Role and Challenges of Primary Sector in the Structural Transformation in Africa

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ABSTRACT

This paper examines the primary sector's performance, preferment, and challenges in structural transformation in the African economy. A systematic research has been done with the help of secondary data by using United Nations Conference on Trade and Development (UNCTAD), EXIM Bank and World Bank reports. Being either under-developed or developing nations, the primary sector mostly dominates the majority of African countries, which indeed is vital for embarking on its autonomous growth.The empirical evidence suggests that other developing countries with a large reliance on the primary sector show a positive effect on the nation's economic efficiency within the context of sustainable development, but a fundamental challenge in Africa's sustainable development is reducing its rampant poverty. Most under-developed African economies aren't able to devote the required skilled resources to their primary production. Africa faces a complex mix of developmental problems within the primary sector, which are vast and multifaceted. A few of these include- the challenge of lesser devotion towards resources to the primary production; challenges of crawling technological adaptations and dependency on traditional harvesting & irrigation methods; less cost-effective agricultural techniques of the contemporary era with respect to inexpensive & unskilled farmers, etc. These challenges as well as their concomitant trade-offs have to be strategically addressed to improve the prospects for sustained growth and development.

Keywords: Primary Sector, Africa, Structural Transformation, Natural Resource, Production.

Introduction

The economy of any geography can be classified into several sectors to define the percentage of people involved in each of such activity

sector. This classification is viewed as a scale of separation from the natural surroundings. This scale begins with the primary sector that is acquitted with the usage of Earth's natural resources such as mining, energy and agriculture.The distance from the earth's natural resources grows from there. Natural resources are described as including all products of agricultural, mineral, and hydrocarbon origin to encompass the full range of Africa's endowment. Agriculture and extractive sectors are both considered within the umbrella terminology - primary sector.

Agricultural includes agricultural non-food products, fisheries, food commodities, and industrial crops. Fruits & vegetables, cereals such as wheat, maize and rice, and plantation crops for the production of beverages like coffee, tea and cocoa are all examples of agricultural food products. All fishery goods & products and livestock like cows, sheep, goats and pigs are also included in this classification. Industrial crops like cotton and wood, as well as locally produced natural goods like the cut flower industry, are examples of non-food products.

Minerals and metals, sometimes known as "hard commodities," include ferrous (iron) and non-ferrous base metals, the most common types of which are copper, zinc, lead, and aluminium, as well as precious metals and minerals like gold, silver, platinum, and diamonds. This group category includes minerals likephosphosphate, sulphate, etc, as well as the rare metals of molybdenum, cobalt, etc.

All resources used for the generation of electricity are classified under hydrocarbons, often termed as energy commodity.In addition to coal and petroleum products (such as oil and natural gas), this also refers to uranium and plutonium that will be utilised as raw materials in the manufacture of nuclear energy.

These three groups give clear indication of how wealthy and abundant in natural resources Africa is. The addition of agricultural products broadens the definition of "natural resources," which is frequently considered to refer primarily to resources with a mineral or hydrocarbon origin.Although, it is more straight forward to analyse agricultural products separately and it makes sense for many problems relating to the high-rent character of specific extractive resources, doing so does not do credit to Africa's natural wealth. In addition, despite their clear

contrasts, all three resource categories share very similar potentials and difficulties. One thing is that labour and capital are used as input to extract all-natural resources from the earth.

Both the cultivation of wheat and the extraction of copper require human innovation, labour, and resources. Second, they serve as the foundation of most product value chains when combined. Third, prices for all three resource categories have increased significantly over the past ten years, practically in harmony, creating opportunities as well as risks from inflation, volatility, and dependency building.

In primary sector harvest or extracts of the products from the earth are considered. It includes the production of basic foods and raw materials.The sector of the economy that directly utilises natural resources is known as the primary sector. Agriculture (both commercial and subsistence), forestry, farming, grazing, fishing, hunting and gathering, quarrying, mining, petroleum, and oil and gas extraction are all activities related to the primary sector. The processing and packaging of the raw material linked with this sector are considered part of this sector. To put it another way, this sector also includes the manufacturing industries that gather, pack, package, purify, or process raw materials near to the primary producers, particularly if the raw material is inappropriate for sale or challenging to transport over great distances. The primary sector is typically more significant in less developed nations, such as those in Africa, and less significant in industrialised nations.

