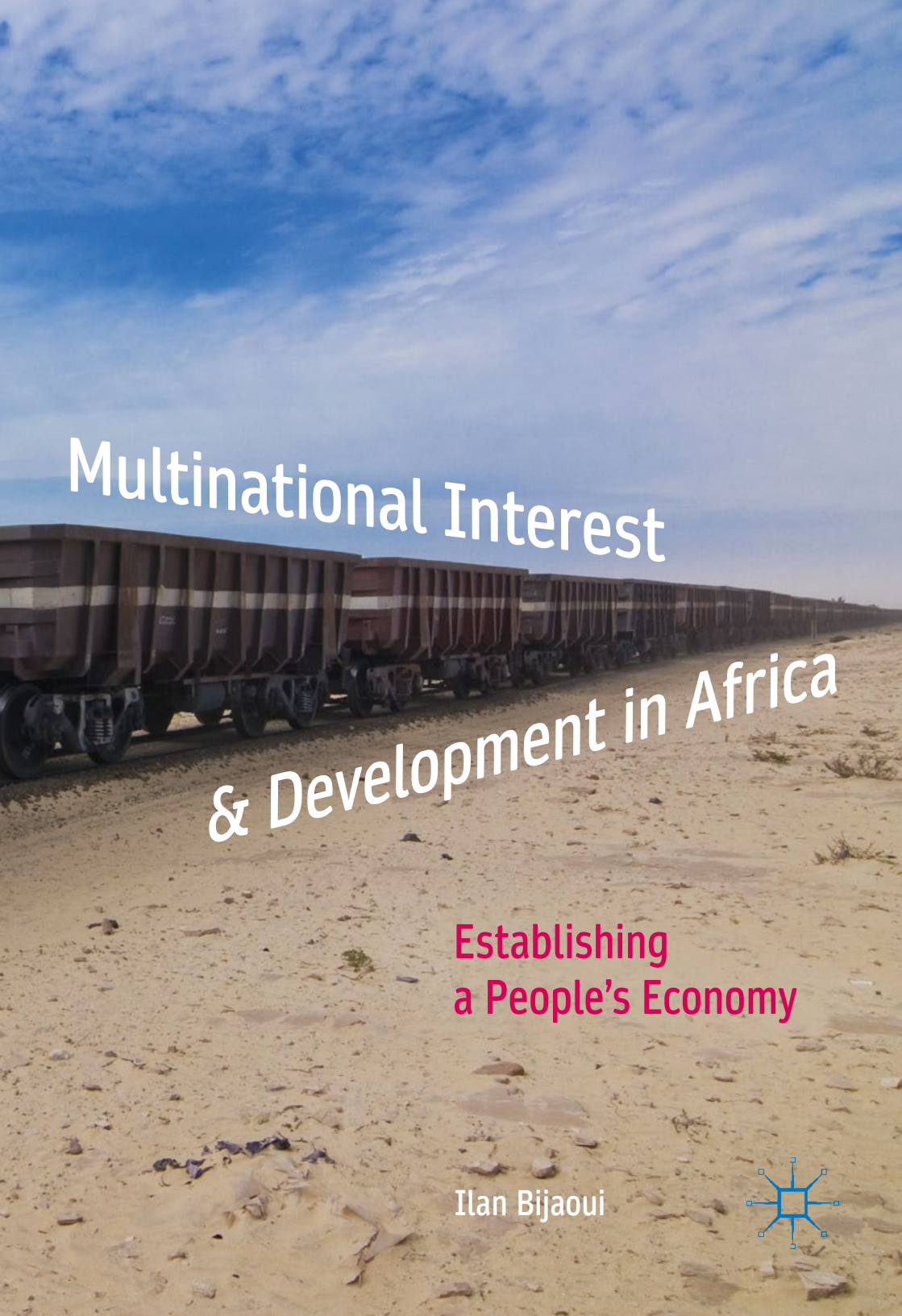

Multinational Interest & Development in Africa

Establishing a People's Economy

Ilan Bijaoui

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CHAPTER 1

Introduction

GDP in Africa is growing on average yearly by 5 to 6% (World Bank 2015a), but most of the population remains at the subsistence level and below. Economic growth benefits few people in Africa.

The main economic activity is still in the growing informal sector which employs most of the population under unsecured contracts without any social rights. Small businesses are not able to invest, grow and globalize.

The middle class is small and so local consumption cannot contribute to economic growth. Cars have hundreds of kilometres in the counter. Taxis fill the tank only when the customers enter the cab and pay for the travel. No running water or electricity is available for most of the population.

Peoples' economy means economic development that is population oriented, sufficient accommodation for many, less informal and more formal economy able to pay fair salaries with social rights such as medical insurance and pension, and a larger middle class which will be able to contribute to the improvement of the economic situation.

There is a growing interest in Sub-Saharan Africa countries not only from the United States, the European Union, Japan and Russia but also from developing countries such as China, India and Brazil. The common interests of those countries are oil, mining, natural resources such as wood, cocoa, cotton, coffee and arable land, and the growing local consumption. Industrialization is mainly based on unskilled manpower and local raw materials. Its impact on economic growth is very limited.

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Our objective is to propose economic development by improving the added value to the local population by generating common economic interests with multinational companies (MNCs) in the local and the global market.

Exports of raw materials generate revenues mainly for MNCs, few local formal firms, some workers and governments. This economic activity increases inequality between the few who receive the main share of the added value and the many who receive less and less because they are more and more numerous. More inequality generates a wider informal economy and more poverty. This vicious circle can be broken only if governments get involved in more investment in the local economy in order to be able to generate higher added value in local economic sectors such as agriculture, food processing and construction, supplying the basic needs of the population.

Reference

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CHAPTER 2

International Trade and FDI

The evolution of international trade and foreign investment in Sub-Saharan African (SSA) countries expresses the ability to generate value and create the conditions for attracting new partners with the relevant knowledge required to globalize the economy.

Export and FDI followed by economic transformation could disseminate more added value to more people. It could be generated by investments in the whole value chain of each economic sector. I analyse the flow of international trade and FDI and their contribution to the SSA economy.

International Trade and GDP Growth

According to the World Bank, GDP growth in Africa was on an average 4.5% in 2014, which is greater than 4.2% GDP in 2013 (World Bank, 2015). It is weaker than the peak average rate of 6.4% during 2002–08. Performance in the three largest economies of the region was different: strong growth in Nigeria, subpar growth in South Africa and a decline in growth in Angola.

Sub-Saharan Africa's (SSA's) main export goods are crude oil, gold, natural gas, cocoa and different minerals. Crude oil is the main export of Angola, Cameroon, Chad, Republic of Congo, Gabon, Nigeria and

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Sudan. The export in oil is more than 80% of the total exports for all oil-abundant countries, excepting Cameroon. Extractive industries play a key role in various economies (World Bank 2015; IMF countries' reports). Iron ore is the top commodity export in Mauritania, copper in the Democratic Republic of Congo (DRC) and Zambia, aluminium in Guinea and tin in Rwanda. In other countries, agriculture is the most important source of the economy. Coffee is the main commodity export of Burundi and Ethiopia, cocoa in Côte d'Ivoire, Ghana and Togo and cashews in Guinea-Bissau.

The GDP per capita of most of the African countries remains lower than US$5000, and those above this threshold are either oil or mineral exporters, or more diversified economies such as South Africa. While SSA has 12% of the world's population and 18% of the world's land surface, it produces only 1.5% of the world's nominal GDP (and 2.3%in PPP) (EU parliament 2016).

Africa's manufacturing has lost its relative importance both globally and at a regional level and has not contributed to any structural transformation. Africa's share of global manufacturing had fallen from about 3% in 1970 to less than 2% in 2013. The share of manufacturing in total African GDP has decreased slightly over the past four decades and is much lower in SSA than in other developing regions.

The failure of industrialization in Africa could be explained by a weak infrastructure in electricity, water supply and transport, lack of skills, small market size and inefficient institutions.

Major commodities exported from SSA countries continue to feel the impact of weak commodity prices especially for SSA largest trading economies that include Nigeria, South Africa and Angola. The continent's merchandise trade contracted for the second consecutive year in 2014, shrinking by 3.79% from US$1.20 billion in 2013 to US$1.16 billion in 2014 (UNCTAD, 2015; ITC Trade Map 2015).

The continued slowdown of the Chinese economy, the impact of the European Union (EU) recession and uncertainty about the timing of the Federal Reserve's winding down of monetary stimulus in the United States continued to depress Africa's merchandise exports.

Africa's export revenues are still overdependent on primary commodities, which account for more than 75% of the continent's total merchandise exports. African energy exports, of which crude oil accounts for 75%,

suffered the highest rate of decline during 2013 and 2014, contracting by 9.7% in 2013 and an estimated 10.5% in 2014.

African metals and minerals exports declined only marginally in 2014. The decline was the result of weak gold and silver exports and a strong US dollar, which reduced the reliance on these minerals as safe-haven assets.

African agricultural exports also trended downwards in 2013 and 2014 on account of low levels of production and exports of cocoa and coffee and weak prices of cotton, rubber, soybeans and tea. International cocoa prices rose substantially in 2014, but cocoa production and exports from the four largest-origin countries in Africa, Côte d'Ivoire, Ghana, Nigeria and Cameroon, are estimated to have declined by 4% from 3.1 million tonnes in 2013 to 2.97 million tonnes in 2014.

Much of the rise in SSA exports is due to an expansion of African trade with Asia, particularly China and India. Asian countries now take about 32% of African merchandise exports, compared to 29% in 2012; nearly two-thirds (62%) of these exports are of energy commodities. Asia has become Africa's largest source of imports of electrical and electronic equipment; imports in this category in 2014 amounted to US$22 billion from Asia, compared to US$16.47 billion from Europe.

The share of African exports going to Latin America and the Caribbean has trended downward during the last two years declining to 2.96% in 2014 from 4.14%.

Intra-SSA Trade

Regional integration plays a key role in intra-regional trade (Afrexim Bank 2015). As part of efforts to pursue regional integration, the following regional economic communities (RECs) were created:

- The Common Market for Eastern and Southern Africa (COMESA), established in 1994
- The Community of Sahara-Sahel States (CEN-SAD), established in 1998
- The East African Community (EAC), established in 1999
- The Economic Community of Central African States (ECCAS), established in 1983
- The Intergovernmental Authority on Development (IGAD), established in 1986

- The Economic Community of West African States (ECOWAS), established in 1975
- The Southern African Development Community (SADC), established in 1992

Intra-African merchandise trade grew by 11.46% in 2014, to US$183.87 billion from US$164.97 billion in 2013. Intra-regional trade remains by far the lowest in Africa of all world regions, 14% in 2014. The comparable share for Europe is 72%; for Asia 52%; for North America 48%; and for Latin America and Caribbean 26% (WTO 2014).

Most of the intra-African trade occurs within sub-regions, between countries that are members of RECs or customs unions. Countries within the SADC registered the highest intra-REC exports in 2014, at an average of US$41.8 billion, followed by members of CEN-SAD, ECOWAS, COMESA and ECCAS.

Cross-Border Trade in SSA Countries

The high cost of transporting goods is an important constraint to economic growth and poverty reduction in both Côte d'Ivoire and Burkina Faso. To address this challenge, the governments of both countries have developed ambitious reform programmes for the transport sector.

The World Bank Group's Board of Executive Directors approved a US$100 million Development Policy credit, to help the governments of Burkina Faso and Côte d'Ivoire to reduce trade and transport transaction costs as a step towards promoting the development of the private sector and improving global integration in the two countries (World Bank 2015b, c). The funds from the International Development Association (IDA) include a US$50 million credit for Burkina Faso and a US$50 million credit for Côte d'Ivoire to support the First Regional Trade Facilitation and Competitiveness Development Policy Operation.

Informal trade is a significant component of intra-regional trade across the African continent. Maur and Shepherd (2015) argue that only an estimated 20% to 25% of the actual regional trade volume in West Africa is recorded. Afrika and Ajumbo (2012) estimate informal trade in the order of 20% of Nigeria's GDP, and 75% of GDP in Benin. Similarly, Lesser and Moise-Leeman (2009) claim that, in Africa, informal cross-border trade (ICBT) is equivalent to 43% of official GDP. Support to formalization of informal trade could improve trade efficiency, stronger competition against dominant players and lower cost.

ICBT plays an important role in diversifying local economies, particularly in the presence of high barriers to formal trade. ICBT also has an important gender dimension—women represent between 70 and 85% of informal traders in SSA. Herewith I present the result of a statistical cross-border trade analysis of two countries, Uganda and Rwanda.

Cross-Border Uganda

Uganda cross-border export is evaluated by US$2.8 billion in 2013, of which, formal exports were worth US$2.4 billion and informal exports accounted for US$421 million (Bank of Uganda 2014). The overall export earnings rose by 0.6% in 2013, registering a much slower increase compared to that recorded in 2012 of 11.8%. Informal exports receipts reduced by 7.2% compared to an increase of 27.5% registered in 2012.

The reduction in the informal merchandise exports is the result of the war in the DRC. There was a reduction in exports of various commodities like maize grains, wheat flour and potatoes by 16%, 43% and 100% respectively. Some beverage and beer companies started exporting directly to the DRC and South Sudan through formal channels.

DRC was the leading informal exports destination during 2013, with exports from Uganda estimated at US$135.0 million representing a 32.0% share of total informal exports receipts. South Sudan followed with US$130.8 million (31.1%). Exports to Kenya amounted to US$69.69 million (or 16.5% of the total). Tanzania and Rwanda followed in that order representing 10.2% and 6.6% of informal exports in 2013 respectively.

The leading informal export commodities during 2013 were shoes, maize grains, fish, clothes, maize flour, beans, cattle, beer, goats, motorcycle parts, human medicine, eggs, wheat flour, bananas, soda, tomatoes, fruits, groundnuts and onions.

Cross-Border Rwanda

Official trade data for the formal and informal sector show that informal exports in 2011 were higher than formal exports to neighbouring countries, Rwf 33.2 bln informal exports compared to Rwf 21.9 bln formal exports. Over the same period informal imports were significantly lower than formal imports. Informal imports were just Rwf 11.5 bln in 2011 compared to Rwf 162.4 bln formal imports.

The export in 2011 was mainly to the DRC (40%), Burundi (8%), Uganda (5%) and Kenya (2%). Imports from Rwanda's four immediate

neighbours were three times higher than exports in 2011 but accounted for a smaller portion of Rwanda's total imports—19%. Imports are mainly from Uganda, Kenya and Tanzania.

Informally Rwanda's Cross Border Trade (CBT) exports are dominated by local agricultural produce (40%) and livestock (26%). Manufacturing goods such as processed food, fast-moving consumable goods (FMCG) and re-exports of paraffin are also significant.

Livestock and petroleum exports—both significant informal exports—are much lower in the formal sector. Beverages, clothing and construction material tend to be exported more often through formal channels as opposed to informal.

The EU

Nigeria, South Africa and Angola are the main exporters to the EU and South Africa and Nigeria the main importers (EU 2014). EU exports mainly machinery and vehicles, energy products and chemicals. The main import is oil.

Recent WTO analysis has highlighted a range of areas where EU policies affect production and trade outcomes (Godison 2015). EU tries to minimize the negative external consequences of EU agricultural policies on food and agricultural sector development on SSA countries.

Since 2010, the African, Caribbean and Pacific (ACP)'s agro-trade surplus with the EU has fallen some 44.5%. Between 2009 and 2013, the value of EU agro-food exports to the ACP increased more than four and a half times faster than the value of EU imports from ACP countries.

This saw the ACP's agro-food sector trade surplus fall from over €5.13 billion to under €2.85 billion. ACP countries are an increasingly important market for EU agro-food exports, with African markets taking on a growing importance in specific sectors, particularly for poultry meat, bulk dairy and horticultural products such as onions commodity exports.

In 2014, imports from Europe of agricultural/mining equipment/machinery (including self-propelled bulldozers, graders and excavators) and energy-related machinery and parts (including turbo-jets, turbo-propellers and other gas turbines) and other forms of machinery amounted to US$31.7 billion, compared to US$24.5 billion from Asia. Europe is Africa's biggest source of iron and steel imports.

West Africa

West Africa is the main destination for EU agro-food sector exports to ACP countries (taking 37.3%) and is also the main source of agro-food imports from ACP countries (taking 34.5%). Since 2010, West Africa's agro-food sector trade surplus with the EU has fallen to 95%. Between 2009 and 2013, the value of EU agro-food exports to West Africa grew to 75.6%, while the value of EU agro-food imports from West Africa grew only 3.5%. This saw West Africa's agro-food sector trade surplus fall steadily and dramatically from €1.6 billion to 85.5 million.

Southern Africa

In 2009, Southern Africa accounted for 35.8% of EU agro-food sector exports to ACP countries. Since 2010, Southern Africa's agro-food sector trade surplus with the EU has fallen 23%. Between 2009 and 2013, the value of EU agro-food exports to Southern Africa grew 60.4%, while the value of EU agro-food sector imports from Southern Africa grew only 32%.

Central Africa

Since 2009, the Central African region has moved from being a net agro-food sector exporter to the EU to being a net agro-food sector importer. The value of Central African agricultural exports to the EU showed a steady decline between 2009 and 2013, falling by 20.6% over this five-year period. In contrast, the value of EU agro-food exports to Central Africa rose 65.8%.

The EAC

While the EAC is the third largest source of EU agro-food imports from ACP countries, it is not a major market for EU agro-food exports (only 3.3% of total EU agro-food exports to the ACP). Between 2009 and 2013, the value of EU agro-food exports to the EAC grew 42.6%, and import values grew only 9.2%. However, the overall EU agro-food sector trade surplus of the EAC with the EU grew 4.2% between 2009 and 2013.

United States

US exports to SSA countries have been steadily on the rise and up 58% from 2009 to 2013 (US Department of Commerce 2014). Exports reached nearly $24 billion in 2013, an increase of $8.8 billion since 2009.

Imports from SSA have passed from more than $74 billion in 2011 to $39.3 billion in 2013. South Africa and Nigeria are the largest markets for US exports, contributing to the first and second highest dollar value of exports respectively in 2013.

In 2013, oil products represented 12.9% of the total dollar value of exports to the SSA region. Transportation-related exports with automotive and aircraft products are 9.5% and 5.5% shares of US exports to SSA respectively in 2013.

US imports from SSA declined by 16% between 2009 and 2013, mostly due to a decrease in crude oil and mineral fuel imports. The total value of imports decreased by US$12.6 billion, or 35%, between 2009 and 2013. Other top import sectors are passenger vehicles, platinum and diamonds.

Due to technological breakthroughs like hydrologic fracturing and a business-friendly environment, the United States has experienced a steady increase in unconventional sources of energy, specifically light tight oil and shale gas, over the past decade (Brune 2015). While global oil prices have declined more than 50% since mid-2014 (closing at below $50 in September 2015) and US production is off its recent highs, net increases in US production over the last decade have impacted economies and oil markets around the world and particularly in Angola and Nigeria. Coupled with the worldwide decline in commodity prices, the cuts caused a sharp reduction in the US share of Africa's exports, from 10.6% in 2012 to 7.89% in 2013 and 4.36% in 2014.

In order to boost the industrialization in SSA countries, Obama launched the Power Africa Initiative in 2013, in which he pledged $7 billion of investment over five years to increase energy production and access to energy in Nigeria, as well as Ethiopia, Ghana, Kenya, Liberia and Tanzania. Since its launch, Power Africa has awarded $700,000 for off-grid energy projects in Nigeria.

China

China's largest African trading partner in export is South Africa, constituting about 21% of China's annual export to Africa, followed by Nigeria with 12% and Ghana with 6%. In imports the leading partners are also South Africa with 42% of its imports from Africa, followed by Angola with 31.7% and Libya with 6% (RAND 2015).

China is the world's second-largest oil consumer behind the United States, consuming 10.2 million barrels per day (mbpd), of which around

5.6 mbpd is imported. China currently receives more than two-thirds of its imported oil from the Middle East and Africa: 2.6 mbpd from the Middle East (about 46% of imports) and 1.2 mbpd from Africa (21% of imports).

China's trade with SSA countries has expanded dramatically during the past decade (Ghosal 2016). China–SSA trade has grown by 26% per year since 1995, reaching a total value of US$170 billion in 2013.

SSA's exports to China have grown faster than its imports, generating a large, positive trade balance. SSA's exports are concentrated in primary commodities, especially extractable resources such as oil, uranium, aluminium, zinc, phosphates, copper, nickel and gold, as well as renewable resources and agricultural commodities such as timber, rubber, coffee, cotton, cocoa, fish and cashew nuts. While SSA's export mix is narrowly focused on the primary sector, Africa's imports from China are extremely diversified. Consumer goods represent the largest share, particularly textiles and clothing, footwear and consumer electronics, and also capital goods such as machinery, commercial electronics and transportation equipment. Chinese capital goods imports are boosted in the presence of large Chinese-financed infrastructure projects, which frequently include country-of-origin procurement rules.

In 2013, China became SSA's most important export partner. China now accounts for 27% of SSA's exports, compared to 23% for the EU and 21% for the United States. While India accounts for just 9%, the growth rate of SSA's exports to India is second only to that of China.

Overall, SSA has benefitted from China's increasing demand for SSA's exports of oil, minerals and metals (Roache 2012). Imports from China have had a negative effect on SSA's exports within the African regional market, and local producers and traders have faced serious competition from Chinese imports throughout SSA. In a study of 44 South African manufacturing industries during 1992–2010, Edwards and Jenkins (2014) show that labour- intensive industries were particularly badly affected by Chinese imports and the negative impact on employment was more than proportional to the output displacement. Edwards and Jenkins also found evidence that Chinese imports contributed towards lower producer price inflation in South Africa, which in turn contributed to a moderation in consumer price increases.

African firms do not appear to be positioning themselves within Chinese value chains. Trade with China is having a limited impact on economic transformation and export diversification. Input exports from China to

SSA for processing and subsequent re-export to the US consumer market have increased in recent years but remain extremely small as a share of total trade (Pigato and Gourdon 2014).

China's trade with SSA is highly concentrated in a few countries. Five countries, Angola, South Africa, the DRC, the Republic of Congo and Equatorial Guinea account for most of SSA's exports to China. South Africa, Nigeria, Liberia, Ghana, Benin are the main importers.

Reduced external demand and lower commodity prices caused a 13% contraction in Chinese imports in the 12 months to October 2015 over the same period a year earlier. By comparison, the value of imports from Africa over the period fell 32% (Romei 2015).

Some African countries are more exposed to the Chinese market. For seven, including Sierra Leone, Eritrea, Republic of Congo, Angola and Sudan; China accounted for 40% of their total exports.

The steep contraction in the value of Chinese imports from Africa is largely due to the fact that commodities and crude materials make up more than 85% of the total.

India

Trade between Africa and India more than doubled from US$25 billion in 2007 to US$57 billion in 2011 (Roy 2014). By 2014, trade figures had reached over US$75 billion, 34.6 export, 40.4 import (UNECA 2015).

In 2014 Africa accounted for 11% of India's exports and 9% of its imports. Since 2010, India's exports to and imports from Africa increased by 93% and 28%, respectively.

Indo-African trade is concentrated in a select few African countries such as South Africa, Nigeria, Angola and Tanzania being the top trading partners in 2014. Most of this trade entails primary commodities exported from Africa, while African countries mostly import manufactured goods from India. Exports from the extractive industries (mining, quarrying and crude oil) have seen the largest increase in the share of total exports.

India–Africa trade has grown steadily in the past years (Schaffnit-Chatterjee 2015). Bilateral trade amounted to US$65 billion (6% share of Africa's trade with the world) in 2014, up from US$7 billion (3% share) in 2000. Most of India's trade with Africa takes place in SSA countries. SSA's exports to India reached US$30 billion in 2014 (8% of total exports), overtaking the United States (share of 6%). Two-thirds of these exports

are oil and gas, 16% gold and other precious stones. India's main trade partners in Africa are Nigeria (US$17 billion), South Africa (US$9 billion), Angola (US$6 billion) and Tanzania (US$5 billion).

India needs increasingly large amounts of raw materials. It imported US$195 billion worth of raw materials in 2014 and is particularly dependent on crude oil imports (34% of its total imports), precious metals, other minerals and agricultural products, such as cashews and cotton. India's total imports from Africa amounted to US$33 billion, a small share (6%) of its total imports compared to its main provider China, 13%. More than a quarter of India's oil and gas imports now come from Africa, particularly Nigeria and Angola, as part of an effort to diversify import origins. Nigeria recently replaced Saudi Arabia as the largest crude oil supplier to India (KPMG 2015).

Although India has lost out to Chinese oil giants in its search for oil supplies in Africa, Indian oil and gas companies are present on the continent. India is a significant market for a few African countries, including Tanzania, Nigeria, Botswana, Cameroon and Angola. It is now the largest buyer of Nigerian oil.

All African countries import pharmaceuticals from India (UNECA 2015). In 2014 pharmaceutical products accounted for US$2.8 billion, or 8% of India's total exports to Africa. The main export destinations were South Africa (17% of Indian pharmaceutical exports to Africa), Nigeria (15%) and Kenya (9%). Overall, Africa was a huge market for India's pharmaceutical exports in 2014, 25% of the total exports of this product group were shipped to Africa.

FDI with and in SSA Countries

Main Trends

Capital investment into the continent surged to US$128 billion in 2014, up 136% from US$54.2 billion in 2013. FDI created 188,400 new African jobs, a 68% increase (EY 2015). Africa attracted more FDI funding than North America, Latin America and the Caribbean, and Western Europe. The upsurge was driven by large, capital-intensive energy extraction and real estate.

Africa has more than doubled its share of global FDI flows, from 7.8% in 2013 to 17.1% in 2014. That made it the second-largest recipient of

capital investment during the year, from sixth in 2013, and the fastest-growing destination for FDI funding.

Africa's FDI projects provide more capital than employment. In 2014, Africa attracted 17.1% of global FDI inflows (only Asia-Pacific performed better) but got only 8.7% of jobs.

A joint study by the African Development Bank (AfDB), Organization for Economic Cooperation and Development (OECD) and United Nations Development Programme (UNDP) estimates that external financial flows to Africa have quadrupled since 2000 (AfDB et al. 2015a).

FDI has grown almost fivefold since 2000. Official development assistance (ODA) has more than tripled in the same period to US$56.3 billion in 2014. Remittances from Africans working abroad have become the biggest source of foreign inflows to African states. FDI helps to build infrastructure and extracting and exporting natural resources.

Main Supported Sectors

A large part of the FDI supports big projects in electricity, roads and railways originally in order to improve the transportation of minerals, but they can generate also industrialization and higher productivity in other sectors (European Parliament 2016).

Electricity Projects

- River dams for electricity production as the Renaissance Dam in Ethiopia on the Blue Nile being the most exemplar. Already half built, the dam will be the largest in Africa when finished.
- The Grand Inga Dam on the Congo River in DRC is only in the concept stage, but if built, it would transform energy supply in the whole region.
- The Lake Kivu methane gas to electricity project in Rwanda is being built with the support of the US governmental aid agency (USAID). Kivu's methane could be used to add up to 960 megawatts (MW) of electricity-generating capacity, more than six times what Rwanda has now (Rosen 2015). The first phase of KivuWatt, a $200 million project owned by the US. energy firm Contour Global.
- Symbion Power is set to begin construction of a 50-MW project on the Rwandan side of the lake by the end of the year. In the

DRC's distant capital, Kinshasa, the Ministry of Hydrocarbons is reviewing bids for that country's first Kivu gas concession. Symbion Power Lake Kivu Ltd, a subsidiary of Symbion Power LLC, signed a 25-year power purchase agreement (PPA) with the Rwanda Energy Group (REG) for a 50-MW methane gas to power project (Symbion Power 2015).

– The Lake Turkana Wind Power Project (LTWP) financed by AfDB and several other development financial institutions (including by the EU with a €25 million grant), seeks to exploit wind power in Kenya. The project aims to provide 310 MW of reliable, low-cost wind power to the Kenya national grid, equivalent to approximately 20% of the current installed electricity-generating capacity (ltwp.co.kewebsite). The planned investment is of €625 million. The wind farm site, covering 40,000 acres (162 km^2), is located in Loyangalani District, Marsabit West County approximately 50 km north of South Horr Township. Completion is planned by July 2017, raising the country's installed capacity to 6700 MW (Genga 2016). Kenya was the first African country to begin developing geothermal power plants in 1956, when the government first drilled two 950-m-deep exploratory wells (Oxford Business Group 2016). The Kenya Electricity Generating Company (KenGen), a 70% state-owned company, is responsible for the majority of Olkaria's development. KenGen began commercial production at the 140-MW Olkaria IV plant, which was commissioned in August 2014, as well as the 140-MW Olkaria I Unit 4&5 plant, which started operation in January 2015. The private sector is also actively involved in the development of Kenya's geothermal resources, most notably at Olkaria III—a 110-MW plant developed and owned by Israel's Ormat Industries—which opened in February 2014. Retail electricity tariffs dropped significantly after these projects were brought on-line. In August 2015 the Kenya Power and Lighting Company announced that it is set to purchase 70 MW of geothermal power from Akiira Geothermal and Marine Power Generation, from its 140-MW Rift Valley plant. KenGen will receive a $387.2 million loan from the Japan International Cooperation Agency(JICA) to fund the construction of a geothermal power plant for the construction of Olkaria (Njini 2016).

Roads and Railways

- The rail connection between Angola, Zambia and DRC has been rebuilt. A new electric railway between Addis Ababa and Djibouti has been opened to freight in November 2015, and a major plan in East Africa to connect Kenya, Uganda, Tanzania, Rwanda, Burundi and South Sudan by rail has started taking shape.
- The bridge at Voi, northwest of the port of Mombasa, is the latest construction frontline for the initial 327 billion-shilling ($3.2 billion) stretch of an ambitious railway project to link the East African country with landlocked neighbours including Rwanda and Uganda (Hill 2016).
- Kenya's rail line, is among the most advanced of the more than $30 billion of African rail projects planned or under way.
- Senegal signed an agreement in December 2015 with China Railway Construction for the renovation of 645 km of railroads. Projects are also planned in Tanzania, Mali and Egypt, while Ethiopia recently completed a line connecting Addis Ababa to Djibouti and has another 4000 km of projects planned.

FDI Distribution by Regions

Southern Africa

Southern Africa attracts about one-third of FDI projects in Africa, and their numbers have been growing at a compound annual growth rate (CAGR) of 10.8% since 2007.

Capital inflows more than doubled to US$33.6 billion in 2014, thanks to a massive energy sector deal, but there was a marked fall in FDI projects announced in South Africa. Companies from both the United States and the United Kingdom, South Africa's largest investors, announced fewer projects in 2014, like those from Germany and Spain.

East and Central Africa

Kenya, softened during 2014, after growing by more than 30% a year (CAGR) since 2007. Investors from the United Kingdom and Japan, who were Kenya's largest investors in 2013, started fewer projects in 2014.

The potential large natural gas deposits in Mozambique attract investors. Financial services attracted the most projects in 2014 as three foreign retail banks moved in, opening a total of 16 branches (fdiintelligence 2015). There was also a strong uptick in RHC and automotive projects.

The 32 projects launched in 2015 in Ethiopia 4.4% of the African total, involved relatively small sums but they provided 18.5% of FDI jobs in Africa. Ethiopia, now has slowly been opening up to foreign investment in manufacturing and retail.

Telecommunications and financial services remain the preserve of state-owned enterprises.

West Africa

Nigeria, attracted 49 FDI projects in 2014, 10 fewer than during 2013. However, the average project involved more than twice as much investment, though job creation continued to lag. It is also the case in Ghana where growth in project numbers has averaged 34.1% since 2007. In 2014, the number of inward investment projects fell to 39%, from 58% in 2013, even as capital investment rose 61.3%.

Sources of FDI

The EU

Western Europe accounted for more than half of all greenfield investment into Africa in 2014, with an estimated $47.6 billion invested, according to a report from fDi Intelligence (FDI Intelligence 2015; Fingar 2016).

France is the main source of investment in Africa with US$18.3 billion, 18% of the total FDI in 2014, followed by Greece with US$10 billion (10%) , United States with US$7.9 billion (9%) and China with US$6.1 billion (7%) (FDI Intelligence 2015). Angola attracted the bigger share of those FDI with US$16.1 billion in 2014 (19%), followed by Nigeria with US$10.7 billion (12%) and Mozambique with US$8.8 billion (10%), Those investments are mainly in four sectors: manufacturing 33%, mining 26%, construction 14%.

France's Total, an oil and gas major, plans to invest US$16 billion to develop the Kaombo offshore oilfield in Angola. The development will be established through a joint venture with Total as the main operator with a 30% share.

Greece's high position is explained by Mac Optic, a Greece-based company that announced plans for a multibillion-dollar refinery and petrochemical plant in Egypt.

Belgium saw the highest increase in capital investment into Africa in 2014 with its $5.2 billion, thanks to commercial real estate devel-

oper Pylos's plans to build more than a dozen shopping malls across Mozambique. Meridian Port Services, a subsidiary of Denmark-based AP Moller-Maersk, is expanding Tema Port in Ghana. The US$1 billion expansion project will see the development of four deep water berths and an access channel for larger vessels, increasing the port's throughput capacity to 3.5 m 20-foot equivalent units (TEUs).

Since 2007, the EU together with some of its Member States has financed numerous infrastructure projects in SSA through the EU-Africa Infrastructure Trust Fund (EU-AITF) (EU-AITF 2014).

The aim of the fund is to increase investment in infrastructure in SSA by blending long-term loans from participating financiers with grants. It funds regional and cross-border infrastructure projects in the energy, water, transport and communications, and telecoms sectors, as well as projects under the Sustainable Energy for All initiative. The money provided by the EU stems from the European Development Fund (EDF). Between 2007, when the fund was created, and 2014, more than €536 million has been provided by the EU to support investment in 73 projects.

The EU–AITF offers grant support from two different envelopes:

- The Regional envelop promotes regional infrastructure projects (energy, transport, water, ICT): cross-border projects or national projects with a demonstrable regional impact on two or more countries.
- The SE4ALL envelop supports regional, national and local energy projects.

Between 2001 and 2012, most private capital flows have benefitted two countries, namely South Africa and Nigeria, with 45% and 13% respectively of the total for SSA. The United Kingdom remains a keen investor overall, though British companies eased back last year.

TheEU is seeking to promote growth in Africa by negotiating economic partnership agreements (EPAs) with regional blocs in the continent. These EPAs are designed to deliver duty-free and quota-free access for African goods to the EU market. Three EPAs have been signed, with the ECOWAS, the EAC and with the SADC (ICTSD 2015). In April 2014, the fourth EU–Africa summit was held to discuss bilateral business relationships (European Council 2015).

EU Commitment from 2014 to 2020, €6.5 billion will be delivered to support EPA Development Programme (PAPED). EU institutions for

over €3 billion, EU Member States for €2 billion and European Investment Bank (EIB) for €1.5 billion.

The funds will be invested in Infrastructure (Energy, Transport), Agriculture, Regional economic integration, Trade and private sector development and Civil society.

The United States

The US private investments in Ethiopia, Ghana, Nigeria and Tanzania are projected to grow at an average rate above 6% between 2014 and 2019 (US Trade and Development Agency 2016). The US government's Power Africa initiative, which aims to increase electricity access across the region, represents opportunities for US industry and has generated demand for US Trade and Development Agency's (USTDA's) Congressional Budget Justification) programme.

USTDA was created to promote United States' private sector participation in development projects in developing and middle-income countries.

USTDA has generated over $51.7 billion in US exports and has emerged as a leading US government agency for early project development and planning activities in emerging economies.

The Agency accomplishes its mission by providing grants to overseas sponsors of priority infrastructure development activities in their countries. Infrastructure such as clean energy, transportation and telecommunications fosters economic growth.

The Agency has formed strategic partnerships with over 35 export promotion organizations across the United States under its Making Global Local initiative.

The objective is to add 30,000 MW (USAID 2015). Power Africa intends to add 60 million connections by scaling up grid roll-out programmes.

USTDA is sponsoring follow-on activities to help three of the distribution companies develop comprehensive network modernization plans, which are expected to lead to additional sales for US firms.

