obvious reasons. Secondly, being exposed to the smoke of cooking fires has a health challenge to those involved in food preparation, mostly women and girl-children. The use of biofuels, using waste and pests in nature (hyacinths), can address these challenges in a meaningful way.
- Waste-to-Energy (WTE) addresses the two problems stated in the introduction, i.e. generating electricity (in a climate-friendlier way than coal-fired systems) and dealing with the waste disposal challenges facing countries. The WTE plant in Addis Ababa (Reppie) is the first WTE plant on the continent. While South Africa has a waste to gas facility in Cape Town, it still does not have a functioning WTE plant, despite the fact that Johannesburg, the largest city in the country, is filling up its seventh landfill site with no alternative yet identified. One would think a WTE plant serving most of the cities of Africa’s most sophisticated economy would be an obvious strategy to adopt.
- As noted, Africa’s growing and urbanising population will have a major impact on waste generation and management. This situation is aggravated by the expected growth in the consumer class of Africa, which has a propensity to consume more, and produce more waste.
- Africa no longer has the luxury of choosing to deal with waste in a slightly more sustainable way. However, as the above waste-to-energy and waste-to-building materials examples show, it can do so while creating wealth for its people, addressing the challenges it faces, and creating investment opportunities for those brave souls willing to invest on the continent.

## 4. Technology and Digitalisation

Growing in leaps and bounds, the world of technology and digitalisation in Africa now shows its potential to transform the continent. The enabling technology ranges from 3D-printing, robotics, and e-commerce platforms to mobile money platforms. While the Fourth Industrial Revolution (4IR) has the potential to add tremendous value, Africa needs to create the conditions conducive to its local application and successful implementation. Africa is a follower in fields such as 3D printing and robotics, but leads in other fields such as mobile money platforms. This article reports on a number of recent developments, since the last African Digest on the topic.

### DIGITAL TECH DRIVING AFRICAN GROWTH

Africa presents an untapped digital market of more than US\$2 billion. According to Dalberg Advisors, in 2018, the digitalisation market for agriculture recorded an estimated turnover of only US\$143 million out of a total market with a potential value of over US\$2.6 billion. Digital solutions include farmer advisory services and financial services, including loans and insurance for farmers. The current digitalisation for agriculture (D4Ag) market has only a 6% penetration.

Some experts view digitalisation as a game-changer, modernising and transforming the economics of Africa's agriculture, while attracting young people to farming, and allowing farmers to optimise production, while also making their crops more resilient to climate change. By using digital solutions, farmers can increase yields ranging from 23% to 73%, with revenue increases of up to 37% percent.

A practical application of the above involves EcoFarmer, a mobile platform developed by Econet Wireless in Zimbabwe. Through this platform, smallholder farmers can buy inputs, sell their produce, and access a wide range of applications such as a funeral policy for their family, all via their mobile phones. Econet Wireless allied with the Zimbabwe Farmers Union (ZFU) to offer the ZFU EcoFarmer Combo, an information and financial service, to the more than one million ZFU members. This enables members to receive crop or livestock tips based on their farming area, as well as weather-based indexed crop insurance.<sup>28</sup>

In Rwanda, Airtel and MTN launched an initiative to drive mobile internet adoption and increase digital literacy. The programme addresses digital inclusion as part of the We Care initiative in Rwanda, launched in collaboration with Rwanda's Ministry of ICT and Innovation and the Rwanda Utilities Regulatory Authority. The We Care programme supports the Rwandan government's strategic efforts to boost ICT penetration and digital services across the country. The Rwandan government embraced the increase of digital inclusion in Rwanda to empower its citizens.

Airtel and MTN will use GSMA's Mobile Internet Skills Training Toolkit to train about 10,000 sales agents and educate customers on how to access mobile internet services. In Africa, We Care is already live in Kenya and Cote d'Ivoire.<sup>29</sup>

### FINANCING EDUCATION START-UPS

According to a research report by Seedstars, Ivory Coast's edtech market is worth between US\$210 to US\$308 million. The sub-sector with the most potential is the e-learning market, with a market of 150,000 to 200,000 tertiary students, worth between US\$90 million and US\$120 million.