In developing nations, primary industry makes up a larger portion of the economy. For example, animal husbandry is more prevalent in Africa than it is in Japan. A smaller and less percentage of workers are employed in the primary sector in both developed and developing nations. While more than two-thirds of the labour force worked in the primary sector in the middle of the nineteenth century, just about 3% of Americans today are employed in this area.

Most of the African countries get FDI in natural resource-based sectors, because they are rich in oil, minerals, and natural gas. According to both empirical and theoretical research, the requirement for secure access to nature's resources is, in fact, one of the primary factors attracting MNCs to Africa, highlighting one of the most important

features of African countries when it comes of natural resource abundance.In contrast to the global trend, FDI in Africa fluctuated between 30 and 85% between 2001 and 2004, moving from Greenfield and some other types of investment and more on the way to Mergers and Acquisitions (M&As, or Brownfield investment). Even while Greenfield investments is preferred in the primary sector, where FDI is important, M&As still predominate in services and manufacturing.

Primary Sector's Role in Africa's Structural Transformation

High-skill services and advanced manufacturing, while promising in the long run and viable strategic options for some of Africa's middle-income countries, provide few chances to accelerate structural transformation in the near future for the majority of Africa's low-income countries. Building a strong primary sector may be the quickest path to structural transformation, according to the importance of learning processes, competences, and factor endowments. Four different avenues can be used by the primary sector to drive structural change:

i) Connections and diversification into related industries;

ii) Serving as a major employer of low-skilled labourers and, as a result, a source of demand for possible new products from related businesses;

iii) as a major source of tax revenue for the government, primarily from the extractive industries, though industrial agriculture can also be significant, which can then be used to fund the establishment of favourable conditions and the promotion of structural transformation; and

iv) Bringing Capital and know-how, by attracting foreign Investment.

The level of foreign investment is another sign of the potential of various activities and sectors. Trade data demonstrate the tight relationship between a diversified primary sector and a diversified industrial sector. The relationship is made up of shared capabilities and favourable framework conditions. The correct environment is necessary for the primary sector because it shares many requirements with the manufacturing sector. Governments should concentrate on the unique requirements that go along with resource-based businesses, such as

energy for mining, transportation links to rural areas, legislation that create the correct incentives, and a robust land management system. In the absence of them, only resources with extremely high rents can be used profitably, but they present fewer chances for structural change.

Four requirements must be met for a new programme to hasten structural change in African nations' activities:

a) Unskilled labour must be employed on a wide scale;

b) Have higher productivity than current activities;

c) Be held accountable for performance; and

d) Be sufficiently close to a nation's comparative advantage and capabilities.

First, employment opportunities should be provided to the vast majority of individuals who currently work with no or few skills in low productivity occupations which lack employment opportunities. Even though an upward trend can be seen in educational attainment but the majority of Africa has poor educational attainment compared to other regions. The second need is that new activities must be more productive than existing ones or at least have the potential to be so. Expansion of current low productivity activities is insufficient to drive structural transformation. Third, pressure to perform must be applied to new activities. Such pressure is brought on by competition. Few capable administrations have tried to create such pressure in the absence of competition but could not succeed. New activities are prone to become ineffective without pressure, andand eventually result in unfavorable structural change.

Last but not least, new activities should not stray too far from the current comparative advantage. A nation's capacity, is reflected by its endowment with production factors (land, labour, capital, and natural resources) and capabilities which is comprised of its human capital, technology, institutions and regulations, infrastructure, government capacity, and public services. Comparative advantage is simply defined as the products that a nation produces comparatively more of. Hausmann et al. (2011) in their analysis studied that the proximity of new activities to current activities, as determined by factor intensities and capabilities,

is strongly correlated with the amount of spillovers and learning opportunities that they provide. Activities that demand a set of characteristics and competencies that are extremely different from those found in a country are unlikely to result in learning and spillovers.

