Sorting forest coffee beans from the centre of origin in Ethiopia

Photo credit: Meine van Noordwijk/World Agroforestry

CHAPTER 17

Industrializing Africa through Tree Commodities

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Highlights

- Africa is at the crossroads of industrialisation, and tree commodities can make a valuable contribution.
- Industrialisation through tree commodities can significantly propel green economic growth. It is potentially doubling contributions to GDP through revenues and jobs.
- Challenges related to infrastructure, skills, intra-African trade and corruption are significant obstacles to industrialising Africa.
- Creating "green entrepreneurs", "African brand of value-added products" and enhancing intra-African free trade areas can significantly boost the industrialisation agenda, including tree commodities.

1. Introduction

In the forward section of the elite book "Industrialise Africa: Strategies, Policies, Institutions, and Financing", the president of the African Development Bank (AfDB) notes, "The secret of the wealth of nations is clear: developed nations add value to everything they produce, while poor nations export raw materials. Africa must quit being at the bottom of global value chains and move to rapidly industrialise, with value addition to everything that it produces. Africa must work for itself, its people, not exporting wealth to others" (AfDB 2017). This statement captures a decade of evolving calls and actions to promote endogenous African industrialisation and leverage enormous opportunities the continent stands to offer. The AfDB, within its mandate as a development bank for the continent, places African industrialisation as one of its five accelerators for African development and growth. It seeks to support African industrialisation by assisting national governments in increasing national production and adding value to everything they produce. The bank launched six flagship programs to foster its agenda across different sectors. These programs focus on supporting industrialisation

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policies with technical assistance to the government, facilitate funding of infrastructure and industrialisation projects, develop liquid capital markets, facilitate access to funding for SMEs, promote partnerships and develop industry clusters. This initiative falls within the continental strategic development framework, African agenda 2063; it is a "strategic framework for the socio-economic transformation of the continent over the next 50 years. It builds on and seeks to accelerate the implementation of past and existing continental initiatives for growth and sustainable development." (AU agenda 2063). Similar to the AfDB, the African Union (AU) puts industrialisation as a key pathway to African growth. Industrialising Africa through commodities is at the heart of this strategy, with a commodity strategy for Africa being developed.

Tree commodities happen to be core products of the commodity strategy for Africa, and continental level development initiatives and policies are key to their growth. Tree commodities are key pacesetters to African industrialisation because 73%, 11% and 3% of global output for cocoa, coffee and palm oil production, respectively, are from Africa (ICO 2020). Cocoa accounts for 40% of export revenues in Cote d'Ivoire and 25% in Ghana, and coffee contributes to 34% of total exports in Ethiopia (Goodman 2017, USDA 2019). However, the contributions of these commodities to Gross Domestic Product (GDP) are not commensurate with their total export shares. For instance, cocoa contributes only 15% and 7% to the GDP of Cote d'Ivoire and Ghana, respectively, while the share of coffee in Ethiopia's GDP is just 5%. This can be explained by the fact that these commodities are often exported in raw or semi-processed forms. Consequently, a very small portion of the global value-addition is captured by local economies in Africa. For example, Africa exports 2.5% of world merchandise trade by value and imports 3%. However, in terms of trade by volume, Africa exported 7% of world maritime trade and imported 4.6% in 2019, thus making a trade deficit by value and trade surplus by volume (UNCTAD 2020). In contrast to the African context, other cocoa-producing countries, such as Indonesia and Malaysia, in the past decade exported more than 50% of their production in semi-processed form (cocoa paste, butter and powder) while Malaysia exports almost all her cocoa at the higher end of semi-processed stages (cocoa butter and cocoa paste). Brazil is equally making considerable efforts to add value to cocoa outputs, with one-third of its total production exported as chocolate products. In contrast, almost all of Mexico's export is made up of chocolate products (Fessehaie and Rustomjee 2018).

African economies that depend on the export of basic products with low value-added cannot deliver strong and sustainable economic growth. African countries need to undergo a structural transformation of their economies by adding value to their raw materials and turning them into processed products (AfDB 2017). Conceptually, shifting from a purely agrarian to an industrialised society starts with adding value to primary commodities. Value added is the difference between the costs of goods purchased by an enterprise and the value of the products

it sells. It is made up of the amounts paid in wages and salaries, interest, profits, sales taxes and depreciation (Adeyoju 1975). It also includes part of its raw material that is turned into waste or low-value products. The benefits of value addition and industrialising commodity sectors in Africa, where most exports are still in primary forms, will include job creation, food security, revenue generation, increased foreign exchange earnings, improved livelihoods and industrialisation (AfDB 2018b, AfDB et al 2014). On the downside, there may be pollution, increased (fossil) energy use, and exploitative or socially undesirable jobs.

To harness the potential of these commodities in driving industrialisation in Africa, the AU commodity strategy seeks to enable African economies add value, capture higher rents from commodities, integrate and potentially dominate global value chains while promoting vertical and horizontal diversification anchored around value addition and intra-African development. This strategy seeks to build on the increasing population growth of Africa (around 3% per annum) with a market of 1 billion people, recent growth in income (about 5% per annum), increasing middle class of about 123 million, averaging daily expenditure levels of US$4-20 (AfDB 2014). These commitments at the continental level underline the importance of industrialisation as a growth pathway for Africa. This chapter seeks to contribute to the African industrialisation agenda by underlining the potential of African industrialisation through tree commodities. The chapter reviews the progress made so far in industrialisation through tree commodities, critically examines industrialisation policies and learns from industrialisation policies and strategies from leading Asian countries with similar tree commodities. Key challenges and options for African industrialisation through tree commodities will also be discussed.

2. Potential for Industrialisation through tree commodities and green growth

Major producing countries of cocoa, coffee and palm oil in Africa have been confronted with value addition over the past decades. They have successfully put in place measures to progressively add value to these commodities to benefit from the value addition of moving up the value chain.

2.1. Cocoa

The development of industrial processes should equally reduce negative environmental impacts, enhance environmental efficiency through material and energy efficiency, circularity and ensure product durability. The industrialisation of African Economies through value addition to tree commodities also requires inclusive social development, which is captured by preserving

cultural values through “Endogenous African Development”. The economic contribution of tree commodities to the Gross Domestic Product (GDP) of African Economies is increasing. It is recognised and promoted at the policy level in many African countries (AfDB 2018a). Indeed, increasing returns have been recorded when a manufacturer moves from one stage to another along commodity value chains (Xing and Luo 2018). Cocoa is a key tree commodity in West and Central Africa, and this section looks at its potential of industrialising Africa on economic growth.