North America is the second-largest source region for investment into Africa after Western Europe, at $13 billion. EY (2015).

Ethiopia is important because the 90 million people are requiring basic needs such as electricity and water and services such as telecommunication and transport. Ethiopia is also an important aviation hub with the continued expansion of Ethiopian Airlines, Africa's fastest-growing and most profitable airline.

USTDA's continued presence in Ghana's energy and transportation sectors will help foster relationships between key Ghanaian public and private sector stakeholders and US companies with sector-specific technologies and expertise.

Nigeria has the largest population in Africa and requires energy and transportation infrastructure in order to industrialize and provide to its population the required products and services.

South Africa, which is the continent's most advanced, broad-based and productive economy, is the destination of choice for US businesses looking to export to SSA.

Tanzania is projected to grow at 7% through 2016, driven by the transport, communications, manufacturing and agriculture sectors. The country's strong growth is also supported by the expansion of public investment in infrastructure as well as private investment in recently discovered natural gas reserves.

US strategy for Africa hinges upon the renewal of its African Growth and Opportunity Act (AGOA), which expired in September 2015. The act grants qualifying African countries tariff-free access to the US market for some goods and services.

Since 2007, US companies have launched 700 FDI projects across the continent, pouring in US$52.7 billion and creating nearly 98,000 jobs. After a slight dip in 2013, US companies became the largest investors in Africa again in 2014, overtaking those from the United Kingdom. Launching 101 FDI projects, up 29.5%, US investors accounted for 13.8% of total FDI projects in Africa, an increase from a 9.8% share in 2013. The number of US projects was almost double that from the next largest group of investors, coming from South Africa and the United Kingdom, in joint second position. US investments in Telecommunication, Media, Technology (TMT) surged from 13 projects in 2013 to 28. US companies also initiated more projects in business services, cleantech and chemicals.

IBM, among the world's most prolific corporate investors, made a handful of high-tech investments in Africa last year. It opened a new Mainframe Linux and Cloud Innovation Centre in Nairobi, and new innovation centres in Lagos and Johannesburg.

China

China is the largest developing country foreign investor in Africa (UNCTAD 2013). The relationship started in the early 1980s, as part of concerted diplomatic efforts promoting Chinese economic coopera-

tion with Africa (Goshal 2016). Initial investments were small, amounting to US$51.9 million for 102 projects (about US$500,000 per project) between 1979 and 1990, with Chinese businesses relying heavily on government-sponsored assistance projects to gain a foothold in local African markets. Investments by Chinese state-owned enterprises can be included in definitions of official flows of development assistance and not of FDI if they receive subsidized state financing such as export credits.

FDI flows from China to SSA rose from non-existence a decade ago to US$3.1 billion in 2013, representing 7% of global FDI flows to SSA.

China's FDI stock in SSA reached nearly US$24 billion in 2013, reflecting an annual growth rate of 50% between 2004 and 2013 (MOFCOM 2003, 2014; Copley et al. 2014).

Chinese FDI has recently undergone a marked diversification into financial services, construction and manufacturing. Chinese FDI are concentrated in Nigeria, South Africa, Sudan and Zambia. Chinese manufacturing firms have invested also in other countries such as Ethiopia, Nigeria and Tanzania.

In 2014, Chinese companies announced 32 FDI projects across the continent, just 4.4% of the total, entailing a total investment of US$6.1 billion and creating 11,015 jobs, 5.8% of those created across Africa by FDI (EY 2015). South Africa was the main destination for Chinese projects, securing 34.4% of them. Tanzania, Ghana and Kenya were also popular, each taking a 9.4% share. Nearly a third of Chinese FDI projects were in TMT, though Chinese companies also stepped up investment in coal, oil and natural gas, mining and metals, and aerospace and defense.

The huge financial losses in 2011 after the fall of the Muammar el-Qaddafi government was a wakeup call (Shinn 2015). This incident exposed its limited ability to protect its economic or security interests (Alden 2014:4). This event and a series of other attacks on Chinese nationals have resulted in new procedures (Anthony and Jiang 2014:84–85).

Some Chinese academics now refer to creative involvement or constructive intervention (Wang 2011). China's objective is not to abandon or replace the non-interference principle, but rather to improve on its definition (Pang 2013:49). As a result, China's traditional concept of sovereignty and non-interference underwent some changes and is becoming pragmatic (Wang 2012:91).

African states, in their majority, are not in a position to formulate projects and suggestions or demands to China before the meeting (Grimm 2015). This partly has to do with very limited capacities to co-ordinate

such a great number of actors, but partly also has to do with somewhat obscure or unclear political preferences, also depending on the political.

One example is Angola Huawei's experience (Haifang 2015). The company managed to work with a nearly collapsed technological institute to tailor the suitable skilled workers, thus initiating stable long-term co-operation.

Chinese International Trust and Investment Company (CITIC), carrying out a large project of affordable houses worked with local communities to recruit and train labourers since 2008. Gradually the training centre has been upgraded into a training college.

Another successful case is the Confucius Institute in Ethiopia, based in a local technological institute assisted by Tianjin University of Technology and Education. As a good working relationship was built, the Ethiopian Ministry of Education developed deep co-operation with the Chinese university, and invited it to co-operate with Addis Ababa University to build the second Confucius Institute (Tianjin University of Technology and Education 2015).

Chinese private investment flow is rising fast (Gu 2015) via tax shelters. The officially reported stock of Chinese FDI in Africa was estimated at US$21 billion in 2012, a doubling since 2009. The largest share is directed towards the resource sector in Angola, Chad, Niger, Nigeria, Sudan and Zambia. Chinese investment in manufacturing is seen in the gradual development of manufacturing clusters in Ethiopia (glass, fur, footwear and automobiles), Mali (sugar refineries) and Uganda (textiles and steel pipe manufacturing).

Development Finance Africa is the largest recipient of Chinese development financing and its share is increasing. Africa received nearly half of the cumulative US$54 billion provided by China in global foreign aid through 2012.

Chinese and OECD ODA differ in scale, nature and degree. Although Chinese assistance increased rapidly as OECD disbursements declined, Chinese aid remains well below the OECD's, amounting to US$3.2 billion in 2013 compared to the US$26 billion disbursed by OECD countries in the same year. Chinese development assistance is frequently packaged into agreements that mix grants and investment, and concessional and non-concessional loans.

SSA's investment in China remains marginal. South Africa is the only country in SSA with a significant investment presence in China. Financial flows from countries in SSA to China are dominated by trading companies, often subsidiaries of Chinese firms supporting the business of their parent companies.

India

Indian companies invest mainly in copper mining in Zambia, and iron ore and steel milling in Liberia and Nigeria (Roy 2014).

The state-owned infrastructure and engineering companies Rites and Ircon have supported Africa's rail and road development and its engineering companies.

The Indian state has supported public companies with credit (e.g. through Exim Bank).

The building of critical human capital (especially in health and education) has also been boosted through the creation of an Indian pan-African e-network linking 53 African countries to Indian universities and hospitals.

India has also been investing in telecommunications, petrochemicals and chemicals, and floriculture, and executing contracts in the power and other sectors.

Tata Chemicals acquired Magadi Soda Company Kenya in 2006, which produces soda ash, while Indian insurance companies and corporations, including Essar Energy, Bharti Airtel, Reliance Industries, Bank of India, HDFC and Central Bank of India, have been investing in Kenya.

In 2009, the Indian government gave a large grant to launch the Pan-African e-Network (Lucey et al. 2015). This allowed India to provide educational and medical support to African countries by means of satellite technology. The project is implemented by an Indian public-sector company through teleconsultations between hospitals in India and Africa.

In terms of technical assistance, India has instituted the Indian Technical and Economic Programme to support training and technical assistance in African countries.

Line of Credit (LoC) was also developed as a means to enhance India's development co-operation, and specifically the role of the private sector. LoCs were established under the Indian Development and Economic Assistance Scheme (IDEAS) in 2004 and backed by the Export Import (Exim) Bank of India. They support developmental projects identified by the Indian Ministry of External Affairs. The Exim Bank has extended LoCs worth US$6.3 billion to 48 African countries, accounting for 133 out of the total 187 LoCs extended by the bank.

India's Tata buses, Maruti cars, Bajaj motorbikes sell in African markets. In the pharmaceutical industry, several Indian companies have increased sales in African markets as the government has pushed its 'Pharma India' promotion.

There are more than 35 Indian pharmaceutical companies operating in Nigeria, 27 out of which about 30 Indian pharmaceutical companies

are located in Lagos alone for manufacturing and/or importing Indian products.

By 2016, pharmaceutical spending in Africa is expected to reach US$30 billion, with Indian companies competing mostly with South African firms in local markets.

The New Delhi-based The Energy Resources Institute (TERI) programmes include policy dialogues and knowledge sharing, as well as participating in capacity-building programmes such as the Indian Technical and Economic Cooperation (ITEC) programme, which offers courses on biotechnology with a focus on Africa.

The Government of India is also facilitating private investments in the agriculture sector in Africa; Indian firms have invested in more than one million hectares of farm land in Africa. The profile of these companies ranges from large to small and medium enterprises, that are present in sectors ranging from tea and spices to chemicals.

The International Livestock Research Institute (ILRI), based out of Nairobi, Kenya, has programmes covering countries like Ethiopia, Kenya, Mali, Mozambique, Tanzania, as well as India, in the field of animal biotechnology.

Some countries that have seen significant interest from the Indian private sector are Ethiopia, Malawi, Kenya, Uganda, Ghana and the Congo.

Intra-SSA Investment

South African companies ranked as the continent's second-biggest investor group, launching 53 projects in 2014, down from 65 the previous year (EY 2015). Though they provided 7.2% of projects during the year, they invested only 4% of the continent's FDI capital inflow.

Investors from Nigeria and Kenya, two other African FDI dynamos, were also less active in launching projects. Moroccans, on the other hand, became more prominent investors, initiating 13 intra-African investments last year—the highest in over a decade. Moroccan companies are looking towards SSA as the country becomes a platform for exporting to African countries.

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CHAPTER 3

Economic Involvement of International Organizations, MNCs and Local Business Leaders and Groups

The international funding organizations try to have a positive impact on the population of Sub-Saharan Africa (SSA) by improving the economic situation in their countries. Each organization has a different approach. Herewith I analyse the approaches of the African Development Bank (AfDB), the World Bank, the United States Agency for International Development (USAID), the European Union (EU), New Partnership for Africa's Development (NEPAD) and Japan International Cooperation Agency (JICA).

Multinational companies (MNCs) play a crucial role in the globalization process of SSA countries. They sell and buy equipment, raw materials, products, systems and services. Their economic interest is sometimes in conflict with local needs. SSA countries when they are negotiating with MNCs or international organizations are the weak 'supported' side. Generally they are represented by governments which are not able to represent the interests of their countries in the long run. I present and analyse also the role of the SSA local business leaders and groups in SSA African economies.

International Organizations

African Development Bank (AfDB)

The AfDB is a financial institution which is mainly managed by African origin specialists. They understand better than anyone the potential and the bottlenecks in African countries. They are relatively independent from the government of their country and they represent the African common

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interest in better education, health and wealth. Turkey became the 78th member of the AfDB in 2013, Luxembourg became the 79th member in 2014 and South Sudan became the 80th member in April 2015. G-7 Shareholding is 28%.

The Bank's annual loans and grants are worth an annual $5 billion. Nearly two-thirds of its funding is spent on building and refurbishing Africa's transport and energy infrastructure.

In the last two years alone, AfDB operations have meant that some eight million people have benefited from new electricity connections, 34 million from improved access to transport, 14 million from new or improved access to water and sanitation, and 27 million from access to better health services.

Initiated by AfDB, the African Development Fund's (ADF) support of fragile states has risen from $60 million to $350 million a year in the last 10 years. The plan is to invest $90 million to support water and livestock management for 12 million especially vulnerable people in the Horn of Africa. This project is expected to cover eight countries over the next 15 years, in one of Africa's most fragile regions. Herewith are some of the projects supported by AfDB:

Institutions and Education

- ***Guinea***—US$17 million to implement financial reform, increase tax revenue, and support the government in improving economic planning and enhancing transparency in the use of resources
- ***Burkina Faso***—US$58 million to encourage growth in micro, small- and medium-sized enterprises. The project will support the creation of business incubators, credit guarantee schemes and export promotion agencies
- ***Eritrea, Kenya, Tanzania, Uganda***—Human Development Portfolio US$1.8 billion for 77 projects covering education, health, poverty reduction and social protection
- ***Chad***—US$18.3 million for Public Finance Reform Support Programme (PARFIP). It will promote public finance management efficiency and transparency in the country by improving domestic resource mobilization enhancing public expenditure efficiency and transparency.

Food Security, Health and Environment

- ***Mali***—Koulikoro Region. Food and Nutrition Security Enhancement Project (US$54 million). Increase agricultural output (10,600 tonnes of rice and 20,300 additional tonnes of vegetable produce) and develop specific gender actions including land tenure
- ***Ebola countries***—US$223 million approved to fight and prevent Ebola and additional US$300 million to support countries' post-Ebola recovery programmes announced in April 2015
- ***The Democratic Republic of Congo (DRC)***—Reducing deforestation and alleviating poverty in the Virunga-Hoyo Region. Improve conservation and management of 1500 km^2 of forest. Reduce household charcoal use via efficient stoves. Raise environmental awareness and reforestation via school tree nurseries.

Infrastructure

- ***Mali***—Kankan Kouremale—Bamako transnational road network in Mali with a link to Guinea. Project size: US$148 million—AfDB financing: US$35 million (African Development Bank 2016)
- ***South Africa***—rail company, Transnet ZAR 312 billion (US$28.6 billion) with AfDB financing US$247 million; Xina Solar One Concentrated Solar Power plant AfDB financing US$100 million. 100 megawatts (MW) of capacity; Eskom Renewable Energy Projects—Sere Wind Facility and Upington CTSP AfDB financing US$265 million. One wind farm of 100 MW capacity and a solar plant of 100 MW to supply base-load power
- ***Kenya***—Lake Turkana Wind Farm Africa's largest wind power project AfDB financing EUR 115 million. 300 MW of wind capacity
- ***Zambia***—Itezhi-Tezhi Hydro Project AfDB financing US$35 million. Installed capacity of 120 MW
- ***Zimbabwe***—US $34.93 million for Bulawayo Water and Sewerage Services Improvement Project in Bulawayo, the second most populous city in Zimbabwe. The project is to be implemented 48 months from January 2016.

Industrial Projects

Nigeria Dangote oil refinery and fertilizer plant. Total cost of US$9 billion with AfDB financing US$282 million. Expected outcomes: Provide over 32,000 jobs, save US$65 billion in foreign exchange.

World Bank

The World Bank is focused on a regional approach and on transformational projects. Its investments in Africa grew from US$700 million in the period 2006–2008 to US$1 billion in the period 2010–2012 and US$1.5 billion in the period 2013–2015 (Ehui and Jenane 2016).

US$600 is spent in technology, US$435 million in pastoralism, US$125 million in irrigation and US$120 million in growth corridors.

Herewith are some projects funded by the World Bank (worldbank projects website)

- ***Senegal***—Building Resilience to Food and Nutrition Insecurity Shocks Team Leader: Health (50%), Other social services (50%) Theme(s): Other social protection and risk management (10%), Gender (15%), Child health (15%), Nutrition and food security (60%) Total Project Cost: US$3.75. Japan Social Development Fund
- ***Angola***—Smallholder Agriculture Development and Commercialization Project
- The project will help increase smallholder agriculture productivity, production and marketing for selected crops in the project areas. The International Bank for Reconstruction and Development (IBRD) Loan: US$70.0 million equivalent
- ***Niger***—Additional Financing for the Urban Water and Sanitation Project
- The objective is to increase access to water supply services and to improve sanitation services in selected cities. Approval date June 30, 2016, Total project cost: US$70 million
- ***Tanzania***—Rural Electricity Expansion Programme. Tanzania will connect 2.5 million poor households in rural areas to the national electricity grid over the next five years. Commitment Amount: US$200 million from the International Development Association. The Programme will scale up the supply of renewable

energy in rural areas while strengthening sector institutional capacity. Approval date June 21, 2016.

New Partnership for Africa's Development (NEPAD)

The NEPAD Planning and Coordinating Agency (NEPAD Agency) was established in 2010 as an outcome of the integration of NEPAD into African Union (AU) structures and processes. The NEPAD Agency is the implementing agency of the AU. The support programmes are as follows (nepad website):

Natural Resources Governance and Food Security

- Agriculture and Food Insecurity Risk Management (AFIRM)
- Climate Change Fund, Climate Smart Agriculture
- Comprehensive Africa Agriculture Development Programme (CAADP)
- Fish Governance and Trade
- Gender Climate Change Agriculture Support
- Nutrition
- TerrAfrica

Regional Integration, Infrastructure (Energy, Water, Information and Communications Technology (ICT), Transport) and Trade

- Africa Power Vision
- Continental Business Network (CBN)
- E-Africa Programme
- Infrastructure for Skills Development (IS4D)
- Presidential Infrastructure Champion Initiative (PICI)
- Programme for Infrastructure Development in Africa (PIDA)
- Sustainable Energy for All (SE4ALL)

Industrialization, Science, Technology and Innovation

- African Biosafety Network of Expertise (ABNE)
- African Institute for Mathematical Science (AIMS)—Next Einstein Initiative

- African Medicines Regulatory Harmonisation (AMRH)
- African Science Technology and Innovation Indicators (ASTII)
- Alliance for Accelerating Excellence in Science in Africa (AESA)
- Bio-Innovate
- Biosciences Eastern and Central Africa Network (BecANet)
- NEPAD Water Centres of Excellence
- Southern African Network for Biosciences (SANBio)

Human Capital Development (Skills, Youth, Employment and Women Empowerment)

Agriculture Technical Vocational Education and Training (ATVET), Capacity Development, Gender, Nursing, Rural Futures.

Grow Africa
Co-founded by NEPAD and the World Economic Forum (WEF) in 2012, Grow Africa aims to transform African agriculture through the CAADP. The second Annual Report, released in May 2014, said that investment commitments by partner companies of the Grow Africa programme more than doubled to US$7.2 billion in 2013, and US$970 million of this had already been invested. This helped create 33,000 jobs and assisted 2.6 million smallholders across Africa. Source: 'Grow Africa Partners Double Investment Plans for Agriculture to US$7.2 billion,' WEF website, www.weforum.org/news, accessed May 2, 2014.

The pillars are:

- Pillar I: Extending the area under sustainable land management and reliable water management systems
- Pillar II: Improving rural infrastructure and trade-related capacities for improved market access
- Pillar III: Increasing food supply, reducing hunger and improving responses to food emergency crises
- Pillar IV: Improving agricultural research, technology dissemination and adoption

United States Agency for International Development (USAID)
In Africa, USAID works with its partners to improve access to and delivery of health services, to support more accountable and democratic institutions, to start businesses and foster an environment attractive to private

investment, and to stave off conflict and strengthen communities. USAID assistance to 42 African countries totalled US$8.1 billion in 2012 (usaid website).

USAID operates 27 regional and bilateral missions in Africa. They are located in Angola, Benin, the DRC, Ethiopia, Ghana, Guinea/Sierra Leone, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Nigeria, Rwanda, Senegal, South Africa, South Sudan, Sudan, Tanzania, Uganda, Zambia and Zimbabwe.

USAID also operates three regional missions: East Africa (Nairobi, Kenya), Southern Africa (Pretoria, South Africa) and West Africa (Accra, Ghana). The supported projects are focused on:

- Boosting agricultural productivity through the Feed the Future Initiative
- Strengthening health systems through the Global Health Initiative
- Supporting democracy, human rights and good governance
- Increasing resilience to climate shocks
- Leading quick responses to humanitarian crises to save lives and help prevent instability

Forum for Agricultural Research in Africa (FARA)

FARA is responsible for co-ordinating and advocating for agricultural research for development (AR4D) (faraafrica.org website). FARA serves as the technical arm of the Africa Union Commission on matters concerning agriculture science, technology and innovation.

FARA was conceived in the late 1990s by a core group of committed champions, including both African scientists and enlightened donor aid officials.

FARA serves as the entry point for agricultural research initiatives designed to have a continental reach or a sub-continental reach spanning more than one sub-region. Headquartered in Accra, Ghana, FARA has been in existence for 12 years. Over this period, FARA has provided a continental forum for stakeholders in AR4D to shape the vision and agenda for this sub-sector, and to mobilize themselves to respond to key continent-wide development frameworks, notably the CAADP.

FARA mobilizes stakeholders around a portfolio of continent-wide programmes and projects jointly developed with the stakeholders, to address specific challenges or opportunities in coordinating the following initiatives

- DONATA Dissemination of New Agricultural Technologies in Africa
- PAEPARD: Platform for African—European Partnership on Agricultural Research for Development (link to description)
- RAILS: Regional Agricultural Information and Learning Systems
- SSA CP: Sub-Saharan Africa Challenge Programme
- UniBRAIN: Universities, Business and Research in Agricultural Innovation

Japan International Cooperation Agency (JICA)
JICA is supporting growth in Africa with Public-Private Partnerships, and promotes human security through inclusive development (JICA 2015).

JICA's main investments are in Kenya, 15.6%, Tanzania, 13.2% and Mozambique, 8.7% The main investments are in the Corridor Development Programme, to facilitate more effective regional infrastructure development such as key transport corridors in Africa, and the formulation of strategic master plans detailing specific blueprints for corridor development covering the 'Northern Corridor' and 'Central Corridor' in Eastern Africa, the 'Nacala Corridor' in Southern Africa and the 'West Africa Growth Ring' connecting countries in Western Africa.

Surveys aimed at facilitating the development of geothermal power generation were carried out in Kenya, Rwanda, Ethiopia and Djibouti. In January 2015, a geothermal power plant with a generating capacity of 140,000 kW supported by ODA loan began operation in Kenya.

Under the Enhanced Private Sector Assistance for Africa (EPSA) initiative, the Japanese government, in co-operation with AfDB, provides loans and technical assistance; JICA is responsible for providing the loans component. The two lending methods are

- the Accelerated Co-financing Facility for Africa (ACFA) with the AfDB/ ADF for governments and government organizations
- Private Sector assistance loans under EPSA. Since 2006, JICA has provided 16 co-financing facilities in eight countries under ACFA, and five private sector assistance loans. JICA commitment is for $2 billion.

JICA has been providing co-operation by training 30,000 African people for industry, establishing TICAD (Tokyo International Conference of African Development) human resources development centres for industry, and inviting 1000 youths from Africa to Japan for graduate school

and internship training at Japanese companies under the African Business Education Initiative for Youth.

JICA is providing support through TICAD human resources development centres for industries in Ethiopia, Uganda, Egypt, Senegal and other countries in higher education, vocational training, and support to improve quality and productivity at companies through the kaizen approach, among others, that meets the needs and expectations of private companies and fulfils labour market demand.

Recognizing the vital importance of the automotive industry in sustaining the economic relationship between Japan and South Africa, as well as the industrialization of South Africa, both sides have developed intergovernmental co-operation for the development of supporting the industry as well as enhancing global competitiveness (za.emb-japan.go.jp/en/ Japan website).

The Japanese One Village One Product (OVOP) co-operative model is conducted in Kenya, Ethiopia, Mozambique, Uganda, Tanzania, Nigeria, Zambia, Madagascar, South Africa, Senegal, Ghana and Malawi by JICA.

Enhanced Integrated Framework (EIF)

The EIF was set up in 1997 at the WTO and subsequently reviewed in 2005. In line with the Brussels Programme of Action, there has been significant work undertaken to create a more results-focused EIF programme.

The EIF is a multidonor programme, which supports Least Developed Countries (LDCs) to be more active players in the global trading system by helping them tackle supply-side constraints to trade (enhancedif.org website). The programme is currently helping 51 of the poorest countries worldwide, supported by a multidonor trust fund, the EIF Trust Fund, with contributions from 23 donors. US$250 million over five years is being sought.

Working in close co-operation are donors, six core partner agencies, observer agencies, the Executive Secretariat (ES) and the Trust Fund Manager (TFM) and other development partners who are supporting LDCs' own drive to:

- mainstream trade into national development strategies
- set up structures needed to co-ordinate the delivery of trade-related technical assistance
- build capacity to trade, which also includes addressing critical supply-side constraints.

In 2013, allocations for EIF activities totalled US$38.6 million, for a grand total of US$132.6 million. The 2013 allocations for EIF activities consisted mainly of Tier 2 projects (almost US$24 million) and a few Tier 1 projects (US$7 million).

The total LDC national implementation allocation is over US$66.5 million, representing 50.2% of allocations. LDC implementation has continued at a steady pace with growing demand for Tier 2 projects from LDCs.

Agency implementation has decreased due to increased Tier 2 project implementation by LDCs, to US$4.8 million in 2013, with a grand total of almost US$25.3 million.

Multinational Companies (MNCs)

MNCs have their own business interests. Sub-Saharan Africa (SSA) countries are the weak side in negotiations with MNCs because of the high risk of those investments due to wars, weak infrastructure and internal conflict of interest at the political level. Activities of some MNCs in SSA countries are herewith analysed in order to find ways to improve the added value staying in SSA countries.

General Electric (GE)

GE, a US-based MNC, has been present in Africa since 1898 (EY 2015). In 2013, it achieved sales of US$5.2 billion in Africa. Responding to rising African demand, in August 2014 the company announced that it would invest up to US$2 billion in Africa and double its workforce on the continent to 4000 by 2018. Its investments are focused on developing facilities, improving its supply chain and training workers. GE is benefiting from the drive to improve Africa's infrastructure.

GE spans 25 SSA countries and six different businesses: health care, aviation, transportation, power and water, oil and gas, and energy management. Headquartered in Nairobi, Kenya, GE employs around 2200 people (ge website). GE won about US$8.3 billion in orders in Africa in 2014 (Clough and Spillane 2014) and 2014 revenues were $5.2 billion, according to GE.

GE has won substantial contracts to supply power generation equipment in Nigeria and Angola. In March 2016 El Sewedy Power—one of GE's engineering, procurement and construction (EPC) partners in

Angola— ordered six of GE's trailer-mounted TM2500 and mobile aero-derivative gas turbine packages for new power plant locations in Cazenga and Camama. This station will supply electricity to around 600,000 people.

GE is also supplying railway locomotives in Angola and South Africa. Angola's government announced plans in June 2014 to buy $1 billion of trains and power generators from GE.

The deal is part of the United States' Power Africa initiative, a privately funded plan announced last year by Barack Obama to increase access to power in SSA. GE has been working with the engineering arm of South Africa's national rail operating company, Transnet, to assemble locomotives in-country. It is also investing in health programmes across Africa.

GE and CSR Corp, China's biggest trainmaker and Bombardier, are assembling locomotives in Pretoria. CSR is responsible for 359 units. Bombardier and CNR Corp are responsible for 6199 facilities in the eastern port city of Durban, with each working on 240 and 232 trains respectively.

Digital industrial group GE has started production of the 233 GE Evolution Series locomotives it has been contracted to supply to State-owned Transnet Freight Rail (TFR) as part of its acquisition of 1064 electric and diesel locomotives from four original-equipment manufacturers (Greve 2015). The R50-billion acquisition contract would see China South Rail Zhuzhou Electric Locomotive and Bombardier Transportation South Africa collectively supply 599 electric locomotives, while GE South Africa Technologies and China North Rail Rolling Stock South Africa would supply a collective 465 diesel locomotives. The group asserted that the locomotives would contain 55% local content:

- Booyco, based in Germiston, is building the air conditioner for the locomotive's main cab. Duys, with its head office in Pinetown, KwaZulu-Natal, but with branches across South Africa, is manufacturing the fuel tank.
- Transnet Engineering would be manufacturing and assembling the locomotives' platforms, traction motors, bogies and alternators at its facility in Pretoria, while the radiators would be produced by Germiston-based Wabtec South Africa. GE has announced the conclusion of the GE-Dangote Framework Agreement for distributed power solutions (allafrica.com, id/00033728). Under the agreement, GE would supply aero-derivative gas turbines to the

Dangote Group for captive power requirements, while Dangote Group would generate reliable and efficient power for the operation of its manufacturing assets within Nigeria and other African countries where its industries operate. GE has more than 400 employees in Nigeria and 1800 employees across 35 countries in the Africa region.

Coca-Cola

Coca-Cola is the largest bottlers in Africa, operating 121 bottling plants and employing about 9500 people in seven African countries (ey.com/GL/en/Industries/Consumer-Products/E website).

Coca-Cola Sabco (CCS) has local shareholding in every African country. The company operates in Tanzania, with an average local shareholding of 20%. Local shareholders are either prominent business people or, in the case of Namibia and Mozambique, the government. All generally play an active role and are often on the local board.

One model that has worked well for bottling company CCS in parts of East Africa is the Official Coca-Cola Distributor (OCCD) approach. Under this model the local bottling factory partners work with a number of micro-distributors. These local entrepreneurs are each given responsibility for a defined geographical area (generally a 1 km radius in an urban environment, servicing at least 500 outlets).

Micro Distribution Centres (MDCs) help Coca-Cola secure hard-to-reach markets while creating wealth and job growth in those communities. MDCs are Coca-Cola depots, typically located in areas where a lack of stable roads and infrastructure makes it difficult for delivery trucks to travel. The people who set up MDCs employ others in the area who then sell and distribute the drinks to retailers, often by bicycle or pushcart. The MDCs are fully owned by local entrepreneurs in Africa. They are not run or managed by Coca-Cola; the MDCs own their franchises and work with Coca-Cola bottlers.

There are over 3200 MDCs in Africa, employing over 19,000 people. They generate over £629 million ($950 million) in annual revenue, 50% of new MDCs to be owned by women.

The OCCDs have become a central element in CCS's core distribution strategy in several countries and are responsible for 70% or more of sales volumes in Ethiopia, Kenya, Uganda and Tanzania. The model helps CCS to address a core route to consumer challenge, while also creating economic opportunities for local entrepreneurs and their employees.

Soda sales have declined in the United States for the past decade. People are placing a renewed focus on health and wellness, and sugary beverages are square in the cross hairs of health-conscious consumers (Ciura 2016). In an effort to adapt to the changing consumer landscape, Coca-Cola is turning to M&A. Through acquisitions and investments in other companies, Coca-Cola is trying to buy the growth it cannot generate on its own. Coca-Cola's latest investment (Esterel 2016) is an agreement with Tropical General Investments Group (TGI). Otherwise known as TGI Group, it is the holding company of Chi Ltd, which is Nigeria's leading dairy and juice company. The two companies have come to an agreement whereby Coca-Cola will take a 40% stake in Chi Ltd, with the intention to increase that stake to a complete 100% within three years (Esterel 2016). The initial investment values the company at slightly less than $1 billion.

The deal presents a number of strategic benefits for Coca-Cola. Africa is a premier emerging market, as it has a growing population and rising middle class.

Nestlé

Nestlé is mainly installed in South Africa and Nigeria and produces to supply the local consumers and consumers in African countries around (Nestlé Nigeria 2012).

Nigeria

Facilities under Nestlé Nigeria also include the Agbara Manufacturing Complex, the Otta Distribution Centre and from 2011 the Nestlé Flowergate Factory. This factory is a Maggi production facility, in Kajola village, near Sagamu, in the Nigerian state of Ogun. Maggi is a popular brand of Nestlé's food seasoning and culinary products (food processing website 2011). This plant is twice the size of the Agbara plant, which is Nestlé's only other production site in Nigeria. Nestlé Nigeria comes under the Nestlé Central and West Africa Region, which includes eight factories and employs around 5500 people.

South Africa

Nestlé is building two new factories in South Africa, in Babelegi, a small town in the North West province, where it will manufacture some of the products it currently imports (Brand South Africa 2011), Cheerios and Milo products, and Maggi range, including instant soups, stocks, sauces, seasonings and instant noodles.

Nestlé bought the Specialised Protein Products (SPP) company in Potchefstroom to increase production of non-dairy creamers and soya-based products.

Its popular products include baby formula milk Nido and Nespray, as well as baby foods like Nestum and Cerelac.

R&R Ice Cream acquired Nestlé South Africa's ice cream in March 2015. The Nestlé acquisition allowed the company to manufacture, distribute and market brands such as Fab, Smarties, Rolo and Rowntrees Fruit Pastilles.R&R employs 200 people at its Johannesburg factory and owns 22,000 freezers across South Africa and the Sub-Saharan region.

R&R, which was founded in North Yorkshire in 1985 and later merged with Leeds-based Treats Group, was itself bought by European private equity giant PAI Partners in 2013. R&R Group had acquired Nestle's UK ice cream business in 2001, which enabled the company to produce and sell brands such as Fab, Smarties, Rolo and Rowntrees Fruit Pastilles (Turner 2015).

Cameroon

The Cameroonian subsidiary of Nestlé is offering, in the medium term, to buy an additional 75% of raw materials locally (Business Cameroon 2014), according to internal sources at the company. The project would correspond to a reduction in imports of around 70%. Currently, 84% of raw materials used in the Douala Nestlé factory as well as 59% of packaging used for processing Nestlé Cameroon products are imported.

Imports are primarily cassava starch (1500 to 1800 tonnes per year for expenditure reaching 300 million FCfa) and cooking salt, ingredients used in the production of Maggi soup bases. According to our source, this product represents 90% of Douala Nestlé factory's total production.

Nestlé Cameroon plans to source up to 100% of its cooking salt needs, and strengthen its co-operation within the local cassava starch manufacturer, the Sangelima Cassava-Processing Company (Sotramas). After taking samples of cassava varieties that can be used by the company across Cameroon, the Nestlé Research Centre in Abidjan chose four varieties that met the company's quality criteria. These varieties will be cultivated by Sotramas providers, which will then provide Nestlé Cameroon with the finished product if the price is competitive.

In this effort to reduce cassava importation, Nestlé is also counting on PIDMA, a Cameroonian government programme financed to the tune of 50 billion FCfa by the World Bank which aims to boost the production of cassava, corn and sorghum in order to facilitate supply to agro-foods companies.

Cameroon Nestlé has invested 18 billion CFA francs over five years to modernize its equipment at its plant in Douala (Cameroon Web 2014). This investment has also increased its production dominated by the fortified Maggi cube, which represents 90% of production at Douala.

Maggi Star Caravan (nestle-cwa website) travels to towns and cities week by week in Cameroon, providing information about balanced diets, micronutrient deficiencies and the importance of culinary hygiene through interactive cooking demonstrations, women's forums, group discussions and presentations on micronutrient fortification. Maggi Star Caravan reached 2.3 million people in Nigeria, while about 15,000 women are benefiting from the home garden initiative.

Ivory Coast

Nestlé has inaugurated a new experimental farm on a 30-hectare site in Côte d'Ivoire to focus on plant science and research into nutrition, sustainable agriculture and rural development (Nestle 2013).

The farm, located at Zambakro, some 18 km from the capital, Yamoussoukro, will create 20 jobs by 2014. The farm will develop better varieties of key raw materials for Nestlé—namely cocoa and coffee—as well as traditional African cereals—like millet, sorghum and maize—and root crops, like cassava and yam. The farm will also provide training in the latest agricultural techniques to Ivorian farmers, co-operatives and other partners.

The centre will feature a mini propagation laboratory, where high-yielding plantlets for distribution to cocoa and coffee farmers will be grown. It will also host a breeding programme for new varieties of coffee and a soil fertility lab. The farm will serve as a demonstration plot for practical training.

The Zambakro facility as a part of Nestlé's Research and Development Centre in Abidjan will work particularly closely with Nestlé's research centre in the French city of Tours, which has developed innovative propagation techniques to deliver high-yielding cocoa plants to farmers in Côte d'Ivoire and is breeding productive plants to improve the lives of cocoa farmers worldwide.

My Own Business Initiative

As part of its 'My Own Business Initiative' programme (nestle-cwa.com website), Nestlé provides vendors with a Nescafé coffee dispenser they can strap on their back, enabling them to sell coffee by the cup in markets, at events and at the roadside. Launched in Nigeria in 2012, this initiative

is now operational in Burkina Faso, Côte d'Ivoire, Cameroon, Ghana, Senegal and Kenya, and is being extended to the DRC, Ethiopia, Angola and Mozambique. Nestlé is the largest wholesaler in Africa and hence a trusted and committed partner to thousands of small and medium enterprises throughout SSA.