However, the sector's start-ups are in dire need of investment if they are to service the local market. Edtech companies in the country have raised only US\$184,600, despite needing to raise US\$1.2 million. Currently, Abidjan, the Ivorian capital, hosts less than 25 edtech start-ups, of which only two raised seed funding. Half of the country's edtech start-ups raised no funding at all, despite being in business for than an average of 30 months. Grant funding also appears to be problematic. Overall, there is a need for more regional tech investors in the country.

Researchers recommended that the country develop a local angel investor network with government support, to assist the players in the edtech sector to build relationships with edtech-focused VC funds.

Challenges faced by entrepreneurs in the sector include the cost of talent, the lack of access to networks, market maturity, fundraising know-how and funding availability.<sup>30</sup>

## **AFRICA REACHING FOR SPACE**

The Ethiopian Space Science and Technology Institute (ESSTI) will be launching its first Earth Observation satellite in December 2019 to help in monitoring water, agriculture, the climate and environment, and mining. The satellite is also being built to train Ethiopia's engineers from scratch, as well as for the exchange and transfer of knowledge and technology. The project is financed by the Ethiopian government and the Chinese government.<sup>31</sup>

## **GROWING THE E-COMMERCE OPPORTUNITY**

Kenya's leading mobile telephony company, Safaricom, intends to expand its Masoko e-commerce platform beyond Kenyan borders. Masoko, which went live in 2018, offers a selection of products and provides a space for merchants to trade goods on social media sites like Facebook and Instagram. It competes with other online shops like Kilimall, OLX, and Jumia, which is Africa's largest e-commerce platform. According to Citibank, Kenya's e-commerce market is valued at ~US\$6.7 million in the near term and as much as ~US\$4.9 billion in the long term.<sup>32</sup>

In South Africa, Macsteel has launched the first B2B e-commerce platform in the steel sector, to sell steel online. This provides customers with easy and continuous access to sales and information throughout the year. They can now place orders after hours. The company also incorporated a seamless enquiry option to facilitate effective online ordering. Macsteel's development is in reaction to the growing relevance of online purchasing in the B2B space. The service is currently live in a few main centres such as Cape Town, Durban and the greater Johannesburg area, with new developments planned to serve additional areas.<sup>33</sup>

## **GOING NUCLEAR AS SOURCE OF ENERGY**

Much of Kenya's electricity supply now comes from hydropower (35%), with the rest generated by geothermal, wind and diesel powered plants. Court actions by environmental activists appear to have stalled Kenya's plans to develop a 1,050 MW coal-fired plant on the coast with Chinese funding. Kenya intends to build its first nuclear power plant within the next decade as it views nuclear power as a long-term solution to high fuel costs and an effective method to cut carbon emissions from the power generating sector.

Kenya's Nuclear Power and Energy Agency (NuPEA) forecasts that its capacity will rise to a total of 4,000 MW by 2033, and that nuclear electricity will be a key component of Kenya's energy mix. The country trained 29 Kenyans (all with Master's degrees) on nuclear energy at top universities in Korea, China and Russia.<sup>34</sup> Kenya recently contracted with China National Nuclear Corporation (CNNC) to identify the most suitable location for the proposed plant. The eventual plan is to build a nuclear power plant with a 1,000 MW capacity, operational by 2027. The top areas identified include the Indian Ocean, Lake Victoria and Lake Turkana. The Rift Valley does not provide enough water to cool the plant, The consultation fees amount to ~US\$500,000.