Cocoa processing involves different stages. First, dried fermented beans are bought by processing companies as raw materials. The dried beans are cleaned, winnowed, shelled and then roasted. Roasted nibs are refined and ground to produce liquor. This liquor can be stored as a semi-finished product or further processed into butter or cake or semi-finished chocolate products (Abbadi and Senadza 2019).

The birth of cocoa processing in Ghana is not recent; efforts through private initiatives in the 1960s led to the creation of West African mills company (Goodman 2017). The cocoa processing company (CPC) was later created as a subsidiary of the COCOBOD in 1965, which processed cocoa into semi-finished products. With the structural adjustment programmes of the 1980s, the company was privatised. It was only from 2009, with significant government support, that cocoa processing companies re-emerged. The country currently boasts many cocoa processing companies, notably: Real Products Limited, Touton Ghana Limited, Barry Callebaut, Plot Enterprise, Niche Cocoa Industry Limited, BD Associates Ghana Limited, Archer, Olam, Cargill and CPC. These companies produce semi-finished (butter, cake, liquor and powder) and finished products (confectionaries and chocolate). The country currently boasts a processing capacity of 531 000 metric tons of raw cocoa beans. However, the percentage of processed cocoa to total production remains low. Figure 17.1 shows trends in cocoa processing in Ghana and Côte d’Ivoire (cocoa butter and paste).

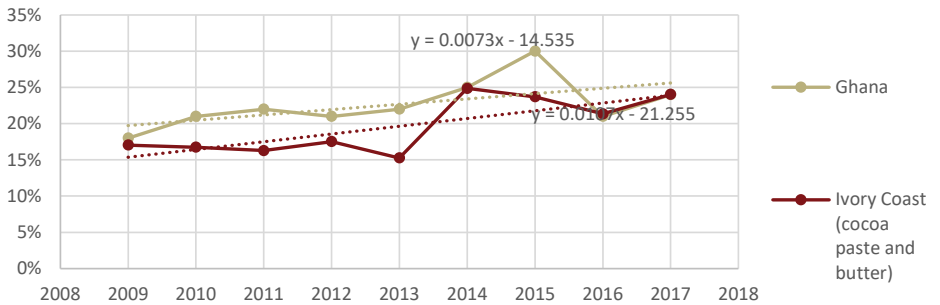


Figure 17.1: *Cocoa processed domestically to total production.*

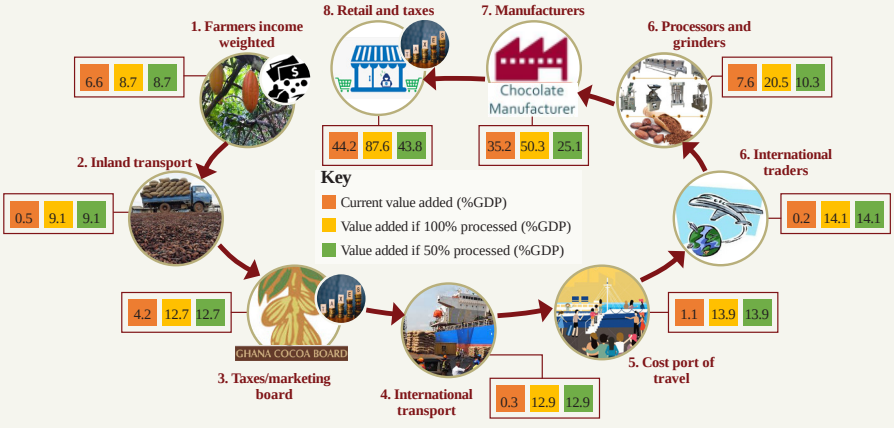
Source: FAO 2019.

Just like in Ghana, Cote d'Ivoire is taking cocoa processing as a key industrial policy. This can be seen through the increasing trend of local processing of cocoa butter and paste. Big cocoa processing companies are now installing processing units in different parts of the country. Africa accounts for 20.8% of cocoa grinding, and Cote d'Ivoire is the second-largest cocoa grinder after the Netherlands with 12.7%, Ghana accounts for 6.1% and other African countries 2% (ICCO 2018). This increase in cocoa grinding in Cote d'Ivoire is accounted for by the installation of local processing units by large cocoa importing companies such as Olam, Cargill and Barry Callebaut. The country currently hosts 712 000 tonnes of grinding capacity and recorded a 4.4% increase in cocoa grinding in 2019/2020 quarter 1 (Reuters 2020). As a strategy to grind 1 million tonnes of cocoa by 2022, Cote d'Ivoire agreed with companies to grind 7.5% of their cocoa beans domestically to benefit from government incentives (Reuters 2020). This agreement resulted in an upsurge of the implantation of cocoa processing plants in the country. Barry Callebaut recently invested US$ 55.18 million to open a domestic cocoa processing plant, Société Africaine de Cacao (SACO) plant in Abidjan, Côte d'Ivoire (Candyindustry 2019).

Box 17.1

Potential economic gains through domestic cocoa processing: Case of Côte d'Ivoire

Côte d'Ivoire is the largest cocoa producer in the World, with an annual production of 1,963,949 tonnes of dry cocoa beans (FAOSTAT 2020). The country is thus in a good situation to drive their industrialisation strategy through the domestic processing of this commodity. As processing goes up the value chain, value addition increases significantly. Cocoa barometer (2015) shows the estimated potential value addition that can be captured if the country goes up the value chain. Figure 2 shows the potential increase in GDP if 100% and 50% of cocoa production is processed locally. GDP figures were extracted from the World Development Indicators database, and 50% is used to capture the potential gains of the government policy to domestically process 50% of cocoa production (Reuters 2020)



Box 17.1

Potential increase in GDP following 50% and 100% local processing

If 50% of domestic production is processed right up to retail and taxes, the country can benefit from a significant contribution to GDP of up to 43.78% from the cocoa industry. However, if 100% is processed locally, the contribution to current GDP can go up to 87.56%. This increase also comes with creation of new jobs and improvement of the balance of payments situation of the country.