Lin (2012) writes that the potential for structural transformation of such operations will be minimal at best, remaining islands or areas; at worst, they will waste a lot of resources before failing completely. These four criteria point to challenges and possibilities for structural transformation in Africa

Challenges and Possibilities for African Structural Transformation

Aiming for high-skilled services as a vehicle of structural transformation too quickly may not be successful given the abundance of low-skilled employees in Africa. It is occasionally asserted that Africa may simply adopt the "Indian" model and focus its efforts on providing services. This is deceptive for a number of reasons. The services sector is the first and foremost sector that comes to mind when most people consider India's success. But since high levels of education are pre-requisite in service sector business, in which comparatively human capital of African countries lack. Additionally, this industry only directly employs a relatively small portion of India's work force, roughly 2%.

So even in India it has not been a force for the kind of employment growth that would allow for large numbers of people to move from the agricultural sector into more productive sectors and higher-paying jobs, thereby eradicating poverty. Achieving broad-based growth on the basis of business services sectors in Africa therefore seems unrealistic, except, potentially, for small countries with a well-educated labor force such as Mauritius or Botswana.

Low-skilled services have more potential, yet many of their activities are inefficient. The majority of informal activities like personal services and trade make up Africa's low-skilled service industry. With a few exceptions, such as large-scale retail trade (supermarkets) and tourism, these activitieshold little potential for productivity advances even though they are crucial for the creation of jobs. Despite the fact that these

two fields have seen and will continue to experience significant growth rates, their employment potential in most nations is still constrained.

Manufacturing has the ability to bring about a lot of low-skilled employment opportunities and new skills. Although productivity has increased in the past, employment has not increased proportionately. Because they display unconditional convergence of productivity growth, Rodrik (2011a) has demonstrated that manufacturing industries can behave as escalator activities. In other words, productivity levels in that business will start to increase towards the global technology frontier regardless of the country once it successfully joins that sector. Rodrik (2011b) opines that the promise of manufacturing is that it will "provide millions of jobs for unskilled workers, generally, women, who were previously working in traditional agriculture or minor services". After all, industrialisation was the primary driver of rapid expansion in East and Southeast Asia beginning in the 1960s, as well as southern Europe throughout the 1950s and 1960s. However, as the examination of structural change that came before has demonstrated, the productivity gains that were made in Africa's manufacturing sector did not result in a sufficient increase in employment. Because of the loss of workers, the overall impact of structural change during the 1990s was even negative. Although this has improved in the 2000s, the manufacturing sector's rate of employment growth is still far too modest.

In the past, it has been challenging to move quickly to advance manufacturing since the value of current capabilities and learning processes had been undervalued. In the decades between 1960 and 1990, many African nations pursued rapid industrialization. These strategies were largely driven by misconceptions about the connections between natural resources and structural transformation. In attempts to industrialise,the potential for value-adding was frequently overvalued, while,the complexity of technology, learning processes,complementary inputs and the importance of the general business environment were undervalued. Little industrialisation has emerged as a result of the efforts made.

Africa must put its attention on developing capabilities if structural reform is to succeed. To succeed, businesses require the correct climate. Despite prior failures, Rodrik's (2011a) conclusion of unconditional

production merging in manufacturing testifies to the sector's potential for structural change.

The businesses operating in this sector require a setting that permits them to extend their operations and welcomes other entrepreneurs to enter the market with innovations, increasing employment, in order to boost productivity while also creating jobs. The capabilities of an economy determines its ability to manufacture and export new goods at a price that is competitive. Hausmann et al. (2011) finds that the best way to understand capabilities is as a combination of specialised technical knowledge and skills with environmental elements like the standard of financial services, public service (education, health, infrastructure, etc), institutions and regulations, as well as the overall level of human capital and government capacity. Additionally, financial stability and political stability, as well as the size of the market are significant environmental elements that may be served.

