

CHAPITRE VI

Potential domains for youth jobs and entrepreneurship

Agriculture

In Ethiopia, Malawi, Nigeria, Tanzania, and Uganda, the share of the operating youth (16 to 25 years) occupied with farming is lower than in the total population (ACET for Africa, 2017).

Insufficient access to knowledge, limited access to land, deficient access to finance related services, troubles getting to green jobs, limited access to employment sectors and limited contribution in policy dialogue are the main observed bottlenecks (Goemans et al, 2014).

By overhauling agrarian innovation and making agriculture more beneficial as a business, this sector could wind up appealing to a part of the educated youth who currently inspire to urban areas. These young entrepreneurs would fill the "missing middle" between the subsistence and smallholder farmers, who presently make up over 80% of Africa's farmers.

Farmers need upstream, seeds, feeding, during the production procedure, manures, and pesticides and downstream packaging and transportation. Youths could provide some of these products and services by establishing new companies or working for them.

Access to knowledge

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) is a consortium of 32 colleges in eastern, central and southern Africa that was established in 2004. RUFORUM's main goal is to upgrade the quality and importance of postgraduate education in Africa. The diverse doctoral programs centre on Dryland Resource Management, Plant Breeding and Biotechnology, Aquaculture and Fisheries Science, Agricultural and Resource Economics, Soil and Water Management, and Agricultural and Rural Innovations (ruforum website).

An innovative lab in Rwanda is helping youngsters develop ICT-based agrarian policies and transform them into business ventures. In June 2012, kLab was established in Kigali to bring together tenants

and tutors. The connection up offers support to young entrepreneurs all through the procedure, giving them Internet access and training to improve their ICT abilities and concrete advice on how to market their ideas and access venture capital. The lab has acknowledged around 70 individuals and helped shape a part of their thoughts into business ventures (klab.rw site).

Access to land

The Relief Society of Tigray (REST), an Ethiopian NGO, propelled an activity in 1999 to enable youth in the Hawezien District of the northern Tigray locale of Ethiopia. REST bolstered the development of soil and water preservation structures on hillside lands. These structures were developed by the entire community and after that, the restored land was disseminated to landless youth in the Hawezien District.

The young beneficiaries get a landownership document from the village administration to make the land transfer official. REST likewise bolsters also, tree planting, beekeeping and the construction of water tanks in collaboration with local extension workers. The youth that benefits from the project are organized in associations which formulate their own land management by-laws in order to avoid misuse of the land. Through the undertaking, 360 landless youth have gotten an aggregate of 90 ha of land and they presently get a salary through the closeout of eucalyptus and honey delivered on their property (dryland site).

Uganda Rivall Uganda Limited (RUL) is a trading firm dealing in food grains, vegetable oils and honey. RUL started working with youth groups from the Kisoro locale in southwest Uganda in 2011. RUL enters into short-term lease agreements with landowners that don't wish or don't have the ability to use their land in the foreseeable 12 months RUL works closely with the local authorities to sensitize landowners with regard to youth and their need for access to land. Landowners' children are urged to shape or join groups to utilize their relatives' land. Once RUL and the landowner on the renting conditions, and the methods of payment, and once the Uganda Land Commission approves the rent, RUL communicates the accessibility of the land to present or forthcoming youth clusters through

noticeboards in the community and the RUL extension workers (naads website).

Access to financial services

In 2011, the Government of Uganda in cooperation with DFCU Bank, Stanbic Bank, and Centenary Bank propelled an investment reserve to begin the Youth Venture Capital Fund. The fund planned to help the development of practical and maintainable SMEs (small and medium ventures) in the private part. To fit the bill for credits, youth entrepreneurs must be aged somewhere in the range of 18 and 35. Every business project must exhibit its capacity to give employment to least four people by the end of the loan period and every borrower must present in any event two credible guarantors. Eligible sectors include: agroprocessing, primary agriculture, fisheries, livestock, manufacturing, health, transport, education, ICT and tourism. Consistently the Government and taking an interest banks audit and concur on an appropriate rate for all credits to be affirmed in the ensuing a year.

Access to green jobs

On the off chance that water hyacinth, waterweed, is not controlled it will cover lakes and lakes completely. This influences the water stream, however keeps the daylight from arriving at sea-going plants and exhausts the water of oxygen, accordingly killing fish.

Michael Otiendo, 32, from Kenya and Robert Atuhaire from Uganda, each changed an ecological issue into a business opportunity and now utilize the water weed to make paper. The knowledge has been procured from the Kisumu Innovation Center Kenya (KICK). KICK gives training chances to youth living around Lake Victoria for the production of value and imaginative items produced using reused products. A privately built machine and a distinctive procedure are utilized to change the plants into paper. The final results incorporate envelopes, A4 size printing paper, photograph outlines, shopping sacks and blessing packs for functions (employmentdailyafrica site).

Access to markets

A 26-year-old Ghanaian, Richard Ahedor Seshie, established Vivuus Ltd, a small enterprise intended to improve the aggregate provincial vehicle framework and lift small Farmers ' salary and the income of road merchants.

Vivus Ltd has established a rural transportation system for the collection of crop surplus, agricultural waste and market residues in urban centres, selling on to third parties or for conversion into biogas and fertilizer. Vivus has additionally established a cell phone-based deals framework empowering women merchants in urban centres to buy food staples. It conveys field operators to enroll women sellers, who must have a cell phone. Women hence become the fundamental casual sellers, ruling retail deals to customers on urban markets and improving dissemination (vc4africa site).

Vivus send them continuous 'deal of the day' SMS, offering staples at discounted prices. Vivus exploits soccer fields and uncompleted houses to set-up impermanent early morning discount markets.

At the farm level Vivus pick a lead farmer who collects the produces from other farmers. The farmers have available to them trucks so they don't need to utilize head portage or walk abundantly to pass on their produce to an accumulation point. Vivus likewise centers on agro-residues.

Staple Crops Processing Zone (SCPZ)

Some African nations established industrial parks for agriculture, furnishing land with infrastructure to attract investors into commercial farming and agribusinesses. MNCs and international organizations invest also in agribusiness.

SCPZ are promoting sustainable agricultural value chains in Ethiopia, Zambia, Togo and Democratic Republic of Congo | African Development Bank (AfDB) (greenclimate website)

SCPZ are agro-based spatial development initiatives intended to concentrate agro-processing activities within areas of high agricultural potential to boost productivity and integrate production, processing and marketing of selected commodities (tralac website).

SCPZ Olam Rice Farm, Nigeria

The Value Chain Development Program (VCDP) organization between the farmers, Olam Rice and the International Fund for Agricultural Development (IFAD), started in 2015 with just 30 farmers on a pilot basis and extended to 1,349 taking part farmers in 2016 and to 4,976 in 2017 (Employment Daily, 2018). Olam has bought in excess of 25,200 MT of rice paddy from smallholder farmers and paid \$9.8 million USD in return. In total

25,000 individuals in remote towns profited by offering their produce to Olam. The organization additionally made 3,795 jobs past cultivating, fundamentally for youth and women in value chain undertakings.

Olam gives 15% of contributions to farmers using a loan which is reimbursed with future deals and is accountable for circulating data sources. Olam centres on buying 75% of the rice paddy (leaving the staying 25% for local utilization) and guarantees payment to farmers upon delivery within 48 hours through direct transfers to farmer bank accounts. Using direct transfers boosts the utilization of the banking system among small-scale farmers. Olam additionally consented to develop rice collection depots within a minimum of 25 km of farmers.

The Nigerian government goes about as a facilitator and organizer of different interventions subsidized by the venture to encourage farmers and give farmer services, and furthermore acts as a supervisor to ensure that funds are used for the intended purposes. The Government additionally offers help through a half award to farmers on all contributions for the initial two years of the program, and connections farmers with the Nigeria Agric Insurance Company to give protection to farmers.

IFAD facilitates the ware coalition group, a platform for the farmers and Olam to examine issues identified with the organization including pricing, services and financing. IFAD likewise gives specialized help and is in charge of the supervision and execution of venture and framework subsidizing.

Olam Rice Farm has been upgraded to a Staple Crop Processing Zone (SCPZ) by Nigerian Minister of Agriculture (agronigeria, 2014).

