Geographic Potentials, Production Integration and Regional Integration in West Africa

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1.1 Introduction

This paper discusses the geographic characteristics of West Africa and diverse productive activities in each of the geographic location and its implications for regional integration. It presents vegetation, mineral endowments and variants of economic activities across the region. The paper identifies products and activities of common interests to clusters of countries and potential for region production clusterization and trade in the West Africa.

2.1 West Africa: The Geographic Expression

West Africa is not a precise geographical expression. In more ways than one, it provides a representative cross-section of the whole tropical Africa[1]. West Africa is often referred to as a group of countries that are located in the north-western region of African continent. Occasionally included are other countries around the region along the sixteen countries that are officially recognised in the grouping. Fifteen of them make up the organisation called the Economic Community of West African States (ECOWAS), plus Mauritania which withdrew from ECOWAS in December 2000 to make up the sixteen.

To the Northern Border is the Sahara desert, a sparsely populated region with extreme heat, and minimal food and water. The Sahara desert, a somewhat difficult terrain for living, creates a natural divide between two regions. To the west and south of West Africa sits the ocean, which equally serves as a natural boundary. The south-eastern corner is bounded by Cameroonian mountains and highlands that lie along the border between Cameroon and Nigeria.

The geographical location, West Africa, is endowed with vast and variety of natural and abundant human resources. Also, the antiquity of history reveals that the geographical expression is not without its own distinctive features. It is a home to several raw technologies of early ages and unique innovations now up-scaled in the most advanced regions of the world and, in particular, the home of some of the early Negro civilization. These are perhaps the valid bases for the early European scrambling for colonies in the region.

3.0 The Geography and Resource Endowment

3.1 The Vegetation

West Africa and its features is the architecture of continuous dialogue between geography and history – from the very beginning of the agrarian shape to the introduction of modern industry[2]. The natural endowments, vegetation and human resources combined to determine the course of economic history and potentials of West Africa. Starting from the surface, varied vegetative coverage exists across the stretch of the region, a suggestion of varied potentials for agriculture. From Dakar, stretching to the Lake Chad, a distance of about two thousand miles, there extends a belt of undulating grassland studded with trees. This area,

[1] Adebayo Adedeji, 1970.
[2] Hopkins, 1973, 1990

known as the Western Sudan, forms a corridor measuring about six hundred miles in term of width. To the North lies the Sahara Desert, spanning about one thousand miles towards the North Africa. To the south and almost into the sea, lies a belt of tropical forests running from west to the east, covering no more than two hundred miles from the north to the south, and truncated in the middle by the savannah [3].

Winter is a rare weather event in West Africa. Therefore, low temperatures are no obstacle to plant growth, while rainfall is the main determinant of the character and extent of the vegetation. Rainfall pattern determines the form of agricultural practices given the almost absolute reliance on rain-fed system. Barring the emerging uncertainty due to climatic events, the amount of rainfall decreases from the south where it might exceed 100 inches a year, to the north, where it might be non-existent in some years. This weather variation explains the large contrast between humid forest zone and dry desert up the Sahel savannah zone. It also explains the parallel bands of vegetation and pattern of agrarian culture from west to east.

According to Hopkins (1973) the main vegetative zones has been present since about 3000 B.C. and are the product of a drying out process which started at about ten or twelve thousand years ago. Before then, and the beginning of approximately seventy thousand years ago, there was an era of reduced temperature and high rainfall that encouraged Mediterranean vegetation and human settlements in parts of West Africa which are now deserts.

3.1.1 Implications for Pattern of Production Activity

In general, West Africans have won their living from land. Agriculture is the main line of activity as in most pre-industrial societies. The agricultural sector accounts for nearly 30 per cent of the regions gross domestic product (GDP), and provides employment for about 70 per cent of active population. In addition, agriculture exports remain the main source of foreign exchange for most countries in the sub-region[4]. On account of weather driven pattern of vegetation types of crops planted varies from rain forest to the savannah. However, foodstuffs are the main items of comparative potential in the region. It has over the year dominated the agricultural production basket, and still account for the largest share of the value of goods and services produced yearly by West African countries.

In the Sahelian areas livestock farming remains critical and still promise the greatest potential for rural livelihood. Pattern of agricultural and livestock production to a large extent have significant implications for the pattern of manufacturing and agro-allied industries in the sub-region and the potential for full transition from agrarian bases to modern manufacturing[5]. West Africa is also well known in the production of many significant cash crops including cocoa, cotton, palm oil and groundnut. Regional and country specific trends and potentials shall be discussed in the latter section of this chapter.