African businesses are currently constrained by their surroundings. The key barriers that result in greater external costs include a small market, inadequate public services and financial access, and the role of government. It is commonly known that institutions and the general business environment negatively affect the development and effectiveness of manufacturing enterprises in Africa. When the business environment is taken into account, African businesses actually outperform businesses in comparable nations in other areas in terms of productivity and sales growth. However, given the current situation, African businesses lag behind those in other areas. Geographical constraints in the form of small market size are the main obstacles to the expansion of African businesses. When compared to non-African enterprises, it reduces the GDP of African firms by roughly 100%. The other primary explanations for African disadvantages are connected to the fundamental market-supporting functions of the government, specifically the infrastructure, protection of property rights, and financial accessibility. Harrison et al. (2013) find that party monopolies appear to be responsible for 81% of the overall factor productivity disadvantage of African enterprises relative to non-African firms. Gelb et al. (2007) demonstrated that in African countries compared to other places, external costs (transport, power, rent, communications, security, business services, and bribery)

comprise a bigger part of the costs of enterprises. Eifertet al. (2005) explained by taking example of Kenya's average gross total factor productivity (TFP) is almost 70% of China's (at the factory level). Kenya's net TFP, however, is only approximately 40% of China's on the global market.

Additionally, labour costs in low-income African nations are higher than elsewhere, indicating that low-wage workers may not actually give Africa a competitive advantage. Comparing average enterprises in other regions at the same GDP level to African firms, the labour premium is typically 80%. The labour cost curve for businesses in Africa is steeper than it is for businesses elsewhere, despite the fact that African businesses are more productive. African businesses that are labor-intensive and productive—exactly the kind of business that is ideal for structural transformation—have exceptionally high labour costs. Various reasons may be to blame for Africa's higher labour costs. High prices are probably going to have a big.

African low-income countries have an average PPP price level that is nearly 20% higher than the mean of the four poorest countries (comparators), according to the decomposition of purchasing power parity (PPP) exchange rates.In other words, a worker in a developing Asian nation may purchase more for the same amount of money than a worker in a developing African one.

World Bank (2013 b) states that the availability of abundance of land in Africa makes it difficult to create a better infrastructure environment. Africa is fairly underpopulated in proportion to availability of abundant land. Africa's population density is 36 per square kilometre, which is lower than that of Europe (120 in the European Union [EU]), South Asia (342) and East Asia (also 120), and more comparable to that of the Americas: United States has 33 inhabitants per square kilometre while Latin America has 29.

Some of the public services required for structural transformation will consequently have substantially higher costs.Wood (2002) states that in comparison to low-income Asia, it predicts that Africa will need to invest at least twice as much of its GDP in infrastructure and will incur higher ongoing costs for operation and maintenance.The factor

endowments of Africa also indicate that, in comparison to Asia or Europe, the primary sector will continue to play a larger role in Africa and manufacturing a smaller one. According to the aforementioned paragraphs, Africa is relatively land-rich and skill-poor compared to other continents. Consequently, Africa has a high ratio of land-to-skill ratio. Wood and Mayer (2001) demonstrate that countries with high land-to-skills ratios typically export primarily primary goods when comparing regions through time. The export mix shifts towards simpler, then more complicated manufacturers as the land-skill ratio declines. Africa will probably never match the land-skill ratio of Asia or Europe due to the massive population density disparity. Wood (2002) opines that Africas sectoral and spatial structure will resemble that of America, which historically relied more on the primary sector, which is comprised of agriculture and extractive industries than on manufacturing due to the abundance of land, as opposed to that of Asia or Europe, where manufacturing has a more significant role due to the scarcity of land.

The opportunity for new structural transformation-enhancing activities that build on already-existing factor endowments and capabilities exists in the primary sector. Eighty per cent of Africa's exports consist of raw materials and semi-processed products derived from its natural resources, including agricultural commodities, metals, timber, minerals, and hydrocarbons. The majority of employment is in agriculture, as was seen in the previous section, but a sizeable number of highly productive positions are also found in the extractive industry. Production in commodity accounts for 50 percentage to 60 percentage of jobs on average, and sometimes even 80% in some nations. The majority of the capabilities associated to commerce and employment are found inside or closely related to the primary sector, despite the fact that Africa has a number of rising capabilities in other sectors, particularly services.