Semi-processed cocoa products represent a low percentage of exports of processed products from the continent; cocoa butter and cocoa powder (6%), cocoa paste (9%) meanwhile exports of finished chocolate products represent 4% of cocoa beans exports (FAOSTAT 2019). Figures 17.3 and 17.4 show the overall progress on semi-processed cocoa for Ghana and Cote d'Ivoire, and figure 17.5 shows the overall progress for Africa.

Ghana, like other cocoa producing countries, has been putting in place policies to promote local processing of cocoa. The country seeks to raise the current proportion of export earnings by 40% from domestic processing of cocoa (Mulangu et al 2015). The country promotes this strategy by according premiums to locally processed cocoa. This falls in line with the country and regional strategy of industrialising Africa from primary product-based economies to industrial-based Economies (AfDB 2019).

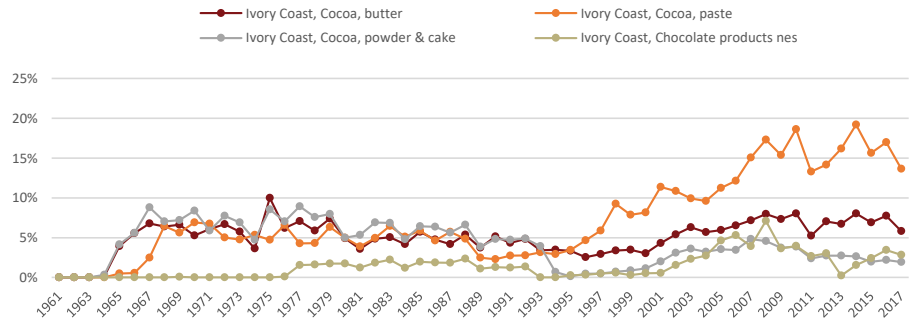


Figure 17.2: *Semi-processed cocoa products as % of cocoa beans exported in Ivory Coast.*

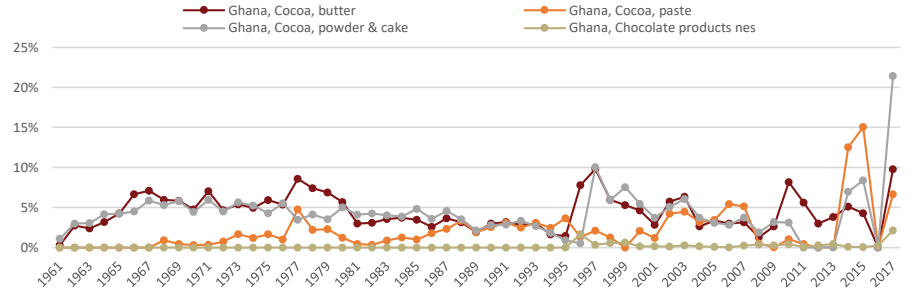


Figure 17.3: *Semi-processed cocoa products as % of cocoa beans exported in Ghana.*

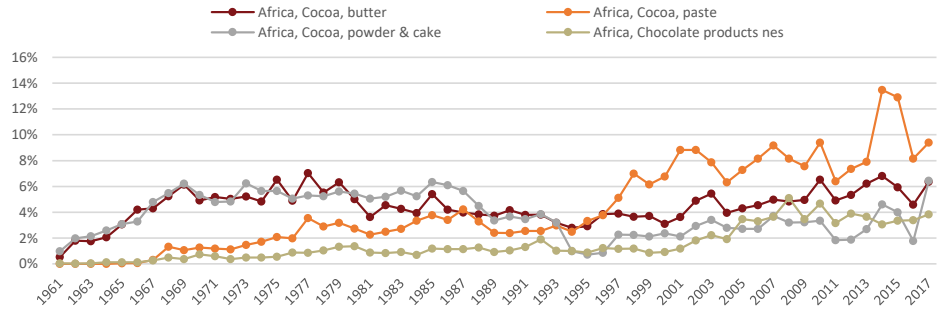


Figure 17.4: *Semi-processed cocoa products as % of cocoa beans exported in Africa.*

2.2. Coffee

Over the years, coffee has remained one of the major tree commodities, and Ethiopia is the largest coffee producing country in Africa and 5th globally (Tamru et al 2016). The country produced 7,250 (1,000 MT 60-kg bags) during the 2018/2019 production season with average productivity of 0.82 tons/ha (USDA 2019). Coffee is either processed wet or dry in the country, and the quality of coffee depends on the processing technique used. Wet processing commands higher premiums due to its better quality; however, only 30% of exported coffee is wet-processed (Tamru et al 2016). The involvement of smallholders in production and processing of coffee in Ethiopia makes the sector one of the highest employers, with over 20 million people who depend directly or indirectly on coffee (USDA 2012). The importance and potential of coffee processing driving the Ethiopian Economy hinges on the fact that the domestic market absorbs 50% of the total production; meanwhile, the rest is exported through the Ethiopian Commodity Exchange (ECX) (Alemayehu 2015). The industrialisation process in Ethiopia through coffee is peculiar because of the dominance of nationals, small-scale processors and farmers who organise themselves into cooperatives and a union of cooperatives to put funds together and invest in coffee processing (see Case of Oromia coffee farmers coorperative). Other small-scale processors use traditional processing techniques to process and sell coffee in shops in major cities of the country. The increasing processing prowess of smallholder farmers coincides with an increasing number of cooperative unions engaged in processing and export of coffee (Minten et al 2014). The growth of wet processing mills has been significant in major production belts in the country. In the Sidama area, single private companies, cooperatives, and shareholding companies account for 40%, 28% and 32 % of wet mills, respectively (Minten et al 2017). The increasing availability of these wet mills in rural areas increased farmers options to sell red cherries used for coffee processing; over a ten year period, sales of red cherries increased by 6.3%. The average distance to the nearest wet mill plant was reduced by 11.7 minutes in the area (Minten et al 2017).

2.3. Oil Palm

Nigeria is the highest African producer of palm oil and 5th globally, with 0.97 million tons of palm oil produced annually; however, domestic consumption stands at 1.26 million tons annually (USDA 2019). This suggests that domestic production is not enough to sustain domestic demand. Palm oil produced in the country can be classified into three categories of products. Technical Palm Oil (TPO) is low-quality palm oil produced by smallholder farmers using traditional milling techniques, which often records Free Fat Acid (FFA) greater than 5%. Specialised palm oil (SPO) is of higher quality, produced by refineries and large oil mills, with an FFA content of less than 5%. Due to increased requirements for FFA, production equipment is often imported since traditional technology is inadequate. Palm Kernel Oil (PKO) is usually supplied by industries for processing and packaging. Local consumption of TPO is very high, with smallholder farmers and processors dominating the sector, which explains why it captures four times the market share compared to SPO. Palm oil is produced primarily for food consumption (81.41%), with industrial consumption accounting for 18.6% (Afrinvest Limited 2019).