In 2014 alone, Nestlé purchased 9660 tonnes of soybean from local farmers in Nigeria. Soybean is a key element in the ingredient mix in Maggi production to provide a distinctive fermented flavour (Umeha 2015).

Nespresso—South Sudan

Nestlé's daughter company Nespresso has launched South Sudan's first ever export coffee and its first significant non-oil export in a generation, after working to help rebuild the nation's coffee industry that was destroyed by conflict (nestle-nespresso website).

Suluja ti South Sudan coffee capsules will initially be sold to Nespresso Club members in France in extremely limited volumes, and the brand does not expect to make a return on the coffee for several years, until production levels increase.

The South Sudan initiative is based on Nestlé Nespresso's AAA Sustainable Quality Program, and since 2011 the brand and non-profit organisation TechnoServe have worked with 500 local farmers in the country to revive coffee production. Nespresso has already invested over CHF 700,000 in the Yei region, and plans to invest CHF 2.5 million to support several thousand farmers over the next few years. The coffee farmers in Yei and TechnoServe are the partners of Nestlé in this initiative.

USAID announced (USAID, Thursday, April 7, 2016) that it had decided to invest $3.18 million to strengthen efforts to rebuild the coffee industry in South Sudan and improve coffee farmers' livelihoods. USAID is partnering with Nespresso and TechnoServe, a non-profit development organization, in this joint effort.

Since 2011, Nespresso and TechnoServe have worked directly with local farmers to revive high-quality coffee production in South Sudan, while developing commercial channels to enable its sale and export. Nespresso has already invested over $1.5 million in the project.

To date, more than 700 farmers have been integrated into the Nespresso AAA Sustainable Quality Program (link is external), which provides support, training and technical assistance to improve sustainability and productivity, while maintaining the highest-quality coffee. South Sudan's

first wet mills (equipment to process coffee cherries into coffee beans) have been established, and the first coffee export was sold as a Nespresso Limited Edition variety in France last year.

USAID's contribution will help expand the existing initiative to support a thriving and inclusive coffee sector in South Sudan by increasing scale and ensuring lasting impact. The funding injection will also enable the programme to be extended to new communities, allowing more farmers in South Sudan to benefit from the revival of South Sudan's coffee industry.

Anglo American (AA)

AA is one of the world's largest mining companies, for more than 25 years in South Africa (Anglo American website). Local goods and services procurement is evaluated at around US$5 billion a year (Anglo American 2014). AA is focused on platinum group metals, nickel, diamonds, copper, metallurgical and thermal coal, and iron ore (southafricanpage website). AA has 76,000 permanent workers and 24,240 contractors.

Unstable Prices

The mining sector in South Africa is in trouble, with the combined worth of South Africa's 35 top platinum mining companies having dropped 55% since June 2014.

Thousands of jobs are being lost and there are concerns over safety. Mining company AA is making an effort to get rid of underperforming parts of its platinum operations, to reduce risk and focus on more profitable areas.

There are three major platinum mining companies in South Africa, Anglo American, Lonmin plc and Impala Platinum, and they have all fallen on hard times because of strikes, low demand and dwindling profitability.

Platinum prices are falling in general because production is outweighing demand and there has been a great deal of labour unrest in South Africa. The government has held meetings with companies and unions to try to prevent widespread layoffs, but this has been a challenge given the state of the market.

AA is selling some of its South African platinum mines due to their limited profitability (Dogson 2016). Platinum mines in the Rustenburg area have been a particularly difficult site to keep operating, as the mines in this region have been operating at a loss for some time.

To make matters worse, car dealer Volkswagen (VW) was found guilty of rigging its diesel engine tests this September, causing sales to dive. Diesel auto-catalysts account for around 40% of global platinum consumption, so when VW sales fell by 4%, a considerable chunk of the global demand for platinum did too.

South Africa sits on about 80% of the world's platinum resources, so it could be detrimental to the industry if diesel auto-catalyst demand continues to drop. Platinum production has been outweighing demand, so unless another use for the material is discovered, the situation could become increasingly bleak.

In 1987, there were 554,000 people working in South Africa's gold sector according to the Chamber of Mines. The same year, the platinum sector employed considerably less at 83,000. When companies began plunging deeper into the earth for decreasingly lower-grade gold, prices went down and the gold industry started to shed jobs.

The platinum industry picked up people who had lost their jobs in gold mining, and in 2006 totalled 168,000 workers, which exceeded the 160,000 in gold for the first time. This was not to last though, and the number of platinum labour workers has been declining since last year.

After a difficult year in 2015, when Anglo's stock sank 75%, it has rebounded in 2016 as raw materials rallied and management set out plans to exit iron ore and coal, and focus on more profitable diamonds, platinum and copper (Biesheuvel 2016a). AA more than doubled in value in 2016 (Biesheuvel 2016b).

Investment in Local Entrepreneurship

AA established Zimele, an offshoot dedicated to enterprise development, in 1989 as an enterprise development arm. Zimele's aim is to help create and develop commercially viable and sustainable black-owned South African small- and medium-sized enterprises (SMEs) by providing early-stage funding (equity finance or subsidized loans), as well as mentoring and hands-on support via a network of small business hubs throughout South Africa. Zimele initially focused on developing suppliers within its own supply chain. Today it has six funds that provide support to diverse kinds of mining-related and non-mining entrepreneurial ventures.

Over the past seven years, Zimele has supported 1885 local entrepreneurial companies, employing over 38,000 people and, in 2014 alone, it provided over R1.3b (US$110 million) in funding for these businesses.

- Kwakhanyisa Co-operative Limited has partnered with South African National Parks to sustainably harvest indigenous timber in the Garden Route National Park. The purchase of a sawmill, funded with a R5 million loan from Sebenza Fund in 2014, was central to expanding the co-operative's capability. Together with Zimele's mentorship:
- Electrical and instrumentation contracting and supply company DEI Projects received a loan of R5 million from Zimele Sebenza Fund to finance its expansion proposal. The company subsequently secured a contract worth R13 million with AA's Mogalakwena Mine in Limpopo province, which has boosted the company's turnover by 40%. DEI Projects currently employs more than 130 people, 80% of whom are from the communities in which it operates.
- CTR Business Enterprise in Richards Bay was able to diversify its service offering to the automotive industry using a loan of R1.1 million from Sebenza Fund in 2014. This has enabled the wholly black-owned company to expand and successfully access new markets.
- Murandu Building Solutions in eMalahleni has received over R4 million in loan funding from Zimele's Community Fund since 2012, to complete construction projects, including contracts on three coal sites in South Africa. Zimele's mentorship support also helped the company to successfully bid to construct a school in the Eastern Cape.
- Enzani Technologies specializes in Electrical Automation Engineering for infrastructure projects. Its primary markets are Water, Renewable Energy and Mining infrastructure for which it offers design, procurement, construction, site and project management services (enzani website). Established in 2005, Enzani Technologies' clientele spans both private and public sectors including large EPC contractors (engineeringnews website).

The number of women entrepreneurs is growing, and they are starting businesses in industries previously dominated by men (Dludla 2015). According to statistics by Small Enterprise Development Agency (SEDA), approximately 72% of micro-enterprises and 40% of small enterprises are owned by women.

Western Cape businesswoman Theresa Cupido is an entrepreneur operating within the road construction industry with a business she started in 2006.

The 44-year-old Cupido is the owner and CEO of a roadmarking and civil engineering company, ATN Group, which is based in Bellville, Cape Town.

Tullow Oil

The company started in a small town called Tullow close to Dublin, Ireland. The first main agreement in Africa was with Senegal in 1986. Gas production and sales started in 1987.

In 1988, Tullow expanded its operations into the United Kingdom by acquiring exploration acreage and proven gas fields. In 1989, Tullow was awarded its first onshore UK licence and acquired exploration acreage in Spain, Italy and South Yemen. In the same year, Tullow listed its shares on the London and Irish Stock Exchanges. In 2000, Tullow made the first of a series of key acquisitions when the Group bought producing gas fields and related infrastructure in the UK Southern North Sea from British Petroleum (BP) for £201 million.

In 2004, Tullow acquired Energy Africa for half a billion pounds. This was a transformational acquisition which gave Tullow substantial production of 54,000 boepd (50% oil; 50% gas) and a range of production and exploration assets in Uganda, Gabon, Equatorial Guinea, Namibia and Congo.

The Group made five oil discoveries in Uganda during 2006, which established the existence of a working hydrocarbon basin. Tullow also made three gas discoveries in the United Kingdom. Tullow announced its largest ever acquisition with a US$1.1 billion bid for Hardman Resources Limited. As a result of this acquisition, Tullow gained not only a dominating operating position in Uganda, where it had partnered with Hardman, but also assets in Mauritania, French Guiana and Suriname.

In 2013, the Group delivered another year of exploration and appraisal success, most notably in onshore Kenya, and made significant progress with its key developments in Ghana, Kenya and Uganda.

Tullow's 'closing the gap' programme, together with initiatives such as Traidlinks and Invest in Africa, focuses on equipping local suppliers to provide goods and services to international standards. Tullow has also

created an online supplier centre, a hub aimed at supporting and developing local suppliers. Tullow is not only directing an increasing proportion of its procurement spend towards local suppliers, US$225 million across Ghana, Uganda and Kenya in 2014, but also requiring international suppliers that want to work with it in African countries to detail in tender documents their commitment to developing local companies.

Symbion

Symbion is an American power construction company working in Africa with offices in South Africa, Nigeria and Tanzania. Symbion builds, owns and operates electrical power infrastructure including power stations, extra high voltage transmission lines, distribution lines, substations and switchyards (Symbion website). Symbion Power is built on a foundation of partnership and co-operation. Herewith are some projects promoted by Symbion.

972 MW Ughelli Power Plant, Warri, Nigeria

Warri, Nigeria
Symbion was part of the Transcorp Ughelli Power Limited (TUPL) consortium that won the right to acquire the 972-MW gas-fired Ughelli Power Plant in Warri in November 2013. The TUPL consortium is revitalizing the Ughelli Power Plant, which is currently producing 300 MW on Open Cycle Gas Turbines and increased output to 700 MW within five years.

Nigeria flares gas because it does not have the infrastructure to take the gas from where it is to the consumers. A lot of gas is stranded because the investment required for the gas infrastructure has not been made. There are complaints from investors in the gas supply and gas treatment plants who say they cannot get paid sufficient amounts of money to justify the investments. There is also incessant vandalism and terrorism problems.

Arusha, Tanzania
With widespread power shortages in Tanzania throughout 2011, the Tanzanian parliament approved a programme to import and install over 400 MW of diesel-fired temporary generators at various strategic locations throughout the country.

The government chose Symbion to participate in this programme, requesting the installation of 250 MW of generation equipment. Installed in March 2012, the Symbion Power Plant in Arusha is a 50-MW thermal plant utilizing diesel engines. It provides power to the greater Arusha community.

Dodoma, Tanzania

Located in Tanzania's capital city of Dodoma, the Symbion Power Plant has an installed capacity of 55 MW and was a fast-track project completed in only four short weeks.

The Symbion plant provides power to the entire Dodoma region, relieving stress on the grid in other areas, including Dar es Salaam, while freeing up power and reducing load shedding. This 55-MW thermal plant utilizes diesel engines and is part of the total additional 250 MW that will be incrementally added to the existing 112 MW, bringing the total megawatts produced by Symbion in Tanzania to 317 MW.

Tanzania has found huge amounts of gas off the coast of Mtwara in the south of the country, just north of the Mozambique border. There is an existing gas field there called Mnazi Bay, and there is already gas infrastructure and a small 18-MW power plant on the mainland. In a public–private partnership with the utility TANESCO, Symbion is going to build a 600-MW power plant at Mtwara. Symbion is also going to build a 550-km, 400-Kv transmission line and then hand it over to TANESCO because the law requires that they own the transmission network. That line will connect the Tanzanian grid, which the utility is currently working to connect to other countries such as Kenya, Uganda, Rwanda, Malawi and Zambia.

Symbion is also in discussions with Electricite de Mozambique (EDM) about the construction of transmission from Tanzania to the northern towns of Palma and Pemba where huge developments will be taking place over the next ten years.

Rwanda, Uganda, Kenya

In Rwanda Symbion is investing in a gas to power project to use methane gas from Lake Kivu.

In Uganda Symbion is doing a project in partnership with the Madhvani Group, well-known to East African sugar farmers and hoteliers.

In Kenya Symbion has a minority partner in a consortium of three companies that is led by the geothermal power specialist Ormat, and has

a concession at Menengai to build a 35-MW geothermal plant; the other partner is the private equity firm Transcentury from Kenya.

Madagascar

Symbion's latest venture in Madagascar intends to develop seven power plants over a three-year period. Three of them are biomass—they are going to grow bamboo—and each one is 5 MW in different areas; 3000 acres are required to grow the bamboo for each plant, farmers producing and delivering the bamboo pellets that they will burn in their boilers. Each plant will have this feedstock supply chain that will create jobs for thousands of people. Symbion has also signed an agreement to build a 9-MW solar plant, photovoltaic solar. Power for Antananarivo is today all diesel and heavy fuel oil huge cost. Symbion is going to build a 116-MW power plant at the oilfield and then build a transmission line of approximately 300 km to Antananarivo. Symbion signed a Power Purchase Agreement (PPA) to invest in the 40-MW Mandroseza power plant in Antananarivo. The plant is in poor condition producing today only 5 MW. JIRAMA (JIro sy RAno MAlagasy, the national water and electricity company in Madagascar) has signed a PPA with Symbion for a tenure of 20 years where it will rehabilitate the plant and operate it at the full 40 MW.

Blackstone

Blackstone is a US-based private equity and investment banking giant, which co-operates with Dangote Group in a number of industries, including cement, food and property (Maritz 2014).

The global private equity and advisory firm has projects in Nigeria, Ethiopia, Mozambique and Togo. It is working with Black Rhino, an African infrastructure company, alongside Dangote to identify, develop and operate large-scale investments (Lewis 2015).

Blackstone's initial foray into major African infrastructure was a $116 million investment in 2005 through Sithe Global, its portfolio company, to revive the stalled Bujagali Dam in Uganda.

In 2014, as part of a US push to ramp up African power production, it teamed up with Black Rhino and Dangote Industries pledging to invest US$5 billion over the next five years.

Among the most advanced of Blackstone and its partners' new projects is a pipeline for refined fuel between Ethiopia and Djibouti. Both governments have signed a memorandum of understanding with Black Rhino and a framework is expected within weeks.

Blackstone's partner in Uganda is the Aga Khan Fund for Economic Development, part of the global network run by the spiritual leader of the Ismaili Muslim community, which has a strong presence in East Africa.

Carlyle Sub-Saharan Fund (CSSAF)

The Carlyle Africa team engages in buyouts and strategic minority investments in partnership with experienced management teams throughout SSA (Carlyle website).

Carlyle is one of the world's largest alternative asset managers with US$188 billion under management, employing more than 1700 people in 35 offices across six continents (howwemadeitinafrica.com.website). Its US$698 million SSA Fund, launched in 2011, has invested in South Africa's TiAuto, owner of automotive equipment retailer Tiger Wheel & Tyre; Diamond Bank in Nigeria; and a logistics company in Mozambique, among others.

Launched in 2011, CSSAF invests in SSA countries, with a particular focus on South Africa, Nigeria, Kenya, Tanzania, Ghana, Mozambique, Botswana, Zambia and Uganda.

Danone

Danone's acquisition of 40% stake of Kenyan Brookside Dairy Limited, owned by the Kenyatta family, East Africa's largest milk company, is set to expand its reach in Africa (UN 2015).

This acquisition gives Danone access to over 140,000 milk farms across the East African region, where it will collect and process 750,000 litres of milk per day. Brookside enjoys the position as a market leader, with an annual revenue of $176 million in 2013. In 2013, Danone bought a 49% interest in frozen dairy products company Fan Milk in West Africa. This company had a broad customer base in six West African countries, including Nigeria and Ghana, while Brookside is strong in such eastern nations as Kenya, Uganda and Tanzania.

By enhancing efforts with three companies in the northern, western and eastern regions of Africa, Brookside Dairy acquired 51% of Sameer Agriculture and Livestock (SALL) business in Uganda for Sh3.5 billion (Star 2015). The government of Uganda owns a 49% stake in the firm.

SALL was established as a joint venture company by the Sameer Group of Kenya and RJ Corporation of India and took over the former government parastatal Uganda Dairy Corporation in August 2006. SALL is the manufacturer of the 'Fresh Dairy' range of dairy products (World Bank, Food and Agriculture Organization (FAO), International Livestock Research Institute (ILRI), The African Union Interafrican Bureau for Animal Resources (AU-IBAR) 2011).

Over 20,000 farmers (either specialized dairy or mixed farmers), who have been trained in hygienic practices for milk handling, bring their milk to the collection centres, where milk is cooled down to 40 degrees Fahrenheit (4.4 degrees Celsius). The milk is transported to Bulking Centres, managed by the Co-operatives, where it is chilled a second time. SALL insulated tankers then take the milk to the processing plant in Kampala.

Cargill

Cargill have 149,000 employees in 70 countries (Cargill website).

In fiscal 2015 the company earned $1.58 billion, down 13% from the previous year. Sales and other revenues decreased 11% to $120.4 billion. Cash flow from operations equaled $3.82 billion (Cargill 2015). Cargill is gradually growing in SSA, purchasing a grain-handling business in Kenya and a soybean processing business in Zambia.

Cargill businesses are in cocoa, cotton, grain and oilseeds, sugar, animal nutrition, specialty food ingredients, and energy trading and transportation. Over 4000 employees are located throughout Africa: Algeria, Côte d'Ivoire, Egypt, Kenya, Ghana, Morocco, Mozambique, South Africa, Zambia and Zimbabwe (Cargill 2014).

Cargill comprises 75 businesses organized around four major segments:

- Agriculture**:** Buys, processes and distributes grain, oilseeds and cocoa and other commodities to makers of food and animal nutrition products. Provides crop and livestock producers with products and services.
- Food: Provides food and beverage manufacturers, food service companies and retailers with high-quality ingredients, meat and poultry products, and health-promoting ingredients and ingredient systems.
- Financial: Provides risk management and financial solutions.
- Industrial: Serves industrial users of energy, salt, starch and steel products.

Herewith are the last acquisitions of Cargill

- In 2006 Cargill acquired Afgri's Clark Cotton business and its interests in eight gins in Southern Africa. In the same year Cargill Animal Nutrition acquired a majority interest in its first feed business in India.
- In 2007 Cargill acquired full ownership of Agrograin, one of the leading grain and oilseeds trading and storage companies in Hungary.
- In 2008 Cargill opened a new cocoa processing facility in Ghana. The facility complements Cargill's existing cocoa processing facility in Abidjan, Côte d'Ivoire.
- In 2012 Cargill invested $20 million in NuTec Southern Africa, a joint venture with Astral Foods, expanding its animal nutrition capabilities in SSA.

Nivea

Kenya's skin care market is set for a shake-up with the launch of the new Nivea Cocoa Butter range, a luxurious line-up of products created with the needs of the local consumer in mind (Capital Lifestyle 2014).

Kenya has become one of the first markets worldwide to retail the new lotion, whose gentle yet effective formula combines the power of natural cocoa butter with Vitamin E and Nivea's exclusive Hydra IQ technology to give silky smooth skin.

In the recent past, cocoa butter has emerged as a popular skin care ingredient owing to its various health benefits, which include skin-smoothing properties and a high concentration of natural fats within the cocoa bean that easily melt at body temperature and are rapidly absorbed into the skin to retain invisible moisture. Extensive research was conducted in putting together the products to suit the local Kenyan and wider East African market.

Nivea products are dermatologically tested and approved. This product is free of artificial colours and animal-derived ingredients (ulta.com website).

Local Business Leaders and Groups

Local business leaders and groups are a part of the local establishment in their country and better connected to the political and economic forces than foreign companies. They are also more mindful of the needs of their country and its population. Most of their investments are the result of a deep understanding of the link between business, politics and the market forces. They play a key role as an intermediary and as a partner of MNCs investing in SSA countries. Herewith we present some of the main active leaders and groups and their main investment in SAA countries.

Aliko Dangote, Dangote Group—Nigeria

Alhaji Aliko Dangote is from a wealthy family in Kano, Nigeria (Amagiya 2015). He is related to the late Alhassan Dantata, who was reputed to be one of the wealthiest Hausa merchants in Kano at the time of his death in 1955.

He is Africa's richest man with US$16.7 billion (forbes.com/africa-billionaires website). He founded and chairs Dangote Cement, the continent's largest cement producer. In 2015 Dangote Cement launched new plants in Cameroon, Ethiopia, Zambia and Tanzania.

The Dangote Group have moved from being a trading company to assume the status of one of the largest industrial groups in Nigeria, including Dangote Sugar Refinery, Dangote Cement and Dangote Flour. They have also diversified into telecommunications and transport of passengers in buses.

The Group in 2012 approached the Nigerian Ports Authority with the idea of leasing an abandoned piece of land at the Apapa Port, supporting the import–export activities of the Group. Dangote also owns salt factories and flour mills and is also known as the major importer of rice, fish, pasta, cement and fertilizer. Similarly, the company exports cotton, cashew nuts, coco, sesame and ginger to several countries. It also has major investments in real estate, banking, transport, textiles, and oil and gas. Dangote Group operates in 14 African countries including Congo, Côte d'Ivoire, Ghana, Senegal, Sierra Leone, Ethiopia., Zambia, Tanzania, South Africa, Kenya, Niger, Liberia, Mali and Cameroon.

Nicky Oppenheimer—South Africa

Nicky Oppenheimer is the second richest man in Africa with US$6.7 billion (in 2015). He inherited his family's stake in diamond giant DeBeers. In 2012, Nicky sold his 40% stake in DeBeers to the mining conglomerate AA, for US$5.1 billion in cash. AA controls 85% of DeBeers, the government of Botswana owns the remaining 15%.

Nicky Oppenheimer served on AA's board for 37 years through 2011. E. Oppenheimer & Son entity controls investment arms Stockdale Street Capital and Tana Africa Capital. Tana Africa Capital holds minority interests in African food manufacturers Promasidor and Regina.

Christoffel Wiese—South Africa

Christoffel Wiese is the third wealthiest businessman in Africa with US$6.5 (2015) billion. He is a South African businessman specialized in retailing. In December 2015, Wiese's biggest investment was furniture and home goods retailer Steinhoff. In February 2015, Steinhoff purchased clothing and footwear seller Pepkor, another one of Wiese's investments, for $5.7 billion in cash and stock. After the deal, Wiese ended up with a 17% stake in Steinhoff. His other investments include 15% of publicly traded Shoprite Holdings, which has supermarkets, furniture stores and fast food outlets in 15 countries across Africa and the Indian Ocean Islands. He has stakes in private equity firm Brait, industrial products company Invicta Holdings and mining-sector investor Pallinghurst. In 2015, he acquired British fashion retailer New Look for US$1.23 billion and gym chain Virgin Active for $1 billion.

Johann Rupert—South Africa

Johann Rupert chairs listed Swiss luxury goods firm Compagnie Financiere Richemont, best known for the brands Cartier and Montblanc. Rupert, the fourth richest businessman in Africa from South Africa, created the company in 1988 after spinning off international assets owned by Rembrandt Group Limited (now Remgro Limited), a South African company his father Anton founded in the 1940s as a tobacco manufacturer (Nsehe 2014). He split it into two divisions—Remgro, a Johannesburg Stock Exchange listed investment company with holdings in the banking, health care and industrial sectors, and Richemont, a Swiss-based

luxury goods company. Rupert owns a 7% stake in Remgro, which he chairs, as well as 25% of Reinet, an investment holding company based in Luxembourg that has a stake in British American Tobacco.

Mike Adenuga—Nigeria

Mike Adenuga, Nigeria's second richest man, with US$3.5 billion, built his fortune in telecom and oil production. His mobile phone network, Globacom, is the second largest operator in Nigeria with 32 million subscribers. He also has operations in Ghana and the Republic of Benin. His exploration outfit, Conoil Producing, operates six oil blocks in the Niger Delta. He also owns real estate firm Proline Investments, which has hundreds of properties throughout Nigeria. Adenuga studied in the United States, receiving an MBA from Pace University in New York, where he worked as a taxi driver to support himself. He returned to Nigeria and made his first fortune trading lace and Coca-Cola. Along the way he made friends with Nigerian military bigwigs who awarded him lucrative state contracts; these formed the foundation of his fortune.

Isabel dos Santos—Angola

Isabel dos Santos is the oldest daughter of Angola's president and, by virtue of her investments in Portugal and Angola, is Africa's richest woman, with US$3.4 billion. Her assets in Angola include 25% of Unitel, the country's largest mobile phone network, and a stake in a bank, Banco BIC. In Portugal she owns a nearly 7% chunk of oil and gas firm Galp Energia (alongside Portuguese billionaire Americo Amorim), and nearly 19% of Banco BPI, the country's fourth largest bank. She is also a controlling shareholder of Portuguese cable TV and telecom firm Nos SGPS (formerly called Zon). In June 2015, the media reported that she spent slightly more than $200 million to buy a stake in Portuguese electric power equipment firm Efacec Power Solutions.

Folorunsho Alakija—Nigeria

Folorunsho Alakija is the second richest businesswoman in Africa with US$2.6 billion. She is the vice chair of Famfa Oil, a Nigerian oil exploration company that has a 60% participating interest in block OML 127, part of the larger Agbami field, one of Nigeria's largest deepwater

discoveries, about 70 miles offshore. Its partners include Chevron and Petrobras. Her first company was a fashion label that catered to Nigeria's elite women, including the wife of former military president, Ibrahim Babangida, who awarded Alakija's company an oil prospecting licence. Alakija's net worth has fallen in the past year as a result of lower oil prices.

Femi Otedola—Nigeria

Femi Otedola, the third richest Nigerian businessman with US$1.7 billion, is the controlling shareholder of publicly traded Forte Oil, an oil marketing and power generation company. Originally a Nigerian subsidiary of British Petroleum, Forte Oil has more than 500 gas stations across the country. It owns oil storage depots and manufactures its own line of engine oils. In 2013, Otedola led the company to purchase a government-owned stake in a gas-fired power plant in Kogi state in Central Nigeria. In September 2015, Swiss commodities giant Mercuria said it would acquire a 17% stake in Forte Oil for US$200 million; as of late February 2016 the transaction is not yet complete. Otedola's daughter, Ifeoluwa, is a popular disc jockey who goes byn the moniker 'DJ Cuppy'.

Abdulsamad Rabiu—Nigeria

Abdulsamad Rabiu, the fifth richest businessman in Nigeria with US$1.7 billion (2015), is the founder of BUA Group, a Nigerian conglomerate active in sugar refining, cement production, real estate, logistics and port operations. Rabiu is expanding cement production. In September 2015, BUA signed a $600 million deal with Sinoma International Engineering, a Chinese cement equipment and engineering service provider, to construct a second production line at its flagship Obu cement plant, located in Edo State in the western part of Nigeria. Rabiu's aim is to double capacity and expand BUA's current 10% market share in Nigerian cement. In January 2016, BUA Group agreed to sell its flour milling and pasta-making businesses to Olam Group of Singapore for $275 million. Rabiu, the son of a businessman, inherited land from his father. He set up his own business in 1988, importing rice, sugar and edible oils as well as iron and steel rods.

Mohammed Dewji—Tanzania

Mohammed Dewji, the richest Tanzanian businessman with US$1.5 billion, is the CEO ofMohammed Enterprise Limited (METL), one of the largest industrial conglomerates in East Africa (Nsehe 2014). Gulam Dewji founded the conglomerate in 1960 as a commodities trading concern until his eldest son, Mohammed 'Mo' Dewji, returned from attending Georgetown University and a stint in a job on Wall Street in the United States and joined the business.

Mo began acquiring government-owned textile and soap manufacturing entities that were being offered for sale in a privatization exercise. METL's turnover now exceeds $1 billion, mainly driven by its textile and soap manufacturing units.

Comcraft Group—Kenya

Manu Chandaria's father arrived as an Indian immigrant to Nairobi in 1915. A hundred years later he is chair and CEO of Comcraft with more than $2 billion in annual revenues, employing over 30,000 people on three continents, and the largest manufacturer of steel and aluminium products in Africa. Chandaria describes the stationing of family members internationally, innovative methods of accessing capital and acquiring talent, and the Group's strategies to navigate political turbulence in African countries. Chandaria also describes the family's entrance into philanthropy and how his religious beliefs, as a follower of Jainism, affected the culture of the firm and his approach to management.

Sameer Group—Kenya

Naushad Merali was the chief architect of the Sameer Group. At the age of 24 he took a bank loan to purchase shares in Ryce Motors from the owner Frank Ryce—a German who was then winding up his business activities in Kenya.

In 1985, he bought a stake in the Commercial Bank of Africa. Thereafter he acquired shares in the First National Bank of Chicago and also Firestone East Africa Group), Eveready Batteries Ltd (now Eveready East Africa), Sasini Tea & Coffee (now Sasini Ltd) belonging today to Sameer Groups.

Dantata Group—Nigeria

The Dantata Organization was founded around 1910 by the patriarch of the Dantata family, Alhassan Dantata, who started trading commodities such as kolanut, cocoa, beads and groundnuts in Lagos and Accra under the company name, Alhassan Dantata & Sons Limited (Nsehe 2014). Aminu's eldest son Tajudeen Aminu Dantata is now in charge of the overall family business. He took the reins of the business in 1988.

The Dantata Organization is a large conglomerate with interests in oil exploration, manufacturing, banking and finance, import and export, farming, and merchandising and commodity trading. Companies in the group's fold include Dantata & Sawoe Construction, a leading construction firm, Bebeji Oil & Allied Products Limited, a petroleum marketing company, Express Petroleum & Gas Company Limited, an oil exploration company, Dantata Property Development & Management, and Kundila Finance Company, among others. The group's annual revenues exceed $300 million annually.

Raymond Ackerman—South Africa

Raymond Ackerman was fired from his position as a managing director at South African food retailer Checkers in 1966. He used his severance package to buy up three retail outlets in Cape Town, which traded under the name Pick n Pay. Ackerman built Pick n Pay to become one of the most popular and largest retail outlets in South Africa by building a strong reputation as a consumer champion and fighting supplier cartels in bread, petrol, cigarettes and many other industries. Pick n Pay now has close to 800 stores in Southern Africa. Pick n Pay is the second-largest grocer in South Africa.

Ibru Organization—Nigeria

Olorogun (Dr) Michael Christopher Onajirevbe Ibru (MCOI), the founder and chairman of Ibru Organisation, is the patriarch of the Ibru dynasty (Sule 2016).

MCOI company started out in 1957 by importing and selling frozen fish from the back of a truck. As his fish trading business grew, he chartered his first fishing boat and went into large-scale fishing, acquiring fishing trawlers. From fishing, the company expanded into other business

sectors such as brewing, construction, petroleum distribution and bulk storage, bulk liquid products, warehousing and importation. Ibru's first son, Oskar, took the helm of the organization in the 1980s and has been responsible for steering the wheel since then.

Bakhresa Group—Tanzania

Said Salim Bakhresa (SSB), 65, laid the early foundations of the Bakhresa group in 1963 as a teenager when he began selling potato mix after dropping out of school. He subsequently opened up a series of small business operations including a small restaurant and an ice cream manufacturing operation and reinvested his profits in setting up a grain milling operation. Today, Bakhresa Group is Tanzania's dominant food manufacturing company. The company's interests include grain milling, confectionaries, frozen foods, beverages and packaging. Bakhresa's two sons, Mohammed and Abubakar, are both Executive Directors of the company and independently manage arms of the business outside Tanzania.

The Bakhresa Group established in 1983, in the city of Dar es Salaam, Tanzania, SSB has the largest wheat milling and storage capacity in East Africa, employing more than 1200 people directly (bakhresa website). The company has acquired wheat, rice and maize mills under privatization programme from the Presidential Parastatal Sector Reform commission, Tanzania and turned them around successfully. SSB employs more than 1000 employees directly.

Domestic and international markets SSB enjoys more than 60% market share in Tanzania and also exports wheat products to the DRC, Burundi, Rwanda, the Middle East and the Far East.

Madhvani Group—Uganda

In 1918, Muljibhai Madhvani acquired a piece of land in Kakira, a small commercial town in Eastern Uganda, with which he established a sugar factory. That sugar factory, Kakira Sugarworks, is today the largest producer of sugar in the East African region, producing an estimated 165,000 metric tonnes of sugar annually and employing over 8000 people. It is also the flagship company of the Madhvani Group, a large Ugandan conglomerate that owns numerous hotels, tea estates, and construction, insurance

and distribution companies. It also owns and operates the Kakira Airport. Muljibhai Madhvani's youngest son, Mayur Madhvani, currently holds the reins as CEO of the group, a position he assumed after his elder brothers passed away. Mayur has played a crucial role in revitalizing the group, and is responsible for diversifying Madhvani's interests from manufacturing to service-related industries.

Ramco Group—Kenya

Kenya's Ramco Group was founded by Rambhai Patel, an Indian immigrant who settled in Nairobi, in the early 1940s and founded a hardware store in the city's downtown district. His three sons, Kirit, Mahendra and Chandrakant, joined the family business after completing their studies and helped expand Ramco's holdings into print, stainless steel, IT & office supplies. Ramco now has operations in Uganda, Tanzania and Rwanda and employs over 2000 people with an annual turnover in excess of US$220 million. Kirit currently serves as Chairman, while his other brothers serve on the company's board.

The Kenyatta Family—Kenya

Muhoho Kenyatta, the youngest son of Kenya's first president Jomo Kenyatta, runs the ship of a business empire spanning extensive land holdings in Kenya, a string of hotels, Kenya's largest dairy company and a media outfit, and has a stake in a large commercial bank. President Jomo Kenyatta laid the foundation for the family business back in the 1960s and 1970s when he acquired hundreds of thousands of acres of land across the country when the British colonial government and the World Bank funded a settlement transfer fund scheme that enabled government officials and wealthy Kenyans to acquire land from the British at very low prices. Jomo's children, particularly Uhuru and his family, also own Brookside Dairies, Kenya's largest dairy company, as well as stakes in popular television station K24 and a commercial bank in Nairobi, among other interests.

Contribution to SSA Economies

The SSA business leaders and groups are mainly involved in low-risk activities such as oil, other minerals, wireless communication (cellular compa-

nies) and food industry for the local market, trade imports and exports and distribution. Few are involved in infrastructure projects or industry. Herewith are their main contributions to SSA economies.

- *Infrastructure:* Telecommunications (Cellular), Transport, Distributed power solutions, Cement plants, Steel and aluminium products
- *Local production:* Sugar Refinery, Flour, Grain milling, Confectionaries, Textiles, Furniture, Soap manufacturing
- *Retailing:* Home goods and supermarkets, Fast food outlets, Luxury goods
- *Services:* Hotels, Banking, Insurance and finance, Logistics and port operations, Gas stations, IT & office supplies, Garages programme to develop new skills
- *Export:* Oil, Cotton, Cashew nuts, Coco, Sesame and Ginger
- *Import:* Rice, Fish, Pasta, Cement, Fertilizer.

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CHAPTER 4

Regional Development and Industrialization

Different models towards industrialization are implemented in Sub-Saharan Africa (SSA) countries in order to improve their position in the Global Value Chain and generate economic development. Special Economic Zones, Clusters, Open Incubators and Corridors presented in this chapter are able to generate together or separately structural transformation. Their impact on the current policies is limited for the moment, but in certain conditions proposed in the last chapter the situation could be improved for all stakeholders.

Introduction

Between 1990 and 2005, labour productivity fell by 1.3%. Some countries such as Ghana, Ethiopia and Malawi did experience positive structural transformation, but not enough to fundamentally generate economic development (De Vries et al. 2013; McMillan et al. 2014; UNECA/AU 2014).

When growth rebounded during the 1990s, we observe a rapid relocation of workers across sectors. The agricultural employment share fell from 61.6% in 1990 to 49.8% in 2010, but manufacturing employment share fell from 8.9% in 1990 to 8.3% in 2010 (deVries et al. 2013).