Four avenues or possibilities are available in the primary sector to promote structural change:

First, by establishing connections with and diversifying into other natural resource activities, new activities, and talents can be encouraged. Hausmann et al. (2011); Hidalgo (2011); Neffkeet et al. (2009); Lin (2012) have supported that the proximity to current capabilities is the

most sustainable route to new capabilities that can support new activities.As a result, the primary sector's current strengths must be used to diversify into new activities that could have an impact on structural transformation in a short amount of time. Two mechanisms are available.

i) linkages between the production of natural resources and associated activity. For instance, providing the agricultural and extractive sectors with goods and services, or turning local produce food commodities into products with higher value added; and

ii) Diversification into nearby natural resource industries that take advantage of available resources and geographic circumstances.

Second, being the greatest employer of low-skilled workers, the primary sector, particularly agriculture, is the key to wide - ranging structural transformation. In reality, evidence from other locations implies that industrial development requires widespread agricultural transformation. Johnston and Mellor (1961:580); Henley (2012) have concluded that this (a) offers cheap food for local consumption, letting a low-cost industrial worker force to exist, (b) raises farmer incomes, which in turn encourages them to purchase industrial goods, and (c) liberates workers for industrial and urban occupations, and saves money for investments. Another possibility for job creation that has low technical and scale barriers is the expansion of domestic supply networks into soft, hard, and energy resources.

Third, the primary sector—and extractive industries in particular—may generate substantial revenues that the state can use to finance structural change. For most African nations to undergo fundamental change, significant investment is required. In most nations, the biggest issues are those relating to gaps in infrastructure and education. But in order to speed up structural transition, specific constraints that each nation encounters must be addressed. The potential cash from the extractive industries can be utilised to make targeted investments to deal with these obstacles. Thus, it is possible to boost the framework conditions for both enhanced structural reform and the growth of dynamic resource sectors.

Fourth, a robust natural resource industry may draw international investment, which brings with it capital and expertise that would otherwise be hard to come by. Foreign investment is a crucial determinant of which industries have potential.

It is mentioned in FDI markets (2013) that natural resources continue to draw the majority of greenfield foreign direct investment, at over 60%. Foreign investment in natural resource-related projects is a crucial source of funding for many low-income African nations. It also includes crucial know-how. Resource-producing nations can learn a great deal about the market through their interactions with foreign investors, and by compelling them to transfer technology, they can foster the growth of domestic capabilities. FDI can be a useful tool for assessing the competitive potential that a certain industry has to offer. Making a mistake in this evaluation was one of the causes of previous industrial programmes failing. Governments should instead concentrate on luring FDI and make investments in regions where such investments are likely to occur. In this regard, the recent increase in greenfield FDI in Africa for resource processing and energy generation, which has been predominantly fueled by projects involving liquefied natural gas, fossil fuel electricity generation, and petroleum refineries, is highly positive.

Exploration and exploitation investments are a reliable indicator of a country's resource economy's strength and the standard of the business climate. Recognized as an important potential does not necessarily mean that it will be used. A nice illustration is gold in the water. The world's oceans are thought to hold billions of tonnes of gold. Nevertheless, because there is no workable technology, this is not being utilised. Economic incentives are one influence, while technology is another: Egypt has large deposits of oil and gas, but is unable to meet its own internal demand due to industry laws that discourage additional foreign investment in exploration.

Balassa (1986) observes that The examination of relative comparative advantage shows the close connection between a robust manufacturing sector and a robust resource sector. According to its definition, a nation's revealed comparative advantage (RCA) is the quantity of goods it exports that are comparatively more than the global average. The RCAs of countries in both categories can be observed to be closely related when