Olam, through this activity, has tackled various issues in the communities. These incorporate viable usage of the land and employment for the adolescents which has repelled them from wrongdoing (Nairaland, 2015).

Alape Staple Crop Processing Zone (SCPZ), Nigeria

The Kogi State and the Nigerian National Petroleum Corporation (NNPC) signed in 2018 a Memorandum of Understanding for their interest in the Alape Staple Crop Processing Zone oriented in Kabba/Bunu Local Government Area of the State for the Cooperation in the Promotion and Development of Biofuels Project (Adeolu, 2018).

NNPC Biofuels covers an aggregate of 20,000 hectares for sugarcane or potentially 15,000 hectares for cassava with possibilities for further extension.

The project includes

for sugarcane

Sugarcane Feedstock Plantation; Cane Mill and Raw/Refined Sugar Plant; Fuel-Ethanol Processing Plant; Bagasse Cogeneration Plant; Carbon Dioxide Recovery and Bottling Plant and Animal Feed.

for cassava:

Cassava Feedstock Plantation; Cassava tubers tonnage; Fuel-Ethanol Processing Plant; Dry local starch; Carbon Dioxide Recovery and Bottling Plant; Animal Feed.

This is to provide about one million direct and indirect jobs.

Staple Crops processing Zone (SCPZ), Zambia

AfDB is supporting the Zambian government for the foundation of the Staple Crop Processing Zone (SCPZ) at Luswishi Farm Block in Lufwanyama District in Copperbelt (African Daily Voice, 2019).

The SCPZ activity is gone for feasible and adjusted agri-industrialization, promoting investments in the agriculture sector, upgrading country employment opportunities, drive economic development and decreasing rural-urban migration.

Farm Block development is one of the program territories recognized in the Seventh National Development Plan (7NDP) to help quicken economic diversification and job creation (Phiri, 2019).

Staple Crops processing Zone (SCPZ), Cote d'Ivoire

Béliér in Cote d'Ivoire is one of the areas chosen for the execution of the SCPZ (2PAIB), near the agro-mechanical park of Yamoussoukro (Rankin et al, 2019). Arranging incorporates the restoration of 17 provincial markets and the building of 12 pack houses for improved treatment of vegetable harvests. The project is financed by AFDB at 80 % up to USD 121 million (AFDB, 2019b),

The nearby Ecole supérieure d'agronomie de Côte d'Ivoire trains during half-year 800 young potential entrepreneurs (half men and half women), who will profit from a financial support and multi-year counseling.

Are oriented 1 835 ha delivering 22 000 tons of rice, 335 ha of vegetables creating 11 000 tons of

vegetables, 12 000 ha creating 72 222 tons of maize and 360 000 tons of cassava. 461 600 individuals will profit from the undertaking (64% nearby).

Food processing

We present herewith two areas of specialization opened to youth initiatives, fruits and cassava processing.

Fruit and vegetables processing

Izandla Women's Initiative, Intaba Mountain Fruit Processing, South Africa

The Izandla Women's Initiative is an entrepreneurship and job production program explicitly planned for helping women living in country territories of the Western Cape (Van Lin et al, 2018).

Izandla is helping jobless or semi-utilized farm laborers to produce jam from the fallen organic product trees in the zone. The Nozala Trust paid for the rental of a neglected church and purchased training hardware for the women to start processing this natural product into jams. The Agricultural Research Council provided factory workers with technical training.

Intaba Mountain Fruit Processing is a provider to Woolvalues Food. From pickling to labeling, Intaba jams have created new livelihood opportunities for dozens of people living in the Piketberg area in the Western Cape. Intaba Mountain Fruit Processing was started by the Nozala Trust and the Cape.

New and advanced equipment was purchased, and the facilities upgraded, providing the means to deliver a unique high-quality product (tshwarisano website).

Dürsots and All Joy tomato training plant in Limpopo, South Africa

The Dürsots Group is a family-run venture situated in Modjadjiskloof in Tzaneen, Limpopo, specialized in the canning, bottling and packaging industries (City Press News, 2019). Aside from the Tzaneen activity, the company has industrial facilities in Eikenhof in the south of Johannesburg and Alrode in Alberton.

Dürsots, one of the leading black-owned and managed food manufacturers in the country processes thousands of tons of fresh tomatoes into tomato paste and manufactures cans of tomato and onion mix, whole and diced tomatoes and tomato seshebo, as well as other food products.

The company has made 70 lasting jobs and in light of the fact that tomato developing is occasional – from April to October – it utilizes several provisional laborers. The organization has likewise settled a "tomato outgrower scheme" to help small scale Farmers sell their items. This has profited individual farmers and helpful local farmers from Tzaneen, Giyani, and Musina. The scheme contracted 80 developing farmers and 10 established (commercial) farmers, all of whom were trained and supervised in the growth of crops.

Levubu Dried Fruit, South Africa

From a home production in 1983, to plant currently utilizing 35 workers (Idfruit, website), Levubu Dried Fruit is located in a subtropical valley at the foot of the Soutpansberg in Limpopo Province, South Africa.

Levubu Dried began by Emmie Cloete when she made a dried guava roll. The item was famous to the point that the business has grown substantially. Presently delivering dried guava, banana, pineapple, mango, and other tropical natural product items, Levubu Dried Fruit has purchasers all through South Africa.

Guavas are produced on the farm, while different natural products are sourced from the encompassing region. Levubu Dried Fruit dries organic products utilizing a mix of air drying in passages and sun drying. The manufacturing plant utilizes laborers from the rural region encompassing Levubu and trains every person in their particular assignment.

Cassava processing

Cassava is a root crop grown in tropical climates. In Africa it is the second largest source of carbohydrates after maize. Cassava needs less water than maize and rice, and can remain underground for more than two years after maturity, reducing the need for large storage facilities. Herewith private and public initiatives which could attract youth to cassava transformation.

Psaltry International (PIL)

PIL is a Nigerian agro partnered organization Established in 2005 to market cassava produce yet later extended its employment line to incorporate farm development and food grade starch from cassava (psaltry site).

PIL has made a production community including up to 5,000 farm families which incorporate more than 2,000 outgrower farmer families, marketers, the employees, the merchants, the transporters, the retail input providers.

PIL established its 20-ton/day starch plant in 2012 and an extra production Line of 30 tons/day limit in 2015, with 400 hectares of Company Cassava farmland situated at Alayide-Wasimi Village, Ado-Awaye, Oyo State, a cultivating community of around 10,000 hectares of farmland. The organization gives employment to more than 300 individuals including 200 perpetual staff and 100 transitory staff.

PIL is a subcontractor to International bodies like USAID and International Institute of Tropical Agriculture (IITA) (psaltryinternational site). In 2009, IITA subcontracted a USAID supported prime undertaking to PIL. In the projects, PIL organized farmers in Oyo, Osun, Ekiti and Ondo states into clusters and provided the farmers with new cassava stem cuttings.

Top-notch Food Grade Cassava Starch can be utilized as an option for starch and other imported materials like wheat starch, in Food, paper, materials, cement, refreshments, ice cream parlor, pharmaceuticals, and building materials like tiles.

In 2016, Psaltry receive the right to utilized an application developed by Syngenta foundation called Farmforce as her Supply Chain Management Tool which aides in overseeing a huge number of outgrowers while likewise checking monitoring the activities of the extension.

GMC Universal and Asikess Ventures Limited

GMC Universal Ghana Limited has secured a US \$25m financing from Cosmos International of India for the foundation of a starch training plant at Nkwanta South in the Volta Region introduced by KORAT S W Group of Thailand, the biggest producer of cassava turnkey processing plants in Thailand (ghana.gov site)

Asikess Ventures Limited at Begoro-Aburaso has likewise with KORAT consent to make and introduce 200 tons every day cassava starch processing plant, booked for April 2019.

The project embraces a square cultivating framework where 2400 square farmers will be locked in to deal with the underlying 4800 hectares farmlands and give employment to more than 3000 individuals in the region.

Peak Agro Products (CAP)

The Crest Agro Products, an agro-based organization started development of an ultra-present day industrial facility as a feature of its N20 billion interest in the production and processing Cassava in Kogi (Sahel, 2017).

The manufacturing plant would begin with 110,000 tons of cassava for each annum and climb to the 500,000 tons inside two years including that the cassava prerequisite for the production line was massive. The organization has 13,000 ha cassava ranch at Apata, Lokoja Local Government.