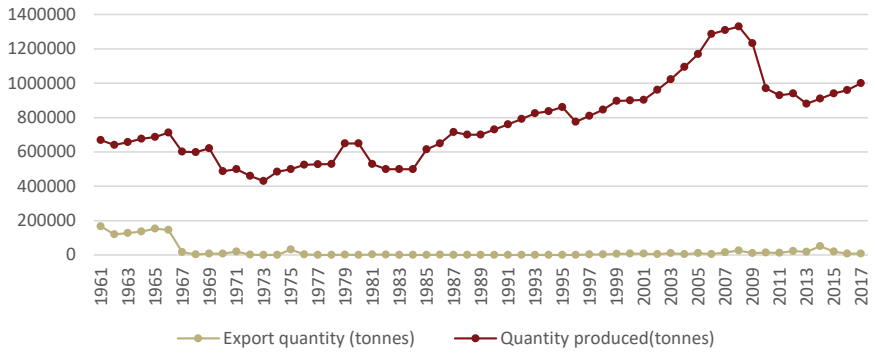


Figure 17.5: *Oil palm quantity exported and produced in Nigeria.*

Domestic demand for oil palm in Nigeria is very high, which explains the very low level of exports, even though production has been increasing (Figure 17.8). More than 80% of oil production is consumed domestically. The demand pattern for palm oil suggests that the industry comprises two dominant types of processors; small-scale or artisanal processing and industrial processing.

2.3.1. Small and Medium-scale or artisanal processing:

There is high demand for SPO coupled with the increasing supply from smallholder-processors who are predominantly women. About 37,000 local processors exist in the Niger Delta, with women making up a good share (>50%) of this number (PIND 2018). Rudimentary technologies and equipment such as mortar and pestle are used. This technique is not very

efficient as only 25% of the oil is extracted; thus, there is a significant loss of yield. However, modern processors are now using mini-processing units, which are semi-mechanised and often composed of a digester, press and small engine. They are more efficient, extracting 67% of available oil. Medium-scale processors can transform an average of 0.5 tons of fresh fruit bunch (FFB)/hour. They have processing units composed of a boiler, digesters, press, clarifier, generator and screening machine. These units produce SPO and can employ up to ten people for operations. Processing units of up to 60 tons FFB/ hour are considered to be large units. They are often very efficient, with up to 75% oil extraction efficiency. Small and medium scale processors still suffer from a significant loss in yields due to inefficiencies of the artisanal technologies they use. The Nigerian Institute has done research on improved techniques for Oil Palm Research. However, research on the challenges faced by users in the adoption and efficient use of these machines needs to be done, and constant upgrading of machines based on users feedback should be put in place.

2.3.2. Secondary or large-scale processing

With the development of enhanced extraction mills, large-scale oil mills record better extraction rates and lower FFA content. The main oil palm millers, such as Grand Cereal and Oil Mills Ltd, Poko Oils Mills Ltd, Real Oils Mills Ltd, Olomu Oil Palm Ltd and Presco Oil Palm Plc, further refine crude palm oil CPO to other products such as Palm Fatty Acid Distillate (PFAD) and Refined Bleached and Deodorised oil (RBDO). Considering current capacity, only three oil refineries can refine CPO in Nigeria. Thus, there is a need to expand the current domestic production and refinery capacity to fill the 800,000 tons demand-supply gap. However, large palm oil refineries, such as PZ Wilmar, are exploiting this opportunity by investing US$ 150 million in an oil palm refinery in Lagos and expanding oil palm plantations by 5,549 ha in Calaro Estate and 2,369 ha in Calaro extension (Business day 2020). The firm equally acquired plantations of about 15,414 ha to expand their production area. These acquisitions fall in line with government policy to increase oil palm production by 700%, estimated at 600,000 tons a year with a total investment package of US$ 500 million (Bloomberg 2019).

Promoting domestic processing at both large-scale and small-scale levels with important policy coordination on incentivising smallholders to process into oils of good quality are relevant options for palm oil in Nigeria. This entails the extensive implementation of sustainable production strategies at both large-scale and smallholder levels with the promotion of high yielding varieties at low cost to farmers. Increasing the research budget for processing raw materials that meets the operational conditions of rural areas and quality demands of consumers is important. Widespread development, testing and dissimilation of processing machinery are therefore key. Policy reforms aimed at marketing and distributing final products with quality control mechanisms are equally important for promoting palm oil in Nigeria.

3. Public policy driving the industrialisation process through tree commodities.

Reorientating industrial policies that create employment, promote shared prosperity and protect the environment while sustaining economic growth, continue to be an overarching objective of African Economies. The recent surge in processing of tree commodities domestically in Africa underscores the potential of good policies in offering incentives for domestic processing of tree commodities. At the continental level, domestic processing of tree commodities is a key trajectory to industrialisation, as outlined by the AU agenda 2063. National Economies have been developing policies that aim for structural transformation of their economies at different levels. Tree commodities have been at the centre of these policies in major producing countries. For example, Ghana and Côte d'Ivoire have developed different policies and incentives to promote domestic processing and cocoa marketing. Nigeria developed policies and incentives to increase oil palm production and processing, while similar policies have been developed in Ethiopia for coffee. Table 17.1 highlights progress made on industrialisation policies for tree commodities in case study countries.

To better improve the incomes of value chain actors and have a better control of coffee quality, the Ethiopian government passed the *Coffee Quality Control and Marketing Proclamation No. 602/2008 of 2008*. Through this regulation, the Ethiopian Commodity Exchange (ECX) was created to regulate the trade of exporters and wholesalers. Ethiopia is a classic example of a success story. Through the ECX, they have succeeded in assisting farmers in producing and processing high-quality coffee with proper quality control systems. Once efficient quality control systems were in place, these small and Medium-Sized (SME) coffee enterprises were linked to the global market through the ECX.