3.2 Natural Resource Endowment

West Africa is endowed with abundance of valuable mineral resources. Significance of mining as a proportion of the gross domestic product (GDP) points the importance of mineral endowment in the growth, development and economic potential of West Africa. Mining is the

[3] Roughly between Accra and Port Novo
[4] UNECA_SRO, 2011.
[5] See Arthur Lewis, 1936

most significant component of the secondary sector of the regional economy. Over the period 2005 to 2010 the secondary sector represents an average of about 34.9 per cent of the GDP of which mineral extraction is 25.7 per cent, and the mark-up was contributed by the combination of manufacturing, construction and utilities.

West Africa is a uniquely resourceful region and great potential to emerge as leaders in the global economies if these resources are well harmonised and optimally managed. According to Cox-George (1968), over 60 per cent of the world production of gold derives from Africa the bulk of which outside South Africa originates from West Africa. 96 per cent of the world production of diamonds comes from Africa bulk of which outside the Congo derives from West Africa. Over 45 per cent of world's output of manganese is produced in Africa, and 34 per cent of it comes from the region. In addition, it produces over 27 per cent of African's output of iron ore. It's been discovered, since the 1960s, that that there unlimited reserves of iron ore running through the Birrimian system extending from Guinea, Sierra Leone, Liberia, Ivory Coast, to Southern Ghana. West Africa also produces the totality of bauxite which enters the world market yet it is only a small proportion of West African bauxite that is really traded. The region is also believed to have considerable deposit of discovered and other minerals yet to be discovered.

4.1 West Africa: The Economy

What is known as the West African economy and its characteristics today has its substratum in the traditional sectors that has been known for ages[6]. As in the past, agriculture remains the matrix in which other indigenous activity is set. Agriculture remains the main source of national income, employment, and trade in West Africa[7]. In addition, agricultural surplus often made finance of development of other sectors possible. Nining is also of traditional significance and it currently makes remarkable contributions to the regional GDP. In countries where large scale mining operations are the major economic activities, they just tend to revolutionize what has been known for centuries. The structure of the West African economies and trade still follows the traditional trend.

In addition to the long history of agriculture and animal husbandry, records of indigenous mining and manufacturing in the region dates back to between tenth BC and the first century AD[8]. Tertiary sector is dominated by trade, while transport and communication also remain significant components of GDP. Table 1 shows West Africa's GDP by its components. It shows that in 2008 agriculture dominated the national domestic activity followed closely by mining. Agriculture accounts for 25 per cent of the GDP, while mining is 21.5 per cent of the same. The third major component of domestic activity is trade sector (see table 1). The three are the main drivers of economic potentials of West Africa.

[6] See Cox-George, 1968 ; Mabogunje, 1972; Hopkins, 1973; and Zeleza, 1997.
[7] Hill 1962; UNECA-SRO, 2010
[8] The beginning of iron smelting in several centres of West Africa

Table 1

Gross Domestic Product by Sector in West Africa in 2008 (in per cent)

Countries	Primary Sector			Secondary Sector			Tertiary Sector			
	Agric	Live Stock	Fish Ries	Mining	Manu	Others [9]	Trade	Tran/ Comm	Pub Adm	Other Serv
Benin	24.2	6.8	4.3	0.3	8.8	6.1	24.5	12.1	10.8	5.1
Burkina Faso	15.6	11.2	1.9	1.0	12.3	9.0	20.0	10.2	14.9	4.7
Cape Verde	7.6	1.7	2.6	0.2	9.0	6.5	18.8	19.5	18.6	19.3
Cote d'Iviore	22.6	1.7	1.4	3.6	16.4	4.4	12.9	6.0	17.6	13.1
Gambia	20.7	5.0	2.5	0.7	4.0	5.6	25.7	16.9	12.0	7.2
Ghana	29.7	2.2	9.1	4.9	9.5	12.7	9.9	4.7	6.9	13.7
Guinea	16.3	4.4	2.9	15.5	3.6	13.7	26.2	6.2	7.6	4.3
Guinea Bissau	16.3	4.6	12.0	0.0	8.5	4.6	23.2	4.3	0.4	8.2
Liberia	51.2	0.6	17.6	0.0	5.7	4.0	5.0	6.8	4.8	4.2
Mali	23.8	9.3	5.5	7.1	10.7	6.8	14.0	6.2	6.7	9.8
Niger	32.6	13.3	5.0	5.1	5.6	4.1	11.3	5.8	8.8	7.5
Nigeria	26.6	2.5	1.4	32.4	5.2	0.1	15.8	4.9	10.2	1.4
Senegal	9.5	5.7	2.5	1.0	13.5	10.0	20.7	13.3	18.3	7.8
Sierra Leone	37.0	1.8	3.4	7.3	2.5	3.1	15.3	7.6	10.7	11.2
Togo	30.2	6.7	4.6	2.2	7.8	8.1	11.5	6.3	14.3	9.0
ECOWAS Average	**25.0**	**3.5**	**2.5**	**21.5**	**7.4**	**3.3**	**15.8**	**6.0**	**11.0**	**4.7**
Mauritania [10]	19.2			34.6			44.1			

Sources:UNECA-SRO, 2010; and http://www.gfmag.com/gdp-data-country-reports

Contribution of agriculture to the domestic economy is more than half of the GDP in Liberia. It contributes more than 30 per cent of GDP in Togo, Niger, Sierra Leone and Ghana. The sector is also about 27 per cent of GDP in Nigeria, 24 per cent in Mali and 21 per cent in Cote d'Iviore. Only in Cape Verde and Senegal is agricultural sector's contributions to the domestic activities are less than 10 per cent. The rest of the region posted figures in excess of 10 per cent in 2008.