Sunbird Bioenergy

Sunbird Bioenergy has finished the planting of a 400 ha cassava nursery in Sierra Leone (sunbird site). The long haul goal is to establish a core farm and out-cultivator program that will develop 600,000 tons of cassava for each year. This is relied upon to make financial prospects for 20,000 small scale farmers.

Sunbird Bioenergy utilizes the cassava to deliver bioethanol for the European transportation sector. Bioethanol is regularly mixed as a ratio of 1:9 with petroleum and sold as E10. Other value included applications for cassava incorporate starch and high-maltose sugar (HMS).

In Zambia, Sunbird Bioenergy Africa began at Kawambwa, Luapula Province, a cassava out-producer program that will give the supportable feedstock to a bioenergy venture that is relied upon to develop 120 million liters of bioethanol every year for the nation's ethanol-fuel mixing program (Biofuel Digest, 2017). The program incorporates the development of a cassava nursery in Luapula territory, the selecting and enlisting 20,000 out-cultivators for the project and the preparation of the out-producers. Subsidizing was accessible in 2017 for 5,000 out-producers and reached out to 20,000 out-cultivators in 2018.

The Sustainable Trade Initiative (IDH) and Grow Africa

The two organizations have mutually completed various programs crosswise over Africa to unite every one of the partners on a similar stage (Talk Agri Nigeria, 2015). The pilot intercession on cassava is in Nigeria, Ghana, and Mozambique.

The goal of the platform is to adjust private sector and public sector and facilitate partners to conduct

advocacy and to take action to address common issues.

Philafrica Foods

Philafrica Foods, an investment company involved in food processing and operating in South Africa, has bought a controlling stake in The Dutch Agricultural & Trading Company's (DADTCO) cassava processing business (Kruger, 2017).

DADTCO patented innovative mobile processing technology has changed the way cassava is perceived, grown and processed in Africa. Instead of transporting the perishable roots over long distances, we process fresh cassava on-farm or nearby. Our mobile technology results in zero waste. 100% of the cassava root is utilized.

Cassava Starch of Tanzania Corporation Limited (CSTC)

Tanzania has propelled in 2019, another cutting edge cassava plant, the Cassava Starch of Tanzania Corporation Limited (CSTC) situated in the southern district of the nation (Food Employment Africa, 2019).

The facility, which was built by a French firm, has the ability to process 60 tons of raw cassava every day, identical to 25 tons of value cassava flour every day and an ability to offer 420 employment opportunities,

The Small Industries Development Organization (SIDO) and Tanzania Industrial Research and Development Organization (TIRDO) are also among the major institutions of interest in the sector.

The new facility provides a reliable market for growers in addition to creating employment opportunities especially for the youth.

Tanzania has signed an agreement with a Chinese firm, Kanton Investment Company to construct a new cassava processing factory, estimated to cost US\$10 million in one of the eight districts of Tanga region, Handeni (Food Business Africa, 2018).

Motorcycle Services

The motorcycle cabs sector doesn't get any support from the government. Training programs could produce more jobs and enterprising activities. Moto taxis cluster is feasible at the national and regional level and even at the sub regional level around the borders of the different countries. The advantage of motorcycle in comparison to car is that they can travel in bad logistic infrastructure conditions.

Motorcycle taxis and transportation of goods

Motorcycle cabs are regularly called 'Okada', 'peen-peen', 'engine taxi' or 'bodaboda' (Goodfellow, 2015). Motorcycle cabs showed up in Nigeria toward the start of the 1970s, in Yola and Calabar (Olvera et al, 2016; Olubomehin, 2012), preceding spreading quickly to a greater amount of the nation's urban communities. In Benin, they landed in Porto Novo in the second half of the 1970s and Cotonou in 1981 (Agossou, 2003).

The "ville morte" urban strikes toward the start of the 1990s helped them spread to Douala, Cameroon in 1991 (Sahabana, 2006) and Lomé Togo, in 1992 (Guézéré, 2008).

They have additionally existed since the part of the policy in a few East African urban areas (Howe, 2003) and to a lesser degree in southern Africa, for instance in Huambo in Angola (Lopes, 2010). There is a positive connection between motorcycle taxi and development of filling stations, bike mechanics and extra parts exchange (Okonda et al, 2015).

Okada business is a marker of youth innovative accomplishment, utilizing a few million youngsters as motorcycle proprietors, riders, repairers and extra parts sellers. Socially, Okada business has made new types of youth subculture and personality, solidarity and a pathway for social versatility.

Motorcycle taxis add to over 75% of yearly traveler transport and small cargo on country streets in Ghana, Malawi, Mozambique, Sierra Leone (Starkey, 2016; Unescap, 2005). On a rural street studied in Cameroon, 82% of traveler used motorcycle taxi (Starkey and Hine, 2014).

In Sierra Leone, Okada business employs directly 300,000 individuals as riders and another 50,000 in a roundabout way as repairers, park orderlies, food sellers or bicycle proprietors.

Starting in 2013, there were in excess of 189,000 motorbike taxi services, for the most part youth in the nation of 7.5 Million individuals (Benson and Peters, 2017).

The Bike Riders Unions (BRUs) are the umbrella body for Okada riders in Sierra Leone. The BRU's record of 200,000 enlisted individuals makes it the biggest youth organization in Sierra Leone, and its leadership at different levels are regularly courted by political parties.

The model from Sierra Leone parallels numerous urban communities in East and West Africa, where Okada riding has become a major economic activity

for youth. It is evaluated that there are more than 80,000 boda-bodas in Uganda, 78,000 enlisted Okada riders in Rwanda, more than 300,000 in Lagos, more than 100,000 in Guinea. (Ismail et al., 2009; Rollason, 2012). Okadas produce income for its riders, investors (bike owners) and the government.

The Okada business in Rwanda is assessed to produce about US\$1 billion every year, more than the estimation of Rwanda's exports (US\$599.8 million out of 2014) (Ngabonziza, 2015).

In Tanzania, the quantity of engine cycles has expanded from 2000 of every 2003 to more than 800,000 out of 2014 after restriction in motorbikes import were lifted (Starkey, 2016; Nyabuta and Muindi, 2018). It is estimated that in a country of 56 Million, this has created over 500,000 jobs for young men operating motorbike taxis.

In Uganda, the motorbike business has so extended that it might now be the second biggest wellspring of business in Uganda after agriculture. 7% of Uganda's populace relies upon this industry. The larger part of these is men between the ages of 25-29 years (Turyahikayo and Ayesigye, 2017).

In 2007, in Kenya, an expected 100,000 motorbikes were enrolled. In September 2016 the number came to more than 700,000 and the number is as yet developing (van Steenberg et al, 2018). Most likely 450,000 of the engine bicycles are utilized as engine bicycle taxi. As a boda-boda is frequently utilized by more than one rider, the quantity of driver operates made is considerably higher. By now there are 21 assemblers in Kenya. There is considerable employment from repair shops and driving schools.

All boda-boda riders are required to have their driving licenses of class F/G. Motorbike riding is trained at local driving schools over a time of one month, after which one sits for a test. One can likewise learn through a companion's motorbike and apply for the permit. A motorbike has to be insured before it is used for public transport.

Riders inside the same region have framed their own affiliations (called Sacco), from which they normally choose their authorities. They keep up organization and guaranteeing boda-boda pick clients from assigned spots. They likewise guarantee individuals pursue traffic guidelines. Moreover, they check each other to guarantee riders don't drink and ride. Sacco's may rescue their individuals if there should be an occurrence of

traffic offenses by incoming fines charged. By and large, the Sacco looks into welfare of members and to ensure the services are provided seamlessly.

Gamberini study (2014) broke down the impact of Motorbike Taxi Service in Rural South Uganda in two towns, Kigarama and Nangara.

Kigarama is situated in the south side of the Kabale region, 6 kilometers from any seasonal road. It is a remote settlement with a developing populace and with moderately high education level. Nangara, is north of Kabale District, at around 2 Kilometers from any seasonal road and has a younger population.

Kigarama comprises of a higher number of people who have completed secondary school.

Gamberini study (2014) demonstrates how the Boda transportation frameworks enabled the provincial and remote populace to get in contact with a more extensive social and economic system. Kigarama is that the nearness of rural surplus is without anyone else's input a solid positive factor for improving the probability of utilizing the Boda framework.