Page (2012) argues that deindustrialization after 1990 was characterized by a declining diversity and sophistication of the region's manufacturing

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sectors. Workers were absorbed in market services sectors, in particular distribution services (Rodrik 2013). The share of distribution services almost doubled to 20.1% in 2010. One-fifth of Africa's labour force is employed in the distribution sector (Jorgenson and Timmer 2011).

Few Sub-Saharan Africa (SSA) countries have managed to diversify their export structure away from unprocessed commodities (AfDB, OECD, UNDP 2015b). In eight countries, a single commodity accounts for over three-quarters of exports; in seven countries, only two commodities account for the same. Some countries still largely depend on exports of a single crop. The dominant commodity is oil. Ethiopia, Rwanda, Senegal and Uganda without sizeable mineral resources have managed to maintain growth by diversifying their exports. They have opened up sectors with greater added value, which contributes to their structural transformation (McMillan et al. 2014).

The changing international economic environment, increasing manufacturing costs in Asia, the shift from the manufacturing of end products to task-based production (UNIDO 2008), and the development of outsourcing and intra-firm trade (Dinh et al. 2012) open up, according to the World Bank (2009), opportunities for light manufacturing. It requires less capital and fewer technical and managerial skills and remains viable in fragile economies (AfDB/OECD/UNDP 2014).

Global Value Chains (GVCs)

GVCs offer an opportunity to integrate into the world economy, but the gains from GVC participation are not automatic. Draper and Lawrence (2013) argue that due to limited production capacity, import substitution is not an option for many countries. They therefore recommend integration into multinationals' (MNCs) value chains, which typically require building capacities in a limited range of specific tasks. Banga et al. (2015) use the concept of regional value chains (RVCs), which may focus on achieving interactive transformation between SSA economies.

GVC Types in SSA Countries

There is a significant degree of heterogeneity across SSA countries, with some countries having fared much better than others (IMF 2015a).

A majority of countries (24 out of 35) have made progress. The improvement is most widespread among non-oil commodity exporters, in

countries such as Burkina Faso, Central African Republic, the Democratic Republic of the Congo (DRC), Ghana, Guinea, Niger, Sierra Leone and Zimbabwe.

Among the best performers, progress within the East African Community (EAC) has been particularly strong, in Kenya, Tanzania and Uganda (Drummond et al. 2015; Sutton 2012).

Five countries in particular stand out, having seen the share of foreign value added in their exports increase by 5% or more in the last two decades: Ethiopia, Kenya, the Seychelles, South Africa and Tanzania. In these countries, the sectors that have benefited the most from the deepening of integration include agriculture and agro-business, textiles, leather products, and tourism in Ethiopia and Tanzania.

The four types of proposed value chains include those focusing on:

- staple food products primarily orientated towards national and regional markets such as rice, maize and cassava
- traditional export products orientated towards international markets such as cocoa, coffee and cotton
- non-traditional products orientated to national, regional and international markets such as fisheries and fish products, and cotton-textile clothing (CTG)
- manufactured products for regional and international markets.

GVC and Oil

Nigeria's oil GVC accounts for 83% of exports and two-thirds of government revenues. Upstream (exploration and production) is dominated by MNCs. Downstream (crude oil processing and marketing) has some local firms and refineries. Nigeria gives priority to local operators in awarding oil field licences and supports skill upgrading and capacity development. Upstream activities implemented by local businesses include construction, support services such as maintenance, telecommunication and control systems (Oyejide and Adewuyi 2011). The downstream activities are limited and not efficient. The Nigerian National Petroleum Corporation has a refining capacity of 445,000 barrels per day against a production capacity of 2.5 million. Local refineries operate well below their capacity, undermining profitability.

Poor provision of infrastructure, corruption, security and poor access to finance are the main constraints to this value chain's development.

GVC and Leather—Textiles

Leather GVC started in 2009, when Xinxiang Kuroda Mingliang Leather Co (Jones 2013) signed a deal to open a US$27 million leather factory in Ethiopia based on local raw material, leather and low-cost manpower. Xinxiang Leather, in partnership with China Development Bank (CDB), formed a joint venture to finance the factory, with ownership split 55% to 45% between Xinxiang and CDB respectively.

The joint venture called China-Africa Overseas Leather Products opened in November 2010, an 80,000 square metre factory which has the capacity to produce 4.5 million pieces of processed leather. Ethiopia's leather industry also received an investment of US$2 billion from China Huajian International Shoe Company. The investment, in partnership with the China Africa Development Fund, started the establishment of a light manufacturing zone.

Textiles GVC has been initiated by Jiangsu Lianfa Textile Co. Ltd, a Chinese textile company involved in yarn spinning, dyeing, weaving, finishing, printing and garment manufacturing activities. The company announced a pre-investment assessment to build a US$500 million textile factory in Ethiopia (Abiye 2014).

Jiangsu Lianfa Textile Co, Ltd is engaged in the textile business in China with several branches in various countries, and sells woven fabric, apparel and textile exported to North America, the European Union (EU), Southeast Asia, South America and China. The company is based in Nantong, China. Factories outside Addis Ababa have been set up by Pittards Plc of the UK and Turkish textile manufacturer Ayka Tekstil.

Shaoxing Mina Textiles, a China-based company, has planned to set up a US$15 million textile and garment factory in the country (linkedin website 2015). The new textile and garment factory will come up in Sebeta, Oromia and would employ about 5000 people when fully operational.

Special Economic Zones (SEZ)

SEZ in China brought growth because they exploited advantages in natural and economic geographies (World Bank 2009: 254). Proximity to large urban agglomerations, coastal areas and good infrastructure allows for dynamic SEZs.

China supports a similar model in SSA countries based on exports to the EU and the United States utilizing existing trade preferences like the

EU's Everything but Arms (EBA) arrangement and the United States' African Growth and Opportunity Act (AGOA) (UNDP 2015).

Nigeria established its first SEZ in 1992, Zambia and Ethiopia in 2006 and 2007 respectively.

Nigeria

The Nigerian Export Processing Zones Authority (NEPZA) is the federal government agency that oversees the implementation of Free Economic Zone (FEZ) in Nigeria.

Lekki Free Zone (LFZ) and Lagos Free Trade Zone (LFTZ) are both located within the jurisdiction of Lagos State Government and are controlled by Lagos State Ministry of Commerce and Industry. Lagos State Government co-ordinates several large projects under development on the Lekki Peninsula:

- LFZ Project that is being run by a Chinese–Nigerian Consortium
- The LFTZ
- Lekki Port is owned by a Singaporean–Nigerian investor, Tolaram Group (World Bank 2011)
- An oil refinery and petrochemical production facility that is being developed by the Nigerian Dangote Group
- Lekki-Epe International Airport project is realized through a public–private partnership arrangement between the Lagos State Government and various private investors.

The LFZ and the LFTZ are already operational. The Lekki Port, Dangote's refinery and the Lekki-Epe Airport are expected to become operational by 2018.

LFZ

Lekki Free Zone Development Company FZC (LFZDC) is a Joint Venture incorporated in May 2006 between China-Africa Lekki Investment Ltd (CALI) as the majority shareholder (60%) and two Nigerian partners, the Lagos State Government (20%) for the land contribution and Lekki Worldwide Investment Ltd (20%) (en.calekki website).

LFZ benefits from the support of the oil refinery and hydrocarbon industrial park proposed by Dangote Industries, and the deep sea port at LFTZ.

Dangote Group is building a refinery with a processing capacity of 650,000 barrels of oil per day, a US$11 billion project.

LFZ attracted 21 enterprises with total invested capital of US$156 million. Another 79 companies are already registered in the zone.

The following are included in the 21 enterprises: Candel FZE—Agro Chemical formulation plant, Loving Home Furnishing FZE—office furniture manufacturing, Dabupum FZE—water pumps, Crownature Nigeria FZE—Garments factory have started their activities in the LFZ.

Lekki Zone Development Company (LZDC) builds its own gas-fired power plant that began its operations in May 2015. Compressed and liquefied natural gas is now sourced locally. Four GE Waukesha gas enginators were commissioned at the LFZ near Lagos, providing 12 megawatts (MW) of uninterrupted power supply to the first phase of the Lekki Development Zone.

LFTZ

The construction and development activities of LFTZ are being undertaken by Lagos Free Trade Zone Company, a company wholly owned by the Singaporean Tolaram Group. Established in 1948, Tolaram Group has since expanded operations in SSA countries to Ghana, Benin, Ivory Coast, Tanzania, Togo and DRC (Tolaram website).

The free trade zone project began in 2002 over 215 hectares of pristine land. In 2012, an additional 590 hectares of land have been acquired, marking the beginning of phase 2. Manufacturing interests span packaged foods, paper, floor coverings, textiles and personal care products.

Zambia

SEZs in Zambia are the initiative of Chinese companies (nse website) and the Zambian government. Three SEZs have been established: ZCCZ renewed of a former SEZ established in 2007, LS-MFEZ established in 2014 and CMFEZ, established in 2015.

Zambia-China Economic & Trade Cooperation Zone (ZCCZ)

ZCCZ is situated in the North East of Zambia close to the Republic Democratic of Congo (RDC) border and to Chambishi Copper Mine, which was obtained by the Chinese state-owned China Nonferrous Metal Mining Group (CNMC), through an international bid in 1998, for a term of 99 years. The mine's resources include 5 million tonnes of copper and 120,000 tonnes of cobalt, and involve a total investment of US$160 million.

ZCCZ is developed and managed by CNMC through its Zambian subsidiary ZCCZ Development Limited (CNMC 2015a).

CNMC is one of China's largest non-ferrous metal mining and processing companies, with international operations in Asia, Africa and Latin America and US$30 billion revenue in 2014.

The zone was initially established as the Chambishi MFEZ in 2007, and was extended in 2010 to include the Lusaka East MFEZ (MCTI 2015). The zone management offers one-stop shop services to its potential investors, including market research, legal advice, financing and visa, travel and accommodation arrangements.

The zone has approved 14 investment projects, and 50% are operational. The firms are in agro-processing, pharmaceuticals, beverages, new energy and logistics.

The Lusaka South Multi-Economic Zone (LS-MFEZ)

The Lusaka East MFEZ, is located adjacent to the Kenneth Kaunda International Airport, as an extension of the Chambishi MFEZ, and is focused on light manufacturing activities and services.

The construction of the LS-MFEZ Ltd office complex was completed in 2014.

The zone has approved 22 investment projects, out of which 12 have signed leasing agreements. The ratio of the foreign and local firms is 50:50. These firms are specialized in agro-processing, pharmaceuticals, motor assembly, plastics, beverages and service sectors (such as education, retail and finance). Two firms (NRB Pharma Zambia Ltd and Zambian Breweries Plc) have completed their factory and facilities and are in the testing stage. Three more have started or are ready to start construction. Zambian Fertiliser is setting up a new plant of US$2 million investment in LS-MFEZ.

These firms have generated over US$300 million (including committed) in total, with close to 1000 jobs (including the construction workers).

Chambishi Multi-Facility Economic Zone (CMFEZ)

Established in 2015 as a Chinese–Zambian co-operation, the zone has a Sino-Zambian Friendship Hospital, which offers comprehensive medical services to the zone staff and local citizens. The hospital has experienced doctors and quality medical facilities.

The CMFEZ has 48 firms operational, generating an accumulated investment of US$1.3 billion, and about 8211 jobs. The investors are

mostly from mining, copper smelt, equipment assembling, construction, agro-processing and services (commerce, health and banking, etc.).

Herewith are some companies established in this SEZ:

Sino Metals Leach Zambia Limited, Chambishi Copper Smelter Limited, Fifteen MCC Africa Construction and Trade Limited, Reba Industrial Co-operation Limited, Zambia Non-ferrous Metals Exploration and Construction, Bolo Mining Investment, Tikto Industries Limited and JCHX Mining Construction Zambia Limited, CNMN Development Zambia Investment Company, Changesheng Mining Equipment Limited and Kilosail Corrosion-proof Technology.

Ethiopia

The Ethiopian Industrial Development Zones Corporation (EIZDC) is managing the FEZ.

Ethiopia aims to transform the economy via industrialization by attracting foreign investors to zones where key public services will be concentrated (Hamlin et al. 2014).

Ethiopia has made it a key priority to turn the country into a hub for light manufacturing. That strategy is bearing fruit: industrial output grew by 21.2% between 2013 and 2014, and now accounts for some 14% of GDP.

The Ethiopian government has set itself a target of $1 bn in textile exports by 2016. Between 2003 and Q3 2015, 11 of the 15 Ethiopian projects China has invested in have been in manufacturing.

Across Africa, the relationship with China has been one of the drivers of the establishment of SEZ (Klasa 2016).

Eastern Industrial Zone (EIZ)

EIZ, the first FEZ in Ethiopia, is located 35 km south east of Addis Ababa in the town of Dukem situated on the Addis Ababa–Djibouti highway and the Addis Ababa–Djibouti Port railway line, with its own railway station constructed by Export–Import Bank of China upon completion of the railway line constructions in 2016. The Djibouti Port handles most of Ethiopia's overseas trade and is located 730 km east of the zone.

EIZ is owned and managed by the Jiangsu Qiyuan Group (Qiyuan Group), a private Chinese investor. Initially the Jiangsu Yonggang Group (Yonggang Group) was selected by China's Ministry of Commerce

through a competitive tender process in 2007 as the developer for the zone with the Qiyuan Group as a minority partner.

Due to financial difficulties caused by the global economic crisis, the Yonggang Group left the project in 2008, leaving the Qiyuan Group in charge of the zone's development and management (Brautigam and Tang 2011).

The Yonggang Group is among China's largest iron and steel producers with over 10,000 employees and an annual revenue of US$4.5 billion in 2010. The Qiyuan Group is a steel pipe and aluminium producer with approximately 1000 employees. The Group consists of 12 subsidiaries in China, two in the United States and five in Ethiopia.

Today, 27 Chinese companies have invested a total of US$205 million in the zone and created approximately 4500 jobs.

In 2010, the Zhongshun Cement Company, one of Qiyuan Group's subsidiaries operating in Ethiopia, was the first company to begin its operations in the EIZ. Since then, 26 other companies have joined, including producers of shoes, construction and packaging materials, steel products and garments, as well as companies focusing on automobile assembly and leather processing.

Huajian was initially unable to source its supplies fully from the local market. Today Huajian is able to source 80% of its raw materials from the local market.

Huajian's 3500 workers in Ethiopia produced 2 million pairs of shoes last year. Located in one of the country's first government-supported industrial zones, the factory began operating in January 2012, only three months after Zhang decided to invest. It became profitable in its first year and now earns $100,000 to $200,000 a month.

Bole Lemi Industrial Zone

The Bole Lemi Industrial Zone, established in 2012, is Ethiopia's first government-run SEZ. The zone is located about 10 km south east of Addis Ababa centre with direct access to the Addis Ababa International Airport and the Addis Ababa–Djibouti Port highway, which is Ethiopia's main import and export corridor.

To date 12 international shoes, textile and garment producing companies have invested in the zone, out of which five are in production, having created about 3000 jobs. The government of Ethiopia has invested US$113 million in the zone (Bole I).

In 2014, EIZDC decided to invest the $250 m World Bank loan into expanding the Bole Lemi SEZ outside Addis, the capital, as well as building an entirely new 'industrial hub' at Kilinito some 30 km south.

The Bole Lemi I and II sites are dedicated for industries engaged in textiles and leather, while the Kilinito site is for companies in the pharmaceuticals, food processing and construction areas, among others (welkessa website).

The International Labour Organisation (ILO) was launched in February 2016 (ILO 2016), a new project that aims at improving the development of a socially sustainable textile and garment industry in Ethiopia at the Arvind Lifestyle Apparel Manufacturing PLC located in the Bole Lemi Industrial Zone of Addis Ababa.

The new project, entitled 'Improving Industrial and Sustainable Development of Textile and Garment Industry in Ethiopia', is funded by Sweden, through Swedish International Development Cooperation Agency (SIDA), and H&M, and implemented by the ILO in collaboration with Ministry of Labour and Social Affairs (MOLSA), Ministry of Industry, Confederation of Ethiopian Trade Unions (CETU), Ethiopian Employers Federation (EEF) and other key stakeholders.

The role of the retailers, such as H&M, in this process supports the efforts to build a sustainable industry with a human face, where the rights of the workers are protected, that can deliver well-produced garments to the international market.

The ILO and H&M signed in September 2014 an agreement on sustainable global supply chains in the garment industry. The partnership is intended to establish a positive and innovative model for other brands and create a global alliance to promote the ILO's Decent Work Agenda in the supply chain of the global garment industry.

The main investments of international companies in textiles in Ethiopia in the period 2013–2014 (Ohno 2015) are as follows:

- The Mumbai-based ShriVallabh Pittie (SVP) group launched a US$550 million investment in Ethiopia in 2014 to set up a cotton mill that will produce cotton yarn fully for export (Fecade 2014).
- Hiroki Japan high-quality leather goods invested in leather jackets, shoes and other products. Shoes are contracted out to local producers (Fortune 2014).
- Jay Jay Mills from Tirupur, India specializes in apparel and home products for the age group of newborns, infants and toddlers.

Caters to reputed brands and retailers in the United States and the EU.
- Arvind India Denim Jeans export to the EU and the United States using tariff privileges and imported materials from Jay Jay Mills India.
- Shints ETP Garment Korea Garment Outer & Sports Wear (for US market using AGOA). Plans to hire 4800 employees. Occupies five sheds in Bole Lemi I and II.
- George Shoe Taiwan Leather shoes OEM Footwear for US and Chinese markets Employs 800 persons (2013).
- H&M Sweden Apparel for Western markets. Opened in 2012. Has production contracts with local factories.
- Huajian China Footwear OEM Footwear exporting to EU and North America. Employs 3500 people (2012).

Corridors

Corridors aim to build industrial and social facilities along with soft and physical transport infrastructure to develop adjacent regions (Byiers 2015*)*.

A key driver of corridors is the high transaction costs of trade and exchange. Exports of mining and agricultural products are behind the investment in transportation, energy, water and ports projects. Those investments are a preliminary condition to economic development. Corridors plan to help in regional integration.

Fraser and Notteboom (2014) classify corridors around ports according to trade type: domestic, transit (transporting the cargo of other countries), foreign (transporting primarily imports and exports of a country) and hybrids, depending on service catchment area.

One of the key features of the corridor approach is the linkage between regional trade policy and investments in infrastructure (Byiers and Lui 2013).

The concept of African Agricultural Growth Corridors was first proposed by the Norwegian fertilizer concern Yara International, at the 2008 United Nations General Assembly, and was subsequently expanded at World Economic Forums in Switzerland and Tanzania (africastrictlybusiness.com website). It involves converting underdeveloped arable land to commercial agriculture, served by an efficient logistics infrastructure of roads, railways, irrigation, storage, processing and ports. The concept was supported by Monsanto, Unilever and Syngenta.

Belgium, Canada, Denmark, Finland, the Netherlands, Sweden, the United States and the United Kingdom have pooled their support and established a single non-profit organization working across the EAC to further its integration agenda. Japan is involved separately under the Japan International Cooperation Agency (JICA) umbrella.

The development of a north–south international corridor linking these east–west international corridors will create wider, regional, efficient logistics networks integrating the five countries of Malawi, Mozambique, Tanzania, Zambia and Zimbabwe.

Major investments along the corridor are concentrated in agri-business and mining (World Bank 2013c).

TradeMark East Africa (TMEA) is an East African not-for-profit Company Limited by Guarantee established in 2010 to support the Northern Corridor Integration Projects (trademarkea website). TMEA is focused on ensuring that gains from trade result in tangible gains for East Africans. Its budget is US$650 million over 2011–2017. TMEA+ works in the five EAC countries and South Sudan to reduce trade costs on major transport corridors and improve the business environment for trade and investment.

The North–South Corridor

The North–South Corridor links Dar es Salaam in Tanzania to Durban in South Africa, through Zambia, Zimbabwe and Botswana. The Sena Corridor (from Blantyre to Beira Port) forms a part of the north–south international axis.

Along the corridor are concentrated mining, agriculture and manufacturing as follows (JICA 2013):

- Zambia: copper, grains, coffee, sugar and tobacco in the Copperbelt, Central and South Provinces. Manufacturing and agro-processing in Lusaka Province
- Botswana: copper and nickel, livestock and meat (beef) industry in northeastern Botswana
- Zimbabwe: soybeans, coffee, tobacco and cotton in central and eastern regions; fertilizer and chemical manufacturing industry in Harare and Bulawayo; pharmaceuticals in and around Harare
- South Africa: platinum, chrome and iron; manufacturing including automobiles and general machinery near Durban; horticultural

and floricultural products in the Free State and in Mpumalanga and Gauteng Provinces.

Major Recent Investments

- Nchanga and Konkola Copper Mine (KCM)—Zambia: KCM, a leading copper producer in Zambia, owns the mine. KCM directly employs 8671 and indirectly contracts 13,087.
- Dukwe Copper Project—Botswana: African Copper through its subsidiary, Messina Copper—Botswana, manages the Dukwe Copper Project comprising two mines: the Mowana open pit and the Thakadu mine.
- Tati Nickel Project—Botswana: Russian Norilsk Nickel has become a major player in the Botswana nickel–copper market through the Tati Nickel Project.
- Debswana Diamonds—Botswana: A joint venture between De Beers and the government of Botswana; is a key player in the national economy of Botswana, producing 70% of Botswana's export earnings, 30% of GDP and 50% of government revenue.
- Hernic Ferrochrome Pty Ltd, South Africa is the world's fourth largest integrated ferrochrome producer. Mitsubishi Corporation acquired shares and co-operates with the German company ELG Haniel GmbH to export to Asia and Europe.
- Assmang Ltd, South Africa produces iron ore, manganese ore, chrome ore, manganese ferroalloys and chrome ferroalloys. Sumitomo Corporation acquired equity stakes in mining.

The 8599 km of North–South Corridor roads have been refurbished or are planned to be renewed within the foreseeable future. The Witbank to Maputo road was rehabilitated as a 30-year concession and the first public–private partnership in Southern Africa (Soderbaum and Taylor 2008).

According to Raballand et al. (2012), there is a need to combat collusive practices between the private sector and public authorities in terms of reducing dwell times. Engel and Jouanjean (2015) cite a study by Keyser (2012) that states that traders need to pay 40 different fees in the course of travelling from Ghana to Nigeria, leading to the conclusion that national governments should prioritize the removal of cartels through active enforcement of competition policy in the region.

Many of the region's ports are dominated by a small number of operators. Five out of eight key port concessions in the region encompassing

Côte d'Ivoire, Ghana, Togo and Benin are operated by the French company Bolloré Africa Logistics, in conjunction with APM Terminals (a subsidiary of Maersk) in Abidjan, Cotonou and Tema, serving the hinterlands of Nigeria, as well as Niger and Burkina Faso (saana consulting 2015).

The Bolloré Group or one of its subsidiaries is reportedly present in all of the 18 ports in the region, while also operating several railway lines and dry ports.

APM Terminals are also part of plans to build a dry port at Ferkessédougou and to run the Ouagadougou container terminal, again with Bolloré Africa Logistics.

The awarding of a second container terminal concession to Bolloré in Abidjan port led to complaints that were passed to the UEMOA competition commission.

The North–South Corridor links the copper belts in Zambia and the DRC, via Botswana, Zimbabwe and Malawi, with ports in Mozambique, Tanzania and South Africa. The corridor seeks to achieve both physical infrastructure improvements in roads, railways and energy supply and streamlining and harmonization of the regulatory environment through trade facilitation measures at the various borders.

In September 2012, the Accelerated Programme for Economic Integration (APEI) was launched by the five COMESA and SADC countries of Malawi, Mauritius, Mozambique, the Seychelles and Zambia in order to improve transport, and port activities.

Transport

A number of corridor road sections are in worse condition:

- Botswana: (Tlokweng Border with South Africa–Kazungula; border with Zambia)
- Zambia: (Kapiri Mposhi–Kasambulesa [border with the DRC])
- Zimbabwe: Beitbridge–Harare–Chirundu and (Bulawayo–Victoria Falls [border with Zambia]); and
- Mozambique: Cuchamano (border with Zimbabwe)–Tete–Calomue [border with Malawi].

Major bottlenecks regarding corridor railways include:

- National Railways of Zimbabwe and Zambia. Railways Limited are almost not operational due to a lack of maintenance
- Missing link between Lion's Den and Kafue

– Missing link between West Nicholson and Beitbridge.

Port

Congestion at the Port of Durban remains a bottleneck. Major development issues include the expansion of the Port of Durban (included in the SADC Regional Infrastructure Master Plan).

The Tanzanian Southern Agricultural Growth Corridor (SAGCOT)

Launched at the WEF in May 2010 in Dar es Salaam, SAGCOT, North–South Corridor from Dar es Salaam to Zambia and the DRC, involves partnership with major international companies such as Yara, Monsanto, DuPont and Unilever on 350,000 hectares with $2.1 billion in potential investments hoped for over a 20-year period, with public sector grants and loans of $1.3 billion (SAGCOT 2011).

Six cluster developments have been identified along the southern corridor of Tanzania: Sumbawanga, maize, sorghum; Ihemi, forest; Kilombero, rice, sugar, buffalo; Mbarali, forest; Ludewa, forest, maize rice, sorghum; and Rufiji, prawns.

SAGCOT intends to support small-farm holders through risk-sharing mechanisms using a fund of $50 million for start-up agri-businesses incorporating smallholders; 'patient capital' to finance the cost of 'last mile infrastructures' such as farm roads and irrigation connections; and loan guarantees and currency risk instruments to leverage capital from the banking sector (sagcot.com website).

Lamu Port (Kenya)—South Sudan–Ethiopia Transport Corridor (LAPSSET)

LAPSSET Corridor is planned to link from the East to West coast, the deep-water port on Manda Bay, in the Lamu Archipelago, on Kenya's northeast coast, to Mombasa (Kenya), Addis Ababa (Ethiopian), Juba (South Sudan) to Douala (Cameroon). For the moment the Addis Ababa–Lamu part is in the process of realization (vision 2030 website).

The project comprises seven major components—a port in Lamu, an oil pipeline from Juba, South Sudan to Lamu, oil refineries in Lamu and Isiolo, a railway link to South Sudan and Ethiopia, three resort cities and airports at Lamu, Isiolo and Lokichogio, and a High Grand Falls along the River Tana for hydropower generation (Sena 2014).

The port on Lamu Island is part of the 24-billion-US-dollar planned investment in order to create Kenya's second transport corridor to Mombasa, boosting economic development and regional integration in the East African region and beyond (Hellenic shipping news website and Shanghai daily).

The Lamu port deal was signed by the Kenya Ports Authority and China Communications Construction Company in 2014, and is expected to be completed in three years.

Lamu port will allow Kenya to earn more revenue from its northern landlocked neighbours (BBC 2012). Ethiopia will have an alternative sea port to Djibouti and another export route if oil is discovered in its Ogaden region, which borders Somalia and where oil exploration is currently under way. For South Sudan, it offers a solution to its dependence on Sudan from which it split last July—six years after the end of a bitter civil war.

The project will also open up development to the northern parts of Kenya. The northeast of Kenya hosts the world's largest refugee camp, Dadaab, home to more than 450,000 Somalis.

The discovery of oil in Turkana Kenya could affect the implementation status of the LAPSSET Corridor project. While the initial focus was Kenya providing the needed infrastructure to transport South Sudan's oil to the Indian Ocean, the new focus could be on Kenya's oil. This new development might lead to instability in the area.

Before appealing to private investors, the government itself financed the launch of the first phase of the construction of the port, investing $306 m. Kenya, Ethiopia and South Sudan signed an agreement in 2012, under which South Sudan will finance part of the oil pipeline and Ethiopia will participate in the construction of the rail link.

To attract FDI, Kenya has also been using the IMF's formula of public–private partnership (PPP) (Miraftab 2004), where the state supervises private sector investors in the creation of infrastructure and provision of public services (Osborne and Gaebler 1993).

Lamu Port will accommodate large ships from supertankers to Post-Panamax vessels. Once completed, it will handle 23 m tonnes of goods a year. It will also be linked to other infrastructure: a 2250-km oil pipeline from South Sudan to Lamu, with branches to Ethiopia, Uganda and the DRC; an oil refinery that will process 120,000 barrels a day; an international standard gauge railway that will link Lamu to Douala, Cameroon; 3500 km of high-speed roads that will connect Lamu to the capitals of

Ethiopia (Addis Ababa), South Sudan (Juba) and Kenya (Nairobi); and a fibre optic network for communications. Lamu is also intended to attract tourists, with international airports and beach resorts.

Trade between Eastern and Central Africa today is dependent on the great Kenyan port of Mombasa. Mombasa is a barometer of East Africa's economic vitality: between 2007 and 2011, traffic increased by 23% and in 2011 the port handled 770,000 TEU (20-foot container equivalent units) of freight, though it was built for only 250,000. But a recent US International Trade Commission report (US International Trade Commission 2012) found that, on average, a container takes more than two weeks to transit Mombasa, from unloading to despatch.

The $2 bn coal-fired plant by Amu Power is set to be constructed at the small village of Kwasasi in Lamu County (Langat 2016). Amu Power Limited is a Centum Investment-Gulf Energy consortium whose vision is to anchor long-term national economic growth and aspirations by provision of reliable, safe and affordable power (centum.co.ke website).

The consortium on September 1, 2014 was awarded a tender by the Kenyan government for the development of a 1050 MW coal-fired power plant, located in Lamu County. The plant will be the lowest-cost IPP and will therefore form an integral part of the country's base load power-generating capacity, and is estimated to cost approximately US$1.9 billion. This project will account for 32% of Kenya's generating capacity measured by today's current installed grid capacity. Only 23% of citizens today have access to electricity.

Power Construction Corporation of China won the construction bid and will start building the power plant by end September, 2016 over a period of two years (business dailyafrica.com website). The area's shady mangroves are home to fishermen, struggling for their subsistence. Building of the port and refinery will cause the fish to disappear. The locals have formed an association called Save Lamu, to demand the right to take part in decisions concerning the Lapsset Corridor.

Beira-Tete, Corridors

The Beira Corridor crosses countries from East to West Africa owing to development strategies based on access to ocean ports. Herewith are some of the investments along this corridor in agri-business and mining.

Agri-business

- Mafambisse Sugar Mill has invested US$20 million to expand the plantations, including sugarcane, and modernize the irrigation system in the area; 75% of the shares are held by the South African Tongaat Hulett Group.
- Principle Energy, a UK-based company, invested US$400 million in ethanol production from sugarcane on planned 20,000 irrigated hectares. The site is located in Dombe, Manica Province (Mozambique) and the biofuel is exported via the Port of Beira.
- Agriterra Group (UK) operates three companies in Mozambique including Mozbife, a vertically integrated cattle ranching and feedlot production business.
- DECA (Desenvolvimento e Comercialização Agrícola, Agricultural Development and Marketing Ltd) processes maize purchased from thousands of local smallholder farmers around Chimoio and Compagri. This company has a second agricultural buying and processing facility established in Tete.

Mining

- Vale (Brazil) invested nearly $2 billion at the Moatize mine and in the capacity of the Sena line in 2015 of projected $6 billion investments. $2 billion are for the extension of the mine and $4.5 billion for the railway and port (worldfolio website). The government possesses 5% of the shares through the 'Empresa Mocambicana de Exploracao Mineira' (EMEM). In partnerships with local universities, Vale trains railway engineers, security and port engineers. Vale seeks to invest in partnership with local institutions.
- Rio Tinto (Australia) holds a 65% share of the Benga coal mine in Tete Province, with a 35% share held by Tata Steel of India.
- Riversdale Mining (Australia) established itself in Mozambique in 2006 and obtained 26 exploration licences, including a 2500 km^2mining concession in Benga.
- Coal production from Revuboè Mine Project is a joint venture of Anglo American (South Africa), which agreed to buy a majority stake in the project from the Australian Talbot Group in 2012, Nippon Steel Group and POSCO, the largest Korean steel manufacturer. The objective is to produce and export coking and thermal coal.

The growth corridor as a whole is driven by mining investments, especially coal in Tete. Vale has a US$1.5 billion open-cast coal mine at Moatize, and Riversdale has a US$800 million coal development at Benga, near Tete (BAGC 2010: 10). Commercial agriculture typically follows mining and energy investments.

Mitsui has agreed to invest almost $1 bn in Vale's coal projects in Mozambique in a sign of Japan's burgeoning interest in Africa's natural resources (England and Pearson 2014).

Transport

Rehabilitation of the Mutar (Machipanda)–Harare and Beira–Vanduzi–Tete road is ongoing, financed by the African Development Bank (AfDB) and the Development Bank for Southern Africa (DBSA).

Bottlenecks along the corridor's railways include the Sena railway line, which has been rehabilitated, but current line capacity (for coal) of 6 Mtpa is insufficient for Tete coal; and a missing link at Chiromo, Malawi.

Development issues regarding the corridor's railways include upgrading of the Sena railway line to 18 Mtpa, and rehabilitation of the railway line linking Beira–Machipanda–Harare.

Port

Bottlenecks at the Port of Beira relate to capacity for coal handling and the shallow depth due to siltation. Major development issues at the port include expansion of capacity for coal handling to 18 Mtpa, and development of the Zambezi River for waterborne export of Tete coal.

Energy

Mozambique has sufficient power supply capacity, with Hidroeléctrica de Cahora Bassa (HCB) (2075 MW) in Tete Province mainly exporting to South Africa through high-voltage direct current (HVDC). The grid of the country is divided into two, one in the northern and central regions and connected to HCB, and the other in the southern region, where power is mainly imported from South Africa. Over the medium term, large-scale hydropower and coal thermal generation plants are planned: HCB North Bank Hydropower Plant, 1245 MW; Mphanda Nkuwa Hydropower Plant, 1500 MW; Benga Coal Thermal Power Plant, 600 MW; and Moatize Coal Thermal Power Plant, 300 MW.

Beira Agricultural Growth Corridor (BAGC)

Launched at the World Economic Forum at Davos in early 2009, BAGC (agdevco.com/ website) focuses on agricultural growth and related infrastructure.

The BAGC initiative is a partnership between the government of Mozambique, private investors, farmer organizations and international agencies (ACB 2015). It was launched in 2010 with the aim of promoting increased investments in commercial agriculture and agri-business in the Beira Corridor. Membership includes MINAG, CEPAGRI, AGRA, DFID, SNV, the World Bank, Standard Bank, Tongaat Hulett and Yara, as well as a number of banks and mining MNCs, UNAC and its provincial union in Manica, UCAMA and UGC.

AfDB and the World Bank will invest in road and rail facilities, Japan in port facilities in Beira and Yara in a fertilizer terminal at Beira for imports (BAGC 2010: 10).

The target for commercial production is 190,000 ha (BAGC 2010: 14). A third of this was aimed at smallholder farmers on irrigated plots (5–50 ha), with the balance reserved for large estates (over 10,000 ha) and medium-sized farms (300–3000 ha) (BAGC 2010: 18).

BAGC essentially has four production models (2010: 25):

- 10,000 ha of irrigated sugar on estates, with 25% to smallholders and 250 ha available for field crops under irrigation, with private capital owning and running the project
- 3000 ha under irrigated rice, with 66.6% to smallholders, with infrastructure built by private capital and leased to farmers and their associations
- 300 ha under mixed horticulture (fruit orchards) and field crops (wheat, soya, maize), on medium-sized farms with 50 ha for smallholders, with infrastructure built by private capital and leased to farmers and their associations; and
- 3000 ha of mixed farms (1000 ha to field crops of which 50% is to smallholders; plus 2000 ha which are for dry land cattle), with the potential addition of poultry and feed stock.

The major World Bank activity in the corridor is the large PROIRRI Sustainable Irrigation Development Project which focuses on supporting the growth of small-scale irrigation in Manica, Sofala and Zambezia, linked to commercial markets (World Bank 2014: 2).

Of the 25,700 ha that is farmed commercially, 22,000 ha is sugarcane (beiracorridor.com website). Apart from two large sugar plantations, survey data indicate that there is less than 4000 ha of commercial farmland in the three provinces of Tete, Manica and Sofala, of which only 1200 ha is under irrigation.

The main crops grown for domestic and international markets are babycorn, chillies, mangoes and banana. Commercial farmers have high irrigation costs, due to a reliance on expensive diesel generators for power supply, and high transportation costs from farm-gate to end markets.