Mining sector which is the most important component of the secondary sector is equally a very significant driver of domestic activities with the largest contribution coming from Nigeria, at over 32 per cent of the national domestic activities. The sector also makes remarkable contribution to GDP in Guinea. In 2008, mining contributed close to 16 per cent of national activity of Guinea. It contributes about 5 per cent in Niger and Ghana, and about 7 per cent in Mali and Sierra Leone. Contribution of the manufacturing sector to GDP is

[9] Energy and others

[10] 2011 estimate agric combines all of primary sector; mining combines total for industry and trade for all of secondary sector represented by services.

highest in Cote d'Ivoire at 16.4 per cent followed by 13.5 per cent in Senegal; and 12.3 per cent and 10.7 per cent in Burkina Faso and Mali, respectively. Manufacturing also ranks high in the GDP of Ghana, Benin, Nigeria and Togo.

In the tertiary sector, trade is of great significance and an important driver of the subsector in West Africa. Of all countries in the region, it is only in Liberian economy that trade contributed less than 10 per cent to GDP in 2008. Trade is in excess of 25 per cent of GDP in Gambia and Guinea over 20 per cent in Burkina Faso, Guinea Bissau, Benin and Senegal. In Nigeria, trade contributed more than 15 per cent to GDP in 2008. Transport and communication sectors, public administration and livestock sectors are also of significance in the regional economic activities.

The next sections discuss historical significance of each sector and component activities, and the potentials for economic prosperity and the relevance for regional integration in West Africa.

5.0 Major Sectors, Potential Contributions to Growth and Regional Integration in West Africa.

The major sectors considered in the sections following are agriculture including livestock and fisheries; industry comprising mainly of mining and manufacturing, and services of which trade, transport and communication are of major consideration.

5.1 Agriculture in West Africa

Agricultural sector plays a crucial role in the development process across West African economies. The development of agriculture was not a sudden event in the region. Agriculture is of pre-historic origin, and evidence exists in particular that there was an indigenous West African Neolithic agriculture. Agricultural sector is the most important determinant of trends and direction of the overall national economies, food security, rural livelihood and trade balance. Agriculture, including livestock and fisheries constitutes over 30 per cent of regional GDP, a little less than the contribution of the service sector. On another note, the service sector is dominated by public service; therefore, agriculture may qualify as the largest sector in the region and, in fact, the cornerstone for developing export capacities of the region, even in countries with high energy and mineral deposits such as Nigeria.

The sector is the main source of employment generation and livelihood guarantee. It provides income earning opportunities for more than 60 per cent of the population. The sector provides 80 per cent of the regional food needs. In addition, it is the most important source of domestic financing of development, debt servicing and finance of imports[11]. Agricultural practices and production are dominated by small-holders' production, small family-owned farms in particular. Contrary to the popular belief, however, agriculture in West Africa is somewhat diversified to the extent that it is permitted by the diversity of ecological zones. Based on ecological variation, specific farms practices and agricultural outputs cut across some countries. In the last five centuries, foodstuffs have majorly been cereals, grains in particular, such as millet, maize and rice mainly grown in the savannah; roots, mainly yam, cocoyam, cassava and plantain grown in association with legumes, bulbs and fruits are dominant

[11] Blein et al. 2008

produce of the rain forest zone. Nevertheless, considerable overlap exists across the region suggesting the existence of areas where diverse mix of outputs are possible.

Agricultural production experienced strong growth trend over the last three decades. Despite the indications that the global agriculture is in crisis, cash crops including cocoa, cotton, coffee, palm produce, cashew, groundnut, among others entering the international market from the region have seen their volumes doubled within the last three decades or so. Cash crop production rose from about 19 million tonnes in 1980 to 38 million tonnes in 2006. Cocoa production, with Cote d'Ivoire as the world leading producer, grew from 880,000 tonnes in 1980 to 2.7 million tonnes in 2006; and cotton from 470,000 tonnes in 1960 to a revolutionary trend in 2006, and qualifying the region as the leading cotton producer in the world. Non traded food crops experienced even higher trend than the latter. It grew from about 59 million tonnes to 212 million tonnes in 2006. In particular, production of cereals rose from 16 million to 124 million tonnes between 1980 and 2006. Growth rates of roots and tubers are about five folds in three decades, and to be precise from 27 million tonnes in 1980 and 124 million in 2006, a trend far higher than the global trend[12].