GPS and MAX applications in Rwanda

Rwanda has set 1 July 2019 as the due date for all moto-cabs to have adopted cashless payment as a move to promote smart transport in the country and reduce losses to public transport businesses. Rwanda Utilities Regulatory Authority (RURA) is currently implementing new taxi-moto fares that will be integrated in the new electronic system developed by Yego Innovation Ltd – a local company that was hired to install the new application into all taxi-motos in Kigali city (Mobile Money Africa, 2019).

Each motorbike will be furnished with a taximeter that is inserted with a GPS to empower the controller and the client to perform various undertakings, for example, checking and incoming through stages like portable money. The GPS will likewise help in following motorcycles if there should arise an occurrence of security episodes.

The venture is a part of Kigali city key vision to embrace the advanced installment framework utilizing "tap and go" application for commercial transport in the capital city, by July 2019. The development will likewise permit taxi moto services to charge travelers as per km. Around 15,000 taxi

motos are operating in Kigali city, making around 350,000 outings for every day.

MAX is a mobility company that uses technology to make moto-taxis safe, affordable and accessible to underserved communities in Africa (max website). MAX enables financial inclusion for drivers, prioritizes safety, and uses IoT technology to track all drivers in real-time.

Motorcycle transporting goods

Karema (2014) study in Laikipia East Sub-province, Kenya, found that 33.3 percent of business motorcycle proprietors/riders were initially farmers while 18.2 percent of the riders had joined the profession after leaving school.

Amongst the agricultural inputs transported by commercial motorcycles in Laikipia East 66 percent was fertilizer. Fertilizers are delicate to awful climate environments and in this manner they require to be shipped to the fields quickly.

The other rural knowledge sources are manure which represented 10 percent, herbicides 7 percent, maize seeds 4 percent, while agro-chemicals represented 2 percent.

Karema study found that maize represented 33 percent, potatoes represent 26 percent and cabbages 48 percent of rural items shipped every month in Laikipia East Sub-County. This province is specialized in sale of motorcycle spare parts, motorcycle mechanics, petrol roadside sales and motorcycle garages.

The research revealed that the main bottlenecks breaking the development of this sector are the high insurance and license fee and the high cost of spare parts.

Transportation of products in rural communities, particularly from farms, is one of the real bottlenecks experienced by country tenants (Oyesikua et al, 2019).

Motorcycle ambulance

Local communities in Nampula, Mozambique

Local communities in Nampula went searching for answers to the access-to-care problem decided to focus on community-owned motorcycle ambulances that rapidly transport pregnant women to emergency clinics from remote areas over poor streets (Owens, 2019). In 2017 Dr. Ron Siemens, a partner educator in the division of pediatric crisis

drug at the University of Saskatchewan who is engaged with the venture, selected Antonio Nhampossa, a Mozambican craftsman and welder who has lived in Saskatoon since 2013, to plan and build a prototype.

Local authorities in Nampula chose people from their community to be the drivers, who were then trained how to keep up the machines and utilize the logbook and call framework and showed essential emergency treatment and care for pregnant women and babies. The preparation and licensing of the drivers was the most tedious part of the venture, yet the primary ambulances were conveyed and trained for use in January 2019.

Kenya snakebite research and intercession centre (K-SRIC)

Snakebite kills 32,000 individuals dwelling in probably the most hindered rural communities of sub-Saharan Africa and leaves more than 90,000 enduring unfortunate casualties with changeless physical inabilities/deformations. 10-30 years old endure the most astounding paces of snakebite mortality.

K-SRIC from the Institute of Primate Research (IPR), is a focal point in snakebite investigate. K-SRIC's key target is to embrace multi-disciplinary research activities prompting better finding and treatments for snakebite while moving in the direction of community-based model mediation frameworks with the essential objective of saving the lives and limbs of those afflicted with snakebites K-SRIC utilizes motorcycle ambulances to improve snakebite the board in Kenya and could be embraced all through sub-Saharan Africa to decrease the landmasses abnormal amounts of snakebite-incited passing and handicap.

Partnership Overseas Net operating Trust (PONT), Uganda

The Ugandan government and an European health specialist organization since held hands to help the debilitated in provincial territories get to health places for critical consideration (University Times, 2019).

Getting to human services in sloping eastern Uganda can be troublesome, particularly for pregnant moms who are going to conceive an offspring. Moms who are in regions that can't be

gotten to by vehicles need to walk long separations to maternity centres to conceive an offspring.

In a crisis case, the mother risk losing her infant or her life.

Ugandan general health authorities together with the Partnership Overseas Net operating Trust (PONT), related with the Welsh Ambulance Services of UK, have since thought of motorcycle ambulances. PONT presented seven tricycles in the zone a few years back. Begun in 2002, PONT is a beneficent organization situated in Pontypridd town.

The activity has since paid profits as health authorities in Mbale district presently state the presentation of three-wheeler ambulances has since diminished maternal passings during tyke conveyance, as more eager moms could be carried to convey at local health centres. The motorcycle ambulances are positioned at health centres, and health laborers and community individuals are trained to ride and look after them. The motorcycles are able to navigate difficult road surfaces, especially during rainy seasons, than car ambulances.

Rural health centres in Malawi

An investigation which analyzed whether motorbike ambulances set at country health centres in was more successful than vehicle ambulances (Hofman, 2008).

Contingent upon the site, middle referral deferral was diminished by 2 to 4.5 hours. The price tag of a bike ambulance was 19 times less expensive than for an ambulance vehicle.

Yearly operating expenses were 508 US dollars, which was just about 24 times less expensive than for an ambulance vehicle,

Motorcycle ambulance in Mosango, DRC

The motorcycle ambulance, in the Mosango health center, in the region of Bandundu, Democratic Republic of Congo (DRC) is utilized as evacuation means by the health center of the zone to the hospital while it takes at least 140 km on foot or by bicycle (African Top Success, 2012).

This locality of 115 000 inhabitants to health care mainly in case of emergency, comes from the medical NGO, MEMISA, specialized in the sector of primary health care.

A community cash register system is established in the health center of the area or in the central hospital. This cash register will allow collecting what is required to pay the driver, the fuel and the maintenance of the motorcycle. Accordingly, 350 FCFA (around 0.30 €) as extra expenses must be paid by each patient counseling. Also, the exchange expenses of a patient with the bike ambulance are 1 000 FCFA (0.89 €).

Motor bike ambulances in Kenya

Motor bike ambulances have been introduced in Tana River County, Kenya, that ferry expectant women to the hospital thereby saving lives (Kapchanga, 2014).

Kenya loses 15 women and 290 youngsters day by day because of pregnancy complication. Around 35 percent of every single infant passing occurs because of extreme contamination. Around 66 percent of passings are brought about by pneumonia and looseness of the bowels. In excess of 34,000 stillbirths happen every year.

Four motorbike ambulances have just been purchased by St John Ambulance for guiding in four remote towns in Tana River County, which has one of the most significant maternal passing rates. The towns are Biressa, Wayu Boro, Dende, and Tawakal.

Charcoal economy

Wood charcoal is a less expensive than current powers, for example, liquified oil gas (LPG) or lamp fuel. In this way, in nations which are simply starting to urbanize, it is very attractive as a fuel source. Furthermore, an expanded charcoal production has made many new jobs and a significant financial boost in many African countries.

Charcoal utilization

63% of international wood charcoal production is situated in Africa, especially Nigeria, Ethiopia, the Democratic Republic of Congo, Mozambique, Tanzania, Ghana, and Egypt (worldatlas website).

66% of all family units in Africa depend on wood fuel. Wood energy represents 27 percent of the landmass' absolute essential energy supply (FAO, 2014b; FAO 2017).

Africa developed 32.4 Mt of charcoal in 2015, 42 percent of which was in eastern Africa, 32 percent in western Africa, 12.2 percent in focal Africa, 9.8

percent in northern Africa and 3.4 percent in southern Africa (FAO, 2016a).

Notwithstanding populace development, quick urbanization is driving charcoal interest (Ghilardi, Mwampamba and Dutt, 2013), with most urban inhabitants in SSA utilizing charcoal when accessible. 95 percent of Liberia's urban populace uses charcoal (Jones, 2015).