Reducing imports and increasing domestic production to meet demand is central to the oil palm policy of Nigeria. To enforce this policy, a 35% duty on palm oil imports has been imposed since 2008, alongside other fees and taxes applied on oil palm imports which increase the price used for export tariff pricing (reference price) to about 50%. Thus, making it possible for palm oil from Nigeria to compete with imported palm oil (UNIDO 2010). The oil palm industry also benefits from research from the Nigerian Institute for Palm Oil Research (NIFOR), although funds are insufficient to deliver on its mission effectively (Gourichon 2013).

Table 17.1: *Industrialisation policies for tree commodities*

Policy Instrument	Description	Where (Country)	Commodity	Comment (mainly on how successful or not so successful
Export Free Zone (EFZ) (tax-free)	• 20% discount on cocoa beans (light crop) for domestic cocoa processing • Price reduction for cocoa beans aimed at domestic processing • 100% direct and indirect exemptions from imports for production and exports from EFZ zones • Exemptions from value-added tax (VAT), double taxation for foreign investors and employees and exemptions from income tax on profits for the first ten years • Exemption from import licence requirements and reduced custom processes and arrangements • Limited restrictions on repatriation of profits, servicing of foreign loan and payment for technology • Operate domestic foreign currency accounts, export at least 70% of goods and services from EFZ	Ivory Coast and Ghana	Cocoa	Current supply of light crop cocoa beans does not meet processing capacity, thus companies import from Cote d'Ivoire, which reduces benefits, unreliable and high electricity prices in Ghana constraints domestic processing Political instability in Cote d'Ivoire in the 2000s and after greatly constrains domestic processing High operational costs, over-capacity leads to low capacity utilisation, thus, comparatively expensive in both countries
Tax rebates waivers	Conditional tax break called « Droit unique de sortie (DUS) « levied at 14.6% for processed products, conditional tax breaks between 1.4 and 5% for intermediate products such as cocoa mass, butter and powder are levied	Cote d'Ivoire	Cocoa	
Incentives for small-scale processors	To promote small-scale coffee processors, they allow smallholders to group through unions and export products after verification and auctions at the ECX trading floor	Ethiopia	Coffee	Organised and facilitated access to foreign markets for small scale producers
Import-substitution	35% duty on palm oil imports has been imposed since 2008, alongside other fees and taxes applied on oil palm imports which increase the price used for export tariff pricing (reference price) to about 50%	Nigeria	Palm oil	This policy permits palm oil from Nigeria to compete with imported palm oil (UNIDO 2010).

4. Key challenges for Industrialisation through tree commodities

Global value-chain actors, processors and retailers of products from major tree commodities are for-profit organisations. Their decision to localise in any country is guided by cost and efficiency gains; thus, the marginal cost per unit in the producer country must be lower than in other locations. Therefore, for African economies to propel industrialisation of their economies through processing of tree commodities, policies and the business environment must provide comparative advantages. The following key challenges have been underscored from the literature as key barriers to industrialisation through tree commodities.

4.1. Infrastructural constraints

The growth of the industrial sector depends on a sound and attractive business environment and basic infrastructure, such as good roads, airlines, seaports, energy supply and communication. Lack of adequate infrastructure increases production and transaction costs to different actors along the value chain, thus making production more expensive and less competitive. The level of infrastructural development is an important element of investment climate, facilitates access to markets, reduces the cost of doing business and is critical in advancing technology and trade integration (Patunola-Ajayi 2013). Electricity costs in Africa are three times higher than in other developing countries, and most companies rely on expensive backup generators that increase operational costs (KPMG 2016). The poor state of regional roads makes it difficult for manufacturing industries to tap into the increasing regional market. Calderon et al (2018) underscores that since 1980, there has been a decline in railroads and few roads are usable all year round. The continent is said to be lagging by 20% compared to average low-income countries in terms of infrastructural development. Only ten African countries are above the global median for transport infrastructure and only five for electricity supply (Yaw-Saw et al 2016).

4.2. Inadequate technical skills and Knowhow

Although the demographic configuration of Africa is dominated by youths, this labour force lack skills and efficiency, which is a major obstacle to investment. Only two-thirds of 15-24 years old complete primary education, and less than 20% go beyond primary education (Filmer and Fox 2014). The World Economic Forum's Global Competitiveness Index ranks only ten African countries in the top half of the "pay to productivity index". These African countries have well developed educational systems, and thus, the skillset of human resources meet labour market demands. In other countries such as South Africa, Egypt, Morocco and Namibia, the

marginal value of labour is lower than the wage rate (KPMG 2013). Some companies have resorted to the importation of the required skillset or intensive training of local staff, which is expensive to companies; thus, making the territory less attractive (UN 2015).

4.3. Complex bureaucracies and corruption

Africa registers the highest direct and indirect costs of international trade due to cumbersome port and tax bureaucracies. Issues related to uncoordinated personnel practices and overlapping jurisdictions are frequent amongst different African countries, and government ministries and states have not been able to eliminate this effectively (Yaw Ansu et al 2016). African trade blocs are being promoted as options to promote intra-regional trade, but national bureaucracies and personnel practices still make intra-regional trade more expensive than international trade. The corruption level across the continent is the highest globally, and application of taxes and trade regulations are dominated by corrupt practices (Transparency International 2019). Stronger political will and coordination are required to facilitate trade within countries and regional blocks.

4.4. Low-productivity of tree commodities

Domestic processing requires the installation of heavy equipment and high upfront fixed capital investments; thus, there is the need for large-scale production to benefit from scale economies. However, the productivity of tree commodities in producing countries in Africa is low, so there is the risk of idle capacity within industrial installations (Nasser et al 2020). For example, the average yield per hectare of cocoa in Africa varies between 100-500kg. However, other countries such as Brazil and Indonesia average 1800kg/ha (Abdulai et al 2018). Low yields are also common with other tree commodities such as palm oil and coffee. Poor farm management practices, low use of fertilisers, aging farms and poor coverage of extension services help explain low yields (Asare 2017).

5. Options for enhancing industrialisation through Tree commodities

Africa is at industrialisation crossroads, with initiatives at different scales to drive industrialisation and revamp the structural transformation agenda. Tree commodities, as described above, offer specific opportunities and options to be considered for industrialisation. Industrial targeting, coupled with research and development, skills development and incentives for exports and Foreign Direct Investment (FDI), which have been used by Malaysia to boost

their industrialisation quest and could be tested in Africa (MITI 2006). Building from current experiences in industrialisation through tree commodities and success stories from Malaysia and other Asian countries, a house diagram with a foundation and pillars for industrialising Africa through tree commodities is proposed (see figure 17.6).