The same catalytic trend applies to fruit and vegetables, including banana, pineapples, produced for export. On the other hand, production of coffee and sugarcane, equally important items of export, slowed down over the three decades. In the case of the regional market gardening sub-sector of agriculture, tomato almost triple from 510,000 tonnes in 1980, onion about doubled from 684,000 between 1980 and 2006. Livestock production experienced much lower trend, in terms of heads of livestock, meat and dairy. The sector is struggling to fully recover from very significant loss to droughts in the early 1970s and 1980s.

The importance of agriculture as a source of foreign exchange earnings is growing in West Africa. Agricultural exports represent about US$6 billion or 16.3 per cent of the regional total exports of products and services in the period between 2002-2004[13]. In return, the region imports food worth US$5.4 billion representing generation of trade surplus[14]. Although, the global food emergency of 2007-2009 may have changed the equation as many countries moved to restrict exportation of food in particular. In term of export sources, the three non-LDCs in the region, Cote d'Ivoire, Ghana, and Nigeria account for close to 80 per cent of the regional agricultural exports mainly from Cocoa, coffee, Cotton, banana, pineapples and fishery products. Cote d'Ivoire alone accounts for over half of the regional agricultural exports

In the last two decades before the global food crisis, food export grew by about 95 per cent while total export grew by much less at 64 per cent. This is a significant improvement in the overall regional food trade balance which rose form a deficit of US$267 million to a surplus of US$522 million over the last two decades.

[12] Blein et al. 2008 cautioned about absolute reliability of the data since no completely accurate data to draw on exists in West Africa.

[13] Blein, 2008 and ECOWAS, 2010.

[14] The account excluded Nigeria whose import structure is driven largely by inflow of petrol-dollar

5.2 Agriculture, Regional Prosperity and Integration

5.2.1 Agriculture: Regional Potentials

More than anywhere else, West Africa has the most diversified ecological systems. From the coastal zone with nearly perennial rain to the dried and arid zone of Sahel, all with strong and diverse potentials to grow variety of crops ranging from grains to roots and tubers, and perennial cash crops in coastal zone to the North of the Sahel with where cereals and oil seeds such as groundnuts are common. The West African region has immense potential yet unexploited. The region has favourable condition for large variety of crop production, livestock farming, and flora as well as the abundance of natural resources.

Although, the region witnessed significant improvement in the regional agricultural production and trade in the last three decades or more much remains to be achieved. Goods that compete with local production – cereals, meats and diary – remain high on the import list of countries in the region. Cereals, meat and dairy in particular, represent about half of the regional imports and have doubled in value over the last decades. In terms of volume, these strategic items have grown even more, even in the face of abundance of cultivable lands yet unutilised.

According to Table 2, only 55 million of 236 million hectares translating to about 23.4 per cent of cultivable lands available in West Africa are under cultivation as at 2005, a situation which has not changed much till date. Agricultural land utilization is highest in Guinea, Benin, Togo and Cape Verde, countries where more than two thirds of cultivable land is currently being utilized. Land utilization is lowest in Mali and Mauritania. Overall, far less than 75 per cent of cultivable land is currently exploited in West Africa. Unfarmed cultivable land is as high as 80 per cent of cultivable land in Sahelian zone and over 64 per cent of cultivable land available in the Humid zone of the South.

Table 2 below shows cultivable land availability and utilization in West Africa.

Table 2
Land Availability in Wes Africa, 2005 (in million Hectares)

Country	Cultivable Land	Cultivated Land	Land Farmed in Per cent
Benin	2.71	1.9	70
Burkina Faso	0.95	0.35	36.7
Cape Verde	0.067	0.042	62.6
Cote d'Iviore	20.3	2.95	14.4
Gambia	0.38	0.18	49.
Ghana	13.9	3.6	26
Guinea	1.22	0.88	72.6
Guinea Bissau	1.42	0.34	24
Liberia	2.59	0.38	14.6
Mali	33.3	3.34	10
Mauritania	39.7	-	11.6
Niger	15.5	4.37	28
Nigeria	70.0	28.3	40
Senegal	8.0	2.31	29
Sierra Leone	2.74	0.48	17.6
Togo	3.63	2.51	69
Regional Average	**236.0**	**55.4**	**23.4**

Sources: modification of Blein et al 2008

The past two decades or so, have also seen the Sudanian area also becoming a "helpful agricultural region" of West Africa due to the reduction of onchocerciasis. It is the area where the majority of rural migrants go when seeking new farming and pasture lands. The relative availability of cultivable land and pasture explain the strong appeal of the area, though remains ecologically fragile.