In the United Republic of Tanzania, around 85 percent of the urban populace depends on charcoal for family unit cooking or as an energy contribution to small and medium-sized undertakings (GFC, 2014).

In Kenya national charcoal utilization becomes quicker than the pace of urbanization (Iiyama et al., 2014) and the general pace of populace development (Iiyama et al., 2013). The charcoal value chain is a source of jobs and entrepreneurship for youth.

Sourcing wood and charcoal production

Charcoal production in SSA is undertaken mainly by the rural population. These producers can be broadly classified into three major groups, the independent producers, the seasonal producers, and the employed producers.

The independent producers

The independent producers are “professionals” for whom charcoal production is the primary source of income. They operate in small groups and are mobile, moving from one woodlot to another once the raw material in a particular area is used up. The independent producers seek out forest owners and negotiate a lump sum price based on density, acreage, distance from roads and type of trees. They have some bargaining power with regards to selling price as they may directly bear the responsibility of transporting charcoal to urban areas (e.g. on bicycles) or have an agreement with charcoal transporters for a set number of bags and price.

The seasonal producers

The seasonal producers are ‘semi-professionals’, typically subsistence-based farmers who pursue charcoal production to generate income during the non-agricultural season. They operate in small groups and their area of operation is limited (i.e. seasonal producers may not venture too far away from their villages). They have very small

bargaining power by setting the selling price of charcoal and often negotiate on-spot prices with road-side transporters.

The employed producers

The employed producers are ‘salaried charcoal employees’ who operate as part of a large charcoal producer – either licensed entities (e.g. for export) or as part of unauthorized ‘charcoal cartels’. They operate in relatively large groups of people, are more organized and therefore more efficient. They are relatively better paid than the previous two categories and typically inspire to forested areas which offer larger volumes of raw material. This makes these paid employees relatively less mobile than the independent producer but causes higher deforestation in terms of acreage.

The conditioning, packaging , logistic and distribution

The conditioning and packaging today is mainly unskilled work intensive but it could be skilled intensive adapting the packaging to each customer segment and application.

A review of charcoal transporters inside Nairobi County uncovered that 10% Bicycles, 30% Carts, 70% Lorries, and Canters are utilized for moving charcoal (kenyaforestservice site). Logistic and dissemination could be improved by more significant transportation imply ready to serve every client segment.

The Demand

The Demand incorporates the distinctive segments of shoppers: private purchasers, ventures and food slow down and cafés.

Private purchasers

Run of the mill family units utilizing charcoal is rural, urban low income to white-collar class or peri-urban inhabitants with limited access to kindling all the time. The operating class for the most part purchases charcoal in sacks up to 5 kgs while lower salary purchasers base their utilization on the day by day wage accessible.

Industries

Industries have boilers that are sustained with biomass and charcoal. Charcoal not just offers a less expensive option in contrast to petroleum products

yet, in addition a guaranteed supply thinking about that few SSA nations are subject to fuel imports, frequently shipped in unstable trucks going on low-quality streets that reason further delays. Non-renewable energy sources are exhausted at international outskirts which further expands their expense. Industrial consumers typically procure bulk quantities of charcoal from wholesalers.

Food stalls and restaurants

The use of charcoal for cooking at roadside food stalls and restaurants is increasingly specific about the nature of charcoal being provided. While softwood charcoal is snappier to touch off and gives extraordinary energy, there is an equivalent interest for hardwood charcoal which can give nonstop warmth to a timeframe required to keep the food warm more than 3-4 hours. There exists no formal framework for recognizing charcoal quality. At present, the nature of charcoal provided depends on trust and goodwill.

Organizations and schools employ chefs who use significant quantities of charcoal in combination with wood fuel in large capacity cook stoves. Keeping fuel cost low is of prime concern.

Professionalization process

Youth in the charcoal value chain could develop more value and open the entryway to other people if from the import of transportation means until the organization of the transportation service will be presented the accompanying enhancements. The preliminary condition is an efficient management of the forest sector and the whole value chain.

Management of the forest sector, Rwanda case

Rwanda is one of the few African nations with increasing forest cover, growing about 7% from 2000 to 2005 fundamentally because of large numbers of forest plantations. This achievement compensating the lost 66% of its natural forest cover during the war. Today, essentially all charcoal in Rwanda is gotten from trees that have been planted on government, private or community land. Private woodlots planting eucalyptus, are giving an expanding some part of the kindling and charcoal market in Rwanda. Charcoal production from natural forest is nearly non-existent. Farmers have turned out to be mindful that with secure land residency and rising wood fuel costs, it is gainful to

put resources into tree planting and to deliver shafts for development, fuelwood and wood for charcoal making. Moreover, because of rising income, the position and social remaining of farmers in provincial society have improved. Farmers can connect with merchants—on an equal footing and to negotiate prices as is common in a free market economy (De Miranda et al, 2010).

A factor that has added to the achievement is that Rwanda as one of only a handful couple of nations in Africa applies private land proprietorship on an enormous scale.

Because of permitting private land possession, trees can be seen all over the place.

Individuals have an impetus to plant trees when they realize that the tree will, in any case be their property when it develops, which isn't the situation on basic terrains.

Trees structure a kind of security for farmers, which they can trade out an instance of need (MARGE, 2009).

Kenya Ceramic Jiko case

One of the best stove extends in Africa is the development of the improved Kenya Ceramic Jiko (KCJ; otherwise called Jambar charcoal stove). It is made of metal cladding with a wide base and an artistic liner (more secure to utilize - cooler outwardly) and can decrease charcoal utilization by some 30%. It is utilized in practically all urban family units in Kenya (just as in 16% of country homes). In Kenya alone, some 2.6 million stoves are being used (combined production now more than 15 million), where KCJ production is presently completely self-supporting employment utilizing privately delivered materials and abilities, generating jobs and new ventures (Source: AFREPREN/FWD, undated).

The KCJ has been scattered crosswise over Africa, at first upheld via CARE and later by numerous other (nearby) organizations. The stove is very famous and clients think it looks pleasant (Visser, 2010). KCJ-type improved stoves are broadly utilized in Uganda, Tanzania, Rwanda, Burundi, Sudan, Ethiopia, Malawi, Zambia, Burkina Faso, Ghana, Mali, Niger, and Madagascar. The success story of the KCJ in Kenya is the result of the cooperation between the private and public sector. KCJ developed around the existing artisanal industry

which reduced the costs of setting up a whole new network (GTZ, 2007).

Import and production of kilns.

The import of furnaces will require support which should be possible via trained youth in that area. Local production of parts and various sorts and size of furnaces will open the entryway of a wide scope of jobs and entrepreneurship.

Import and production of transportation vehicles.

Today imported bikes are principally utilized. Tricycles and uncommon mechanized vehicles could be developed by youth and ready to serve the diverse section of clients.

Conditioning and packaging.

Packaging today is an enormous pack of 50 kilos with no probability to decide the nature of the charcoal. Various uses, warming, catering, brazing, could require distinctive sort of charcoal and separated Packaging. Distinctive quality levels are required by various clients' part. Small, medium and enormous packaging could be adjusted to clients' need.

Income distribution among the charcoal production community (Vos and Vis, 2010):

In Tanzania, by and large, makers can catch around 33% of the last end cost of charcoal, with transporters-cum-wholesalers catching around half. Retailers catch only one-6th of the retail cost.

In Mozambique, the charcoal business demonstrates to be in like manner more beneficial for transporters than for makers and retailers.

In Malawi, the distribution appears to be to some degree more equivalent, with qualities collecting to makers running from 20% to 33% of charcoal retail cost, to transporters from 20% to 25% and to retailers from 25% to 33% of conclusive selling value, as indicated by (Kambewa et al, 2007).

Agri-Pharma

Shea Faso soap - cream

Shea spread is a skin superfood that originates from the seeds (Karite). An, E and F. It offers UV assurance (it is SPF ~6) and gives the skin basic

unsaturated fats and the supplements essential for collagen production (health mam site).

Shea spread has been utilized in Africa and numerous different areas for quite a long time to improve skin and hair health. It additionally has a long history of restorative use, for example, in wound consideration and notwithstanding treating disease.

Because of its cinnamic corrosive and other regular properties, shea spread is mitigating. One compound specifically, lupeol cinnamate, was found to diminish skin aggravation and even possibly help keep away from skin transformations. This additionally makes it valuable for certain individuals with skin inflammation.