## **TAPPING INTO THE 4IR**

According to South Africa's President Cyril Ramaphosa, to deal with the problems facing South Africa, and rise to the challenges of poverty, unemployment and inequality, the country must embrace the Fourth Industrial Revolution (4IR) and harness the opportunities it offers. This would include aspects such as the IoT, robotics, virtual reality, and artificial intelligence, technologies that will change the way people live and work. Tapping into these opportunities will provide many benefits, such as enhancing economic transformation and job creation, improving education outcomes and the skills revolution, and transforming spatial integration. In the coming decade, the transformation programme will focus on creating an ideal South Africa through the realisation of seven critical priorities that apply to all sectors

of society.<sup>35</sup> These priorities were announced during President Ramaphosa's State of the Nation Address in June 2019:<sup>36</sup>

- Economic transformation and job creation
- Education, skills and health
- Consolidating the social wage through reliable and quality basic services
- Spatial integration, human settlements and local government
- Social cohesion and safe communities
- A capable, ethical and developmental state
- A better Africa and World

In another development, mobile telephony giant Vodacom launched a range of IoT products to enable customers to connect and monitor their compatible home and leisure IoT devices through Vodacom's dedicated global IoT network. The product range was developed in reaction to concerns about the risks to the safety and security of homes and family members.<sup>37</sup>

## POINTS OF INTEREST

- Africa's e-commerce sector shows steady growth, mainly from home-grown competition to the likes of Amazon and Alibaba. The dominant firms in Africa hail from Nigeria (Jumia and Konga), South Africa (Superbalist, Takealot and Bidorbuy) and Kenya (Killimall and Masoko). Rapid increases in mobile phone use, which in Africa is the primary mode used to access the internet and thus e-commerce, drives growth in this market. Mobile access encryption technology also increases trust in using the Internet for purchases and online payments. Last-mile delivery is a challenge to Africa's potential in this sector, partly due to the absence of addresses in many areas of Africa, not only in rural areas, but even in its cities.
- The 4IR has been punted as the next wave of driving global growth. While developed world countries have the advantages of technology and knowledge, Africa has to embrace the 4IR needing to catch up on its knowledge backlog. The threat that automation, machine learning and AI could make cheap labour as a source of competitive advantage redundant will not materialize in the near future, if ever.
- Developing markets, such as those in Africa, should gear themselves to tap into the opportunities presented by the 4IR– by transforming their education systems and creating opportunities for the transfer of knowledge and technology. Some African countries have developed meaningful developments in this sector. In addition to launching a satellite, which has been done a number of times by South Africa, Ethiopia is teaching robotics to its students! Labs in Togo, Tanzania and Uganda made 3D-printers from e-waste materials!
- Africa's people suffer from the failure to provide reliable and affordable electricity. While punters point to renewable energy, and more specifically solar, as the main business model for energy, a number of countries plan to take up nuclear. In recent years, Russia's foreign minister, Sergey Lavrov, visited African countries such as Ethiopia, Rwanda and South Africa to sell them Russian-designed and built nuclear plants to produce electricity. In spite of the huge costs, some African governments take this option seriously. However, their societies, who deem nuclear to be too expensive, push back, and consider the many alternatives as far cheaper and much more environmentally friendly.
- Education in Africa is another attractive business opportunity, largely due to the potential of digital technology and online learning. Private education institutions increasingly tap into this opportunity. However, as indicated by the above article on the Ivory Coast, financing growth remains a challenge. A recent development in South Africa, where venture capitalists and private equity funds can invest in start-ups and list them on the ZAR X alternative stock





exchange, as an exit strategy to reduce risk, will hopefully increase investment in edtech start ups by VC and PE players.

## 5. Xenophobic Violence in South Africa

Towards the end of August and the start of September 2019 in South Africa, xenophobic violence flared up, leading to a loss of life and destruction of many businesses, buildings, and cars through looting and arson. This is unfortunately not a one-off event, with South Africa demonstrating this concerning trend since 2005. This article highlights the main events and provides concluding remarks.