With such an abundance of land and the teeming population available West Africa can fill the food import gaps. The simple approach will be to increase utilisation rate of vast uncultivated land available and engage science, technology and innovation to improve the productivity of land and the efficiency of labour working on the farms, as done in other regions. In addition, the region has huge potentials for fishery production. Fishery has become an economic cornerstone for countries like Senegal, mainly in the form of maritime sea fishing. In fact, foreign trawlers are currently benefitting and to a large extent over-exploiting the precious sea resources without any clear agreement with the national authorities.

5.2.2 Agriculture: Potential Instrument for Regional Integration in West Africa

Agriculture possesses the most significant potential to foster regional integration in West Africa, judging from the diverse ecological endowments and crop varieties that cut across many countries in the region. The ECOWAS Head of Governments adopted a common framework for agriculture called ECOWAP to foster this ambition in 2005. ECOWAP

defines the overall framework for integrating and harmonizing intervention in regional agriculture. However, the global food crisis of 2007 – 09 shows that the regional policy framework still remains a document yet unutilized.

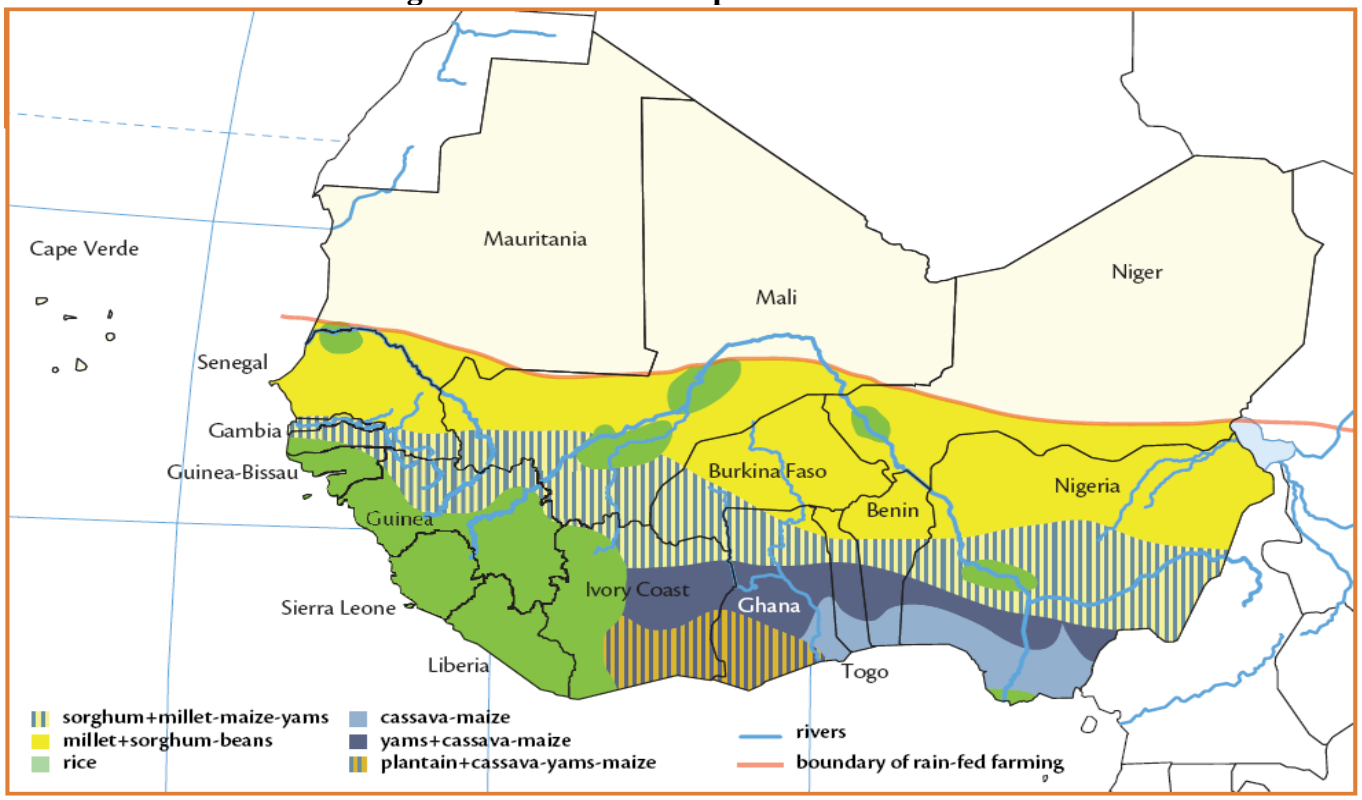
West Africa qualifies as the best arena to apply agricultural potentials as the instrument of integration. It is the right geographic space to experiment with a new regional development strategy, given the strong complementarities between areas of production, consumption and ecological space. Many ecological and natural resources such as rivers, biodiversity reserves and underground aquifers run through several West African countries and serve a basis for resource management cooperation for production and extra-regional trade. There are quite a number of over-laps in agricultural productions amongst West African countries which can serve as basis for common strategy in production and marketing, including pricing and procurement of specific crops; a process which may lead to economic of scale, greater efficiency and sector-specific integration, and in effect a veritable seed to regional integration.