Faso Soap is the brainchild of Moctar Dembélé, from Burkina Faso, and Gérard Niyondiko, of Burundi (release cnn jungle fever website).

Included Shea spread, lemongrass, African marigold and other plants from Burkina Faso, it is intended to leave a creepy-crawly repulsing smell on the client's skin subsequent to washing. It could be utilized to forestall against a wide scope of mosquito-transmitted environments - maybe in the long run even Zika.

The "soap of Faso" offers an innovative solution for the prevention of malaria, which takes into account financial constraints and cultural habits of African families. The company will deliver and showcase both antibacterial and hostile to mosquito cleansers made with 100% nearby assets to coordinate counteractive action against malaria in the day by day lives of individuals most influenced by this scourge. Faso Soap turned out to be formally in 2019 Maïa, the primary long span cream against intestinal sickness (inafrik magazine, 2019).

Haircare products using African botanical oils

AfroBotanics of Ntombenhle Khathwane, a postgraduate degree in Public Policy and Politics BA Politics and Philosophy from Swaziland, fabricates premium haircare items utilizing African herbal oils and other common items and equations to think about the hair and point of confinement harm however much as could reasonably be expected.

AfroBotanics items depend on characteristic fixings, similar to aloe vera and coconut oil that are deductively gotten and sourced from different areas all through the African continent. Its fundamental product offerings are the super hair development cream, conditioner, and lotion with a leave-in-conditioner (afro-botanics website).

In six years, AfroBotanics established a completely equipped plant in Midrand and now occupies prime shelf space in a part of the nation's biggest retailers (Hartzenberg, 2017).

Every one of the oils benefits a community someplace. Coconut oil is produced in Mozambique, avocado oil and baobab oil in Nelspruit South Africa, and shea margarine in Ghana. As a small entrepreneur, Khathwane has additionally taken a choice to put resources into an especially economically-depressed community in Makapanstad in the North West.

Cannabis therapeutic production

Established in 2001 with a solid spotlight on African indigenous plant extricates, Afriplex South Africa is right now one of the manufacturers of complementary medicines (CAMs) and health supplement products in the country.

In late 2017 the South African government released a draft guideline for the cultivation, processing and distribution of medical cannabis in South Africa, (Kramer, 2018).

Afriplex joined forces with House of Hemp South Africa in 2018, the primary organization to get the Cannabis Cultivation License from the South African Health Products Regulatory Leadership (SAHPRA) (Lindeque, 2019).

This is a recorded achievement for South Africa to turn into a functioning and inventive player in the growing cannabis market and denotes a positive push ahead by SAHPRA to empower the development of the medicinal cannabis and cannabidiol (CBD) area.

A developing assortment of medicinal research both locally and comprehensively indicates the acknowledgment of cannabis – and particularly cannabidiol (CBD) use – for patients expecting to oversee infections like cancer (and the symptoms of chemotherapy), epilepsy and seizures, post-horrendous pressure issue (PTSD), glaucoma, dementia, Alzheimers, mental imbalance, fibromyalgia and a scope of auto-immune illnesses.

Theracann from Canada, a leader in the medical cannabis market and House of Hemp entered in June 2019 a collaboration agreement to build a sustainable cannabis industry In South Africa (Theracann Canada, 2019).

Theracann's GMP compliance software coupled with traceable cultivation technologies (ETCH biotrace) is pioneering the international cannabis industry and ensure ongoing compliance while setting the required international standard.

Mining Sector

A boom in extractive industries can crowd out other industries, such as manufacturing, that are more conducive to long-term economic growth (Pole et al, 2017).

In Zambia, Africa's largest copper exporter, the incidence of poverty remained virtually unchanged, at 60 percent, during 2000–10, despite a doubling of economic output.

In Mali, large-scale mining accounted for about 7 percent of GDP in 2013, but less than 1 percent of the population was employed by the industry (Sanoh and Coulibaly 2015).

There are exceptions to the resource curse. Botswana, Chile, and Norway were successful in transforming their resource wealth into economic prosperity.

Canada, Sweden, and the United States are long ago able to diversify their economies and reduce their dependence on natural resources.

Mining supporting local economic development

In Tanzania, efforts have been made to improve the potential for local procurement, including in services such as catering, vehicle repair, machine shop services, welding, metal employment, electrical employment, and plumbing. However, the ratios of inputs sourced locally remain low, as they are in Ghana and Mali.

In Angola, the potential purchasing from the local market is in pressure tests on oil and/or gas, storage tanks and pipelines, transportation, foodstuffs, drinking water, catering, cleaning and gardening, maintenance of equipment and vehicles.

In Ghana mining local procurement opportunity are in the following domains: activated carbon, Ammonium sulfate, Bolts and nuts, Calico bags Cement, Fencing, Chemicals (caustic soda)

Conveyor rollers/idlers, Explosive supply HDPE & PVC pipes.

Mining and youth

Jønsson and Bryceson's (2009) review of diggers at two locales in Tanzania's ring of gold found that twenty-eight percent of the excavators were less than 30 years old; the general normal age was 36 years with a mean gold mining passage age of 24 years.

Some adolescent had been pulled in to high-quality mining in their teenagers, with a minority (7 percent) of pre-youngsters (10-multi years old). The dominant parts (77 percent) of the reviewed excavators were from rural backgrounds (Bryceson and Jønsson 2010). 23 percent of the inspected diggers had less than five years of schooling.

The researchers found that excavators who are 'early starters' with a normal mining passage age of 17 years have higher mean monthly profit than 'normal starters' with a section age of 22 years, while 'late starters' entering at a normal age of 40 get the most minimal income.

Their conclusion was that achievement in mining is an aggregate procedure of profession migration-related to expanding background, aptitude, and portability, which extends know-how and interpersonal organizations for data trade and pit get to.

Only 1 per cent of the children were projected to become future miners (Bryceson, Jønsson, and Verbrugge 2014).

Large Scale Mining (LSM) and Artisanal and Small-Scale Mining (ASM)

LSM is capital-intensive in production (Stoop et al, 2016). In a setting of poor governance, the commitment of LSM to government income may stay modest because an advantageous fiscal regime needs to be offered to private companies to compensate for the uncertainties that such a context implies.

The natural resource rents that reach the government budget are notoriously volatile, such that the burden to balance the budget falls on public expenditures. ASM scores are far superior on direct poverty decrease. This can be improved by formalizing ASM.

The current Mining Code envisages such a formalization procedure by requiring artisanal miners to frame cooperatives, which can apply for research and exploration in Artisanal Exploitation Zones (AEZs) and ought to take into consideration a transition towards small scale mining.

ASM happens in roughly 80 nations around the world. Artisanal and small scale production supply represents 80% of international sapphire, 20% of gold mining and up to 20% of precious stone mining. It is across the board in creating nations in Africa, Asia, Oceania, and Central and South America. Around 100 million individuals – laborers and their families - rely upon high-quality mining contrasted with around 7 million individuals international in mechanical mining.

Artisanal mining has developed from 10 million out of 1999 (ILO, 1999) to possibly upwards of 20-30 million (IIED, 2013).

The International Institute for Environment and Development (IIED) gauges that 15-20 percent of international minerals and metals get from artisanal mining (IIED, 2013).

ASM in SSA nations

In 2014, 9,8 million ASM operators and around 54 million individuals whose jobs rely upon the sector (Brown, 2018). ASM utilizes ten times a greater number of miners than LSM.18% of Africa's gold, and practically all gemstones aside from jewels, are delivered by ASM.

In Ghana, two primary types of ASM are available, for example formal (or lawful) and informal ASM (Tychsen et al, 2017). The "formal or legitimate" ASM is the one where operators acquire permits from the authorities that regulate mining activities in order to undertake mining.

ASM operators secure access to land through either formal authorizing from the Minerals Commission or informal arrangements with traditional or customary land-owning groups through agreements with families, clans, skins and chiefs, who are usually the alloidal landowners (Nyame and Blocher, 2010).

Complete gold production from ASM operators expanded from 2.2% in 1989 to 31% in 2016 (ghanatradinghub site).