There is a small dairy in Chimoio with approximately 1000 head of cattle and a poultry operation, also in Chimoio, which has 200,000 layers and produces 70,000 broilers a week.

Semoc was the only seed company operating in Mozambique until 1999, after which the sector was liberalized. When it was first established in 1978, Semoc had a processing capacity of 18,000 tonnes of seed and was able to produce 2000 tonnes of seed annually, during the late 1980s. This figure rose to 9000 tonnes in 1994. Maize seed constituted 70% of seed production and 64% of sales. Semoc struggled to establish its own distribution networks after the relief programmes were phased out (Wulf and Torp 2005: 18). In the mid-2000s, national production of certified seed reached approximate figures of only 1000 tonnes/year (Wulf and Torp 2005: 23), indicating the low uptake of technology.

In mid-2013 there were 41 registered seed companies in Mozambique (MINAG 2012). Pannar and Semoc are the two main companies at the moment with several other regional and MNC corporations, as well as domestic seed enterprises including farmer collectives. In the year 2000 Pannar, then a South African company, began operating in Mozambique, first as a seed importer and later establishing a production facility in Chimoio. Pannar produces hybrid seeds and its portfolio includes maize, cowpeas, sorghum, beans, sunflowers and vegetables (Wulf and Torp 2005: 23). In 2012 Pannar was acquired by US MNC Pioneer Hi-Bred but still operates under the Pannar brand.

Semoc was partially privatized in 1997 with a 51% shareholding going to Seed Co, but was repurchased by the state at the beginning of 2014. The reasons could be related to Seed Co having been acquired by Monsanto and Groupe Limagrain.

Government remains the main buyer of certified seed, which it distributes to small-scale farmers through the subsidy programme and in emergency situations.

Besides Semoc and Pannar, a number of other regional or MNC companies operate in Mozambique. Hygrotech, another South African company, started operations in Mozambique in 2000, mainly in the southern provinces. It focuses on vegetable seed and agricultural input supplies. More recently, Syngenta has opened offices in Maputo. It is allied to NAFSN, has started registering seeds and has initiated activities in Nampula (Marapusse et al. 2014: 31).

Phoenix Seeds, the largest domestic seed producer in Mozambique, is based in Vanduzi just outside Chimoio. It is managed by Kevin Gifford, a relocated Zimbabwean farmer, and focuses on commercial grain (hybrid and OPV maize) and pulse seed production for distribution to smallholder farmers, in the Beira Corridor and nationally.

Nacala Corridor

Nacala is Eastern Africa's deepest port, and is also the terminus of a rail corridor coming from the mining areas of Tete Province, through Malawi and some of the most productive agricultural areas in Mozambique. The new Nacala Airport is operational from 2016 (umhambi.blogspot.co.il/2015/11 website).

The Nacala growth pole in the Nacala Corridor is a SEZ covering the municipality of Nacala and the district of Nacala-a-Velha in Nampula Province. It is targeted at light manufacturing and logistics (World Bank 2013a, b, c). There are 53 approved investments of which a few agro-processing firms have already started operations.

Herewith are the latest investment and business deals in Nacala Corridor.

Mining-Infrastructure

Two big investments in the Nacala Corridor are being carried out by Vale that operates the Moatize coal mine in Tete One. Investment aims to rehabilitate the export terminal port in Nacala and the railway that runs from Nacala to Tete, passing through Malawi. Vale has the concession to operate both the railway and the associated coal export terminal at the deep-water seaport of Nacala-à-Velha.

Rolling Stock Deal (zitamar website)

A joint venture between South African logistics firm Grindrod and the Pembani Remgro Infrastructure Fund (PRIF) plans to transport grain for

the Malawian arm of Bakhresa Milling Group, which provides grain and flour across East and Southern Africa. Bakhresa Malawi owns a grain terminal in Nacala and a milling and packing facility in Malawi. Bakhresa's main port logistics operation is at Dar es Salaam where it has a 10,000 m^2 yard and an inland container terminal.

Port Tender Phase 2
Phase 1, funded by Japanese development finance agency JICA, was only for Japanese bidders. Phase 2 bid is open to anyone. Phase 2 includes the building of a new container wharf and yard, an accompanying by-pass road and a rail container terminal at the port.

New Railway
New railway between the border of Mozambique and Malawi and Nkaya junction close to Liownde, Malawi's capital: 145.1 km long (mota-engil website). Mota-Engil (Portugal) is the contractor. The cost is US$706 million and the deadline is 27 months. The project directly employs 3500 workers, with an expatriation rate amounting to 500 workers, out of which 300 are Portuguese. However, another 200 workers within seven different countries are indirectly affected.

ProSavana Project
ProSavana will span14 million hectares of land currently cultivated by peasant farmers serving local markets in this area into massive farming operations run by foreign companies to produce cheap agricultural commodities for export. ProSavana is a triangular partnership between Mozambique, Brazil and Japan.

The partners will help Mozambique upgrade its infrastructure, including rail links, a port and a 350-km road. Vale started construction on its $4.4 bn freight corridor, linking mines in the land-locked Tete Province to Nacala Port.

The masterplan for the corridor will create zones for the production of corn, cotton, soya, cashew, coffee and rice. Local producers are supposed to be integrated in the value chain as commercial investors via contract farming and co-operatives. The Nacala Fund includes a social share class used to finance smallholder farmers. The medium and large investors will give a guarantee to the small farmers for technical assistance, and a guarantee to buy the produce of the small farmers.

The ProSavana Development Initiative has provided technical and financial support to companies which integrate small-scale producers into their value chains such as Lozane Farms, Ikuro, Orwera Seed Company, Matharia Empreendimentos and Santos Agricola, which all operate across the Nampula and Zambezia regions.

Pinesso Group, the Brazilian producer, recently started operations in the country and sugarcane processor Tereos also runs mills there. Farm producer SLC Agricola announced that it was targeting the Nacala Corridor for its first investment outside of Brazil. Olam, the Singapore-listed agri-business, buys cotton, cashew, sesame and peanuts direct from 70,000 smallholder farmers in the country.

Olam in 2011 invested $35 m in rice production, supporting the country's efforts to become a net exporter of the foodstuff, and it is currently building a vegetable oil processing plant as well.

Mozambique's National Peasants Union (UNAC) has been leading a campaign to raise awareness about the situation in the Nacala Corridor and to oppose ProSavana, which, in the long run, will expropriate small growers (GRAIN 2015).

Lúrio River Basin Project

In January 2014, high-level government officials and businessmen gathered for the presentation of a new development project in the Lúrio River Basin. The development involves a massive farm project along the Lúrio River, at the intersection of the provinces of Niassa, Nampula and Cabo Delgado.

The $4.2 billion project is being overseen by a company called Companhia de Desenvolvimento do Vale do Rio Lúrio run by TurConsult Ltda. TurConsult is owned by Rui Monteiro, an influential businessman in Mozambique's hotel and tourism industry, and Agricane, a South African company that has provided consulting and management services to many large-scale agri-business projects in Africa, especially in the sugar industry. The company's plan is to construct two hydroelectric dams of 40 MW and 15 MW on the Lúrio River and to create an irrigation scheme covering 160,000 ha, as well as the development of around another 140,000 ha for rain-fed agriculture, contract farming and livestock production.

The project will focus on the export production of cotton, maize, cereals and cattle, as well as sugarcane for biofuel ethanol; 500,000 people liv-

ing in the area will be affected by the project. The Strategic Plan is funded by JICA—the Japanese company Mitsui is a major investor in the Moatiza coal mine, the railway and the port of Nacala, as well as being a potential investor in agricultural production in the area. Herewith are the recent developments in this project:

The Mozambique Agricultural Corporation (Mozaco) was established in June 2013 by Rioforte Investments and João Ferreira dos Santos (JFS Holding). Mozaco says it acquired 2389 ha near the village of Natuto in the Malema District of Nampula Province in June 2013, where it plans to cultivate soybeans and cotton. The company's objective is to expand it up to 20,000 hectares. It also intends to pursue contract production with 116–170 local farmers on 83 ha, building on a programme developed with the US NGO Technoserve.

Alfa Agricultura Lda (South Africa), which provides drilling and water services around the Nacala, intends to establish a large poultry operation, and has started by acquiring land to produce soybeans for feed and for export. Its farming operations are supported by a 2.6 million meticais grant [$77,000] from USAID and the Mozambican government, under their joint FIN Agro project.

A project for integrated grain cluster is planned to be implemented in the Majune district. This project would demand 60,000 hectares in the Gúruè (usually in the Lioma region) and Lichinga districts, producing mainly soya. The companies involved in this project are Hoyo Hoyo (Portugal), Africa Century Agriculture (registered in Mauritius and based in London), Rei do Agro (the United States) and Agromoz, a partnership between Grupo Pinesso (Brazil), Grupo Américo Amorin (Portugal) and Intelec Holdings, owned by the Mozambican president, Armando Guebuza (Hanlon and Smart 2012).

New Horizons Africa LLC is owned by the Ron Cameron family of Arkansas, which also owns Mountaire Corp, the sixth largest poultry company in the United States in 2011. The Center Fresh Group—the second largest egg producer in the United States, with around 25 million hens in their farms enter to the partnership and create the joint venture called Mozambique Fresh Eggs, with New Horizons and Eggs for Africa.

Aslan, through its Mozambican subsidiary Rei Do Agro, acquired 2500 ha from the Mozambican government in Gurúè, Zambezia, about 130 km west of the New Horizons poultry operations, as well as a 42,000 ha cattle ranch in Morogoro, Tanzania. Both areas are epicentres of land conflicts between foreign investors and local people. Aslan Global

Management is financed by about 50 Americans who have each invested around $100,000 in the company.

Maputo Development Corridor (MDC)—Mozambique

The MDC initially included the toll road from Witbank to Maputo, the upgrading of the railway line from Ressano Garcia to Maputo (Byiers and Vanheukelom 2014), the upgrading of the port, the dredging of the harbour and the upgrading of the telecommunications network between South Africa and Mozambique.

The Mozal aluminium smelter plant will benefit from those improvements in the infrastructure financed by African and European public and private organizations. MDC attracted $5 billion of private funding between 1996 and 2005 (Office of the Premier 2008).

The US$2.8 billion aluminium smelter projects Mozal I and II in the Matola District are a joint venture between South 32 (South Africa), 47.1%, Mitsubishi Corporation (MC), 25% (South 32 website), the Industrial Development Corporation of South Africa, 24% and the government of Mozambique, 3.9%.

It employs 1190 people directly and a further 1500 indirectly, and has an annual turnover of about US$1.1 billion. The company uses mainly imported intermediates (alumina from Australia, coke from the United States and electricity from South Africa), but it has involved domestic SMEs in upstream activities, namely construction, maintenance, expansion and engineering services. Their engagement was boosted by SME empowerment initiatives supported by the International Finance Corporation. Until 2013, Mozal exported all its aluminium ingots, since it signed an agreement with Midalunder, which is setting up a factory to produce aluminium cables using 50,000 tonnes of Mozal's ingots (Sutton 2014).

The Beluluane Industrial Park/Matola Industrial Zone was established in the region, which has attracted 22 businesses employing some 1000 workers and has generated US$20 million in investment.

More recently, a US$50 million steel tube factory—a joint venture of South African, Chinese and Mozambican companies—was established.

Sasol Natural Gas Pipeline Project, US$2.1 billion project, was undertaken by Sasol (South Africa), in a joint venture with Empresa Nacional de Hidrocarbonetos (ENH), a wholly owned company of the government of Mozambique and the government of South Africa. It extracts natural gas

from the Temeane and Pande gas fields in Mozambique and transports the gas via a pipeline to Sasol's facilities in Secunda. The natural gas production started in 2004.

The Russian company Norilsk Nickel acquired a 50% interest in the Nkomati joint venture in 2007. Nkomati is located in Mpumalanga Province and is the only primary nickel producer in South Africa. The extracted ore is processed at its own concentrator using the traditional sulfide flotation technology.

Less than 0.5% increase in Gross National Income is the result of Motzal investment in 2015. Currently 1200 people are directly employed by Mozal, of which over 80% are Mozambicans, and indirectly employment is upwards of 10,000. Mozal created a joint programme with government and development agencies—MozLink—to promote connections between the project and Mozambican suppliers, which achieved some success.

The recent discoveries of large-scale natural gas reserves that allow for the construction of a multibillion dollar LNG plant, together with the extensive coal basins already being exploited, have opened the possibility of developing value-added products locally, such as iron, steel, power and a diversity of downstream hydrocarbon-related industries. The agricultural sector also presents good opportunities for agro-processing, in particular the more developed crops of cashew, cotton and tobacco.

Transport

Development issues regarding the corridor's roads include countermeasures for the congestion and the development of a dry port at the Lebombo–Ressano Garcia border crossing (a medium-term project in the SADC regional infrastructure master plan).

Port

Concerning the Port of Maputo, congestion of the access road to the port creates a bottleneck. Development issues include a port master plan for expansion to maintain competitiveness vis-à-vis the Port of Richards Bay, and development of a new port at Techobanine.

West African Corridors

Accelerating Trade in West Africa (ATWA) is funded by the Danish International Development Agency (Danida). Working alongside regional Commissions, national governments and the private sector, the scoping

and design phase work was to be undertaken by ATWA between January 2015 to October 2016.

West African corridors can be divided into two categories: transit corridors and intra-regional corridors (Saana consulting 2015). Transit corridors link a port with a landlocked country, running from North to South, while intra-regional trade corridors link multiple countries from East to West.

Transit Corridors

Lagos–Kano–Jibiya (LAKAJI): This is not strictly speaking a transit corridor, although it serves markets in Niger and beyond. The port-city interface is very congested, and it is expensive to move containers out of the port. The corridor costs are high compared to other countries in the region, and levels of road harassment are the highest in the region. There are also significant security concerns in Northern Nigeria.

Cotonou–Niamey: The Cotonou–Niamey Corridor is the busiest West African transit corridor (2.2Mt). However, much of the goods carried on this corridor are destined for Northern Nigeria, competing with the more expensive LAKAJI corridor described above. It is the least costly corridor in the region.

Lomé–Ouagadougou: This is the most important transit corridor for Burkina Faso. Costs are lower and it has the lowest truck turn-around time (11.6 days).

Tema–Ouagadougou: The Port of Tema complains that it has lost importance as a transit port (transit to Burkina Faso has dropped to 358,000t) because Ghana has been implementing axle load control regulations.

Abidjan–Ouagadougou/Abidjan-Bamako: Abidjan-Ouagadougou has both a road and a rail corridor. With road and rail combined, this is the second most important corridor for Burkina Faso (848,000t) and will probably grow if the railway is upgraded and extended to Niamey and Cotonou, as planned. Abidjan–Dakar is the second most important corridor for Bamako (700,000t).

Dakar–Bamako: Dakar–Bamako, like Abidjan–Bamako, has both a road and a rail corridor, but the rail corridor is dilapidated. The company Transrail obtained a concession for the railway in 2003 but has not invested in the line.

Intra-Regional Corridors

Bamako–Ouaga and Ouaga–Niamey: These corridors are part of the Trans–Sahelian Highway (TAH 5) from Dakar to N'djamena in Chad. The Bamako–Ouagadougou corridor is similar in performance to transit corridors.

The Abidjan–Lagos Corridor: Is part of the Trans–Coast Highway from Dakar to Lagos. The Abidjan–Lagos corridor connects the major urban centres in West Africa—with a total combined population of 37 million. It carries much local cargo traffic, and international traffic is dominated by passenger traffic.

The ATWA programme starts with the group of corridors and associated countries that presents the most potential for quick results, lowest levels of risks, opportunities for partnership and building on an existing momentum for reform.

The corridors/countries that best fit this description are Côte d'Ivoire, Burkina Faso and Ghana. In order to capture most of the transit trade to Burkina Faso, the Lomé–Ouagadougou Corridor has been added to the focused corridors. Specifically then, ATWA will cover the following trade routes: Abidjan–Ouagadougou, Tema–Ouagadougou, Lomé–Ouagadougou.

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CHAPTER 5

Generators of People's Economy

I focus my analysis on selected domains which could generate strong competitive advantage in the long run and will contribute to a wealthier life for most of the population in Sub-Saharan Africa (SSA) countries. The selected specializations are electricity production based on local resources, minerals, cocoa, cotton, mango, shea nuts, moringa, gum Arabic, mobile payment services and ambulatory medical services.

Energy Based on Local Resources

Hydropower

Hydropower produces more than three-quarters of the world's renewable energy output each year. Its carbon emissions, over the entire lifecycle of construction, operation and decommissioning, 'are far lower than those from all other renewable sources, including wind and solar' (scidv website). But the risk of dam damages in the long run is very high, especially in poor countries due to low maintenance. This is the case for most of the SSA countries (Leslie 2016).

In January 2016, the energy minister of Zambia declared that Kariba dam was in dire condition. An unprecedented drought threatens to shut down the dam's power production, which supplies nearly half the nation's electricity (Leslie 2016).

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Kariba's collapse, according to Leslie (2016), would constitute an epochal event in the history of energy development—the dam industry's Chernobyl. At least 3 million people live in the flood's path and most would die or lose their crops or possessions. About 40 % of the electricity-generating capacity of 12 Southern African nations would be eliminated.

Leslie concluded that dams cannot be drained, and dismantling them can be as costly as building them. It is the trap of Industrial Age technology: once mechanized systems supplant natural ones, they must be managed in perpetuity, or else they break down.

Few of the big dams have a positive return (Leslie 2016). Dams are particularly ill-suited to climate change, which simultaneously requires that they be larger (to accommodate the anticipated floods) and smaller (to be cost-effective during the anticipated droughts).

In 2014, researchers at Oxford University (Ansar et al. 2014) reviewed the financial performance of 245 dams and concluded that the construction costs of large dams are too high to yield a positive return. Other forms of energy generation—wind, solar and miniature hydropower units—cause far less social and environmental damage.

The members of Southern African Power Pool (SAPP) (sapp website) have created a common power grid between their countries and a common market for electricity in the Southern African Development Community (SADC), with South Africa, Zambia and Mozambique being the largest energy producers in the pool (KPMG 2016).

Herewith we present the economic impact of two existing dams, Kariba dam—Zimbabwe–Zambia and Cahora dam—Mozambique/South Africa, and the potential economic impact and risk of two planned big dams, Inga 3 dam—DR Congo and Renaissance dam—Ethiopia, in SSA countries.

Kariba Dam—Zimbabwe–Zambia

Kariba dam Zimbabwe, constructed between 1955 and 1959, is one of the African world's two biggest dams based on water storage capacity, along with Akosombo dam, located in Ghana, constructed from 1961 to 1966 on the Volta River. Both were constructed by Impregilo-Italy (Water Technology 2013).

Kariba dam comprises two power stations generating a combined 1470 MW of energy, which constitutes approximately 60% of the hydropower outputs for Zambia and Zimbabwe.

Zimbabwe's and Zambia's populations benefit from very little of that electricity. For around 60% of Zimbabwe's population and 88% of

Zambia's population electricity was not accessible in 2012 (dataworldbank website). The main reason is the limited network distribution, which demands a public investment, and the incapacity of most of the population to pay for it, which requires relevant support.

Zambia has seen a significant deterioration in the proportion of electricity losses, increasing from 4% in 2002 to 24% in 2012 (KPMG 2016). Electricity losses are the result of damaged power lines, transmission technical losses and theft of electric power. While this has been accompanied by a significant rise in generation capacity, the rise in proportional losses indicates that the increased generation infrastructure has not been accompanied by an equivalent increase in distribution infrastructure.

Cahora Dam—Mozambique–South Africa

Cahora dam's positive return is achieved by exports to South Africa and industrial consumption by Mozal aluminium smelter plant.

Construction of Cahora Bassa dam in 1969 included also a transmission line of 1400 km linking Cahora Bassa to South Africa but not to local cities. Cahora Bassa reached its maximum electricity-generating capacity of 2000 MW in 1979.

Mozal, a $2 billion energy-intensive aluminium smelter near Maputo, consumes about 900 MW of electricity, which is about half of Cahora Bassa's capacity and more than four times the rest of Mozambique's electricity consumption.

Merowe Dam—Sudan

The Merowe dam or Hamadab dam in Northern Sudan was built on the Nile's fourth cataract between 2003 and 2009 by Lahmeyer International, a German engineering consulting firm; two Chinese companies, China International Water and Electric Corp and Harbin Power Engineering Co; and the French energy company Alstom. The US$2.4 billion was funded by the Sudanese government, China Export Import Bank and Arab banks and development organizations (Abbas 2012).

With a capacity of 1250 MW, the project doubled Sudan's electricity generation. It also displaced more than 50,000 people from the fertile Nile Valley to arid desert locations. (internationalrivers website).

The residents of Merowe city have benefited from the construction of a hospital and schools, new services and the renovation of the university campus. But people have complained that humidity from the dam's lake

has affected the production of dates, one of the most important items in their diet and one of their main exports.

Accessibility to electricity of the Sudan population stayed very low, around 32.6% in 2012 (dataworldbank website).

Inga 3 Dam—RD Congo

Inga 3, the mega dam on Congo river to produce 4800 MW, is the largest dam in the world and will cost $14 bn (£9.5 bn). Critics say it will displace 60,000 people and wreck the ecosystem (the guardian 2016).

The Congolese government is fast-tracking the construction to fulfil a legally binding contract signed with the South African government to supply 2500 MW of electricity from the Inga 3 by 2021. In 2013 and 2014, the African Development Bank and the World Bank approved US$141 million in grants for the preparation of the $14 bn project.

In July 2016, the World Bank suspended funding for Democratic Republic of Congo (DRC)'s 4800-MW Inga 3 Basse Chute hydroelectric plant (Harris 2016). This follows the government of the DRC's decision to take the project in a different strategic direction to that agreed between the World Bank and the government in 2014.

Per their 2014 agreement, the World Bank's International Development Association (IDA) would provide a US$73.1 million grant, consisting of $47.5 million earmarked for the Inga 3 Basse Chute and $25.6 million for other mid-sized hydropower development.

According to the World Bank, IDA's financing would have helped pay for technical assistance, strategic advice to the DRC government, complementary studies, capacity building and institutional strengthening with transparent development as a public–private partnership.

The IDA aim is to support a government-led process for the transparent development of Inga-3 BC as a public–private partnership. The World Bank did not say whether it will consider lifting the suspension should the African country meet its conditions, but said it remains committed to supporting the DRC.

Grand Renaissance Dam—Ethiopia

When completed, the project will generate around 6000 MW of electricity for both domestic use and exports. This $5 billion project is entirely funded by Ethiopia, without any foreign investment. The project employs 8500 workers. According to the Ethiopian authorities, 20% of the project

is financed from bond offerings to Ethiopians, and the remaining 80% from tax collection.

Ethiopians at home and abroad have contributed about $350 million, and the government says that the 170-m tall dam is on track for a 2017 opening, with 40% of the work already complete.

If the Grand Renaissance dam and other hydroelectric projects, such as the Gibe III dam on the Omo River, are completed on time, the World Bank estimates Ethiopia could earn $1 billion a year from electricity exports. In Ethiopia, only 26% of the population has access to power (dataworldbank 2015).

Egypt, Ethiopia and Sudan discussed in February 2016 the technical proposal to study the effects of the under-construction Grand Ethiopian Renaissance dam, which has troubled Egypt (Aswatmasriya 2016). After a meeting in the Sudanese capital Khartoum, the three countries, each represented by a technical committee, arrived at a joint memo of their observations on the study proposal handed to them by two French firms that had been selected by the trio. The proposal for two studies on the potential effects of the dam had been sent out the previous month to the three countries for review ahead of this round of talks.

Egypt, Ethiopia and Sudan have for years been locked in negotiations over the Ethiopian dam and Egypt fears that, once completed, the hydroelectric dam will have a detrimental effect on its share of Nile water.

Artelia Group, which offers consultancy and project management services in many markets including water and the environment, is set to carry out 70% of the studies, the Ethiopian foreign ministry said.

The rest of the work will be carried out by BRL Group, which offers consultancy services specializing in water and the environment.

The three countries have agreed that contracts with the two firms will be signed no later than mid-February. One study will determine the effects of the dam on the water reaching Egypt and Sudan, as well as the effects on the electricity outputs of already existing dams. Both Egypt's Aswan High Dam and Sudan's Merowe dam are hydroelectric projects. The second study will identify the environmental, economic and social effects of the dam on Egypt and Sudan. Egypt has been receiving 55 billion cubic metres of the Nile River's water annually, the largest share, as per agreements signed in the past century in the absence of Ethiopia, whose Blue Nile tributary supplies most of the water.

Local Initiatives of Mini-Grids

Local initiatives of mini-grids, provide electricity to the population, based on different sources of energy or on allocation and operation of long-term regional concessions connected to the main grid. Those solutions improve the daily life of millions immediately and create higher business values to growers, and other small- and medium-sized enterprises (SMEs).

Ghana

Ghana has one of the fastest rates of rural electrification in SSA (Scott 2015; Abavana 2012). The proportion of the rural population with access to electricity increased from 6% in 1990 to 52% in 2012 and 66% in 2015 (petromin.gov.gh website). In the three northern regions it is only 30%. This progress has been driven by the National Electrification Scheme (NES), which began in 1989 with the aim of extending access to electricity to all communities of 500 people or more, by 2020. A major component of the NES is the Self-Help Electrification Programme (SHEP). By 2009, the SHEP had connected 2837 communities. The purpose of the SHEP is to connect villages and towns within 20 km of the grid. They must apply to be included in the programme, and to be eligible the community itself has to provide materials and finance for the low-voltage distribution network, as well as evidence that at least one-third of households are wired and ready to be supplied with electricity. The government provides conductors, pole-top arrangements and transformers, and covers the other installation costs. The Ministry of Energy is responsible for vetting and selecting the communities to be included in each phase of the programme.

Access to electricity in communities connected by the SHEP has been facilitated by the use of lifeline tariffs and the cross-subsidization of poorer consumers by more affluent and high-usage electricity consumers.

The rural electrification project in Ghana has received much needed impetus after Industrial Commercial Bank of China (ICBC) and Stanchart Ghana announced plans to sponsor the US$98 million exercise (Construction Review Online 2016).

About 556 communities will benefit from the electrification project, which forms part of electricity infrastructure expansion in order to support the operation of social projects, productive ventures and activities in the rural areas.

Senegal

The electrification rate in Senegal more than doubled between 1990 and 2010. By 2012, 90% of urban households had access to electricity, and in rural areas 28% of households were electrified, compared to just 2.2% in 1990 (Gouvello and Kumar 2007; Mawhood and Gross 2014).

The approach of the Senegalese Rural Electrification Agency (Agence Sénégalaise d'Électrification Rurale—ASER) in contributing to this progress, with support from the World Bank, has attracted the attention of other countries. Before 1998, rural electrification was managed through a number of agreements between the government and the national utility, SENELEC (Société National d'Electricité du Sénegal). In 2001, ASER was established and given the responsibility to promote rural electrification. This has been pursued through several channels. The principal one focuses on the allocation and operation of 25-year rural electrification concessions. ASER also supports locally initiated rural electrification projects and multisector projects to support business productivity and social service delivery.

The country has been divided into 18 different rural electrification concession areas, to be awarded to private operators by ASER through a competitive bidding process. Each concession area is to have its own electrification plan, covering 5000–10,000 potential electricity consumers. The concessionaires are contractually required to connect a given number of households, including a number living more than 20 km from the grid.

The maximum tariffs for defined levels of service in each concession are set by the independent regulator, the Commission de Regulation du Secteur de l'Electricité (CSRE). Tariffs can vary between different concessions but not within concession areas. Consumers pay a monthly charge that allows their up-front connection and wiring costs to be repaid over time. ASER's concessions approach provides a way to ensure private investment in rural electrification.

Concessionaires are required to provide at least 20% of the investment. Up to 80% of the investment cost can be provided as a subsidy by the government, through World Bank support, but disbursements are tied to performance milestones and the number of connections made.

The first six concessions secured a total of US$52 million of private finance, amounting to 49% of the total investment and more than double the minimum 20%. ASER's objective was to increase the national electrification rate to 30% by 2015, a target which has been surpassed.

Tanzania

Over 30 mini-grids are operating in the country (Rural Electrification Investment Prospectus, se4all.org website). Renewable energy mini-grids are a cost-effective electrification option for an estimated 20% of the population, over 9 million people. Herewith are some mini-grid initiatives in Tanzania:

- TANESCO (Tanzania Electric Supply Company Limited), the state-owned utility, operates 21 diesel and gas-fuelled mini-grids, with capacities ranging from 400 kW to 12 MW. The initial investment came from public funds and donors. The generators for these mini-grids are expensive to operate (the costs in 2012 were US$0.40–0.45 per kWh), but TANESCO is required to charge households the same tariff as consumers with grid connections. This means that TANESCO loses around 30 cents per kWh consumed by customers on its isolated mini-grids. Private sector mini-grids in Tanzania are operated by commercial organizations, co-operatives and non-governmental organizations.
- Rift Valley Energy, a commercial company, set up the 4-MW Mwenga hydro plant with a mini-grid to provide electricity to rural areas (riftvalley.com website). Operational since September 2012, this $10 million project—co-financed by the ACP–EU Energy Facility and the Rural Energy Agency (REA)—has supplied TANESCO via connection to the main grid, Mufindi tea plant and a rural electrification network with approximately 25,000,000 k,mnbW/h of green power per annum. At present, Mwenga Hydro has 17 village transformers installed, including one for a local hospital. On completion, the entire project will cover 30 villages, supplying over 5500 rural households and village institutions with affordable and sustainable electricity by using an innovative, mobile-phone-based, pre-paid electricity vending system.
- TaTEDO is a sustainable energy development organization based in Dar es Salaam, Tanzania with zonal offices in Shinyanga and Moshi towns, implementing activities in more than 10 regions, 30 districts and 70 villages in Tanzania. This organization has installed mini-grids in 16 rural communities (tatedo website) and in parallel has promoted sustainable charcoal production practices in order to reduce forest degradation and deforestation. TaTEDO

succeeded in improving practices charcoal yield by up to 30% and also in producing charcoal from forest and agro-residues using simple retorts and briquetting machines. TaTEDO has also promoted the use of generators using either liquid biofuels or mineral diesel, and can provide mechanical power as well as electricity.

– JUMEME is a partnership between INENSUS, a leading German company specialized in development, technology and consultancy services on rural mini-grids, TerraProjects, an Austrian specialist in renewable energy project development, and St. Augustine University of Tanzania, an independent higher learning institution based in Mwanza (eeas.europa.eu website, 2016). Recently, RP Global, an Austrian developer, investor and operator of renewable energy projects, joined JUMEME as the newest and largest shareholder. JUMEME was founded in 2014 to develop, build, own and operate rural mini-grids in Tanzania. At the end of 2014, the Sustainable Energy Fund for Africa (SEFA) approved a grant of US$420,000 to Jumeme Rural Power Supply Ltd, for the preparation of plans to develop a portfolio of solar hybrid mini-grids (eeas.europa.eu website 2016). The JUMEME project aims to expand rural electrification to 16 villages, in the first phase, serving 11,000 households, 2600 businesses, 42 public offices, 32 schools and 12 health centres. The goal is to set up 300 systems and serve up to 1 million people in rural areas across Tanzania by 2022, making JUMEME the largest mini-grid operator in the country.
– The project 'Micro Power Economy, Tanzania Roll-Out', developed by JUMEME and its international partners, aims at implementing and operating solar-hybrid mini-grids in remote settlements in Tanzania (inensus.de website). This project has a total budget of 16 million euros (around 38.4 billion TZS) and is co-funded by the European Union (EU) under the European Commission ACP–EU Energy Facility with a commitment of 7.4 million euros (around 17.8 billion TZS); 50% of the project cost is covered through private investment (both equity and debt). The mini-grid in Bwisya is the first of 30 systems to be installed by JUMEME over the next two years, supplying reliable electricity to around 100,000 people.

Azuri Technologies

The cost of solar technologies has fallen in recent years, and solar lighting remains out of reach for many low-income families. At US$70, the typical price of a lighting device is too high to be affordable without credit, but this is often not available for their purchase (azuri website). The suppliers of lighting devices are therefore innovating payment methods that allow resource-poor households to pay the purchase cost over a period of time.

Azuri Technologies from the United Kingdom has developed solar home systems that incorporate a pay-as-you-go controller. This is activated by a code which is obtained by purchasing a scratch card and is then sent by SMS to Azuri.

Azuri sells its solar home systems to dealers who install the system, provide after-sales support and sell the scratch cards, which can be physical cards or scratch card numbers bought using a mobile payment system. Customers pay an initial fee of about US$10 for the installation of the lighting system in their home, comprising a 2.5 Watt-peak (Wp) PV module, battery, two light-emitting diode (LED) light bulbs and a USB socket for phone charging. They pay about US$1.50 for a weekly scratch card, which is about half of the typical US$3 a week spent on kerosene for lighting. After 18 months, users can pay a fee of about US$5 to have the system permanently unlocked or they can upgrade to a larger system.

Following a pilot in 2011, Azuri began commercial sales in Kenya the following year and by March 2013, 2400 systems had been installed.

By 2015, the system was available in 11 African countries. An impact study in 2014 found that the main use of the lighting provided by the solar home systems was studying, and that mobile phone charging was the second most important use of the systems. Most users also reported working more, and saving time on travelling to purchase kerosene or charge their phone.

Azuri works with an ecosystem of distributors, service agents, installers and local entrepreneurs comprising an end-to-end value chain.

Biofuel for Local and International Markets

Africa has become the new frontier for innovative non-food crop-based biofuels projects, according to a new report by the United Nations Conference on Trade and Development (UNCTAD 2016).

Two main types of second-generation biofuel projects can be found, the transport industry and domestic applications such as cooking and cleaning (biofuelnews 2016).

Transportation is one of the largest markets for African biofuels, with countries such as Angola, Ethiopia, Kenya, Malawi, Mozambique, South Africa and Sudan having all introduced blending mandates.

Solaris Project

South African Airways (SAA) and Boeing, along with partners SkyNRG, an international market leader for biojet fuel, based in the Netherlands, and Sunchem SA, a research and development company based in Italy, launched Project Solaris in 2012 to develop an aviation biofuel supply chain using a nicotine-free, GMO-free tobacco plant called Solaris, developed and patented by Sunchem Holding (biofuelcentral 2014). Project Solaris began in community farms in Marble Hall, Limpopo Province in 2012 with two hectares of crop, rising to 11 hectares in 2013, before expanding to the current 50 hectares in 2014.

The SAA and Mango Boeing 737–800 s used biofuel to power their engines on July 15, 2016. Under Project Solaris, the plant produces small leaves, flowers and seeds which are crushed to extract a vegetable crude oil. It is a nicotine-free, hybridized tobacco plant (South Africa info 2016). Helping to reduce pollution, it is estimated that biofuels could reduce carbon emissions by up to 80% in the future (agriportal 2016).

Presently oil can only be taken from Solaris seeds, which contain almost no nicotine. It is hoped in the future that the whole plant can be used for biofuel means.

Project Solaris received the Roundtable on Sustainable Biomaterials (RSB) certification in September 2015 for producing the crop in line with the RSB's global standard. It is a GMO-free plant that yields significant amounts of sustainable oil (Southafricainfo 2016).

RSB is an independent global multistakeholder coalition that works to promote the sustainability of biomaterials. Its certification scheme verifies that biomaterials are ethical, sustainable and credibly sourced.

Tapera Industries—Zambia

Mutoba Ngoma finished studying aeronautical engineering in the United Kingdom in 2006 and decided to return to Zambia and start Tapera Industries, supplying biodiesel for any biodiesel engine and organic soap (Douglas 2015).

The public service vehicle market supplying bus drivers was his first mass market.

The company focused also on soap production in order to finance the biodisel long-term project. Production includes a liquid shampoo, a hand wash for industrial workers.

Green Energy Biofuels—Nigeria

Femi Oye, winner of the first-ever West African Forum for Clean Energy Financing (WAFCEF) award in 2013, tried to contribute to women's health in Nigeria by providing clean, safe and affordable energy (afdb entrepreneurs website).