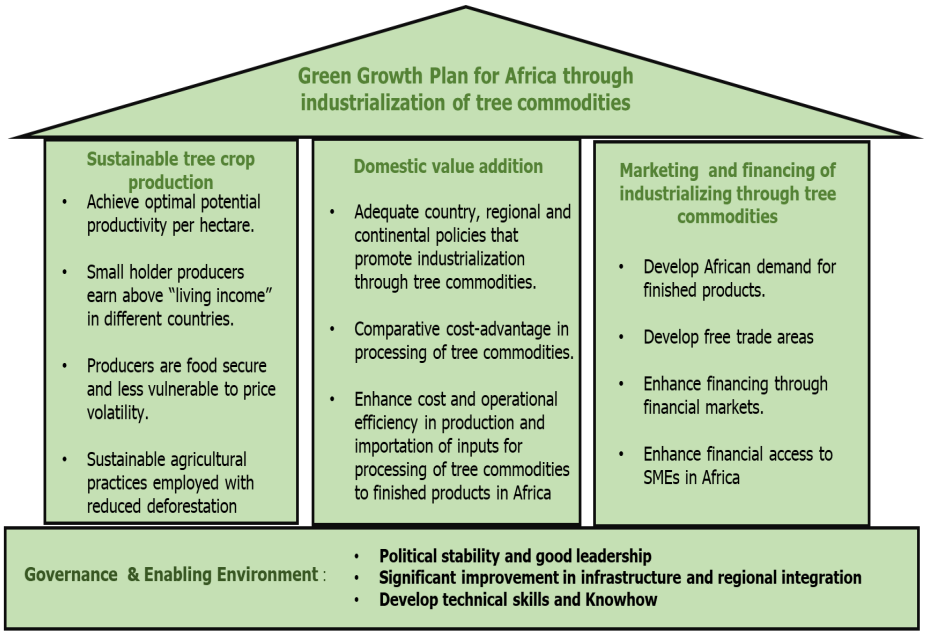


Figure 17.6: *Green growth plan for Africa through the industrialisation of tree commodities.*

5.1. Enhance governance and enabling environment for industrialisation

At the foundation of countries that have succeeded in industrialising through tree commodities is a sound governance and enabling environment. This is constructed on political stability coupled with good and committed leadership with a long-term vision for the nation. Malaysia achieved this through a phased development agenda coupled with medium and long-term plans and adjusted at different phases of their development (World Bank 2019). Coordination between sectors and countries coupled with strategic partnerships are key elements of "industrialisation governance". Infrastructural development with the development of land, sea and air transport networks connected with proper information and communication infrastructure are key prerequisites. Access to sustainable energy sources at low prices and qualified labour at affordable rates are key elements that constitute an enabling environment for industrialisation.

5.2. Develop sustainable tree crop production systems

For tree crop production systems to be termed sustainable, they must be produced at potential optimal productivity levels, permit farmers to earn above "living income", are food secure and sustainable agricultural practices employed with reduced deforestation. For this to happen, farmers must embrace and practice the concept of "green entrepreneurship", which entails producing more for commercial purposes in a sustainable way. This entails that farmers have a good mastery of their cost structure and potential revenue and clear knowledge of diversification and competitive strategies. These measures entail the adoption and practice of climate-smart farming techniques to mitigate climate change while increasing productivity at a relatively low cost (Likoko and Kini 2017). Development and scaling-up of efficient farmer organisations that enhance farmer productivity through provision of better planting materials, fertilisers, and access to markets, can improve the value chain for tree commodities, such as cocoa, coffee and oil palm. Sustainable agricultural practices that ensure economic viability, resistance to climate change and better access to markets should be the new normal.

5.3. Domestic Value-addition to tree commodities

For African countries dependent on tree commodities to capture a greater share of global value chains, they must put in place policies, and systems that give domestic economies cost and operational efficiency for domestic and FDI-led industrialisation processes. This can be done at two levels:

5.3.1. Incentives for processing by small and medium-sized enterprises(SMEs)

Production of tree commodities such as cocoa, coffee and palm oil is dominated by smallholders. Currently, these smallholders lack the technical support, finance and skills to process their products to semi-finished or finished products; thus, preventing them from gaining the advantages that come with value addition. Therefore, actions could include linking smallholders to better market outlets for semi-finished products, and small-scale farmers or cooperatives could engage in semi-processing of cocoa to liquor to be used by large enterprises for the production of finished products (Ton et al 2008). Policy incentives in Ethiopia to organise the export of coffee and allow smallholders to process and export coffee is driving the industrialisation process. So far, in West Africa, policy incentives for industrialisation through tree commodities have been tilted towards attracting FDI and large companies to process domestically. Engaging smallholders with a proper quality control mechanism can be a pacesetter for industrialisation within the continent.

Box 17.2

An example of local SME value addition: Case of Oromia coffee farmers coorperative

Oromia Coffee Farmers Cooperative Union is located in the region where coffee originated and coffee cultivation is a cultural activity of the region. The cooperative was established on June 1st 1999. The Oromia Coffee Farmers Cooperative Union is a democratically-managed union composed of coffee growers, processors, suppliers of high quality organic coffee for export. Over the years the union has grown significantly from 34 primary cooperatives representing 22,691 farmers to 405 cooperatives representing 400,000 farmers. The initial capital of the cooperative also increased over time, from $90,000 to $20,763,000.

Coffee processing, both wet and dry, is an intergral part of the activities of the cooperative. They currently run three high tech processing facilities in Kality (11 tons per hour), DireDawa (3-4 tons per hour) and Elan (5-7 tons per hour). The Cooperative Union equally boasts a lab for quality control and central facility for technical, administrative and financial issues. The processing units employ more than 2,000 seasonal workers. Coffee exports are certified by Rainforest alliance, UTZ, Fair trade and organic systems. Fair trade premiums are used for social projects such as health, schools, clean water and bridges. So far, a total of 266 projects have been executed with over 224,544 beneficiaries.