### THE START OF THE XENOPHOBIC VIOLENCE

The stated period will be remembered as a period during which South Africa was shamed through various acts of xenophobic violence. By Friday 6 September, a total of 497 suspects, who have been looting shops in Gauteng Province, had been arrested. Many of the targets or victims of the violence were foreigners from the rest of Africa. While 11 people had been killed during this period, only seven deaths have been directly linked to the incidents of violence. During this period, business owners in a number of the affected areas kept their stores closed.<sup>38</sup>

The current spate of xenophobic attacks started in Pretoria on Tuesday 27 August 2019 when a taxi driver was allegedly killed by a drug dealer. Subsequently the taxi drivers confronted drug dealers and buyers, with whom they had been in a conflict situation for a while. Shots were fired and a taxi driver was killed. This led to the taxi operators bringing traffic to a standstill in Pretoria's CBD. They hijacked numerous buses and blocked roads.<sup>39</sup> In addition, they torched and looted stores owned by foreign nationals who they suspected are dealing drugs to the youth. The South African police were apparently not quite successful dealing with the arson and looting.<sup>40</sup>

These protests and attacks spilled over to Johannesburg. On Sunday 1 September, violence broke out in Jeppestown, Johannesburg, and later spread to the CBD. Foreign-owned stores were attacked and looted. On Monday more than 50 shops and business premises owned by non-South Africans from countries in the rest of Africa were destroyed. Protesters threw rocks and petrol bombs at shops, raiding shops, and running off with goods. Police fired tear gas, rubber bullets and stun grenades to disperse the riots.

In addition to Nigerians being targeted, Kenyan businesses also caught up in the looting and protests. Kenyans residing in Gauteng Province were physically assaulted and their businesses looted and burnt.<sup>41</sup>

This is not the first time xenophobic attacks shocked South Africa, with reports of scattered attacks against foreigners since April 2019, and other attacks in 2018. In 2015, violence against foreigners killed at least seven people. Before that, approximately 60 people died in xenophobic violence in South Africa in 2008.<sup>42</sup> Xenophobic attacks were also recorded in 2005.

### THE WORLD AND AFRICA PUSHES BACK

The violence and property destruction gave rise to intense tension between Nigeria and South Africa. To address this issue, President Muhammadu Buhari scheduled a meeting with President Cyril Ramaphosa in October. Public reaction in Nigeria has been quite severe with calls to boycott South African companies in Nigeria, e.g. Multichoice (pay-TV), MTN (mobile telephony and mobile money player), Stanbic (bank) and Shoprite (food retailer), all four large organisations. Calls have also been made for the closure of Nigeria's High Commission in South Africa, for all Nigerians to return to Nigeria and for the expulsion of all South Africans from Nigeria.<sup>43</sup>

After retaliatory attacks on its facilities in three Nigerian cities, MTN Nigeria decided to shut all stores and service centres in Nigeria until further notice.<sup>44</sup> The South African High Commission in Nigeria had also shut down operations out of concern for the safety of its employees.<sup>45</sup>

The Nigerian Foreign Affairs Minister insisted that President Buhari's administration demand compensation for the attacks on and destruction of Nigerian businesses in South Africa.<sup>46</sup> A Nigerian airline, Air Peace, has offered to evacuate its nationals in SA for free, an offer which led the Nigerian foreign ministry to introduce plans to evacuate Nigerian citizens from South Africa.<sup>47</sup>

By Thursday 5 September, both the African Union and the UN had condemned the xenophobic violence in South Africa.<sup>48</sup>

The presidents of the DRC, Malawi, Nigeria and Rwanda decided not to attend the World Economic Forum Summit in Cape Town as protest against the xenophobic violence.<sup>49</sup> In addition, the Botswana government issued a travel cautionary to its citizens to avoid the conflict areas.

Most recently, first Zambia and then Madagascar withdrew from a football match against the South African national team.<sup>50</sup> In Zambia, people attacked outlets of South African businesses in retaliation for the violence against foreigners in South Africa.<sup>51</sup> Many protesters burned down the sign outside the South African High Commission in Lusaka.