He was motivated by his grandmother, Mama Kike, who succumbed to respiratory illnesses due to inhalation of black carbon while cooking. She was diagnosed with lung cancer and kidney damage, suffering a prolonged attack before she died.

More than 80% of the population—low-income households—are cut off from the power grid in Nigeria. An estimated 84% lack access to quality cooking and lighting fuels, and 95,000 women die annually from indoor air pollution.

Oye founded Green Energy Biofuels to produce a bioethanol that substitutes for more polluting fuels such as kerosene, charcoal and wood (Hirtenstein 2015).

Green Energy Biofuels exports to Ghana, Senegal, Benin, Cameroon and Ethiopia. Talks are ongoing to raise capital to build production facilities in these countries, according to Oye. The company is also considering entering Kenya, Congo and Madagascar.

The African Development Bank is funding Green Energy Biofuels, as well as the Overseas Private Investment Corp, the International Finance Corp, the United States Agency for International Development (USAID), the Acumen Fund, and the governments of Nigeria, Ghana and Senegal.

NDZiLO—Mozambique

NDZiLO, a bioethanol cooking plant, opened in 2010 in central Mozambique as the result of a partnership between the Danish Novozymes, one of the world's largest producers of industrial process enzymes, the American CleanStar Ventures and ICM, an American bioplant engineering company. Bank of America/Merrill Lynch provided a start-up grant for an option on carbon credits that this project has the potential of earning.

At full capacity the plant produces 8000 gallons of ethanol a week (Kaye 2012).

The bioethanol is sourced from cassava, the most common staple food grown in Maputo Province and Sofala Province. The 1500 farmers participating in the programme are required to raise the cassava using a permaculture arrangement.

Numerous problems appeared (Biello 2014). Not enough farmers could be convinced to adopt the new rotation system involving nitrogen-fixing beans and peas along with staple crops. As a result, not enough surplus cassava could be grown to feed the new ethanol fermentation plant. Mozambique's bad roads and old trucks transported any existing excess cassava to Dondo, causing the plant to shut down in November 2013.

Sales of the ethanol stoves themselves kept growing in Maputo. More than a million litres of ethanol brewed from molasses had to be imported from South Africa to fuel those 33,000 stoves.

Novozymes and its partners decided to file for bankruptcy in 2014.

Charcoal is cheap and cleaner cookstoves are much more expensive. Roughly 40,000 square kilometres of forest are cut and burned annually to make charcoal, and the World Health Organization notes that indoor air pollution from wood and coal stoves is a leading global killer. The US State Department is still making and distributing cleaner cookstoves as part of its Global Alliance for Clean Cookstoves and aims to get them into 100 million households by 2020.

In Maputo, local investors, led by Thelma Venichand, former sales and marketing director for CleanStar, have purchased the part of the business that covers sales of ethanol and the cooking stoves, called NDZiLO Mozambique. But the smell of smoke remains ubiquitous in Maputo and the rest of the country, where a bio-based economy remains out of reach.

Minerals

Africa is one of the main producers of platinum, phosphates, manganese, vanadium, cobalt, aluminium and diamonds. Most of the world reserves of those raw materials are in SSA countries.

African mineral regimes are essentially based on the principle of free mining (Jourdan 2012). Free mining includes a right of free access to lands, a right to take possession of them and a right to proceed to develop and mine the minerals discovered (Barton 1993 p. 193).

Laforce et al. (2009) maintain that free mining privileges the values and interests of mining companies in contrast to those of the local population.

Jourdan (2012) proposes to African states to demarcate their territory into

- areas of unknown mineral assets (high risk), which would be open to private exploration
- areas of low risk over known metallogenic terrains which would be auctioned off as blocks with the state tax-take
- areas of partly known deposits which could be reserved for further geosurvey by the respective geosurvey departments, or explored in partnership with private capital.

In the three options, during the preparation of the bids, the rights of the local population and local SMEs have to be taken into account in order to insure a minimum transfer of value to the local communities. The preferred proposal will be that which insures transformation and co-operation with local SMEs. The local authorities could be involved in the content of the bids.

Industrial clusters around mineral resources could comprise:

- Upstream industries: Plant, machinery, consumables (inputs), engineering services, financial services, consultancies
- Downstream industries: Resources processing (value addition) into intermediate products, semi-manufactures, components, sub-assemblies and finished, resource-intensive products
- Infrastructure: Power generation and supply, construction, process automation, logistics, marketing, transport infrastructure (rail, road and ports).

The failure of resource-based industrialization is mainly due to a deficient national learning and innovative capacity, resulting from low human capital and weak scientific infrastructure (Maloney 2007; ANC 2012). The answer to this challenge lies in overcoming infrastructure bottlenecks, deepening the mineral sector linkages to the region, increasing the quality of human capital and generating local technology development.

Industrial zones close to mines could be one of the possibilities. The Zambia-China Economic & Trade Cooperation Zone (ZCCZ) situated close to Chambishi Copper Mine owned by the Chinese state-owned China Nonferrous Metal Mining Group (CNMC), which is also the main initiator and owner of ZCCZ, could create such synergy.

Such initiative close or in SEZ benefit mainly to MNCs and few to local population. Around the SEZ the local authorities could support open incubators (Bijaoui, 2015) supported by SMEs able to be sub-contractors or customers of the MNCs inside the FEZ.

The establishment of regional common markets would greatly increase the possibility of a successful resource-based development strategy. SSA countries will be less dependent on price fluctuation of raw materials and will use their economic power to attract investments and use those raw materials locally. Herewith are some examples of potential mining inter-regional clusters.

Platinum Group Metals (PGM)

Most of the worldwide supply of platinum and palladium and the associated elements is obtained from mines in four locations (Schouwstra and Kinloch 1999): the Bushveld Complex in South Africa, the Stillwater Complex in the United States, the Great Dyke in Zimbabwe and the Noril'sk/Talnakh Complexes in Russia (Gruenewaldt 1991).

Bushveld Complex in South Africa is surrounded by 70% of the world's platinum and palladium production (http://www.platinumgroupmetals.net/). Platinum Group Metals Ltd is the South African mining company focused on the production of platinum and palladium. Cawthorn (1999) estimates that for the Bushveld Complex as a whole, the proven and probable reserves are sufficient for 40 years of production at the current rate of production.

Anglo American, the South Africa—UK public company, mines the Bushveld Complex in South African (southafrica.angloamerican website).

Anglo American owns the largest platinum reserves in the world and is the largest primary producer of platinum, accounting for some 40% of newly mined supply.

The Great Dyke is a geological feature running through the heart of Zimbabwe for about 550 km in a roughly north–south direction. The PGMs occur in a layer known as the Main Sulphide Zone, which is typically about 3 m thick. However, the economic mining width may be as little as 1 m, depending on grade, metal prices and the chosen mining method (platinum.matthey website).

Anglo American is also involved in developing mining activity for PGMs on the Great Dyke of Zimbabwe, the second largest repository of platinum after the Bushveld Complex (angloamerican, platinum website).

Pen East Investment (Zimbabwe) and JCS Afroonet (Russia) signed an agreement in January 2015 with the government on the exploitation of platinum.

Consumer and industrial products made with PGM include flat panel monitors, glass fibre, medical tools, computer hard drives, nylon and razors. Platinum, palladium and rhodium play a critical role in autocatalysis and pollution control in the automotive sector.

The requisite capital goods are predominantly supplied by imports and could be supplied by local and sub-regional investment in the development of trackless mining.

Both governments could join efforts in order to improve the value provided to their countries along the value chain of the main products of PGM-based components.

3TGs (Tin, Tantalum, Tungsten and Gold)

3TGs' major inputs for smartphones and laptops are most significantly sourced from the DRC and the Great Lakes Region of Africa (UN 2013). These minerals are mined by artisanal and small-scale miners whose livelihoods very much depend on these mineral supply chains. Currently they finance the DRC's continuous armed conflict and have been labelled 'conflict minerals'.

The USAID DRC country mission directly implements a programme with US$8 million funding, an initiative called the Public-Private Alliance for Responsible Minerals Trade (Cook 2012), including three components:

- The first component helps the DRC government to implement its pilot national conflict-free mineral supply certification system. Rehabilitation or completion of two trading centres (Centres de Négoce, or CdN), an administrative building in South Kivu and transport infrastructure linking the centres to export points.
- A second component focuses on reducing child labour in mining through various educational activities.
- A third component provides technical support to help authorities to implement conflict-free minerals supply chain initiatives and provide capacity-building to help the artisanal mining sector to move towards a legally based, semi-industrialized, formal production model.

These mechanisms are focused on the upstream side (from mine to smelter) with a few focusing on the downstream side (from smelter to end users) where the higher added value is generated.

The European Public–Private Partnership for Responsible Minerals Sourcing provides a good platform for co-operation between EU governments, companies and civil society to address the issue of conflict minerals (3TG). The aim is to launch PPP projects in 2016.

The Public–Private Alliance for Responsible Minerals Trade (PPA) (reslvo.org website) provides funding to develop conflict-free supply chains. The members of PPA are companies such as Microsoft, Acer, Boeing, Dell, Ford, Toyota, HP, GE and Motorola.

PPA periodically offers funding opportunities for projects that support efforts to develop validated, certified and traceable mines and supply chain routes, for gold, tin, tantalum and tungsten in the Great Lakes Region. Philips became a strategic partner of the new European Partnership for Responsible Minerals (EPRM), a public-private partnership initiative which was launched on May 12, 2016 by the founding members, Philips, Intel, EU governments and NGOs (Philips website).

Upstream and downstream clustering process could improve the added value of the potential cluster and generate wealth to the local population and to numerous SMEs in the DRC and neigbouring countries.

Cobalt Cluster

The growing global market for portable electronic devices and rechargeable batteries is driving the growing demand for the extraction of cobalt, a key component in lithium-ion rechargeable batteries (Amnesty international 2016). More than half of the world's total supply of cobalt comes from the DRC.

According to the government's own estimates, 20% of the cobalt currently exported from the DRC comes from artisanal miners in the southern part of the country. There are approximately 110,000 to 150,000 artisanal miners in this region, who work alongside much larger industrial operations.

The value chain starts from Kolwezi miners to transportation and traders in Musompo market, most of them Chinese. In turn, these traders sell the ore on to larger companies in the DRC which process and export it. One of the largest companies at the centre of this trade is Congo Dongfang Mining International (CDM). CDM is a 100% owned subsidiary of

China-based Zhejiang Huayou Cobalt Company Ltd (Huayou Cobalt). Through intermediaries, this company sells cobalt to companies such as Apple Inc, Dell, HP Inc, Huawei, Lenovo (Motorola), LG, Microsoft Corporation, Samsung, Sony and Vodafone, as well as vehicle manufacturers like Daimler AG, Volkswagen and Chinese firm BYD.

The sector employs 40,000 child workers in dangerous conditions. Most of the value of the whole value chain goes to MNCs upstream and downstream. Better working conditions and local processing could improve the situation.

The children could go to school and their parents could earn more with a better and more specialized education. Such a process depends on the local and national authorities, which have to organize and support the local value chain. The funding could come from a better sharing of the value in upstream and downstream activities, from the mine owner and the workers to the transporters, the traders and the companies processing and using cobalt.

Mozal Complex

On February 15, 2013, an agreement between Mozal Aluminium and Midal was signed, marking a critical milestone in the history of Mozal region in Mozambique. This was the beginning of Mozal Aluminium's participation and contribution to the local downstream industry by supplying aluminium ingots locally.

Mozal and Midal are in the Beluluane Industrial Free (BIF) Zone. They have attracted several companies upstream and downstream such as Agro Alpha, specialized in production and marketing of metalworking products; Capital Star Steel, specialized in production of steel tubes; Dendustri Moz, specialized in manufacture and maintenance of anodes used in the aluminum smelting process; DRS Mozambique, specialized in construction of pots with refractory material for the aluminium industry; and Aggreko, specialized in production of power energy using gas (beluzone website).

Mtwara Potential Mining Complex

Mtwara area includes the six Tanzanian administrative regions of Rukwa, Mbeya, Iringa, Ruvuma, Mtwara and Lindi and the southern parts of Morogoro and coastal regions (UN 2008). Also included in the Mtwara region are neighbouring districts in Malawi, Mozambique and Zambia. The

common feature of the southern Tanzanian regions and the northern regions of Mozambique, Malawi and Zambia is that they are all endowed with abundant and economically viable natural resources that are undeveloped.

A mining licence has been issued by the Tanzanian government to the developers. The British Euromet Limited, which is a major player in the world of commodity trading, handles an extensive selection of products and specializes in raw materials, ores, concentrates, base, semi-precious and precious metals, and micronutrients (euromet website).

The Tanzanian government is also in the process of selecting an investor through a tendering system for investment into the iron project at Katewaka, in Iringa region. The Katewaka iron ore is planned to be developed in parallel with that of the Mchuchuma coal mine, which will produce coal for both power generation and smelting of iron. Mchuchuma is the only known source of coking coal in the country.

Applications for the exploration of uranium exist in Iringa and Morogoro regions with the support of the government. An international airport in Mbeya is planned.

Zambia Railways (TAZARA) links the port of Dar es salaam to Kapiri Mposhi in Zambia. A bridge across Ruvuma River has secured funding and is expected to provide a reliable crossing between Tanzania and Mozambique. Further development across the four countries includes the electricity inter-connection between Zambia and Tanzania.

Mtwara's strength is in its wide range of mineral resources, the regional market and regional power inter-connectivity with the membership in the SADC regional economic block comprising Botswana, Lesotho, Mozambique, Namibia, South Africa and Swaziland. These competitive advantages could be translated into higher local value along the value chain of the sectors by improving the transfer of technology through educational and research centres generating a more experienced labour force. The development of a regional infrastructure and the integration in SADC and NEPAD industrial development strategies could generate more economic value for each country.

Agglomerations and Open Incubators

Agglomerations of small businesses exist in organized and less organized locations in urban and rural areas in SSA countries. They are specialized in fruits and vegetables, food cooking, artisanal works, clothes, metal working, furniture, electronic devices or cellulars.

The World Bank team (2011) analysed spontaneous agglomerations in five countries in SSA, Cameroon, Ghana, Kenya, Mauritius and Rwanda, and collected quantitative and qualitative data from those agglomerations.

A key finding of the World Bank research is that agglomerations based on micro and small enterprises are performing better, both in sales performance and ability to reach distant markets than enterprises of the same size, in the same industries, and in the same cities, but outside the agglomeration. The high capital intensity inside the agglomeration is the primary factor behind the sales performance. Agglomeration leads to capital accumulation. Joint action by firms such as joint sales practices helps enterprises to penetrate distant markets.

Enterprises located inside the agglomeration have a higher probability of attracting new customers.

These agglomerations could be organized with the support of local and national authorities. Enterprises in agglomerations are more likely to buy their inputs from other enterprises within the same location.

The pattern supports the hypothesis that strong buyer–seller networks operate within those agglomerations, facilitating access to external markets for outputs. Accessibility to customers is the main reason enterprises decide to locate within industrial clusters.

The open incubator model (Bijaoui 2015) supports entrepreneurs in a determined sector and region along the whole value chain. Each firm in each agglomeration could belong to the network supported by the management of the open incubator and its experts. Common support activities such as research centres, joint purchasing of raw material and joint effort in implementing opportunities proposed by the management of the open incubator and firms in the networks could generate economic growth and the transformation of agglomerations into clusters.

The role of the open incubator is to create the conditions for a deeper and wider positive cooperation—competition. The open incubator model can be initiated by a public or a private organization.

Street Food in Ghana

The objective of the project was to the enhance quality, safety and economics of street-vended foods in Ghana. The project was implemented in two stages, one in November 1999–October 2000 focused on a survey on food vendors (nri.org 1 website) and the second one in February 2003–

January 2004, the objective of which was to develop food safety and business strategies (nri.org 2 website).

The study was conducted on street-vended foods in Accra, Ghana. A mini-census and a survey of 334 street vendors indicated that the street-food sector contributed significantly to the economy of Accra. It employs over 60,000 people and has an estimated annual turnover of over US$100 million with an annual profit of US$24 million. In Accra, 94% of the vendors were women, who had minimal or no education, and 75% did not pay taxes.

Ninety-six street-vended food samples (waakye, fufu and salad) were analysed. This preliminary study found evidence of heavy metal (lead) contamination in waakye, a popular Ghanaian dish made from rice and cowpea, and in fufu, a dish made from pounded cooked cassava and yam. Possible sources of heavy metal contamination include metal pots, pans and utensils, since these are manufactured locally in foundries with limited facilities operated by staff with poor education.

The hygiene of street-vended food appeared to have deteriorated since an earlier survey funded by FAO between 1994 and 1997. A workshop in Ghana brought together other parts of the sector. This included food legislation, regulation and enforcement, education and views of street-food vendor organizations. A governmental Street Food Working Group headed by the Ministry of Science, Environment and Technology was formed directly as a result of this project.

In 2003/2004, in the second stage, the research partnership developed strategies that could be used to control identified food safety hazards in an economical and socially acceptable manner; 300 vendors were trained in Accra. A survey of 265 street-food vendors highlighted that many had limited understanding of their business finances and this hindered the benefits of training. The project contributed to developing new knowledge on food safety and business issues. It also illustrated new challenges if this new knowledge is to be adapted successfully and in a sustainable way to improve the livelihoods of the vendors and the health of consumers.

We can imagine a third stage to this project with the establishment of an open incubator which could provide financial and professional support to those small businesses in order to acquire the relevant equipment and raw materials, to build a common infrastructure bringing water and energy (charcoal) and to build a common area with seats and tables for the customers.

Arusha Furniture—Tanzania

Japan International Cooperation Agency's (JICA's) case study on the Arusha furniture agglomeration-cluster in Tanzania provides insights on how informal social networks, such as ethnic networks, and market accessibility help enterprises to choose their specific location within an agglomeration and how the choice of a specific location affects their productivity.

In 2007 JICA conducted a door-to-door census of micro and small workshops in the wooden furniture industry in Arusha, Tanzania, which experienced a wave of new entries in the 2005–2007 period (Muto et al. 2009).

Entrepreneurs chose to avoid densely populated locations. The owners of workshops tend to locate where the market is large or where customers are expanding. Customers are expanding along the international road, which is connected to the Kenyan road network, or along the road that connects Arusha with inland urban centres.

Upstream supporting activity in the value chain of furniture production is crucial to the performance of furniture workshops. Higher performance is observed for workshops that are located where the upstream wood-processing linkage is efficient.

Actual business performance, with regard to both efficiency and quality of products, is influenced by the geographic conditions for value chain linkages: on the international road close to the customers, and where the upstream wood-processing activities occur close to the suppliers of raw material and sub-contractors.

The open incubator could improve the relations between the workshops along the value chain and their link with the local and international customers.

Suame Magazine Cluster, Automobile Repair Services—Ghana

Located in the Suame area in Kumasi, the second largest city in Ghana and the centre of the Ashanti region, Suame Magazine is an agglomeration with approximately 10,000 enterprises and workshops in automobile repair services (garages), automobile parts production and retail services, as well as metalworking, employing an estimated 100,000 workers (Iddrisu et al. 2009).

In Ghana, trailers and trucks are concentrated on the artery roads connecting major southern cities such as Accra and port cities with the

major cities in the north, such as Tamale and Ouagadougou, the capital of Burkina Faso.

Suame Magazine is said to be larger and to have higher technical skills and better equipment than any other location in West Africa. Collaboration among specialists is co-ordinated by generalist mechanics called fitters, who receive orders from car owners, determine the cause of the trouble, decide who should be involved in the repair work and how much they should be paid, and collect and distribute payments by the customers. Suame Magazine is equipped with a large number of machine tools, such as lathes and milling machines, and specialized machines. Skilled machinists operating these machines overhaul engines, gears and crankshafts.

Machinists also repair worn gears and other parts for large firms located outside the cluster, such as lumber mills and mining companies. They process parts for metal products, such as flour mixing machines, water pumps and cash safes, which manufacturers fabricate using scrap metal. The number of these machine shops has increased since the 1980s, when the Intermediate Technology Transfer Unit, a training institution established in 1980 by the Kumasi Nkrumah University of Science and Technology, assisted promising enterprises in acquiring machine tools.

While the garage sector is dominant in Suame Magazine, this concentration of garages has attracted other manufacturing activities such as blacksmiths, machinists and parts manufacturers. Natural backward and forward linkages have formed between these enterprises and the garage sector. Manufacturers are skilled welders who could use welding machines to fabricate anything but usually specialize in specific metal products. Since they do not own machine tools, they often contract out processing work to machinists within Suame Magazine.

The availability of scrap metal as a raw material within the cluster is another important source of agglomeration of multiple sectors which are interlinked in supply chains.

Fitters organizing the orders, machinery and technology transfer unit express the will to co-operate, and this is a positive environment for the creation of specialized open incubators.

Kariobangi Light Industries, Nairobi

Kariobangi Light Industries is a concentration of micro and small metalwork enterprises, as well as hardware retail shops and machinery repair

service workshops, located in northeastern Nairobi (Akoten 2009) 10 km from Nairobi. There are approximately 300 enterprises and workshops.

The products manufactured include foundry products (such as car spacers); lathe works, welding and metal fabrication (steel doors, windows, furniture, cooking stoves); and mechanical machines (flour millers, feed mixers, block makers, counterweight balances, band saws, candle makers, bakery machines and chip cutters, among others). Some companies are also beginning to produce spring and bag-weighing scales. This agglomeration could attract more businesses along the different value chains and supply a wide range of processing services, components and devices. Several specialized open incubators in construction, food processing and metal products could generate more intra- and extra sales and co-operation.

Morogoro Engineering

The Morogoro Engineering Cluster Initiative (MECI) is located in the Morogoro region, Tanzania. It is a large agglomeration with a number of large-scale and small-scale firms (Msuya 2011). MECI started with nine engineering workshops, 20 tinsmiths groups and 189 employees in 2005, and now it has 60 registered companies, 38 woodworking enterprises and 450 employees. In addition to achievements made by its firms, MECI received a certificate of recognition for successfully training and supporting members who had contracts to supply fuel-efficient stoves.

Zanzibar Seaweed

The Zanzibar Seaweed Cluster Initiative (ZaSCI) started its activities in 2006 with one firm of 20 members located in one village in Zanzibar and now it works with 15 firms located in 11 villages in Zanzibar and one on the mainland with about 3000 members. Members of the cluster include seaweed farmers, processors who make value-added products, buyers and exporters of seaweed, research institutions, and government departments responsible for the seaweed industry.

The research institutions working with the cluster are Institute of Marine Sciences (IMS) of the University of Dar es Salaam (UDSM) and the Kizimbani Agricultural Research Institute, both based in Zanzibar. The government departments working with the CI are Departments of Fisheries, Agriculture, and Trade, while the Zanzibar Chamber of Commerce and Zanzibar Investment Promotion Authority are part of the

private sector. The main activities are to produce high-quality seaweed and seaweed value-added products. Some of the products are wet seaweed and dry seaweed which are common to all groups, seaweed powder, seaweed soaps, seaweed body creams, seaweed oils and seaweed food products. Open incubators could generate a clustering process.

Nutraceuticals—Dar es Salaam

The nutraceuticals agglomeration in Dar es Salaam is a group of businesses specialized in products using moringa leaves, aloe vera leaves, soy beans and rosella. In most cases the producers are also sellers. Products made by the agglomeration include soybean flour, rosella, and moringa powders, soy milk, aloe vera drink and aloe vera soap. Currently the cluster sells nutritious flour to two schools in Dar es Salaam and aims at selling to 20 schools. The nutraceuticals agglomeration has done research to remove toxic substances from aloe vera. Open incubators could attract more SMEs along the value chain to generate a clustering process.

Cassava Processing—Kibaha Tanzania

The agglomeration includes large-scale and small-scale farmers, large-scale and small-scale processors, sellers of cassava and cassava products, consumers, and collaborating partners such as research institutions and government projects.

Herewith are some of the firms:

- Boko farmers and processors: cassava chips for human consumption, cassava chips for animal feed and cassava flour
- Shenyagwa farm in Visiga: The aim is to help other farmers by leasing land
- Mongola farmers and processors: Products produced by the groups in cassava flour, foods such as buns, pancakes
- Zogowale farmers and processors: Products produced by the firm are cassava chips, buns, cakes, biscuits and spaghetti.

Collaborators include Sokoine University of Agriculture (SUA), SIDO, and Food & Nutrition centre. Active networking by the creation of open incubators could expand the agglomeration and generate new specializations.

Kilindi Small-Scale Gemstone Agglomeration—Tanzania

The gemstone agglomeration incorporates mainly small-scale miners located in Tanga and Mombo areas. Apart from Ng'ombeni area where the visit was undertaken, there are mines in Mombo (Mwenga, Mlembule, Kwaisewa and Marange); Lushoto (Mlalo, Mlola, Mgwashi, Makanya and Mnazi); Kilindi (Negero, Vadigwa, Kwediboma and Togoleani); and Simanjiro (Mererani, Loborosoit, Lelelai, Lemungu and Kitwai). The mines in Kilindi have started to operate whereas those in the other areas are potential mines. Through the effort of the facilitator, the agglomeration members are members of the Tanzania Women Miners Association (TAWOMA). Business networking generated by an open incubator could support them at the processing and market level.

ICT Agglomeration, Rwanda

The Kigali ICT Park was created in early 2006. It is attached to the Rwanda Information Technology Agency and seeks to create a centre of innovation and production as well as an ICT showcase. It has three components: technology production and a showcase for established ICT companies (both local and international); an incubator, where ideas are nurtured; and a multidisciplinary centre of excellence where research and development in cutting-edge technologies is conducted.

Six potential clusters were identified to lead the growth and development of the ICT and IT-enabled industry in Rwanda. The six include (rdb.rw website), Education and Training, E-government, Business Process Outsourcing, Mobile Applications Development, Cloud computing and IT Security. Each specialization requires an agglomeration of enough SMEs to generate a clustering process through the organization of an open incubator.

Cocoa

Cocoa trees grow in tropical environments, within 15 to 20 degrees' latitude from the equator (world cocoa foundation 2014). The primary growing regions are Africa, Asia and Latin America. The largest producing country by volume is Côte d'Ivoire, which produces 33% of global supply. Other major producing countries include Ghana, Nigeria, Cameroon, Indonesia, Malaysia, Papua New Guinea, Brazil, Ecuador and Colombia.

Worldwide, 90% of cocoa is grown on small family farms of 2 to 5 hectares, while just 5% comes from large plantations of 40 hectares or more. Cocoa production provides livelihoods for between 40 and 50 million farmers, rural workers and their families in the Global South.

The cocoa market distinguishes three main sub-types of cocoa beans (CBI Market Intelligence 2016):

- High-grade, Criollo cocoa (the original cocoa tree) grows in Venezuela, Central America and Mexico. Criollo beans account for between 5% and 10% of all global cocoa production.
- Common-grade, Forastero cocoa. Now the predominant cocoa variety cultivated in Africa, representing around 80% of all global cocoa production.
- High-grade, Trinitario cocoa. Grows in Trinidad, but now also cultivated in Venezuela, Cameroon and Indonesia. Trinitario accounts for between 10% and 15% of all global cocoa production. The beans are a hybrid between the Criollo and Forastero trees.

The largest increase in cocoa production is expected in Africa, up by 13% to 3.189 million tonnes, followed by a 7% rise for the Americas (up to 666,000 tonnes) (Anga 2015). Similarly, production in the Asia and Oceania regions is expected to increase by 4% to 503,000 tonnes. In terms of its share of total world production, Africa is forecast to remain by far the largest cocoa-producing region, accounting for 73% of world cocoa output in 2013/2014, with the shares of the Americas and of Asia and Oceania likely to be around 15% and 12% respectively.

Ivory Coast and Ghana are the world's number one and two producers of cocoa beans, and together account for nearly 70% of the world's cocoa production (Mungai 2016).

Uganda, too, is expanding (mgafrica website 2014), its acreage under cocoa—now estimated to be about 50,000 acres, mostly in the western and central parts of the country.

Côte d'Ivoire

The Coffee and Cacao Council (CCC) is in charge of managing the activities of both sectors. CCC verifies the quality, approves the co-operatives and the exporters, supports the government during the negotiations for international agreements related to trade of coffee and cacao, ensures the

financial governmental participation and supports projects improving the quality of the products (conseilcafecacco website).

In 2014/2015, 53 commercial companies and 27 co-operatives were approved, and in 2015/2016 only four commercial companies and four co-operatives (conseilcafecacao exportateurs website). Quality has not improved over the last year. Exporters are rejecting roughly half of cocoa port arrivals from top producer Ivory Coast on quality grounds, adding to problems that are already expected to result in a 180,000 tonne global supply deficit this year (Aboa 2016).

The rejections are because of high acid levels and small bean size, exporters and merchants said, adding that farmers are also struggling to dry beans because of recent heavy rains.

Bean size is determined by the number of beans per 100 g of cocoa, known as the bean count, with a higher figure reflecting smaller bean size. CCC has fixed a ceiling of 120 beans per 100 g for beans destined for export during the April to September mid-crop. But exporters said that average bean counts are coming in between 125 and 160. Smaller beans contain less cocoa butter, the ingredient that gives chocolate its texture, while FFAs erode the quality of that butter.

The decline in bean quality is blamed on a prolonged dry season and is particularly harsh.

Ghana

Ghana succeeded in modernizing its infrastructure and improved the value added of cocoa to the local economy. Marketing of Ghana's cocoa beans is the primary objective underpinning the formation of the Cocoa Marketing Company (CMC) (cocoamarketing website).

CMC is affiliated to the Ghana Cocoa Board (COCOBOD). It has a close working relationship with the Quality Control Company held in CMC's warehouses of cocoa before shipping to buyers abroad. Subsidiaries of COCOBOD are Seed Production Unit (SPU), Cocoa Swollen Shoot Virus Disease—Control Unit (CSSVD-CU), Quality Control Company Limited (QCCL), CMC, Cocoa Research Institute of Ghana (CRIG).

CMC is a member of international trade associations including the Federation of Cocoa Commerce (FCC) and the Cocoa Merchants Association of America (CMAA). CMC is affiliated to international commodity organizations such as the International Cocoa Organisation

(ICCO), Cocoa Producers Alliance (COPAL) and International Coffee Organisation (ICO).

The company has commercial dealings with some of the world's leading cocoa trading firms, and cocoa processing and manufacturing companies. It also deals with the core of the world's leading financial institutions, in the execution of the annual offshore syndicated loan facility. CMC deals with the world's leading shipping lines, destination inspection companies and syndicate of international insurers.

Locally, the company works closely with Licensed Buying Companies (LBCs), haulage companies, banks, insurers and many other stakeholders in the cocoa supply chain.

Sales of Ghana cocoa beans are done by a group of traders who monitor price movements in the international cocoa futures markets in London and New York. Selling decisions are made on the basis of internal strategy towards obtaining the best achievable prices in the market. Sales are done directly to firms, registered as buyers of Ghana cocoa beans and delivered directly to designated ports. CMC sells cocoa to international cocoa processing companies, chocolate manufacturers and trade houses.

Annual cocoa production has increased in recent years, from 19,139 tonnes in 2000 to 48,283 tonnes in 2013. The warehousing and port operations of CMC include receiving cocoa from LBCs, warehousing of cocoa and evacuation of cocoa.

The shipping operations of CMC include the anticipation, preparation and delivery of cocoa to buyers abroad. The shipping department also prepares the appropriate invoices and other documentation, out of which cocoa proceeds are received. Co-ordination of freight services and related port activities forms part of CMC's shipping operations.

CMC is in charge of all exports, ensuring that the consistency and reliability of cocoa-related shipments and documents have played a central role in establishing the country's reputation for high-quality beans (Agrisystems Ltd. 1997).

The functions of COCOBOD centre on production, research, extension, internal and external marketing and quality control. The functions are classified into two main sectors, Pre-harvest and Post-harvest, which are performed by specialized divisions of the Board (cocobod website).

The Pre-harvest functions are performed by CRIG, SPU and CSSVD-CU. The Post-harvest functions are undertaken by the Quality Control Division (QCD) and the CMC.

COCOBOD staff levels were reduced from 100,000 in the early 1980s to 10,400 in 1999 to just over 5100 in 2003, bringing down costs considerably (cocobod website). In the same year, COCOBOD ended its control over all domestic purchases by allowing a number of private licensed companies to compete with its former purchasing agency, the Producing Buying Company (PBC), to buy and transport the cocoa crop from farms; the board, however, specifies a minimum price.

The internal marketing of cocoa has become more competitive in recent years, with nearly licensed buyers, along with PBC, procuring cocoa through nearly 3000 buying stations manned by purchasing clerks or individuals from cocoa communities who purchase the crop on the buyers' behalf. Although the total number of licensed buyers is relatively large, five dominate the market: the PBC, Kuapa Kokoo, Olam, Armajaro and Global Haulage, a former transport company comprising three Ghanaians.

The co-operative Kuapa Kokoo, which means 'good cocoa farmer' in Twi, is a cocoa-growing co-operative set up in 1993 by a number of leading cocoa farmers who recognized the opportunity to organize farmers and found a company to market their own cocoa (fairtrad.uk website).

The co-operative is also co-owner of the Divine Chocolate Company in the United Kingdom, which markets chocolate products made from cocoa grown by Kuapa Kokoo.

In 2013, the organization had 87,907 members, of which 32% were women. Members of Kuapa Kokoo are predominantly smallholders highly reliant on cocoa income and living in remote and deprived parts of the country.

COCOBOD has signed a US$1.7 billion loan with a syndicate of more than 20 international banks to fund purchases for the 2014/2015 cocoa season (Dann 2014).

Signed in Paris, the pre-export receivables-backed trade finance deal was over-subscribed by 15%, included a number of new lenders and, according to COCOBOD spokesman Noah Amenya, COCOBOD will receive a further US$200 million on demand to be drawn in the first three months of 2015.

The Netherlands

The Netherlands is the world's largest importer of cocoa beans and the second largest grinder after Ivory Coast thanks to its huge cocoa-processing industry and the presence of the world's largest cocoa port (Amsterdam).

The Netherlands imports around 90% of its cocoa beans from West Africa, primarily in the form of bulk cocoa.

Grinding is the first step in the processing of cocoa beans, whereby the beans are ground into cocoa powder, liquor or butter. The Netherlands domination is attributed to the presence of large national and multinational grinders, including Cargill, ADM and ECOM Dutch Cocoa and international supply chains such as Walmart and Tesco.

More than 99% of the cocoa exported by the Netherlands is destined for intra-European trade. Germany is the most important destination, accounting for 83% of the total reexports in volume.

The Netherlands is the largest processing country by volume, handling about 13% of global grindings. Though unsuitable for growing cocoa, Europe as a whole comprises nearly 40% of the processing market. The remaining 60% is divided almost evenly between Africa, Asia and the Americas.

Value Chain

In 2014, the global retail sales of chocolate confectionery were nearly a staggering $100 billion. But Ivory Coast and Ghana earned just over $8 billion in cocoa exports. In the global value chain for chocolate, the value is skewed heavily in favour of processors, marketers and distributors: cocoa growers receive just 6.6% of the price that consumers pay for chocolate (Anga 2015). African-processed chocolate accounts for 2% of global chocolate sales. Ghana currently processes 30% of its cocoa produce, mostly into cocoa butter, liquor and powder (Mungai 2016).

On May 18 2015, the French Group CEMOI inaugurated its first chocolate factory in Abidjan (cacaoforum website). Nearly 6 million EUR have been invested in this factory with a production capacity of 10,000 tons per year. Its products are dedicated to the sub-regional market: first cocoa powder and chocolate spread, then chocolate.

Uganda is also processing its own chocolate too, with two companies, Good African Chocolate and Pink Food Industries, already in the retail market.

China is a key market for chocolate marketers. Consumption in China is just 100 g per capita, while in the United Kingdom (the world's leading chocoholics) it is 8 kg (mgafrica website 2016).

While profits of multinational chocolate companies have increased since the 1980s, the world market price for cocoa beans, when adjusted for

inflation, has declined by half. Price instability and increasing production costs generate impoverishment for millions of cocoa farmers.

Most of the profits go to leading manufacturers such as Mars, Nestlé and Ferrero, processors such as Barry Callebaut and Cargill, and the big supermarket chains like Wal-Mart, Carrefour or Tesco.