5.3.2. Incentives to attract Foreign Direct investment-led industrialisation

These incentives will motivate multinationals with processing stations in the US and EU to delocalise their processing factories to Africa. Incentives and tax rebates employed so far in Ghana and Cote d'Ivoire have succeeded in increasing considerable FDI led grinding of cocoa beans. However, they have not been adequate to motivate large-scale domestic processing to finished products, principally due to high operational costs. Thus, an adequate understanding of overseas cost per unit can help African government design strategies to make their economies cost-efficient for industrialisation. Moreover, tree commodities are only one of the other elements of the final product; enhancing production and importation systems for inputs and by-products are also options for reducing operational costs for industrialisation.

5.4. Marketing and financing of industrialisation through tree commodities:

Enhancing African demand for African products and trade is key to marketing tree commodities. Intra-regional trade in Africa today accounts for 17% of total exports, which is significantly low compared to more advanced continents like Asia and Europe with intra-regional trade of 59% and 69%, respectively (Signé and Johnson 2018). Thus, reduced transaction costs within the continent make them more competitive. This would enhance trade for products between African

countries and within intra-regional trade blocs. Intra-regional trade of manufactured products accounts for 42% of intra-regional trade compared to 15% extra-regional trade (Songwe 2019). Thus, products processed to end-uses within the continent are of high demand within the continent, suggesting that developing intra-regional markets for them can significantly boost the industrialisation agenda. This equally enhances diversification of exports and reduces shocks due to dependency on particular countries. For instance, emerging countries in Asia are using export diversification strategies to overcome exogenous and dependency shocks. Diversification is facilitated by high-level political will and coordination between member states, a proper review of competitive advantage and removal of tariffs and administrative barriers to the movement of goods and capital (Songwe et al 2012).

Access to finance remains a major obstacle to SMEs, especially those engaged in tree commodities value chains. Institutions such as AFBD and regional development banks within the framework of continental and regional development plans can integrate financing of SMEs involved in processing of tree commodities as a priority. Enhancement of existing financial markets also stands as key opportunities to facilitate access to finance.

6. Concluding remarks

The industrialisation of Africa is being promoted by national governments, regional and continental development banks and organisations as the next phase of Africa's economic transformation. However, the industrialisation process has been hampered or slowed down by challenges such as poor infrastructural development, lack of adequate skills, poor inter-regional coordination and road network, low productivity of tree commodities and corruption. A holistic and inclusive approach to industrialisation through tree commodities would help promote domestic processing and include smallholder farmers, research and development, and the development of key skill sets. At the foundation of the industrialisation agenda is a stable and visionary political leadership, proper infrastructural development and skills that meet the shifting paradigm. Sustainable production of these tree commodities is the first and most important pillar of Industrialisation through tree commodities. It gives assurance of continuous supply of raw material, proper industrialisation policies that make African economies comptetive, cost and operationally efficient and thus, key in attracting domestic and FDI-led investors. The African free trade area, financial market and financing mechanisms for SMEs are key in financing and marketing the industrialisation process.

References

Abbadi S, Senadza B, Lieuw-Kie-Song M, Abebe H. 2019. Assessing the employment effects of processing cocoa in Ghana International Cocoa Organization (ICCO), 1999-2939; 1999-2947 (web.pdf)

Abdulai I, Jassogne L, Graefe S, Asare R, Van Asten P, Läderach P, et al. 2018. Characterization of cocoa production, income diversification and shade tree management along a climate gradient in Ghana. *PLoS ONE* 13(4):e0195777. https://doi.org/10.1371/journal.pone.0195777

Adesina A. 2015. Opening speech delivered by African Development Bank President Akinwumi Adesina at the high-level conference on Africa feeding Africa: An action plan for african agricultural transformation. Abdou Diouf International Conference Centre, Dakar, Senegal. October 21 2015.

Adeyoju S.K. 1975. Forestry and the Nigerian Economy. Ibadan University Press. Ibadan. Nigeria. 308pp.

[AfDB] African Development Bank. 2018. Annual Report 2018a. https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/AFDB_Annual_Report_2018_and_Appendices_-English.pdf

[AfDB] African Development Bank. 2018b. African Economic Outlook (AEO) for Central Africa 2018. African Development Bank. Abidjan. 32pp.

[AfDB] African Development Bank, [OECD] Organisation for Economic Co-operation and Development, [UNDP] United Nations Development Programme. 2014. Global Value Chains and Africa's Industrialisation. African Economic Outlook (2014). Thematic Edition, African Development Bank. http://africaneconomicoutlook.org/sites/default/files/content-pdf/Edition_Thematique_EN_web.pdf

[AfDB] African Development Bank. 2017. Industrialise Africa: Strategies, policies, institutions, and financing. Abidjan. Cote d'Ivoire. 228 pp.

[AfDB] African Development Bank. 2014. African economic outlook, 2014: Global value chains and Africa's industrialisation. https://www.oecd-ilibrary.org/development/african-economic-outlook-2014_aeo-2014-en

Alemayehu. M. 2015. Ethiopian Highlands: Home for Arabica Coffee. Available at www. Research gate. net . Accessed on April 22, 2020

Asare R, Asare R, Asante W, Markussen B, Ræbild A. 2017. Influences of shading and fertilization on on-farm yields of cocoa in Ghana. *Experimental Agriculture 53*(3):416-431. doi:10.1017/S0014479716000466 AU, 2017. African Union Commodities Strategy and Industrialization. https://au.int/en/flagships/african-commodities-strategy

AU, Agenda 2063 and the Commodities Strategy https://au.int/en/flagships/african-commodities-strategy

Business day 2020. Nigeria's 2019 palm oil import from Malaysia rises 18.4% amid border closure. Feb 11, 2020 https://businessday.ng/agriculture/article/nigerias-2019-palm-oil-import-from-malaysia-rises-18-4-amid-border-closure/

Candyindustry 2019. Barry Callebaut opens cocoa processing unit in Côte d'Ivoire: New facility will increase capacity by 40 percent by 2022. April 3, 2019. https://www.candyindustry.com/articles/88613-barry-callebaut-opens-cocoa-processing-unit-in-c%C3%B4te-divoire

Calderon, Cesar; Cantu, Catalina; Chuhan-Pole, Punam. 2018. Infrastructure Development in Sub-Saharan Africa : A Scorecard. Policy Research Working Paper;No. 8425. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/29770 License: CC BY 3.0 IGO.