Rwanda mines governance

Cooperatives

In Rwanda, cooperatives can apply for an exploration license inside an 'artisanal exploitation zone' (AEZ). The two larger cooperatives are 'Coopérative Minière Des Exploitants Artisanaux' (COMIDEA) and 'Coopérative Minière et Agricole de Ngweshe' (COMIANGWE) (De Haan and Geenen, 2015).

Much of the time, excavators were not involved in the selection of their leaders. many mineworkers are not aware of their right to be represented.

The rise of cooperatives has not significantly changed the power and wealth distribution in the artisanal mining sector (Geenen, 2015).

The traditional elites that have utilized cooperatives to keep up their power position and legalize the abuse of excavators (Bashizi and Geenen, 2015; Kelly, 2015).

International trade

Mineral export is very significant in Rwanda (Heizman and Liebtrau, 2017). In 2015, 55 % of the total exports was related to minerals. The 3T (Tin, Tungsten, and Tantgraduate) minerals are the most significant. 3T minerals were 79 % of the total mineral export from Rwanda in 2015.

While there are not many medium-scale mining initiatives, the real part of Rwanda's all out mineral production is produced by ASM programs. These small initiatives will, in general, utilize manual mining strategies, with few or no mechanized mining equipment. This labor-intensive approach generate mainly low skilled employment and gives benefits as far as adaptability and relevance, considering inspires identified with fluctuating mineral markets and infrastructural environments.

Cobalt, The Democratic Republic of Congo (DRC)

Cobalt global demand has expanded because tense market situation for cobalt where most of the production originates from the DRC (BGR, 2017). Cobalt represents a significant metal utilized in the production of batteries, super amalgams, carbides, colors, and magnets. From 2010 to 2015 international cobalt request expanded from 65,000 t to in excess of 90,000 t for every year. Over a similar period, the mean compound yearly

development rate for cobalt request was 7.5 % while the interest for cobalt-based synthetic compounds expanded at a much more extreme pace of 10.6 % (CRU 2016).

The study "Commodities for Future Technologies",, commissioned by the Federal Institute for Geosciences and Natural Resources (BGR), brings up that notwithstanding when just considering the developing developments market (and particularly lithium-ion batteries utilized in electric autos), yearly cobalt metal interest should ascend to 122,000 t by 2035 (Marscheider-WeideMann et al. 2016).

Outside of China, Glencore plc, Umicore NV/SA, Sumitomo Chemical Co. Ltd and Sherrit International Corporation represent the most significant makers of refined cobalt.

Being largely a byproduct of copper and nickel mining, cobalt production is linked to the global production of these commodities.

DRC is expecting to build up a smelter in Tanzania to limit transport expenses of raw cobalt delivered to markets outside Africa (Tairo, 2018). The Congolese government will utilize smelters and other mineral processing plants in Tanzania to process its raw cobalt for the fare. Tanzania is creating mineral and mineral gather plants to process its raw minerals that the DRC can utilize.

The DRC delivers more than 70 percent of the world's cobalt, but lacks the electricity and key facilities to process it.. Tanzania and the DRC are looking at key alternatives that would allow to share mining and mineral expertise and create jobs for the young generation of both countries.

Medical applications

Several high tech domains have been adapted by African entrepreneurs to the local needs and conditions. Their drives have developed jobs and employment prospects for some other youth.

Cardiopad

The Cardiopad, developed by Arthur Zang from Cameroon, is a tablet that takes a reading of the heart activity and sends it to a heart specialist.

Four cathodes are appended to the patient's chest to determine if their heart is operating ordinarily. The knowledge is remotely transmitted to the tablet and sent, Via a cell phone, to a cardiologist

who can decipher the knowledge in less than 20 minutes.

Cardiopads are conveyed to medical clinics and centers in Cameroon for nothing out of pocket. Patients pay \$29 yearly memberships. The device is as of now being sold in Gabon, India, and Nepal (edition.cnn site).

Cardiopad empowers heart patients in remote regions to get to medicinal services without traveling to the urban communities where most heart masters employment (Chimtom, 2017). Youth could be trained so as to operate the framework in country neighboring and inspire the knowledge of the patients.

CerviScan, Cameroun

CerviScan is an innovation answer for the recognition of breast and cervical cancers targeting the most vulnerable populations developed by Arthur Zang from Cameroun (Abdelkrim, 2018).

Conrad Tankou has developed a digital microscope which is ultralight, compact and battery-operated, needs no electrical outlets and adapted to rural environment. CerviScan is furnished with a computerized camera that can be associated with a PC or a cell phone, where genuine-time pictures can be seen and spared. This innovation makes it possible to scan each coverslip (biopsy) using the microscope, by producing images that can then be zoomed in and analyzed in very high resolutions via smartphones, computers or tablets.

Today, in under a year almost 1,276 Cameroonian women aged 30 to 70 years have profited or are profiting by a follow-up led by CerviScan.

Expert training could open the entryway along the value chain to youth from suppliers of components and programming application up to be operators through medical centres with the patients.

SMS lifesaver, Chad

As a specialist in Chad, Didier Lalaye's saw a rising number of contaminations of bilharzia, particularly among youngsters and he realized he expected to plan something for stop it (africa.reachfrochange, didier website).

Bilharzia or schistosomiasis is a sickness brought about by small parasites. It is a treatable ailment, however one that can lead to very serious complications such as infertility and bladder cancer

if it is not dealt with early. The disease is Chad's second largest public health concern.

Didier carried the issue to a Reach for Change and Tigo and Reach for Change Competition in Chad in 2013.

Didier's innovation includes sending groups of businessmen to convey entryway to-entryway testing for the contamination. Results are then sent to patients and families through SMS. Where fundamental, therapeutic treatment regimens are likewise conveyed through instant message and prescriptions are conveyed directly to patients' homes.

In 2015, Didier dedicated his opportunity to increase his computerized innovation facto. He invested energy in the Netherlands to build up a small microscope connected to a mobile phone able to test for bilharzia accessible for people in remote areas.

In 2015, more than 1,600 children were tested for bilharzia and more than 300 cases were treated. Through the awareness campaign more than 60,000 Chadians have been reached.

PaluCheck, DRC

PaluCheck, developed by Patrick Kabangiro from DRC analyze intestinal sickness through infrared and web innovations and takes out the requirement for blood

and enables health experts to test patients rapidly and viably. PaluCheck™ is a diagnostic mobile application of malaria which use infrared captor instead of blood connected to a smartphone.

This activity is lessening the demise pace of youngsters contaminated with the disease through snappy analyses (facebook.com/PaluCheck site).

Education applications

Children's edutainment, Tanzania

Ubongo established by Nisha Ligon from Tanzania is an Africa's driving maker of children's edutainment in six languages, English, French, Kiswahili, Kinyarwanda, Kikuyu and Luo (ubongo website). As a social venture Ubongo makes fun and enables children to learn using symbols or pictures.. Ubongo arrives at a large number of families crosswise over Africa through available innovations like TV, radio and cell phones.

The programs improve school preparation and learning results for children, and furthermore advance social and conduct change for children, guardians, and teachers.

Akili is an inquisitive 4-year-old who lives with her family at the foot of Mt. Kilimanjaro, in Tanzania. She has a mystery: consistently when she nods off, she enters the mysterious universe of Lala Land, where she and her creature companions become familiar with about language, letters, numbers, and craftsmanship while creating graciousness and dealing with their feelings and quickly changing small child lives! With communicate in 7 nations and a huge international web-based after, children from around the globe love going on mystical learning undertakings with Akili. Ubongo arrives at 11 Million family units in 31 African nations.

Education platform ,Shule Direct, Tanzania

Shule Direct is an innovation-based answer for lack of educational resources developed in 2016 by Claire Mongeau (CEO) and Julie Otieno (CTO). (shuledirect site). The mission of Shule Direct is to improve learning results of pupils and educators in Africa by making better approaches to convey education content through accessible innovation.

Today 1,489,982 pupils and 24,637 educators deal with the SMS stage called MAKINI SMS by doing specialized development, specialized combination, content development and setting up programs plans (shulidirect website).

The number of test up-and-comers expanded by a factor of nine, from 42,887 applicants in 1998 to 397,126 up-and-comers in 2012. MAKINI SMS is a learning platform in Tanzania available via web platform and cell phones.

The web platform not just gives content in 13 subjects on the Tanzanian National Curriculum. It additionally gives extracurricular help towards youth development, for example, financial literacy, life skills and girls leadership. It empowers students to connect through a talk discussion that is directed by Shule Direct's virtuoso instructor.