Europe and the United States are the main importers of cocoa products. Cocoa butter is mainly imported by Germany, the United States, the Netherlands and Belgium; cocoa powder and cake by the United States; and cocoa paste by Germany, France and the Netherlands.

Consumption

Emerging markets' cocoa per capita consumption levels are still low, less than 1 kilo per capita per year for India, China, Thailand, Indonesia, Nigeria, Korea, Brazil, Malaysia, Mexico and Argentina (Simmons 2014).

The leaders in chocolate consumption are Belgium and Switzerland with more than 5 kilo per capita per year, followed by Norway, Germany and Austria with around 4 kilo per capita per year.

One of the most important qualities of cocoa butter is its high stability as compared to other fats (organicfacts.net, website). This unique aspect gives it a shelf life of two to five years, which is improved by the antioxidants found in cocoa butter. Its stability at room temperature but relatively low melting point also makes it an ideal base oil for suppositories and other medicinal creams.

The health benefits of cacao open new applications beyond the food market. These include active heart function, mood elevation, proper brain and nervous function, and stress relief (organicfacts.net b website).

Cocoa butter has a high concentration of antioxidant compounds, including oleic acid, palmitic acid and stearic acid. Although these are technically fatty acids, they are beneficial for the body, and help to neutralize free radicals throughout the body, particularly in the skin. By reducing the occurrence of oxidative stress, cocoa butter can help reduce the signs of ageing, including wrinkles and age marks.

Cocoa butter can also help to moisturize the hair, helping to improve its general appearance and strength. Cocoa butter has also been linked to a lower incidence of dandruff and healthier hair follicle beds, thereby reducing hair loss and preventing the onset of male pattern baldness.

The health benefits of chocolate also include improvement of brain and nervous system, heart function, blood pressure and diabetes. It is also an antidepressant and a stimulant (organicfacts.net website).

Researchers have discovered a gene that controls the melting point of cocoa butter (Zhang et al. 2015; Mulhollem 2015). The discovery of this melting point—a critical attribute of the substance widely used in foods and pharmaceuticals—will likely lead to new and improved products.

The finding by plant geneticists should also lead to new varieties of the cocoa plant that could extend the climate and soil-nutrient range for growing the crop and increase the value of its yield, providing a boost to farmers' incomes in the cocoa-growing regions of the world.

The 'snap' and 'melt' of chocolate are two very important textural features that determine the appeal of chocolate to consumers, and having new varieties of the cocoa plant that produce butter with different melting points would be a valuable resource to control those characteristics. Medical applications could include production of drug-delivery products with slower release of drugs than is possible with current cocoa butter-based systems.

Cotton

World cotton production is dominated by China, India and the United States (Cottoninc 2016), but the main exporter is the United States with 10.5 million 480 lb. bales in comparison to four for Brazil and India.

Cotton is vital for the survival of many low-income countries in SSA countries. In value terms, it accounts for 26.4% of Benin's exports and 58.7% of Burkina Faso's (fairtrade.org, 2015). Burkina Faso is the first African exporter with 1.2 million 480 lb. bales, followed by Mali (1 million), Côte d'Ivoire (0.7 million), Benin (0.6 million) and Cameroon (0.5 million).

As many as 100 million households are directly engaged in cotton production, and an estimated 300 million people work in the cotton sector when family labour, farm labour and workers in ancillary services such as transportation, ginning, baling and storage are taken into account.

The Nairobi Ministerial Conference adopted in 2016 a decision on cotton (WTO website, Nairobi package) prohibiting export subsidies and calling for a further reduction in domestic support. It also calls for improvements to market access for least-developed countries (LDCs).

African countries can now export their cotton to developed countries duty-and quota-free as from January following a global deal sealed in Nairobi at the World Trade Organisation Ministerial Conference (Ligami 2016).

The agreement includes three key elements—on market access, domestic support and export competition. The deal comes into effect from January 1, 2016 and cotton-producing countries in Africa, mainly Burkina Faso, Benin, Chad and Mali, and other developing countries, can begin to export cotton duty-free.

Almost 80% of cotton fibre is processed into yarn in Asia (intracen.org website). In contrast, fibre transformation rates in Africa are only 5% of francophone and 43% of anglophone African cotton being processed on the continent. On average, 83% of SSA cotton is exported as lint, almost exclusively through international merchants to Asia.

Tanzanian cotton was sold in direct marketing activities from independent ginners to spinning factories in both Bangladesh and Thailand for an amount of US$10 million.

This was the first-ever direct sales from African ginneries to Asian spinning mills.

Sales from Senegal to China amounted to approximately US$3 million. Three Chinese spinning mills agreed to co-operate with two ginners from East Africa for the import of 3000 cotton bales, valued at approximately US$800,000.

The feedback from Thailand on the quality of the cotton received was very good. Individual score card assessments by the buying spinner resulted in above average scoring for the Tanzanian cotton in almost all categories, except for contamination.

In addition, a spinning factory plans to invest US$6 million in spinning facilities in Tanzania.

EU–Africa Partnership on Cotton

The Pan African meeting on cotton, which was held in Cotonou (Benin) in June 2011, notably highlighted the need to continue working towards a Pan African Cotton Road Map (PACRM) (United Nations 2014).

A first version of the PACRM was drafted in May 2012 within the framework of the 3ACP programme under the aegis of the UNCTAD.

The EU–Africa Partnership on cotton and the cotton-textile clothing regional strategies aims to implement public policy instruments and

mechanisms that support the cotton sector, in conjunction with the Comprehensive Africa Agriculture Development Programme (PDDAA) and the Regional Agriculture Investment Plans (RAIP) (coton-acp.org website).

The PACRM is divided into productivity, trade and marketing, and the added value of African cotton and its rotational crops. During the 20th meeting of COScoton (Benin, March 2015), the conclusions and recommendations related to the PACRM led to the establishment of the Technical Working Group made up of representatives of the AU, NEPAD and RECs, who would finalize the work.

About 570 million euros has been spent to subsidize the African cotton sector over the last ten years (coastweek website 2016); the EU and its Member States provided 70% of the funding.

The mobilized funds have been directed to support cotton-textile clothing regional strategies, essentially in the West African economic and monetary union (WAEMU), the Economic Community of Central African States (ECCAS) and in the Common Market for Eastern and Southern Africa (COMESA).

Burkina Faso

Burkina Faso's dependence on cotton has grown as a result of the implementation of institutional reforms, which have brought new land and producers to cotton production (Kaminski and Thomas 2009).

Cotton is the main cash crop in Burkina Faso. The cotton sector provides a livelihood for more than 3 million people, and is the largest employer and the second largest foreign currency earner in the country. Shifts in global demand and commodity prices have made it difficult for cotton companies to secure financing, which could threaten the economic development of Burkina Faso.

Burkina Faso's success in creating an efficient cotton value chain stems from the institutional capacity for improved contractual co-ordination and collective action, such as the creation of co-operatives efficient in marketing, credit repayment and cost savings.

IFC, a member of the World Bank Group, the Global Agriculture and Food Security Program's private sector window and Société Générale signed an agreement to provide a €70 million trade facility to Burkina Faso's largest cotton exporter SOFITEX (Brussels cta 2016).

SOFITEX purchased raw cotton for processing from more than 160,000 Burkinabe farmers and exported the production to international markets, a record of 750,000 tonnes of cotton in 2015.

The Action Framework (AF) under the EU–Africa Partnership on cotton (EU 2016) co-ordinate such actions.

In 2003 Burkina Faso became one of the first African countries to begin field trials of Bt cotton (Dowd-Uribe and Schnurr 2016).

This was done in partnership with the agriculture company Monsanto. Bt refers to a toxin, Bacillus thuringiensism, that kills one of the world's most common and pernicious cotton pests, the bollworm. Monsanto agreed to backcross the Bt gene onto local Burkinabe varieties, which were subsequently released to farmers in 2008.

The introduction of Bt cotton has reportedly boosted total cotton production. In 2014, Burkina Faso had the largest number of total GM crop producers on the African continent. It has more than 140,000 smallholder farmers cultivating Bt cotton.

The average Bt cotton farming family gained 50% more profit than from conventional cotton. This is despite the very high cost of Bt cotton seed. Bt cotton growers also use significantly less pesticide.

But the inferior lint quality of Bt cotton has caused severe economic losses for Burkinabe cotton companies. Company officials and Monsanto representatives cite two problems with lint quality. Bt varietals produce shorter, less desirable lint. The shorter length means poorer quality, which in turn means a lower price on the international market. Burkina Faso has abandoned genetically modified Bt cotton crops in order to phase out inferior-quality GM crops for non-GM crops (Dowd-Uribe and Schnurr 2016; GM watch 2016).

Cocoa processing in SSA countries, especially in Ivory Coast, Ghana and Uganda, could be the starting point of growing sales in the SSA market and stronger competence, improving the added value of cocoa products manufactured locally and exported in the global food, cosmetics and pharmaceutical market. Research centres, professional schools and the establishment of support and related industries are required.

Mango Cluster

The World Bank project Programme Compétitivité et Diversification Agricoles (PCDA), with funding from the Dutch Embassy, built a modern pack house, the Plaza in Bamako-Mali, near the airport, to help exporters

improve their capacities in handling and shipping mangoes (wds.worldbank.org/ website). The Plaza has proven to be an effective pack house despite its location, away from the growing region and the border with Côte d'Ivoire. However, the Plaza currently operates only during the mango season. PCDA is looking at other exotic fruits, such as papaya, that could make use of the pack house. These products could also be from other nearby countries.

Over time, training has increased the capacity of mango producers, allowing for continued success in the sub-sector. Supply chain financing through the PCDA project, local banks and other financial institutions has regained trust and interest in Malian horticulture.

As part of PCDA, the Dutch firm Bakker Barendrecht teamed with five exporters operating at the Plaza to teach the exporters how to reach European markets with their products. Bakker invests in knowledge in mango production and pays a minimum on the fruit if the exporters abide by a code of practice detailed in the contract. Results and impacts of Mali's development agenda place a high priority on agricultural growth and diversification. A wide range of stakeholders participating in the value chain, small farmers, traders, agro-processors, exporters, service providers (technicians, financiers and accounting specialists), and input and equipment providers have been involved since project launch and are benefiting from the expansion and improvements brought about by these projects. The Mango Task Force as a trade/business association is managing the entire process.

Enhanced Integrated Framework (EIF) of WTO (enhancedif website) has assisted in fundraising to improve mango quality in the regions through phytosanitary treatment of mango orchards; popularization of good agricultural practices; and raising awareness, information and capacity building of the different actors in the value chain. EIF supported the guidance and support to the GLOBAL CAP certification for a dozen exporters, and marketing support at national and international trade events (enhancedif.org website).

For dried mangoes, support has been primarily focused on acquiring dryers; providing training on standards, including good hygiene practices; and introducing and promoting a quality management system in processing SMEs.

Moreover, in terms of value addition, EIF has also promoted the building of a fruit-processing unit of mango marmalade in Yanfolila. The Yanfolila fruit-processing unit operates for the benefit of rural women and

seeks to empower women to add value to local fruits. At present, the unit can produce up to 120,000 jars of 220 g annually.

All these efforts, combined with support from other development partners, have contributed to the increase in mango export volume, which rose from 25,890 tonnes in 2013 to 37,573 tonnes in 2014, marking a 45.13% increase. As a result, sales increased from US$24.3 million in 2013 to US$34.7 million in 2014.

With the recently acquired ISO 22000 certification, Mali hopes to export over 300,000 jars of mango jam to Europe and the United States in 2016.

The government of Mali allocated a sum of US$3 million for 2014 for EIF Programme implementation.

The mango season in Mali is April–July (africa.undip website), in Kenya November–April (nafis website) and in South Africa January–April (veggiebunch website). An SSA mango cluster could be able to supply in April–July, November–April, and January–April, mangoes and compete more efficiently in the global market. This cluster could be expanded to exotic fruits from nearby SSA countries using the same infrastructure and marketing network.

Shea Nuts Cluster

Under natural conditions, the shea tree begins to bear at age 20, and full production is reached at age 40 or 50 (Sanou et al. 2004). This is a major disincentive for farmers to plant it. Grafting can make trees bear fruit younger, but it has not yet been applied on a large scale (Sanou et al. 2004) and requires plantlets that will often have to survive high livestock pressure. Another critical factor is the complex bundle of rights to shea trees as distinct from rights to the land on which shea trees grow (Fortmann 1985).

Some social groups and especially migrants are discriminated in this issue (Elias 2010).

The shea tree (Vitellaria paradoxa) is indigenous to the savannas and dry forests of the Sudanian region (Kamara 2011; Rousseau et al. 2014). It is found in a 5000-km – long belt that crosses West Africa. Shea trees are usually not planted but selected, saved and protected by farmers in their fields (Lovett and Haq 2000). The shea tree is the most common parkland tree species in Burkina Faso (Fischer et al. 2011).

In Burkina Faso, rights to shea trees in the cultivated areas may be shared between the landowner and the farmer who has use of the land or restricted to the landowner (Augusseau et al. 2006; Elias 2010).

As establishing plantations of shea trees may require new institutional tenure arrangements (Berry 1988), planting shea is not yet part of existing agrarian systems; it raises problem of land tenure and involves the question of social justice. Efforts have not been made to propagate its production by farmers (Adola 2011). The people's habit of destroying the trees for charcoal production leads to environmental degradation, deforestation and loss of huge economic potential.

Shea fruit is collected by women between May and August. Dry nuts can be stored for several months before being crushed to release the kernel. International companies are interested only in shea kernels. Shea butter processed from shea kernels has traditionally been and still is the main source of lipids in the local diet in rural areas (Lamien et al. 1996).

The UN Development Programme (UNDP) estimates that 3 million African women work directly or indirectly with shea butter (Moundio 2013).

Production

Nigeria is the world's leading producer of shea butter with about 500,000 metric tonnes in 2015 (Oladunjoye 2016). Shea butter is produced in Kogi State, Kwara State, Kebi State, Nasarawa State, Niger State and Oyo State, particularly in Iseyin region. Mali produces 190,000 MT, Ghana 67,901 MT and Burkina Faso 67,614 MT (Osibo 2013).

According to Lovett (2004), the potential nut production in Africa could surpass 1 million tonnes per year if all nut-producing countries were fully participating in the market.

West Africa currently exports between 265,000 and 445,000 tonnes of shea per year in nut weight equivalent (Yinug and Fetzer 2008) and accounts for 99.8% of total exports of shea.

Ghana is the leading exporter in the region, and exports about 40,000 tonnes per year (Addaquay 2004). The commodity is exported to France, Great Britain, the Netherlands, Denmark, North America and Japan (Elias and Carney 2007). The shea tree spreads over almost the entire area of Northern Ghana, over 77,670 square kilometres covering the regions of West Dagomba, South Mamprusi, West Gonja, Lawra, Tumu, Wa, Nanumba and East Gonja (CRIG 2002).

In 2005, 26% of shea export was as crude butter (Yinug and Fetzer 2008), which rose to 35% in 2010 (Reynolds 2010). The main exporters of shea butter from West Africa are 3F Group India, IOI Loders Croklaan Group Malaysia, AAK Sweden and Fluodor, TGI Nigeria Benin.

3F Group

3F Group began with one plant in Tadepalligudem, India in 1960 specialized in food fats and fertilizers. 3F Group has operations in Singapore, the Middle East, Vietnam and West African countries and employs more than 5000 workers (fff website). Its portfolio includes bakery fats, fats for frozen desserts, fatty acids, refined oils, soap noodles and toilet soaps. 3F produces shea butter in Ghana Free Zone Board (GFZB)—Tema (gfzb website).

IOI Loders Croklaan Group

IOI Loders Croklaan Group (middleeast.ioiloders website), one of the world's leading producers of premium quality oils and fats and the world's second largest exporter of shea, moved from a strategy of shea nut export to a strategy of crude shea butter export from industrial plants in West Africa.

Loders Croklaan buys raw unrefined shea butter from Ghana Specialty Fats, a German/Scottish processor of cashew nuts installed in GFZB—Greater Accra Region (gfzb website).

IOI collaborates also with StarShea Network in Tamale, Ghana (starshea website). This network is now approaching 15,000 members.

StarShea Ltd is dedicated to commercializing the shea nuts and butter produced by the women of the StarShea network. Launched in June 2012 as a social business, StarShea Ltd aimed to achieve sustainable access to direct markets for these women in order to increase their revenue. The creation of the company was facilitated by its founders PlaNet Finance, which provided equity financing, and SAP, which provides financing through an interest-free loan. SAP is the world leader in enterprise applications in terms of software and software-related service revenue. Based on market capitalization, they are the world's third largest independent software manufacturer (go.sap website).

In March 2015, IOI Loders Croklaan co-operated with Hershey to fund the construction of three warehouses in Northern Ghana that will improve incomes for 900 women shea farmers. Hershey and IOI Loders

Croklaan provided funding to StarShea to construct these three warehouses (businesswire, 2015 website).

AAK

AAK is organized in three business areas: food ingredients, chocolate and confectionery fats, and technical products and feed. The cosmetics production unit is a part of chocolate and confectionery fats. Production plants are located in Belgium, Colombia, Denmark, Mexico, the Netherlands, the United Kingdom, Sweden, Uruguay and the United States.

In 2009, AAK started a project in Kolo Nafaso—women's groups in Burkina Faso by training them how to treat the shea in the best possible way—from collection to storage—and thus increase their income from higher-quality shea kernels. During the 2014/2015 season the project reached out to 55,000 women. For the 2015/2016 season AAK intends to increase reach to 70,000 women.

Fluidor—TGI

Fluidor Benin was created to expand the TGI Group's interests in francophone Africa, particularly in the food industry and trade of tropical products (fluidor website).

TGI Group is an international investment and holding company with diversified interests and investments in Nigeria, Ghana, Republic of Benin, Morocco, UAE, South Africa, China and several other emerging markets (clicktgi website).

Fluidor started commercial production of its oil and De-oil Cake (DOC) with cottonseed as its raw material in May 2000. The plant has a capacity of 300 tonnes of cottonseed and also grind shea nuts.

SNV

Founded in the Netherlands in 1965, SNV is a non-profit organization which has built a local presence in many of the poorest countries in Asia, Africa and Latin America (snv website). Its global team works with local partners to equip communities, businesses and organizations with the tools, knowledge and connections they need to increase their incomes. SNV works in shea in Ghana, Burkina Faso and Mali and will soon in Benin. SNV has been present in Ghana since 1991.

Several small and medium exporters from Ghana, Ivory Coast, Burkina Faso and Mali are listed on the website http://www.africa-shea-butter.com/

Cocoa Butter Equivalent (CBE)

The main outlet for shea is CBE industries. Shea butter has similar chemical and physical properties to cocoa butter but costs less (Schreckenberg 2000). In addition, it is used to help maintain the texture of chocolate, its hardness and bright exterior, to prevent the forming of fat bloom, and to improve heat resistance (Fold 2000). CBE industries absorb 90% of total shea exports from West Africa.

Western Europe is the main market for CBE, and the EU decision to allow 5% of CBE in chocolate (Directive 2000/36/CE, application August 3, 2003) has supported this market.

The growth of the CBE market is mainly driven by new markets such as Eastern Europe, Russia, Brazil and Oceania (Yinug and Fetzer 2008). During 2000–2005, the global CBE market increased by 29% (Reynolds 2010; Yinug and Fetzer 2008). In about the same period, total exports of shea in nut weight equivalent increased by 35% (Yinug and Fetzer 2008).

CBE's main manufacturers, AAK (AarhusKarlshamn AB, Sweden), IOI Loders Croklaan (IOI Group, Malaysia) and 3F (Foods Fats and Fertilizers Ltd, India), opened branches in Bobo—Dioulasso, Burkina Faso during 2000–2005. The choice of Bobo-Dioulasso and the western part of Burkina Faso was motivated by the volume and quality of nuts available in this area.

AAK, IOI and 3F accounted for an estimated 95% of the buying market share for export. AAK dominated the market with around 60% of the market share (Reynolds 2010).

Cosmetics

Shea butter is highly concentrated in fatty acids that melt at body temperature (bettershebutter.com website). This means that it is readily absorbed when applied to the skin.

Shea butter can easily be blended with essential oils to create specific fragrances, making this product very versatile. It is rich in vitamin E and vitamin A. Both these vitamins are essential for healthy skin and eyes. They are potent antioxidants that protect and heal the skin, which is why shea butter is effective for boosting the immune system. In addition, shea butter contains cinnamic acid. This is a special compound that can help to safeguard the skin from ultraviolet ray (UV) damage.

West African exports of shea for cosmetic purposes are estimated to have increased from 200 tonnes/year in 1994 to 1500 tonnes/year in 2003 (Lovett 2004). Approximately half the supply of shea butter to the cosmetic industries comes from CBE and agri-food industries (Elias and Carney 2007). Herewith is the US, EU and African cosmetics experience based on shea butter.

US Experience

Shea in the US cosmetics and personal care market is mostly used in specialty brands in the naturals segments (Reynolds 2010).

Jergens, a very well-known US brand owned by the Japanese company Kao Brands, features a lotion made with shea butter.

Proctor and Gamble has added shea butter to its Puffs Plus line of lotion tissues, a category growing at 7% a year and now comprising 20% of the tissue market.

The CVS drugstore chain has launched a hand sanitizer made with shea.

Softsoap by Colgate Palmolive has formulated a liquid soap with shea.

European Experience

L'Occitane, a French company, and the UK-based The Body Shop, which was acquired by the French cosmetics giant L'Oreal in 2006 for £652 million (The Guardian 2006), are both prominent actors in the global shea market.

L'Occitane, founded in 1976, has been sourcing its shea butter from Burkina Faso since the early 1980s. It was early to advance viewing its relationship with Burkinabe women's collectives not just as one of buyer and supplier but rather one of true partnership. Founder Olivier Baussan first went to Burkina Faso in 1983 and observed how shea butter was made.

By 2007, L'Occitane launched the Shea Center in Ouagadougou, Burkina Faso and built a 4300-square foot production facility to further train the women on butter neutralization in its effort to optimize quality and reduce losses. The unit included space for manufacturing, storage and an analysis laboratory. In that same year the company ordered 336 tonnes of shea butter from the collectives, including 60 tonnes of organic butter.

L'Occitane collaborates with 15,000 rural women producers in its use of shea butter in its products (Kamara 2012). L'Occitane estimates that it pays 20% to 30% more for shea butter from Burkina Faso than it would for shea butter from Western industries. Sales of shea butter to

L'Occitane represent about $1.23 million in revenues yearly for the supplier co-operatives.

The Body Shop, a global beauty brand founded in 1976, pioneered the nature philosophy behind its products (bodyshop website). The Body Shop has more than 3000 stores in more than 60 countries. In 1992 Anita Roddick, the founder, visited Ghana to test production of quality shea butter at the village level. The butter is shipped to ZOR in Holland for refining.

The Tungteiya Shea Butter Association in Ghana is made up of over 475 women in 11 villages around Tamale, northern Ghana (bodyshop website). The Association has set up a fund to pay for community projects. L'Oreal is expanding its business activities in Africa and in 2016 fully acquired a Kenyan local beauty firm Interconsumer Products, makers of Nice & Lovely brands (Business Daily Africa 2016). L'Oreal's eyes are cast on the low end of the beauty market. Interconsumer Products owns the manufacturing plant and products that will allow the firm to tailor items for Kenyan buyers.

African Experience

Established in 2011, the Global Shea Alliance (GSA) is a non-profit industry association with headquarters in Accra, Ghana (globalshea website). The GSA currently has 350 members from 25 different countries (palmers website). Members include women's groups, small businesses, suppliers, international food and cosmetic brands, retailers and non-profit organizations. The GSA's mission is to design, develop and deliver strategies that drive a competitive and sustainable shea industry worldwide, improving the livelihoods of rural African women and their communities.

Herewith is the African cosmetics experience based on shea butter.

Shea Yeleen International—Ghana

Established in 2005, Shea Yeleen International, Inc is a social enterprise dedicated to empowering women in West Africa through the production, sale and use of shea butter products (sheyeleen website). Shea Yeleen specializes in manufacturing high-quality, organic, fair trade skin care products and utilizing a sales strategy that incorporates women's micro-enterprise development.

In 2005, Rahama Wright, Ghanaian and American, launched Shea Yeleen International in order to help women in West Africa organize co-operatives and provide training and micro-enterprise development

(prnewswire website). In 2012, she created Shea Yeleen Health and Beauty, LLC, a for-profit sister organization focused on the distribution of shea butter products. Shea Yeleen is working to help women in Northern Ghana earn a living wage through the production and sale of shea and gain more visibility within the US marketplace. In 2008, the White House Project and O, The Oprah Magazine selected Rahama as a national leader through their Women Rule programme. Rahama holds a degree in International Relations from the State University of New York at Geneseo and is an avid traveller. Shea Yeleen International works with women in co-operatives in Ghana, Burkina Faso and Mali (Grenée 2011).

Beads for Life (BFL)—Uganda

Founded in 2004, BFL strives to lift women and their families in East Africa out of extreme poverty. BFL's latest initiative—shea butter production—started in early 2010 (Beads for Life website).

The Uganda co-operative employs 750 women who are trained to be self-sufficient in the production of shea butter. BFL offers an array of shea butter-based products, with the majority of profits rolled back into local initiatives.

Co-operative members are paid based on the total usable weight of nuts they collect. A woman brings between 100 and 200 kilos during a three-month period (June through August). BFL pays about 10% more than the local market weight.

SeKaf Ghana

Senyo Kpelly and Michael **Kaf**ui Bulla founded **SeKaf** Ghana Limited in 2003 (sekafghana website). Senyo and Michael are high school mates and their vision is to become an innovative leader in the global shea industry. SeKaf Ghana Limited operates in three segments: the SeKaf Shea Butter Village, agricultural services and shea consultancy (tamacosmetics website).

The SeKaf Shea Butter Village segment develops and manages organic and conventional shea fields and collaborates with women's co-operatives at the grassroots level to process premium quality unrefined shea butter (organic certified, traceable and conventional) in a fully traceable and controlled system. SeKaf's natural shea butter is used for producing bath and beauty products under the brand name TAMA®.

The agricultural services segment procures and transports raw material for multinational agro-processing firms in the shea and cashew industries.

This segment also trades in agricultural commodities such as shea nuts, soya beans and sesame seeds (tamacosmetics website).

SeKaf collaborates closely with the SeKaf Shea Butter Village's women's co-operative and currently buys shea nuts and shea butter from 2500 women.

Olvea—Burkina Faso

Founded in 2007, Olvea Burkina Faso produces shea butter and other vegetable oils. Olvea's production is exclusively distributed by Olvea Vegetable Oils (olvea website). Located in Bobo Dioulasso, in the heart of shea country, Olvea is a fully equipped facility for grinding kernels to extract the butter.

In 2015, Olvea became a responsible operator with a "Mastery" level of responsible performance according to the ESR (Fairness, Solidarity and Responsibility) standard of Ecocert.

- Memorandum of understanding expressing the mutual participation between Olvea and each woman's co-operative with the emphasis on a long-term outlook.
- Training of co-operatives: additional income, promotion of co-operatives, providing improved cookstoves (for scalding nuts) and carts (for transport), creation of many direct, sustainable jobs in compliance with local labour legislation, complete fire safety equipment, training of employees, social security.

Shea Origin Nigeria Inc

The Chief Executive Officer , Shea Origin Nigeria project, Mrs Mobola Sagoe, knows the importance of teaching local women to get involved in shea butter production (naspansw website). Her companies, which include a spa and beauty clinic, supply cosmetics and export shea butter to the United Kingdom and the United States. She studied beauty therapy at the Pivot Point Beauty School, Chicago.

Mrs Sagoe has developed and manufactured organic skin care products to give and maintain smooth, healthy, supple and bright skin.

She is recognized for her skincare beauty products and marketing. Her skincare line has been a huge success because she took into account black skin and Nigeria's climate. She based her beauty products on shea butter ingredients, incorporating a centuries-old tradition that uses 'the power of the plant' in health and beauty treatments.

Supported by USAID Nigeria and Expanded Trade and Transport Program (NEXTT), her firm strives to lift women and their families out of extreme poverty through improved shea production.

The Savannah Fruits Company—Ghana

The Savannah Fruits Company is a Ghanaian registered company based in Tamale in the middle of the savannah zone of Northern Ghana (savannah-fruits website). The company was founded in 2006 by 4950 women from 40 women's groups in Northern Ghana for conventional butter processing.

SNV Ghana develops and shares knowledge through its advisory services and expertise with local organizations with the goal of making them better equipped for their work. The partnership between SNV and the Savannah Fruits Company aims to ensure that business activities are performed in a socially responsible, transparent and pre-agreed manner.

The company is a partnership between

- A Dutch entrepreneur, Bart Boterman, the managing director. With a professional career spanning Venezuela to India to Singapore, Bart finally settled down as an entrepreneur in Ghana.
- A Ghanaian/Belgian entrepreneur, the general manager, Diana Banuro, who
- Drecently returned to the motherland after living in Belgium for over two decades.
- A local Ghanaian operation manager, Felix Basing. With a Natural Resource Management background, Felix has a lot of experience in co-ordinating with local women's groups in different geographical areas on sustainable shea production.
- And 13 Ghanaians in charge of the different activities of the firm.

Manuski Ghana Limited (MGL)

MGL is a cosmetics manufacturing, packaging, trading and service company (http://mglnaturals.com/). Israella Kafui Mansu, A young African woman who graduated from the University of Ghana established MGL in Ghana, West Africa in 2009 (mglnatural website). She decided to research all natural organic skin and hair care products and ingredients, to find solutions to unsafe beauty care products on the Ghanaian market. Her first research was into organic and natural cocoa butter. Later, she studied the production and benefits of virgin coconut oil, pure shea butter, varieties of African black soaps, organic neem oil and pure wild African honey. Most

Gorgeous Look (also MGL) is a natural beauty care product brand. MGL manufactures bathing soaps—African black soaps (AlataSamina), body creams/butters, hair food/pomade and massage oil.

Moringa

Moringa oleifera (MO) grows in dry to moist tropical or subtropical climes, with annual precipitation of less than 800 mm irrigation and temperatures between 18 and 28 C (Leone et al. 2015). It grows in any type of soil, preferable heavy clay and waterlogged, with pH between 4.5 and 8, at an altitude up to 2000 m.

MO is a fast-growing tree; in three months it can be 3 m high. The great interest in MO is in its multipurpose uses and its ability to guarantee a reliable yield, limiting the risk of suffering from nutritional deficiencies. Moringa leaves have been characterized as containing nutritional balance,vitamins, minerals, amino acids and fatty acids (Moyo et al. 2011; Teixeira et al. 2014; Razis et al. 2014).

MO is widely used in the Indian Ayurvedic system of medicine and as a nutraceutical. It also increases defence against diseases (Anwar et al. 2007; Masurekari et al. 2015).

The leaves contain various types of antioxidant compounds such as ascorbic acid, flavonoids, phenolics and carotenoids (Alhakmani et al. 2013; Vongsak et al. 2014). The therapeutic potential of MO leaves in treating hyperglycemia and dyslipidemia was reviewed by Mbikay (2012). MO leaves, seeds, bark, roots, sap and flowers are widely used in traditional medicine, and the leaves and immature seed pods are used as food products in human nutrition (Stohs and Hartman 2015).

Kumari (2010) treated type 2 diabetic subjects with 8 g of powdered MO leaf in tablet form per day for 40 days. A total of 46 subjects were involved in the study. At the end of the study, fasting blood glucose and postprandial blood glucose were 28% and 26% lower, respectively, in the treated subjects. Furthermore, total cholesterol, triglycerides, low-density lipoprotein cholesterol and very low-density lipoprotein cholesterol were 14%, 14%, 29% and 15% lower relative to the control group.

A number of recent studies which investigate the utility of moringa powder in treating HIV-positive patients have showed that moringa leaves contain some powerful antioxidants that can help prevent and delay some of the worst complications such as the wasting of body tissue and the deterioration of patients' mental health (glen website).

Moringa could prevent the virus from replicating itself. Moringa is rich in antioxidants and has super-nutritional properties so it helps make the immune system stronger.

The phytochemical compounds of moringa contain simple sugar rhamnose and unique compounds called glucosinolates and isothiocyanates which have anti-cancer and hypotensive effect properties. In extensive studies moringa also contains compounds for cancer prevention which are inhibitors of TPA. For the prevention of skin cancer the ingestion of moringa seed pod extract shows a reduction in skin papillomas.

The NGO 'Médecins du Monde' started clinical experiments in 2007 on 40 patients with HIV at Come Benin (fr-fr.fcebook website); 20 took three spoons daily and 20 did not take anything. Six months later, the CD4 count of those who took moringa increased from 200 to around 500 and they took on average 1 to 1.2 kilos. For the 20 others, CD4 count and weight did not change. Herewith are some of the small business initiatives commercializing moringa in SSA countries.

Emerald Moringa Tea—Cameroon

The Cameroonian woman entrepreneur Vanessa Zommi, founder of Emerald Moringa Tea, puts diabetes to flight with her tea manufacturing business (Idriss 2016). She took her decision when her grandparents died of diabetes and her mother suffered from the same illness.

At the age of 17, Zommi started manufacturing her tea and established the company Emerald Moringa Tea to supply consumers in Molyko, a town in the Buea region. Today the company employs nine people and is looking at expanding its distribution to other regions in Cameroon, as well as the rest of Africa. She recently completed a degree in chemical engineering, and is currently pursuing her masters at Villanova University in the United States. Her business is being run by a dedicated team in Cameroon while she is away.

Jal Gua—South Sudan

Born and raised in war-torn South Sudan, Emmanuel Jal was only seven years old when he was forced to become a soldier (Ngabo 2015). A British aid worker smuggled him to Kenya and that is where Jal went to school. Through his music themed on peace and forgiveness, his journey eventually brought him to Canada.

A few years ago, Jal developed signs of diabetes and high blood pressure. He decided to go back to his South Sudan roots to create Jal Gua with health experts at Niagara College. Jal Gua is based on sorghum and moringa, the natural remedy in South Sudan for lowering sugar level in blood.

He launched Jal Gua (meaning 'walk in peace' or 'walk with power' in the Naath language) in Toronto, in the local food market. Jal Gua is an instant powder super food (jalgua website).

Jal Gua is mainly for busy professionals, athletes and weight management and to lower blood pressure and sugar in blood.

Moringacare—South Africa

Moringacare is a South African company producing a wide range of products based on moringa, from capsules to powder, including passion fruit drink as an energy drink sold online (moringacare website).

Zija International—South Africa

Zija, a South African company, began with one man, Ken Brailsford, a pioneer in the nutritional supplement industry (drintlifein website). Zija products are based on moringa for weight management, and liquid nutrition, energy drinks and skin cream are currently produced by this company.

Moringa King Juice—Ghana

Ben Ajofu was diagnosed with hypertension at the age of 35, and doctors told him he would be on medication for the rest of his life. Within three to six months of taking moringa, he realized his blood pressure had lowered.

He is the founder of Moringa King, a producer of juice and powder containing parts of the plant. He formulated a drink full of the plant's nutrients. After three years of trading, the company has a staff of 10 and an annual turnover of $79,000. It counts two of the world's largest hotel brands, Movenpick and Kempinski, as clients, as well as being stocked in all the major fitness and retail outlets in the country.

Moringa could be the basis of an SSA regional cluster specialized in food additives and medical plants in a wide range of applications as detailed above.

Gum Arabic

Gum arabic is produced from two Acacia tree species found in the SSA region, that is Acacia Senegal and Acacia Seyal. Acacia Senegal is known to produce high-quality gum whereas the gum produced from Acacia Seyal is of low quality (pitchenginewebsite). Gum arabic is the complex mixture of polysaccharides and glycoproteins and is the original source of arabinose and ribose sugar.

Gum arabic is a natural emulsifier, holding together substances that do not mix well. Starches, the most popular alternative, are less successful at retaining flavors, and their use can mean shorter shelf lives.

Production and Export Markets

Sudan is the world's leading producer of gum arabic with 70% followed by Nigeria, Mali, Senegal, Chad and Niger Republic (Mohammed 2015).

Sudan produced 52,000 tonnes between January and May 2014, 40,000 tonnes of which was exported. Sudan targets annual shipments of 300,000 tonnes within three years.