Protestors in the DRC smashed the windows of the South African consulate in Lubumbashi, where after they looted a retail store owned by South African group MRP. Tanzania also expressed its disgust with the situation by suspending commercial flights between Dar es Salaam and Johannesburg due to the risk posed to its passengers in Johannesburg.<sup>52</sup>

The Ethiopian government urged the South African government to protect Ethiopian nationals in South Africa and condemned the attacks on Africans and the looting and destruction of foreign-owned shops and properties in South Africa.<sup>53</sup> The president of Mozambique is the latest to express his condemnation of the events.

## **POLITICIANS AND FAKE NEWS**

A video of the police in South Africa frisking a number of South Africans, who were lying on the ground, went viral as evidence of Nigerians recently being manhandled by the police. The people were actually hostel residents being searched for drugs by police in 2015.

Tiwa Savage, a well-known artist in Nigeria, tweeted about Nigerians in South Africa being "butchered", while the former government minister (Minister of Aviation), Femi Fani-Kayode, wrote on Twitter that Nigerians were being "killed like chickens" in South Africa.<sup>54</sup> . The truth is that of the twelve people killed in this latest xenophobic violence, apparently ten were South Africans. (Not that this is in any way acceptable.)

Fani-Kayode also publicly referred the South African Minister of International Relations, Dr. Naledi Pandor, as an "irresponsible, insensitive, shameless, conflicted, self-hating, pitiful and mendacious creature." He also asked "(d)oes this she-devil of a Foreign Minister really believe that innocent Nigerian men, women and children should be butchered at will in the streets of South Africa by bloodthirsty and bestial mobs?"<sup>55</sup>

## **POINTS TO PONDER**

There are no excuses for xenophobic violence, not in South Africa and not anywhere in the world. Law enforcement agencies are there to protect people and address any alleged criminal activities by foreigners. There is no excuse for South Africans who complain about foreigners who use the opportunities in South Africa to open shops and stores.

Africa has shown it will push back in serious ways. The South African presence in Africa constitutes large businesses, such as Massmart, MTN, Multichoice, Pick n Pay, Shoprite, Spar, Stanbic and Vodacom. They generate significant portions of their total revenue from Africa. Focused action against them would hurt South Africa financially to a much greater extent than the activities against entrepreneurial businesses with foreign ownership. There were also voices in Nigeria that called for the nationalisation of South African businesses in Nigeria.

Many South Africans work abroad in Africa, as farmers and as entrepreneurs. They are far more vulnerable to retaliatory action than the large corporates.

The recent push back from Africa shows clearly Africa will not hesitate to become involved in retaliatory actions. Firebrands like former Minister of Aviation, Fani-Kayode, have the ability and following to rouse tempers and generate negative feelings towards South Africans in Nigeria.

The condemnation from both the AU and the UN should send a clear message that this kind of unacceptable behaviour will not be tolerated. With enough support, it is not inconceivable that more serious disciplinary action could be instituted against South Africa.

Given the progress of the African Continental Free Trade Area (AfCFTA), more foreigners will be targeting South Africa as their future home or place of commercial activity. The past decades' xenophobic violence raises serious questions about their safety and security. The South African government has not shown convincingly that it can deal with these xenophobic attacks. One way of dealing with this, could be to keep South Africa out of the AfCFTA. This would defeat the whole purpose of integrating Africa.

It also appears that while the number of attacks on migrant-owned businesses is high, justice seems to be lacking. The police is apparently too thinly stretched and too poorly equipped to deal with the situation efficiently and effectively.

Some commentators have stated that the underlying cause of the xenophobic violence lies in the high levels of inequality, poverty, and unemployment in South Africa. These are very negative social issues that must be addressed. However, South Africa's ability to do so has received a serious setback with the high levels of corruption that accompanied the Zuma administration.

Inflammatory statements from South African politicians have also been reported as playing a role in raising the emotions against foreigners. These statements are frequently, if not mostly, taken out of context by those responsible for the violence. Politicians should take care to express themselves clearly and to consider the potential impact of their statements.

Unfortunately, the media has shown that the xenophobic attacks are not a thing of the past. The latest reports show attacks against foreign businesses in the Mpumalanga Province as recently as 11 September 2019.<sup>56</sup>

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