Borrowing from the European Union (EU) after two wars or three, if we consider the cold war, the countries of Western Europe comprising of France, Belgium, Netherlands, Italy Luxembourg and West Germany experimented with integration of coal and steel sectors which were common to all as a seed towards expansive common market, now operating in all commodities among now 27-member union.

Back to West Africa, Figure 1 and 2 give clear pictures of areas where sectorial integration can be played around with in manner experimented in the EU, now the best model of integration around the world today.

Figure 1

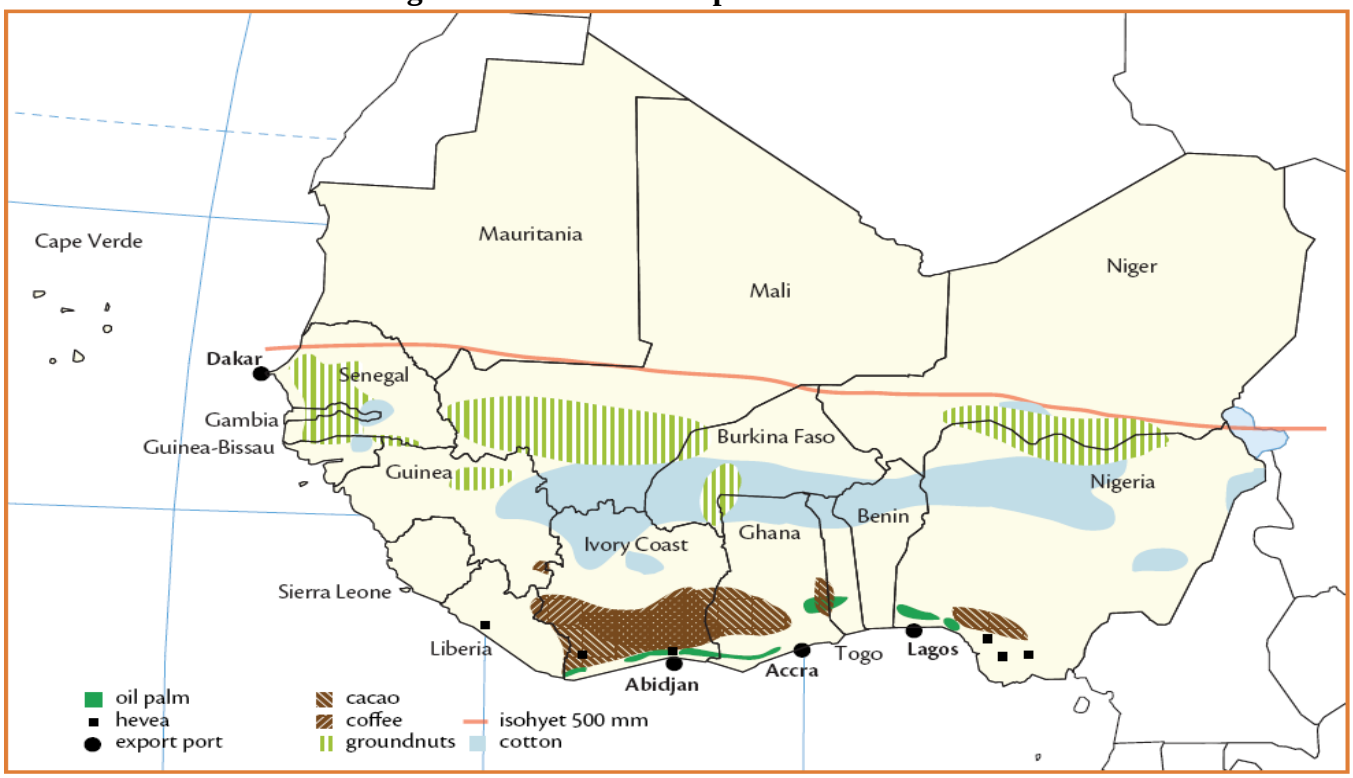
Coverage Areas for Food Crops Production



Source: Blein et al 2008

Figure 2

Coverage Areas for Cash Crops Production



Source: Blein et al, 2008.