Sudan mostly produces hashab, or hard variety of gum arabic. Its main competitors include Chad and Nigeria, which mainly produce the lower-quality talha, or flaky gum.

The major gum arabic-producing areas in Nigeria are Bornu and Yobe states (nairaland website).

In 2014, Western Europe and the United States imported most of the 60,000 tonnes of gum arabic. Domestic consumption in Sudan was about 10,000 tonnes, while an estimated 25,000 tonnes may have been smuggled across the country's borders. France imported almost half of Sudan's total exports in 2013 (Mohammed 2015).

Sudan is boosting loans to farmers and providing labourers with low-cost housing in a bid to double harvests of gum arabic. The government plans to build accommodation near gum-producing areas over the next three years to encourage migrant workers to settle.

A group of ten Sudanese banks has also pledged $41.9 million of financing for gum arabic producers and exporters. Seven new domestic companies have begun gathering and processing the commodity since 2012.

The objective of Multi-Donor Trust Fund-National (MDTF-N) is to revitalize the Sudan Gum Arabic Production and Marketing Project (Worldbank 2013b).

Designed to help increase the income of small-scale gum arabic producers, the project established pilot programmes in four regions of Sudan: Blue Nile State, Sennar State, outh Kordofan State and North Kordofan State.

Since 2010, the MDTF-N Revitalizing the Sudan Gum Arabic Production and Marketing project supported a rise in average annual incomes by as much as 65% in 2011. From 2009 to 2011, gum arabic exports sawa remarkable increase of 120%.

Gum Arabic Producers Associations (GAPAs) members are trained in gum harvesting and the harvests are now healthier. The GAPAs, with the support of the MDTF-N, provide loans to villagers and allow them to repay in installments over time. Women are key players in the GAPAs scheme, and constitute about 25% of all the members. Ten GAPAs spread throughout the four regions comprise only women.

In 2009, with the help of World Bank analytical research, 'Export Marketing of Sudanese Gum Arabic', the government broke the monopoly that provided the Gum Arabic Company (GAC) with sole power to set the export price of raw gum arabic. Soon after, the government created the Gum Arabic Board.

South Sudan is also a potential exporter of gum arabic, but due to security reasons it is impossible to collect and export the gum arabic.

The gum arabic market is projected to reach $800.3 million by 2019, at a CAGR of 6.7% from 2014 to 2019 (marketsandmarkets website).

In 2014, North America was the largest market for gum arabic, closely followed by Europe, as it is one of the largest consumers of bakery and confectionery products. Latin America is projected to be the fastest-growing market for gum arabic during the review period. The growth of the global market is driven by rising income levels, multiple functionalities of gum arabic in the food and beverages industry, and the rising awareness regarding the medicinal benefits of gum arabic.

Main Applications

Flavour and Beverage

The major property utilized is the natural ability of gum acacia to produce and stabilize emulsions. This functionality arises from the high-molecular weight Arabinogalactan-Protein complex (AGP) (agrigum website).

The excellent solubility in aqueous solution, low viscosity, bland taste, neutral odour, fibre source and low calorie content of gum acacia has lent the subtance many nutritional applications.

Coca-Cola and Pepsico Inc use gum arabic in their products. Sanofi lists it as one of the ingredients in its Avil antihistamine medication, while it is also used to make glue, paint and incense (Feteha 2014).

Confectionery

Gum acacia is a major component in the production of confectionery products worldwide. The usage is based on the natural properties of gum acacia such as viscosity, emulsification ability, adhesion, film-forming, pH stability and excellent compatibility with other gums and starches.

Pharmaceutical and Nutraceutical

The usage of gum acacia in pharmaceutical applications is based on its natural properties of emulsification, stabilization, demulcent action, adhesiveness and binding action.

Gum acacia is a 100% water-soluble non-starch polysaccharide (NSP) which is resistant to hydrolysis by the digestive enzymes of humans and thus delivers in excess of 85% total dietary fibre.

Recent research studies have shown the health benefit effects of gum acacia supplements on chronic renal failure patients (Babikker et al. 2012; Badreldin et al. 2013; Nasir 2013).

The preliminary research results suggest that this fibre source supplement has increased faecal nitrogen excretion and lowered serum urea nitrogen concentration in patients with chronic renal failure.

Industrial Non-food

An online search of the United Kingdom's top supermarkets shows numerous results under the words 'gum arabic', 'acacia gum' or 'E414'. ASDA lists Colgate, Haribo, Nestle and Rowntree's products, among others, as containing the ingredient (McEachran 2016).

Gum arabic is also used in cosmetics. Gum arabic functions as a stabilizer in lotions and protective creams, where it increases viscosity (Dauqan and Abdullah 2013). It is used as an adhesive agent in blusher and as a foam stabilizer in liquid soaps (Arja et al. 2011). Gum arabic is also used in the preparation of etching and plating solutions in the lithography industry. It is used as a dispersant in paints and insecticidal/acaricidal

emulsions, respectively keeping the pigments and active components uniformly distributed throughout the product. In the textile industry, it is used as a thickening agent in printing pastes for the coloration of knitted cellulose fabrics (Verbeken et al. 2003).

Leading Companies

GAC (Sudan)

In 1969, the Minister of Supply and Internal Trade granted the GAC, a public company incorporated, an exclusive concession to export raw gum arabic. Responsibility for technical support to producers was later transferred to the National Forestry Corporation of the Ministry of Agriculture (ide website).

The cleaned grade, which constitutes the bulk of GAC's exports, was exported mostly via the GAC's 'international agents': international companies which are GAC marketing agents with exclusive rights. Four of these international agents buy an estimated 70% of the GAC's exports; they have their own processing capacity, and sell processed gum (usually powder or spray dried) to large confectionary and soft drinks manufacturers in Europe and the United States.

At Port Sudan, the Khartoum Gum Arabic Processing Company (GAPC) maintains a fully equipped laboratory and warehouses, ensuring quality-tested supplies for export. The company, which is 60%-owned by the GAC, operates a modern processing plant at the port, providing powdered and kibbled gum arabic to order.

The gum is produced in Kordofan region, 49.3%; Kassala region, 24.4%; Darfur region, 23.4%; and White and Blue Nile region, 2.9%.

The involvement of the Sudanese government in GAC management is very strong: the board of the GAC is chaired by the Under Secretary of the Ministry of Trade, and comprises the General Manager of the National Forest Corporation, the Governor of the Central Bank of Sudan and representatives of the Sudan Farmers Union (marketwatch 2015 website).

Agrigum—Sudan

The Sudanese Haddad family started to trade gum arabic in 1950 . In 2007 Agrigum International Limited was established by the third generation of the family (afrigum website).

Agrigum International has taken a more technical approach to the gum acacia business and, by focusing on a range of customer-specific projects, has developed a new range of products (agrigum website).

Nexira (France), Afritec

Nexira is an agro-industrial group composed of three complementary businesses: Food, Health and Technology. The three divisions offer a global expertise ranging from raw material sourcing and proprietary processing technologies to formulation support (nexira website).

Historically, the company has made its reputation as the global leader in acacia gum.

Today, Nexira's proprietary portfolio includes emulsifiers, texturizers, antioxidants and actives for weight andstress management , along with other specialty hydrocolloids and a large number of highly functional botanical extracts. Nexira has business operations on five continents, leveraging a wide network of collaborative partners.

In 2008 Nexira openedAfritec in Sudan at Soba new industrial area, Khartoum (afritec website). It is considered as the first facility in Africa to meet the growing international demand for preprocessed gum arabic. Afritec is a leading French Sudanese partnership (established by Nexira International—France, and SAY Group), with shareholding percentages of 75%:25%, respectively. The factory specializes in processed gum arabic for export with its first Gum Arabic Processing Factory (Kibbling) in Sudan. The operation includes collection, cleaning and primary processing of gum arabic crops.

SAY Group belongs to Yagoub Group, the main business group contributing to the economy of Khartoum and the Sudan. The Group is family owned and managed under the leadership of the Chairman, Mr Salih A. Yagoub. Afritec provides a high grade of acacia Senegal, Seyal and polyacantha as kibbled and raw in different packing according to international shipping and manufacturing standards.

TIC Gums (USA)

TIC Gums was founded in 1909 as the Tragacanth Importing Company and marketed water-soluble gums and resins (ticgums website). The operations were transferred to new management and were focused exclusively on water-soluble gums, emphasizing food and pharmaceutical uses.

In the 2000s TIC Gums launched the patented Ticamulsion line of next-generation emulsifiers, installed a new dairy pilot plant offering

UHT/HST capabilities and developed the TicaPAN® coating system, a binder for sugar and sugar alcohol syrups, taste-free, odourless and low-pigment GuarNT® Flavor. In the 2010s, TIC Gums launched its Texture Revolution® education initiative at IFT Food Expo 2011 and opened manufacturing a facility in China to serve the Asia Pacific market.

From the state-of-the-art pilot plant to the commercial-grade testing kitchen and the sensory testing rooms, TIC Gums is prepared to turn even the most difficult texture or stabilization challenges into solutions.

Kerry Group—Ireland

Kerry Group is a global leader in taste and nutrition serving the food, beverage and pharmaceutical industries, and a leading supplier of added value brands and customer branded foods to the Irish, United Kingdom and selected international markets. With revenues of €6 billion, the Group employs some 23,000 people and serves a global customer base in over 140 countries (kerrygroup website). The Group is headquartered in Tralee, Ireland.

Kerry Foods has established strong strategic and commercial alliances with its retail partners in the Irish, United Kingdom and selected international markets. Kerry Foods is also a leading provider of customer branded chilled foods.

Kerry has been processing and supplying gum acacia to the food, beverage, and pharmaceutical markets for many years and is a significant supplier worldwide. Kerry offers several grades of gum acacia that are all processed at its dedicated facility in Cam, United Kingdom (shefilledbioscience website).

Alland & Robert (France)

Francisque Alland, a chemist, and Alfred Robert founded the company Alland & Robert, trading in gum acacia used in the textile industry. The company has developed partnerships with African suppliers to ensure security of supply (allandrobert sourcing website). Alland & Robert is deeply involved in the harvesting process of gum acacia and the selection of crude gum.

The company has constructed its own installations, from own kibbling and sorting installations in Senegal, Chad and Mali to the station of warehouses in Senegal, Chad and Mali (allandetrobert suppliers website):

- Plant of Tambacounda (east of Senegal)—Alland & Robert implemented in Dakar its own industrial kibbling and sorting equipment.
- Ferlo Gommes plantation—Alland & Robert supports a local company called Ferlo Gommes. In 2002, they started to implement a plantation of gum acacia in the Ferlo region (north east of Senegal).

Since 2002, 16,000,000 acacia trees have been planted. The total surface of the plantation is 20,000 hectares (100,000 acres).

Investment in Chad—Alland & Robert implemented its own kibbling and sorting installation in N'Djamena. Alland & Robert funds the gum acacia crop in advance. The gum is cleaned in the N'Djamena facility by women and operations are processed by men.

Investment in Mali—Alland & Robert recently implemented its own kibbling and sorting installation in Bamako, in addition to the existing warehouse.

Alland & Robert has built three spray-drying towers, respectively in 2002, 2007 and the latest in 2013. They have highly technical equipment which is able to produce instant soluble and spray-dried grades of gum acacia. This company manufactured more than 13,000 tonnes of gum acacia in 2015.

Most of the international companies cited above have set up processing installations in SSA countries .

The involvement of local, national and international organizations in the establishment of research centres and educational programmes related to this sector in agricultural schools and universities, including training programmes in industrial processing, could encourage those companies to develop new applications in SSA countries along the gum arabic global value chain.

Financial Mobile Cluster

Bank account ownership varies widely around the world. In high-income OECD economies account ownership is almost universal: 94% of adults reported having an account in 2014 (Demirguc-Kunt et al. 2015). In developing economies only 54% did. There are also enormous disparities among developing regions, where account penetration ranges from 14% in the Middle East to 69% in East Asia and the Pacific. In many countries

in Africa there are very few branches in small towns or rural regions; 24% of the Sub-Saharan population have access to traditional financial institutions. There are five ATMs available for every 1 million people in Africa, compared to the world average of 34.

The only possible alternative is the mobile money account.

In SSA countries almost a third of account holders reported having a mobile money account. Within this group about half reported having both a mobile money account and an account at a financial institution, and half a mobile money account only. Mobile money accounts are especially widespread in East Africa, where 20% of adults reported having a mobile money account and a bank account and 10% a mobile money account only.

Kenya has the highest share of adults with a mobile money account, at 58%, followed by Somalia, Tanzania and Uganda with about 35%. Herewith we present the main mobile account companies and the services they provide.

M-PESA

M-PESA ('M' for mobile and 'PESA' for money in Swahili) was developed by mobile phone operator Vodafone and launched commercially by its Kenyan affiliate Safaricom in March 2007 (IFC 2010). To access the service, customers have to register at an authorized M-PESA retail outlet. They are then assigned an individual electronic money account linked to their phone number and accessible through an application stored on the subscriber identification module (SIM) cards of their mobile phones. The UK Department for International Development (DFID) provided the seed funding for the proof of concept of Kenya's M-PESA (webarchive website).

M-PESA registration is free. Customers are charged flat fees of approximately $0.403 for person-to-person (P2P) transfers and bill payments, $0.33 for withdrawals (for transactions under $33) and $0.013 for balance enquiries. Individual customer accounts are maintained in a server that is owned and managed by Vodafone, but Safaricom deposits the full value of its customers' balances in the system in pooled accounts in two regulated banks. Thus, while Safaricom issues and manages the M-PESA accounts, the value of the accounts is fully backed by highly liquid deposits at commercial banks.

M-PESA's early adopters were primarily banked customers as a complement to formal services for clients who were wealthier, and more exposed to formal financial service options. As M-PESA services move deeper into the Kenyan market, however, unbanked users are increasingly driving its expansion.

Prior to the introduction of M-PESA the cost of sending US$100 through formal channels ranged between US$12 (MoneyGram) and US$20 (bank wire transfer), while the cost of slower formal channels ranged from $3 (bus companies) to $6 (postal money order) (Kabbucho et al. 2003).

Compared to these alternatives M-PESA offered a significantly cheaper method of instantly transferring funds, where the cost of sending US$100 to a non-registered user by M-PESA was approximately US$2.50 in early 2008, while the cost of sending to a registered user was even less (Safaricom 2008). On average, the commission (defined as price to send money divided by the amount sent) charged for money transfers fell from approximately 7% in 2003 to 3% in 2010.

M-PESA has had an important impact on the Kenyan population and economy (Mbeti and Weil 2014). Within eight months of its inception in March 2007, over 1.1 million Kenyans had registered to use M-PESA, and over US$87 million had been transferred over the system (Safaricom 2007). By September 2009, over 8.5 million Kenyans had registered to use the service and US$3.7 billion (equivalent to 10% of Kenya's GDP) had been transferred over the system since inception (Safaricom 2009). This growth was followed by the growth of M-PESA agents (or service locations), which grew to over 18,000 locations by April 2010, from a base of approximately 450 in mid-2007 (Safaricom 2009; Vaughan 2007). By contrast, Kenya has only 491 bank branches, 500 postbank branches and 352 ATMs (Mas and Ng'weno 2009).

The success of mobile money services in Kenya spread to surrounding countries such as Tanzania, Somalia and Sudan. In the West African region, however, mobile money has been slow to expand. In relatively wealthy countries in North Africa the penetration rate of mobile money has jumped from 42.3% as of 2011 to 74.7% as of 2014, according to the World Bank's Global Findex Database 2014 (Demirguc-Kunt et al. 2015).

Kenya's mobile account penetration rate, 58.4%, is the highest in the world, followed by Somalia (37%), Uganda (37.1) and Tanzania (32.4) (Jang and Park 2016).

Safaricom announced that penetration rate in Kenya was 87.7% as at 31 December 2015 (Safaricom 2015).

According to the Responsible Business Forum (2016) the number of agents in 2015 was 150,000, the number of customers close to 30 million and the number of transactions more than half billion. Financial access points per 100,000 people were Kenya 161.9, Tanzania 48.9 and Uganda 63.1.

Kenyan households utilize M-PESAnot only for transferring or receiving money but also for saving; 85% of households store some money in their M-PESA account according to survey evidence from Jack and Suri (2011).

Vaughn (2007) notes that some individuals stored money in M-PESA due to safety considerations, especially when travelling across the country.

Both Airtel and Safaricom increased the number of deposit of microfinance institutions belonging to Savings and Credit Cooperatives (SACCOs). 75% saving rate is reported in Jack and Suri (2011). Close to 20% of users also report using M-PESA while travelling, presumably for safety concerns, as discussed in Vaughan (2007) and Morawczynski (2009).

Plyler et al. (2010) argue that M-PESA has enabled small businesses to expand and grow and has also increased the circulation of money in three analysed communities. M-PESA has promoted the growth rates of (small-scale) firms in the communities they studied. This was driven by the increased circulation of money in these communities.

Individuals with bank accounts use M-PESA almost three times as much as those without bank accounts. Urban residents, richer individuals, the more educated and those in the non-farm sector use M-PESA almost twice as often as rural residents, poorer individuals, the less educated and those employed in the farm sector respectively. Those with mobile phones used M-PESA three times as often as those without mobile phones.

M-PESA is also used as a saving instrument (Morawczynski and Pickens 2009). Over 25% of individuals report using M-PESA as a saving device (FSD Kenya 2015).

M-Swari

The potential for M-PESA to be a savings vehicle has received more attention, as Safaricom and Equity Bank have introduced M-Swari ('Shwari'

means calm in Kiswahili), an interest-bearing savings account that is directly linked to M-PESA (Cook and McKay 2015).

M-Shwari has been launched in November 2012 through a strategic partnership between Commercial Bank of Africa (CBA).

There are over 10 million M-Shwari accounts and CBA disburses 50,000 loans every day. One-third of all active M-PESA users are also active M-Shwari customers.

M-Shwari pays interest ranging from 2% to 5%, based on a customer's average daily balance. These rates are well above the 1.5% weighted average reported by the Central Bank. M-Shwari funds are also insured up to about $1200.

Each 30-day loan comes with a 7.5% facilitation fee. Since launch, CBA has disbursed 20.6 million loans totalling $277 million to 2.8 million unique borrowers with an average loan of $15; 54% of M-Shwari accounts were held by customers without a bank account (cgap website).

Transactions on mobile banking service M-Shwari crossed the Sh3 billion mark as savings continued to outpace loans (Mumo 2013). The value of individual transactions remained low with average deposit clocking in at about Sh1100, while the average amount borrowed was about Sh1000 per customer. In total, about 1.6 million customers have used M-Shwari in 2013.

On March 6, 2015, it was reported that CBA had signed with 10 million customers to M-Shwari, having handled a total of Sh153 billion in deposits (fsdkenya website).

KCB-M-PESA

The KCB-M-PESA account launched in March 2015, a joint initiative of KCB (Kenya Commercial Bank Group), and Safaricom is the newest entrant (Safaricom kcb mpesa account website).

The KCB-M-PESA account registered 640,000 subscribers in three weeks, translating to an average of 40,000 sign-ups a day, according to a media release available on the bank's website.

In that same period, customers deposited KShs 36 million and borrowed KShs 380 million. In total, KShs 90 million moved from M-PESA to the KCB-M-PESA account in the same period, while transfers from KCB-M-PESA to M-PESA were KShs 380 million.

The KCB-M-PESA account provides loans up to KShs one Million. In addition to loading the account through M-PESA, one can still access

it through any KCB branch or agent. This means it is possible to set up standing orders for convenience.

The KCB-M-PESA account has also upped the maximum repayment term to six months, compared to M-Shwari's maximum term of one month, or two if rolled over. M-Shwari customers have reported difficulties in repaying their loans in a month, especially in emergencies when it takes them time to recover financially.

The KCB account's monthly interest rate depends on the loan tenure, from 2% for a 6-month loan to 4% for a 1-month loan.

KCB-M-PESA funds are disbursed to the customer's KCB-M-PESA account before they can be transferred to M-PESA. However, when it comes to repaying the M-PESA loan, KCB auto-debits customers' accounts, looking first at the KCB-M-PESA wallet, and if there are not enough funds, then any other existing KCB account and lastly M-PESA. M-Shwari loans have to be repaid manually ; sometimes the customer may not remember the exact date of repayment or the exact amount.

As Kenyans decide which product suits them best, they will spur competition amongst the banks to better serve the population. KCB-M-PESA has recorded up to Kshs.7.8 billion in loans in 12 months since its launch last year (biznews 2016).

This translates to an average Kshs.660 million loans disbursed on a monthly basis to 5.2 million customers recruited within the same period. A year after the launch 18% of the population using new mobile banking services such as KCB-M-PESA and M-shwari in the proportion of bank account users has now risen to 38%. This is a 10% increase since 2013.

Safaricom revenues from the M-PESA service grew from 10.4 Kshs billion in 2013 to 19.3 billion in 2016, around US$200 million (Safaricom website).

Kopo Kopo

Launched in 2011, Kopo Kopo provides loans and transactions to merchants (B2B), by using basic phone, smartphone, PC/laptop, tablet and SMS. The markets are deployed in Kenya, Tanzania and Rwanda (Wills 2016).

Kopo Kopo provides tools to facilitate mobile payments through existing platforms, focusing on merchant payments that enable small and

medium businesses to accept mobile money payments from their customers. Kopo Kopo has now reached over 12,500 merchants.

Kopo Kopo has a wide range of merchant customers on its system, from large book stores to small corner shops in Nairobi, and from agro-vets in the remote, rural regions of Kenya to large industrial distributors in the country's second largest city Mombasa.

Kopo Kopo has raised a US$2.1 million internal funding round in order to further push its merchant micro-loan product (Jackson 2015).

Kopo Kopo has launched PayEasy in partnership with Diamond Trust Bank (Uganda) (Wainaina 2016). With PayEasy, retail merchants in Uganda can now accept customer payments at the point of sale via Airtel Money and MTN Mobile Money using a single, unified account—a first in East Africa.

With PayEasy, merchants have access to web-based tools for monitoring payment activity, requesting electronic statements and settling funds to their bank account in real-time. To pay a merchant via PayEasy, customers simply let the cashier know if they will be paying via Airtel Money or MTN Mobile Money, and then the cashier initiates the payment by entering the purchase amount and customer phone number on their phone. The customer is then given an opportunity to review the details before confirming the payment.

The initial service scope included integration with micro-finance institutions to facilitate loan disbursals and repayments (IFC 2010). During the pilot phase of the project, Vodafone Group partnered with Faulu Kenya, a local micro-finance institution that lends small amounts to several thousand small business owners, who then repay a few dollars a week into the Faulu bank account. The normal structure for doing so is to form groups of borrowers who meet each week and submit cash to the group treasurer who in turn takes the money to a local bank.

Mobile BtoB Payments in Agriculture

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the EU. Its research on mobile BtoB payments in agriculture was conducted in Uganda, Zambia and Ghana (Gollin and Rogerson 2010).

Smart Money—Uganda

SmartMoney is a mobile savings and payments platform in Tanzania and Uganda (Babcok 2015). Over 90% of farming households have a mobile phone and 46% of farmers use mobile money products (Mercy Corps 2013). The Bill & Melinda Gates Foundation supports digital payment schemes as a foundation for subsequent digital finance savings, credit and micro-insurance services (gatesfoundation website).

SmartMoney introduces mobile payments to various actors along the agriculture value chain. It replaces cash and uses the disbursements of large coffee and cotton buyers to jump-start the village economy with digital currency. Large agri-businesses can use the SmartMoney platform to transfer electronic crop payments into the SmartMoney wallets of intermediary buyers.

The intermediary buyer then purchases crops by transferring electronic crop income payments into the SmartMoney wallet of the farmer who, in turn, can spend this digital currency in the numerous SmartMoney shops and with other SmartMoney users in the village.

SmartMoney has partnered with the Ministry of Trade, Industry and Cooperatives (MTIC) to introduce the service to their more than 13,000 co-operatives throughout the country. Together with the MTIC point of contact, SmartMoney conducted pilots in northern and eastern Uganda and in August 2013 began implementation with coffee and cotton buyers in the Kasese district in western Uganda.

The five SmartMoney community operations managers (COMs) serve as relationship managers for the SmartMoney CICO retail shops, SACCOs , co-operatives, large buyers and users.

Since August 2013, SmartMoney has invested in building an infrastructure of more than 45,000 registered users as well as strategically selected SACCO and retail shop service centres. They have also raised awareness about benefits of the service and developed a level of name recognition and trust in their targeted value chains and villages.

In August 2013, SmartMoney began a full roll-out in Kasese district in the west by investing in the creation of SmartMoney shops, service centres and users in selected village communities. In August 2014, SmartMoney entered into a contractual relationship with four large coffee buyers. SmartMoney partners with retail shops and SACCO service centres to accommodate cash-in/cash-out needs within the system.

SmartMoney users can cash in or cash out as needed. The absence of any fees between SmartMoney wallets allows for village neighbours and

economic actors to conveniently support each other for cash-in/cash-out needs in the SmartMoney system.

For larger cash-out needs, SmartMoney retail shops provide robust liquidity because they take in cash for the sale of goods.

SACCOs are co-branded with SmartMoney and provide a dual role as a receiver of cash-in and registration agent for new SmartMoney users. SmartMoney's segmentation strategy is to understand its market, register new users and service centres, and further develop itself as a known and trusted stakeholder within the cotton and coffee sectors.

Nyakatonzi Growers Co-Operative Union has recently become a SmartMoney large buyer and has 62 cotton, coffee, maize, rice, bean and soybean farmer societies with a total membership of more than 15,000 farmers. Their volume purchase of cotton for a season is as much as US$2.8 million. The Kyabarungira Farmers Marketing Association (KFMA) is the first Nyakatonzi Society to transition to SmartMoney. Nyakatonzi sends its SmartMoney advance payment to KFMA who in turn purchases coffee by making SmartMoney payments to farmers with SmartMoney wallets. Nyakatonzi has received technical assistance from the government of Uganda, USAID, Swedish Cooperative Centre and other donors.

NWK Agri-Services—Zambia

NWK Agri-Services (formerly Dunavant) has been in Zambia since 2000 and they now have six ginneries (Babcok 2015).

Cargill Zambia and NWK Agri-Services have partnered with MTN mobile provider, in order to supply mobile finance services to their growers. They have 60 agricultural operating offices/sheds and employ 450 full-time and 1000 seasonal staff who source cotton from over 130,000 smallholder farmers. Their 2011 cash payments throughout the country totalled US$44 million (Kalinda and Bwalya 2014) and in 2013 totalled US$17 million. These cash-handling costs are significant, but do not compare to the loss of an employee's life during an attempted robbery.

Agricultural Value Chain Mobile Finance (AgFin) Projects

Founded in 1963, ACDI/VOCA is a non-profit economic development organization with total revenues of approximately $176 million (acdivoca website).

Based in Washington, DC, ACDI/VOCA has worked in 146 countries since 1963 in agri-business, food security, enterprise development, financial services and community development.

AgFin was initiated by Agribusiness Systems International (ASI), an affiliate of ACDI/VOCA with Tigo Cash, one of Ghana's leading mobile network operators, and OpenRevolution, an international firm with expertise in launching and scaling out mobile money platforms (advoca 2016).

ASI used a Visa Innovation Grant to enable payments for smallholder rice farmers via mobile devices in the rural Volta Region of southeastern Ghana. In partnership with Global Agri-Development Company Ltd (GADCO), a major rice producer, miller and provider of extension services, ASI initiated the Rice Mobile Finance Pilot (RiMFin) to introduce a more efficient, secure payment mechanism, reduce side selling, and maintain loyalty in the rice supply chain.

To introduce the new mobile money platform, ASI and GADCO facilitated alliances with Tigo Cash, the mobile money transfer product of Millicom Ghana Ltd (one of Ghana's leading mobile network operators) and smallholder rice farmers. To align incentives of these different stakeholders, ASI drew on its experience in the agricultural sector and the technical assistance of its mobile payments partner OpenRevolution, an international firm with expertise in launching and scaling out mobile money platforms.

Before RiMFin, rice farmers dealt exclusively in cash payments from aggregators or traders. The cash-based nature of payments posed problems along the entire rice supply chain from risk of theft and payment delays for farmers to side-selling and lack of transparency and traceability for buyers.

To address these issues and develop a robust mobile payment system, RiMFin undertook the following activities to facilitate the transition of over $345,765 in payments to smallholder farmers from cash to mobile money.

The RiMFin pilot has reached more than 700 farmers with $345,765 in mobile payments to provide proof of concept for subsequent scale-up to GADCO's supply chain of 10,000 farmers—over 60% of which are women—and their estimated 45,000 family members.

AgFin is scaling out RiMFin's MMT successes to different groups and value chains. It will affect up to 10,000 smallholder farmers in three value chains: cocoa, oil palm and dried fruits. Sixty per cent of these farmers will be women.

It will involve up to 10 financial institutions and have an indirect impact on an estimated 45,000 household members in the Western, Brong-Ahafo, Central, Eastern and Ashanti regions. After the project concludes in mid-2016, ASI will draw additional lessons learned to inform best practices for Tigo Cash's full scale-up in 2017–2018 to 20,000 farmers.

Clustering Forces in Mobile Financing Systems

Mobile financing systems could compete but they could also co-operate in generating an SSA mobile financing services cluster which could globalize its activities in developed and developing countries by providing to a multitude of private customers and SMEs more efficient and less costly financing services than banks.

Herewith are the supporting and related activities of the cluster based on M-PESA, PayEasy, Smart Money and RiMFin cases.

Supporting Activities

Initiator: Vodafone-M-PESA, Ministry of Trade, Industry and Cooperatives (MTIC), NWK Agri-Services-Cargill , ACDI/VOCA.

Mobile phone operator: Vodafone, MTN, Millicom.

Platform Management: Safaricom, KCB-M-PESA, Kopo Kopo, Airtel Money MTN Mobile Money, Tigo Cash, OpenRevolution.

Commercial Bank: CBA, KCB, Diamond Trust Bank, Faulu.

Mobile financing system: M-PESA, PayEasy, SmartMoney, RiMFin.

Related Activities or Customers

Private users,

Retail shops: CICO.

Savings and Credit Co-operative (SACCOs).

Growers Co-Operative: Nyakatonzi Growers Co-Operative Union cotton coffee, maize, rice, beans and soybean, Renzori Cooperative.

Trading companies: Ideal commodities, buys coffee, The Kyabarungira Farmers.

Associations: Marketing Association (KFMA), NWK Agri-Services Global Agri-Development Company Ltd (GADCO), Agribusiness Systems International (ASI), NWK Agri-Services.

Ambulatory Medical Services in Rural Environments

Just like the cellphone has revolutionized telecommunications and financial services in SSA countries, it could provide wireless medical diagnostic services supported by drone technology to any population in any geographic environment.

African systems developers and service providers, in co-operation with global companies, could develop competitive advantage in providing ambulatory medical services in rural environments in developing and developed countries.

Aerotel Medical Systems (aerotel website) is considered a world leader in providing medical diagnostic systems and devices for the home care, eHealth and telemedicine markets. The company provides a complete disease management package, including transtelephonic devices designed for a variety of remote diagnostic, emergency services, rehabilitation and monitoring applications, including end-to-end hardware and software platforms, with phone and web-based software solutions.

Medi-CliniQ™ is Aerotel's multipatient public health station intended for multiple patient use in public locations (e.g. at a rural clinic, assisted living home, etc.).

The system can be installed on a special trolley cart, designed for easy storage, carry and operation of the system. It provides a convenient platform for using the system in a mobile setting, as it can be easily transported in a car and rolled out for temporary setup and use in any village.

Drones could improve the transportation process of blood, vaccines or other drugs in any climatic conditions, and could save lives.

Matternet, Zipline and Afrotech are the first three initiatives in that domain. Unicef and Matternet, a Silicon Valley-based startup, are testing whether deliveries could be more efficient by air in Malawi.

It has already been certified as safe by Malawi's defence ministry, which has approved an air corridor for the drone's use (Allen 2016).

The team from the Silicon Valley will run tests to measure the drone's resilience, cost effectiveness and efficiency. The operating costs are minimal because electricity to recharge the battery is cheaper than diesel fuel for motorbikes, but each drone costs $7000 (£4900), so there needs to be a strong business case.

The tests will measure the drone's performance with differing winds speeds, humidity and distance, and if the results prove positive the experiment will be expanded.

Another Silicon Valley start-up called Zipline (flyzipline website), plans to begin operating a service with them for the government of Rwanda in July 2016 (Markoff 2016).

Jonathan Ledgard, a British citizen and novelist who spent 10 years as the Africa correspondent for The Economist magazine, joined Lausanne's Federal Technology Institute EPFL's Afrotech Red Line project, referring to the transport line for blood and medical supplies by using drones.

In summer 2016 his team will start by building a single drone port, designed by British architect Norman Foster. Ledgard ultimately envisions a network of them that can become hubs within their respective communities.

Afrotech is based at EPFL Switzerland (afrotech website). Its objective is to help pioneer advanced technologies in Africa on a massive scale.

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CHAPTER 6

Conclusion

Dams supplying hydraulic energy are a generator of development if supported by an efficient distribution system connected to homes and industries and a current maintenance service. It could be a burden for the local economy if the electricity is exported only or supplied to few industries, and a danger if maintenance does not exist. Local independent mini-grids or mini-grids related to the main grid using different sources of energy such as water, sun, wind or even biofuel could bring electricity immediately to people living without light by night and without any of the existing basic electrical appliances.

Minerals are a weakness if they create political, economic and military conflicts. Scarcity of minerals is a strength if it is transformed into value for the local population. It could be the case of the pgms, cobalts, 3TGs or Mtwara mineral complex. Numerous global value chains of high- and low-tech industries are based on these raw materials. A part of those industries could be established in Sub-Saharan Africa (SSA) countries for the benefit of their populations and the other involved stakeholders.

Agglomerations of small businesses are a current phenomenon in SSA countries in both urban and rural environments. Those entrepreneurial forces in trade of agricultural products, cooking food, food processing, furniture and metalworks could generate higher value for the entrepreneurs and the local economy if the local authorities organize it. More

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efficient businesses will generate more revenues and greater ability to pay taxes, which could be used in order to improve the infrastructure and the support to new entrepreneurs.

Cocoa, mainly produced in SSA countries, is the origin of the chocolate, green pharmaceutical and cosmetic industries. During recent years Ghana, Uganda and Ivory Coast have started an industrialization process supplying chocolate products to the local and sub-regional population. Research centres in cocoa and cocoa butter in SSA countries could be the starting point of a wider industrialization process if countries such as Ivory Coast and Ghana could together start a clustering process.

Cotton is an important raw material for the textiles industry. Agricultural improvement of cotton based on local research in Burkina Faso, in order to overcome the disaster of MGO seed provided by Monsanto, could lead to co-operation with Mali, Cameroon and Ivory Coast, the other main producers, in order to compete in the threads to textiles markets.

We could expect the development of supporting and related industries generating an SSA textiles cluster supplying the global market.

Leather is another important raw material processed mainly in Ethiopia into shoes, clothes and other products. Other SSA countries could contribute to the development of a cluster based on leather and related products.

Mango and other exotic fruits are supplied by SSA countries to a growing global market when a small share of the added value generated along the value chain benefits the local population. Common investments in infrastructure and markets could ensure the supply of exotic fruits to the global market year-round. SSA governments, growers and traders could co-operate along the value chain for the benefit of each stakeholder, including the local and international customers.

Shea nuts, gum arabic and moringa contribute to the development of industries such as soft drinks and food, paint and chemicals, and cosmetics and pharmaceuticals. The SSA countries involved in the production of these natural products are not conscious enough of their value and importance for several multinational companies (MNCs). There is no co-operation between SSA countries at the government level or at the sector level. There is no research centre supporting the production of these natural raw materials, and no plantation and no planned production. This huge potential could be implemented at the first stage if the countries were able to supply MNCs with the raw material under the condition of starting processing in Africa.

Wireless financial and medical services are new specializations of SSA countries which have been developed in order to overcome bottlenecks in wire communication, banking and transportation infrastructure. Products and systems related to these technologies could be exported to other developing countries but also to developed countries which have similar problems in the rural environment.

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