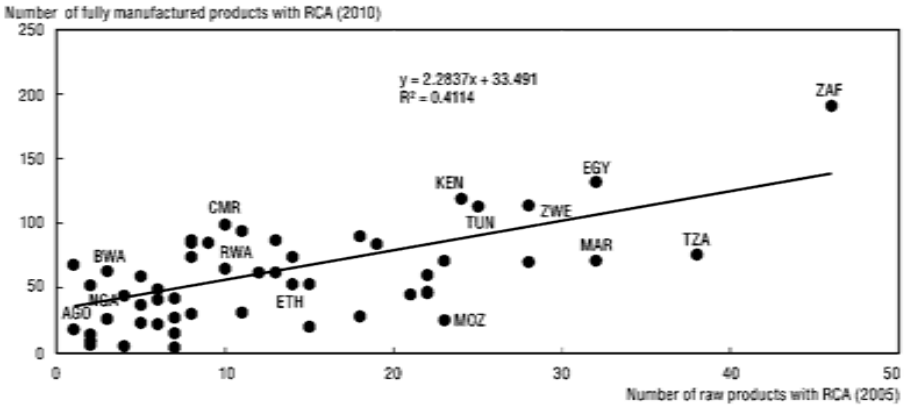
this notion is applied independently to raw commodities and goods with higher value added (Figure 2.1). A wide variety of higher value-added products are often more advantageous for countries that have comparative advantages in a wide range of raw materials. Therefore, having a robust and diverse primary sector is crucial for developing a diverse economy that generates high-quality jobs, as instead of pushing a country back.

However, a robust primary sector is not always the result of geologically abundant resources. The exports of natural resources from Africa are less diverse than those from other continents. Although raw materials make up a large portion of African exports, the variety of these materials in which Africa has a comparative advantage is constrained when compared to other areas (Figure 2). Only 13 African nations export more goods using RCA than the average country worldwide. With RCA, South Africa leads the way in 46 commodities products, followed by Tanzania (34) and Morocco (36).

The correct circumstances are required for the natural resource sectors to generate structural transformation. Stronger natural resource sectors are hindered by a large portion of what is preventing structural transformation into manufacturing. While the geological allocation of resources like land, minerals, and hydrocarbon deposits is decided by nature, the economic abundance of resources is mostly influenced by the challenges faced by both investors and farmers during the exploration and exploitation process.

The section before has demonstrated the connection between good governance, as determined by the Mo Ibrahim index, and elementary school graduation and leads to optimistic structural transformation. The same relationship holds for performance of the hard resource and soft resource sectors. The correlation between a nation's gross per capita production of hard and soft resources and the Mo Ibrahim index is depicted in Figure 3. In the same way, public services such as land management, infrastructure, and a reasonable amount of property rights are as significant for production of natural-resource as for other different economic sectors.

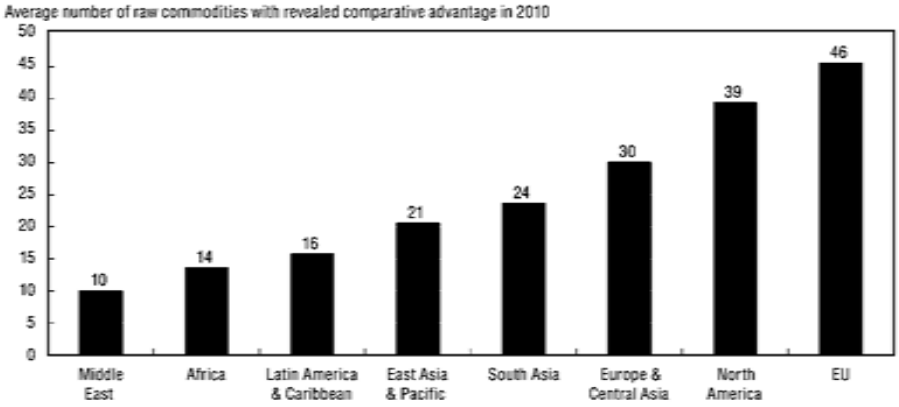
Figure 1: Relative comparative advantage (RCA) in unprocessed commodities and manufactured products: Africa



Note: To exclude reverse causality effects data for raw products are from 2005, data for manufactured products from 2010. Selected countries are highlighted for illustratory purposes: Angola (AGO), Botswana (BWA), Cameroon (CMR), Egypt (EGY), Ethiopia (ETH), Kenya (KEN), Morocco (MAR), Mozambique (MOZ), Nigeria (NGA), Rwanda (RWA), Tanzania (TZA), Tunisia (TUN), South Africa (ZAF), Zimbabwe (ZWE).