Figure 1 shows the areas of food crop production where sectorial integration experiment is possible. Almost all the food crops produced in the West African region are also commonly consumed in the region. The common food crops that cut across countries in the region are yam, cassava, maize, millet, sorghum, rice, beans and plantain. In addition, rivers flow across countries to make common trade in sea resources possible. Products specific analysis shows that integration is possible in production of yam and cassava in the following countries: Nigeria, Ivory Coast, Ghana, Togo and Benin; Sorghum and Millet for all countries except Sierra Leone, Liberia, Cape Verde and bulk of Guinea Bissau; Plantain in the case of Ivory Coast and Ghana, with South West Nigeria as a heavy consumer of plantain. Rice production also cuts across Ivory Coast, Nigeria, Sierra Leone, Liberia, Guinea Bissau, part of Mali, Niger and Senegal.

On cash crops integration, Figure 2 shows areas where cooperation towards production and trade is possible. Oil palm production is specific to Nigeria, Togo, Ghana and Ivory Coast; Cocoa is more specific to Ivory Coast, and then Ghana, Nigeria, Togo and on a low scale Liberia and Guinea. Coffee is planted in Ivory Coast with possibility in Nigeria but consumed throughout the region. In addition, groundnut production is common to Niger, Nigeria, Burkina Faso, Mali, Senegal, Gambia and Guinea Bissau. Cotton is also one of the most important cash crop which cuts across many countries in West Africa, and of significant offensive and defensive interests in regional and global trade negotiations. Cotton is produced in Nigeria, Benin, Ghana, Burkina Faso, Ivory Coast, Mali, Guinea and parts of Senegal, Gambia and Guinea Bissau.

Rivers cut across all countries making regional harmonization of fishery and water resources trade a possibility. Also, export ports exist in sensitive corners of the region, Dakar in Senegal, Accra in Ghana, Abidjan in Ivory Coast and Lagos in Nigeria, to facilitate exports from the region.

5.3 Industry, Regional Potentials and Integration

West Africa has a long history of industrial activity. The historical literature on the region cites traditional mastery of numerous examples of mining, artisanal and medium scale manufacturing and agro-industrial processing including milling, edible oil extraction and refining, brewing, tanning, soap-making, metallurgy, furniture construction, cotton tanning and weaving. In addition, the region has a long tradition in production or assembly of such goods as matches, pots and pans, clothing, agricultural machinery, and personal vehicles. In countries such as Nigeria, Cote d'Ivoire, Senegal and Ghana, these activities predate the era of import-substituting industrialization strategy adopted in the 1960s and 1970s and in some instance, the colonial era[15]. This section discusses trend in industrial activities in West Africa, mining and manufacturing in particular.

5.3.1 Mining and Metallurgy in West Africa

The importance of mining and metallurgy in West Africa cannot be over-emphasized. The past decades have witnessed significant expansion in West African mineral exploration. In some of the economies, Nigeria in particular, governments has focussed largely on mineral sector to drive economic growth. This section discusses the historical trend, technologies and potentials of some of the most essential minerals and metals in West Africa.

Iron Production

Controversy still exists as to what the origin of iron and iron production in West Africa is. Why some people argued strongly that iron production is of African origin[16], some have maintained that iron diffused into Africa from Western Asia into Egypt and the rest of Africa before the nineteenth century[17]. From what is known later, iron smelting began from several centres in West Africa, Central and East Africa. Knowledge of iron works was known in these centres between the tenth century B.C and the first century AD. Originating from Oyo, Nigeria smelters developed technology that made their works purer and more preferred long before the European incursion changed the terrain. The West African technology significantly purged impurities in form of phosphorus and optimally manage the level of carbon present making it better than European technology at that time.

Added to its revealed origin, Oyo in Nigeria, the same technology was efficiently and profitable adopted in Southern and Northern Ghana[18]. Also the Nupe tribe in Nigeria anyone could smelt iron and in fact, a significant activity known with the tribe, but only members of certain tribes were allowed to become blacksmith. In Northern Ghana, most villages had blacksmith quarters and therefore are specialists, with the rest of the community knowing nothing about the work[19]. For centuries, most of the irons used in the region were locally

[15] Cobham and Robson, 1993
[16] Diop, 1968; Keteku, 1975; and Anda, 1983
[17] Wickins, 1984
[18] Pole, 1982
[19] Pole, 1982

produced. By the beginning of the nineteenth century, West Africa and Africa in general, still satisfied substantial proportion of its iron need from local production.

As late as 1904 there were about 1500 iron production furnaces that produced about 540 tons per year in Yatenga, northernmost provinces of Mossi states, around the Volta River in the independent West Africa kingdom that existed between the 15th and the early 19th century. The area currently lies between Burkina Faso and Ghana. The output of iron from this region when it was active was more than the iron and steel imported per year in the region in the late 19th century[20]. By the end of the century, imports had become dominant in some part of the region. Some reasons were adduced for the substitution of local steel production for imports. The main reason is that West African iron industry could not sustain the effect of European competition; although, unlike domestically produced much of European iron had high sulphur and the carbon content largely inappropriate compared to the local[21].