Ticha Shule Direct and National Microfinance Bank Plc (NMB) have propelled financial Education on Shule Direct computerized learning stages to engage youngsters with money management abilities and incorporate a savings culture in Tanzania. The interactive online and mobile SMS content shows youth on defining objectives, moving

in the direction of them, finding out about accepted procedures in sparing and satisfying their dreams.

CreationHill, Rwanda

15 percent of secondary schools in Rwanda have science labs, and just five percent have specific innovation programs. Creation Hill, by using trending technologies, fun experiments and technology-oriented games demystifies STEM standards for children and gives them a foundation to wind up future designers and trendsetters who will help build up Rwanda's economy not far off (blogreachforchange website).

Gaspard Twagirayezu, Creation Hill initiator, holds a Bachelor's qualification in Electrical Engineering and a Master's in Engineering Management from Oklahoma Christian University. He has led building camps intended to expand enthusiasm for designing among youngsters. He has been operating at Agahozo Shalom Youth Village where he develops programs that demystify science and innovation to secondary school-age children.

Gaspard impacted thousands Rwandan students, who have proceeded to think about in STEM fields in post-optional and who will transition toward becoming researchers, designers, and IT experts driving Rwanda's development all through their vocations.

Eneza Education – Kenya

The Kenyan startup established by Toni Maraviglia, Kago Kagichiri, and Chris Asegotwo, previous employees of Nairobi's iHub communities, intends to provide kids in rural Africa with a virtual tutor. Eneza Education creates educational content that kids in rural, low-income areas can access on low-end cell phones Through its "virtual study hall," students between the ages of 11 and 18 can study subjects including Maths, Science, and English, and take any of its 2,000 tests and in excess of 16,000 inquiries, with the option of a mini lesson if they score below 50%—all for the equivalent of 50 U.S. cents a month.

Solar Energy

The sustainable power source segment upheld about 10.3 million jobs international in 2017 (IRENA, 2018). Project level knowledge demonstrates that, by and large, sustainable power source creates a larger number of jobs than petroleum products. For example, sun based PV

ventures make in any event double the number of jobs per unit of power developed than do coal or flammable gas ventures (UKERC, 2014). Together, sun based advances – including CSP and sun based PV (small and huge) – would represent 89% of the sustainable power source operates expected in 2030. The deployment of around 40 GW of utility-scale solar PV across the region could result in around 124 000 jobs.

The World Bank's Lighting Africa program

The World Bank's Lighting Africa program opened the solar home framework transformation clearing crosswise over Africa, a dedicated multilateral development bank program focused on micro grids could change the lives of many millions (Guay, 2016).

Since running its first pilot extends in Ghana and Kenya in 2009, Lighting Africa has just empowered 28.8 million individuals crosswise over Africa to meet their essential power needs (lighting and cell phone charging) through quality-checked off-solar grids (lightingafrica website). The objective is to arrive at 250 million additional individuals by 2030. Lighting Africa is as of now operational in 25 SSA nations.

Lighting Africa is executed partnership with the Energy Sector Management Assistance Program (ESMAP), the International Environment Facility (GEF) and the governments of Australia, Austria, Canada, Denmark, Finland, France, Germany, Hungary, Iceland, Italy, Lithuania, the Netherlands, Norway, Sweden, the United Kingdom, and the United States of America.

The Board of the World Bank Group endorsed on April 17, 2019 the Regional Off-Grid Electrification Project (ROGEP), which incorporates \$150 million as credit and award from the International Development Organization (IDA) and \$74.7 million contingent recovery grant from the Clean Technology Fund to enable the West African Development and ECOWAS' Center for Renewable Energy and Energy Efficiency expand off-grid access to electricity for populations in 19 countries in West Africa and the Sahel region. The general target of ROGEP is to expand power access of family units, businesses and public institutions using modern stand-alone solar systems through a harmonized regional approach. The project is relied upon to profit about 1.7 million individuals right now living without electricity connection.

Lighting Africa/Kenya propelled a program to prepare local female entrepreneurs in the employment aptitudes they have to begin or become their very own micro entrepreneurship. The preparation, kept running by Lighting Africa/Kenya in a joint effort with local society organization Practical Action, expects to connect with women in the sunlight based value chain as entrepreneurs and shoppers.

Entasopia Microgrid, Kenya

In 2012 SteamaCo, a UK organization established by Harrison Leaf and Sam Duby chose to handle the test of energy access by introducing an 8.5 kW modular solar microgrid in the small town of Entasopia in Kenya (Dorothal and van der Linden, 2018). The company also developed the technology to remotely manage the control of these systems, as well as manage mobile-money payments. The services and technologies are presently offered to other microgrid initiatives so as to give the benefits of this innovation to an expanding number of customers.

The Entesopia undertaking was propelled in 2013 when SteamaCo introduced its first completely automated microgrid management system. By April 2015, the company had introduced 23 systems in Kenya and two in Tanzania. These systems have a sustainable power source limit of 80 kW, with around 1,000 homes and small businesses and can produce 50 MWh/year of power.

Kaï Microgrid, Mali

In 2018, the Kai town set about raising money for the installation of a grid. The communities paid into a central fund. It took four months to raise 40,000 euros, enough to handcraft posts from eucalyptus trees and run 7km of link with 400 points of access. Kaï now has a decentralized community that has made local jobs and produces clean, affordable energy. Cutting-edge smart grid features, provided by SteamaCo, help Africa GreenTec, a German company, funded by Torsten and Aida Schreiber, to regulate power use, and to provide energy as cheaply as possible by encouraging consumers to prioritize energy use during the day. . At the beginning of 2019, the Solartainer began providing internet access to Kaï. The company is currently raising funds for a

total of fifty Solartainers: enough to bring power to another 200,000 people.

SolarAid and Sunny Money

SolarAid a business-based approach to sell solar lights in Africa through its social enterprise, SunnyMoney (Hagan et al, 2015). SunnyMoney's field groups visit schools to clarify and show the benefits of off-grid lighting items to head educators. The head instructors at that point exhibit the sun-powered lights to their students and request that they advise their parents when they return home. The parents along these lines buy their first sunlight based lights from SunnyMoney's field groups at the schools. By structure trust and awareness in sunlight based lights through head instructors at schools, more students and their parents are coming to and persuaded to obtain the sun based lights. In Zambia, SunnyMoney gives access to sun-powered lights over Southern, Eastern, and Copperbelt territories. With help from the Ministry of Education, SunnyMoney operates intimately with district education boards to arrange head teacher meetings, bringing groups together to learn about solar lighting. Through SunnyMoney Zambia's trade and dealer networks, the teams sell lights through retail outlets, cooperatives and large agri-businesses as well as local shops and agents.

Easy Solar

Nthabiseng Mosia is a South African-Ghanian entrepreneur, co-founder of Easy Solar alongside Alexandre Toure and Eric Silverman (Rajgopaul, 2018).

Easy Solar rose in mid-2015 because of the energy needs in Sierra Leone where 90% of individuals (and 99% in provincial territories) did not have any power (easysolar website).

Easy Solar produces solar devices including solar home systems with lighting, mobile charging and DC appliances as well as solar lanterns.

Consumers use Easy Solar products for lighting purposes in homes and businesses.

Easy Solar has built a network of nine distribution points across 16 districts in Sierra Leone.

Until this point in time, Easy Solar has carried power to in excess of 100 000 individuals and has made 150 jobs. The organization gets its subsidizing chiefly from speculators like Acumen and Gaia

Fund, advances from Cordaid and SIMA assets and grants from MasterCard and AECF.

Solar Box

The Solar Box has been developed by Aubin Ngoua, an architect in the electrical building from Gabon (Jordan, 2017).

Solar Box Gabon leases and sells versatile solar based units with coordinated radio, a 220V socket, 6 lights of 3W, an MP3 yield, and 2 USB outlets for charging telephones (ulule website).

It consists on a solar cube on the roof of 9 faces of 10 W and thanks to its refractive power, it will produce twice as much energy as identical panels installed on flat surface.

By turning the inverter we can promptly observe the battery level. We can revive two electrical outlets and have 4 lights associated at the same time. There is the possibility of plugging a device up to 220V.