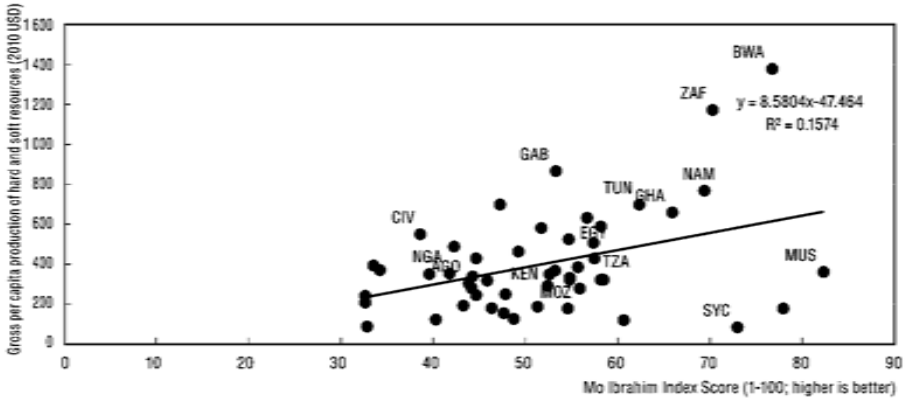
Source: Calculations based on UN (2013), UN ComTrade, (database), via wits.worldbank.org/wits

Figure 2: Africa's Natural Resource Exports are Less Diversified than those of other Regions



Source: Calculations based on UN (2013), UN ComTrade, (database), via wits.worldbank.org/wits

Figure 3: Agricultural and Mining Commodities Need a Good Business Environment to Thrive



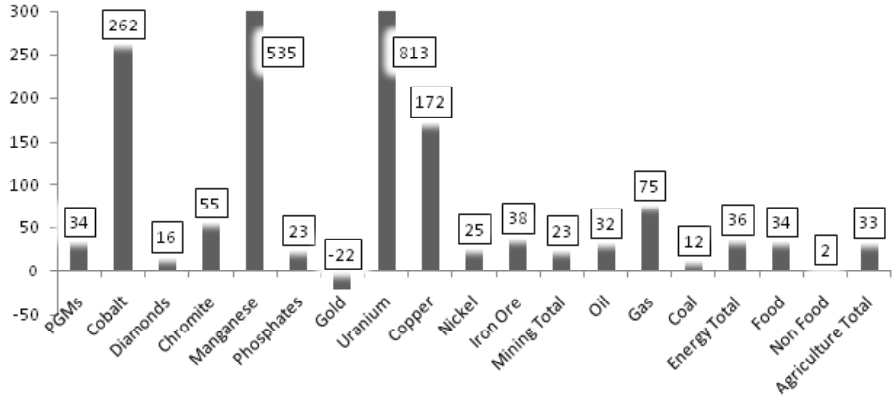
Note: Selected countries are highlighted for illustratory purposes: Angola (AGO), Botswana (BWA), Cote d'Ivoire (CIV), Egypt (EGY), Gabon (GAB), Ghana (GHA), Kenya (KEN), Mauritius (MUS), Mozambique (MOZ), Namibia (NAM), Nigeria (NGA), Seychelles (SYC), Tanzania (TZA), Tunisia (TUN), South Africa (ZAF).

Source: Calculations based on data from Mo Ibrahim Foundation, 2012 Ibrahim Index of African Governance: Data Report, www.moibrahimfoundation.org/downloads/2012-IIAG-data-report.pdf

Additionally, in order for agriculture and extractive sectors to fully realise their structural transformation potential, certain conditions must be satisfied.The availability of the necessary skills, the infrastructure for transportation and energy, sector-specific legislationand land management stand out. The lack of research and skill development that may have increased productivity as it has in nations that have undergone "green revolutions" has been one of the main barriers to the revolution of agriculture in Africa.The extractive industries are the same. African countries miss out on the possibilities to develop new capacities afforded by these industries since the native skill base is poorly fitted to the sectors' requirements, despite the fact that international investors can import competent employees from overseas.Infrastructure-wise, mining frequently requires huge amounts of electricity that significantly exceed what is offered and is required by other sectors. Agriculture also requires more effective transportation facilities from rural to urban areas.