Cocoa barometer. 2015 looking for a living incomehttp://www.cocoaconnect.org/publication/cocoa-barometer-2015-usa-edition

FAOSTAT. 2020. http://www.fao.org/faostat/en/#data/QC

FAOSTAT/FAO. 2019. http://www.fao.org/faostat/en/

Fessehaie J, Rustomjee Z. 2018. Resource-based industrialisation in Southern Africa: Domestic policies, corporate strategies and regional dynamics. *Development Southern Africa* 35(3):404-418. DOI: 10.1080/0376835X.2018.1464901

Filmer D., Fox L. 2014. Youth Employment in Sub-Saharan Africa. Washington, DC: The World Bank.

Full Steam Ahead. 2019. Afrinvest Limited - The Nigerian Oil Palm Sector Report. Full Steam Ahead, 29th January.

Goodman AMC LLC. 2017. Investing in Ghana's Cocoa processing industry: Opportunities, risks & the competitive advantage. https://drive.google.com/file/d/0B8S7ODNbOsDZVTJQTUVKQXl4QXM/view

Gourichon H. 2013. Analysis of incentives and disincentives for Palm Oil in Nigeria. Technical notes series,

[ICO] International Coffee Organization. 2020. Coffee market report, June 2020 http://www.ico.org/documents/cy2019-20/cmr-0620-e.pdf

[ICCO] International Cocoa Organization. 2018. Quarterly bulletin of cocoa statistics volume XLIV No. 1, Cocoa Year 2017/18, London

KPMG. 2013 Manufacturing sector report https://home.kpmg/cn/en/home/insights/2013/07/global-manufacturing-outlook-o-201307.html

KPMG. 2016 Sub-Saharan Africa Power Outlook. KPMG Africa Infrastructure. https://assets.kpmg/content/dam/kpmg/pdf/2016/05/kpmg-sub-saharan-africa-power-outlook.pdf?__hstc=182950649.2d3fcf2f99a265337744294b740e0787.1522540800082.1522540800083.1522540800084.1&__ hssc=182950649.1.1522540800085&__hsfp=3733277192

Likoko E, Kini J. 2017. Inclusive business: a business approach to development. *Current Opinion in Environmental Sustainability* 24:84–88.

Minten B, Dereje M, Engida E, Kuma T. 2017. Coffee value chains on the move: evidence in Ethiopia. *Food Policy* 83:370-383.

Minten B, Tamru S, Kuma T, Nyarko Y. 2014. Structure and performance of Ethiopia's coffee export sector. ESSP Working Paper 66.

[MITI] Malaysia Ministry of International Trade and Industry. 2006. IMP3: Third industrial master plan, 2006-2020: Malaysia - towards global competitiveness. Kuala Lumpur: Percetakan Nasional Malaysia Berhad.

Mulangu F, Miranda M, Maiga E. 2015. Is more chocolate bad for poverty? An evaluation of cocoa pricing for Ghana's industrialisation and poverty reduction (AGRODEP Working Paper No. 14).

Nasser F, Maguire-Rajpaul VA, Dumenu WK, Wong GY. 2020. Climate-smart cocoa in Ghana: How ecological modernisation discourse risks side-lining cocoa smallholders. Frontiers in Sustainable Food Systems, 4 https://doi.org/10.3389/fsufs.2020.00073

Patunola-Ajayi B. 2013. Infrastructure development and economic empowerment in Nigeria. The Nigeria Institution of Estate Surveyors and Valuers. NIESV

Signé L, Johnson C. 2018. The potential of manufacturing and industrialisation in Africa.

Songwe V. 2019. Intra-African trade: A path to economic diversification and inclusion. Available: https://www.brookings.edu/research/intra-african-trade-a-path-to-economicdiversification-and-inclusion/. Accessed: July 27 2020.

Songwe V, Deborah W. 2012. Exports and export diversification in Sub-Saharan Africa: A strategy for post-crisis growth. Brookings Institution.

Tamru, Seneshaw & Minten, Bart. 2016.- revise as Tamru, Seneshaw & Minten, Bart. 2016. Value addition and processing by farmers in developing countries: Evidence from the coffee sector in Ethiopia, 2016 Fifth International Conference of the African association of agricultural economists, September 23-26, 2016. Addis Ababa, Ethiopia.

Ton, Giel, Geoffrey Hagelaar, Anna Laven, And Sietze Vellema. 2008. Chain governance, sector policies and economic sustainability in cocoa. Markets, Chains and Sustainable Development Strategy and Policy Paper, no.12. Stichting DLO: Wageningen. Available at: http://www.boci.wur.nl/UK/Publications/

Transparency International. 2019 . Corruption Perceptions Index 2019 https://images.transparencycdn.org/images/2019_CPI_Report_EN_200331_141425.pdf

UNIDO, Central Bank of Nigeria, Bank of Industry. 2010. Unleashing agricultural development in Nigeria through value chain financing. https://www.unido.org/sites/default/files/2011-01/Nigeria_Finance_Diagnostics_final2_0.pdf

United Nations. 2015. If Africa builds nests, will the birds come? Comparative study on special economic zones in Africa and China. Working Paper 6. China: UNDP and International Poverty for Reduction Center.

USDA. 2012. Ethiopia coffee annual report. Foreign Agricultural Service: Global Agricultural Information Network. GAIN Report Number: ET 1202

USDA. 2019. Coffee annual report. https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=Coffee%20Annual_Addis%20Ababa_Ethiopia_5-29-2019.pdf

UNCTAD. 2020. The least developed countries report 2020: Productive capacities for the new decade (United Nations publication. Sales No. E.21.II.D.2. Geneva).

World Bank. 2019. The World Bank annual report 2019 : Ending poverty, investing in opportunity. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/32333 License: CC BY-NC-ND 3.0 IGO."

Reuters. 2020 Ivory Coast 2019/20 Q1 cocoa grind up 4.4% by end Dec. https://www.reuters.com/article/cocoa-ivorycoast-grind-idUSL8N29K1VU

Xing M, Luo F. 2018. Comparative study on the optimisation or path of industrial value chain in China's resource-based cities. *Sustainability* 10:1338. https://doi.org/10.3390/su10051338.

Yaw Ansu David Booth, Tim Kelsall and Dirk Willem te Velde. 2016. Public and private sector collaboration for economic transformation. https://www.tralac.org/images/docs/9263/set-acet-atf-public-and-private-sector-collaboration-for-economic-transformation-march-2016.pdf