Since natural resource production requires a lot of land, effective land management is essential for success and one of the main barriers to this industry in Africa. Finally, it is clear that sector-specific regulations, such as those governing ownership, concessions and licenses for exploration and exploitation, and taxes on certain resources, are crucial.A rise in global demand encouraged an increase in the output of natural resources. According to Table 1, there is significant increase in all the resource category in Africa during the period between 2000 and 2010.True production of soft and energy resources increased by roughly a third, while mining output increased by approximately a quarter. However, there were considerable differences between the various metals and hydrocarbons (Figure 4).

Figure 4: % Growth in Natural Resource Production in Africa in 2000-2010



Source: Data on mining production provided for this report, FAO (2012), FAOSTAT, (database), faostat.fao.org, (data on soft resources), EIA (2012), "International Energy Statistics", World Bank (2013b), World Development Indicators.

Table 1: Africa's Natural Resource Production 2000, 2010 and Future Potential

Natural Resources	2000			2010			Comparison		
	Africa's share of global production in %	Value of Africa's Production (USD million)	Number of countries 2000	Africa's share of global production in %	Value of Africa's Production (USD million)	Number of countries 2010	Real output growth 2000-2010 in %	Difference in countries	Future Potential Output Increases by 2017 (in %)
PGMs	55	10,588	2	74	14,191	4	34	2	33%
Cobalt	43	490	6	62	1,775	8	262	2	87%
Diamonds	45	4,265	16	54	4,967	17	16	1	14%
Chromite	51	1,578	4	42	2,442	4	55	0	
Manganese	32	493	4	30	3,131	8	535	4	
Phosphates	28	4,607	10	26	5,662	10	23	0	
Gold	24	25,568	36	19	19,947	39	-22	3	53%
Uranium	17	111	3	19	1,013	4	813	1	
Copper	3	2,871	11	8	7,806	12	172	1	86%
Nickel	5	1,225	5	5	1,535	5	25	0	
Iron Ore	5	4,637	10	4	6,404	9	38	-1	466%
Mining Total	14	59,592	44	12	73,286	44	23	0	
Oil	10	216,001	18	11	284,875	19	32	1	
Gas	5	39,036	14	7	68,423	18	75	4	
Coal	6	21,266	15	4	23,759	13	12	-2	
Energy Total	10	276,303		11	377,056		36		
Food	8	195,082	54	9	260,910	54	34	0	
Non-Food	8	5,618	54	6	5,729	54	2	0	
Agriculture Total	8	200,675	54	9	266,605	54	33	0	

Source: Calculations based on BGR (Bundesanstalt für Geowissenschaften und Rohstoffe) (n.d.), Data on mining production provided for this report, FAO (2012), FAOSTAT, (database), faostat.fao.org, (data on soft resources), EIA (2012), "International Energy Statistics", www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm (data on energy), World Bank (2013b), World Development Indicators, data.worldbank.org/data-catalog/world-development-indicators (data on GDP and population).

Note: Agriculture total does not include timber.

Conclusion

The developed nations dominate trade in agricultural products in Africa. African trade that meets the needs of the average person, and resources should be mobilised from local, regional to global markets.Due to increase in population growth, in Africa, there is requirement to increase the usage of Science and Technology(S&T) applications and agricultural land. To achieve the goal of structural transformation in Africa, the African agricultural system will be helped by science and technology approach such as better seeds, dwarf plantations, crop rotation patterns,

demands for less water crop, minimal periods of crop production, and priority for the use of natural insecticides.Last but not least, the government should implement initiatives like the "food for work" and "cash for work" programmes in the agricultural and associated industries. The linked industries include those that build roads, build dams, drill wells, construct minor channels from rivers for irrigation, install power projects, etc. The agriculture sector will be given the appropriate direction through the relationship between the governments, farmers, markets, and consumers, which will meet the needs of the African society and encourage today's investments and true prosperity tomorrow.

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