Today, some countries, including Nigeria, have tried to revive the iron and steel industry but the idea had been killed mainly by borrowed technology, mismanagement and the political economy of the global iron and steel market. Immense opportunities still exist in global iron and steel market which West Africa can take advantage of. The new quest for industrialization in many least developed and developing countries open veritable market for iron and steel from the region. In addition to Nigeria; Liberia, Mauritania, Ivory Coast have endowments to develop viable and competitive iron and steel industry

Just like the conventional wisdom of the European, iron and steel sector in West Africa can be revolutionized. The approach may be to modernise through science, technology and innovation the West African owned technology which delivered quality iron that surpassed the European quality in the early days, and also attempt to integrate iron production and market in West Africa.

Copper, Tin and Gold Production

The copper industry in West Africa is also of ancient history. Copper was being mined and smelted as far back as 2000 BC in Agadez, Niger; by the fifth century BC at Ajoujt, Mauritania. Copper is a more versatile metal than iron, so smiths could work it into almost any shape or form for which West Africa is very known for. Adequate quantity of copper was found in parts of Niger and Mauritania. Alloyed coppers, most especially bronze and tin and brass, were severally applied in copper works. Evidence of bronze production in West Africa came from many sources, the most well-known being Igbo Ukwu in Nigeria. West African brass is also found in Ife, Benin and Tada among other areas in Nigeria.

In the case of gold, West Africa was the main source to Western Europe during the European middle ages. Gold deposits of commercial value were found in Lobi Bambuku and many other parts of West Africa. Bambuku gold occurred mainly in alluvial and shallow but scattered ores deposits. It is virtually impossible to know how much gold was produced in West Africa but gold production increased in the late nineteenth and twentieth century[22].

[20] Curtyin, 1975
[21] Flint, 1974; Goucher, 1981
[22] Peribam, 1988

5.3.2 Salt Production

West African salt from sea was a major source of regional salt consumption. Salt was extracted from the lagoon, in quite large a quantity during dry seasons before the beginning of rains. Along the Ghana coast large amount of salt were produced at Ada, at the mouth of the Volta River. It was recorded that each family in Ada area had one or two store houses for salt, each containing up to 50 Danish tons[23]. Ada salt dominanted the salt market in parts of Ghana. In addition, salt was extracted from both natural and artificial pan along the Senegambian coast. Estimate of Senegambian salt production was put at about 1000 to 2000 tons per year[24]. Salt was equally found in Sahelian site with annual productivity per worker in salt production seemingly more. The salt from Sahel was widely traded throughout West Africa with encouragement from governments of the then Borno and Sokoto States of Nigeria from which the two states derived a lot of revenue by taxing salt trade[25]. According to Zeleza (1997), salt helps facilitate the process of commercial integration in West Africa. In fact, West African salt producers were making different salts to satisfy varied tastes and diversified demand of the market. The potential remains and the prospect to satisfy West African market with West African salt remains.

5.3.3 Others

Nigeria has a very large deposit of hydrocarbon, making oil production to take over from agriculture as the mainstay of the Nigerian economy. Oil production in Nigeria has benefited the region in several ways. With emergence of oil in Ghana and Niger of recent, the region may be on a new growth part. It has also been proven that gas deposit in Nigeria is far more than oil and Nigeria is capable of being a world leading gas exporter in near future.

The mines and quarries sectors in Niger, Benin, Côte d'Ivoire, Burkina Faso and Mali also have a considerable resource and development potential. Mineral exports still constitute significant proportion of exports from Sahelian Mali and Niger today. Between 2000 and 2004 gold exports was close to two-third of Mali's total export, while a combination of gold and uranium accounted for close to half of total exports from Niger among other mineral deposits including bauxite, phosphate, diamond, manganese and iron[26].

It is useful for the region to attempt regional harmonization of production along the products and country lines. The common mineral deposits and product may actually form a basis for industrial clusterization of West Africa.

5.4 Manufacturing

An important index of level of national economic development is manufacturing. Manufacturing remains significant component of imports in West Africa making the region a fertile land for development of own-driven manufacturing. Manufacturing constitutes about 50-60 per cent of total imports in most West African countries, while for a few bigger countries, Nigeria and Ivory Coast, it's about 70 per cent of total imports and mostly consumer goods.

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[23] Sutton, 1981
[24] Curtin 1975
[25] Lovejoy, 1986
[26] SWAC/OECD, 2010

The structure of manufacturing production in West Africa is biased towards Food, beverages and tobacco; and textiles and clothing. Ghana, Ivory Coast, Nigeria, Togo and Senegal have had well developed structure for manufacturing for more than four decades yet serious lacuna remains in manufacturing production and trade in West Africa. A study conducted by UNIDO in 2003 towards creating the framework for the 'African Productive Capacity Initiative', identified two important sectors of manufacturing potentials for West Africa: agri-foodstuffs and textiles. These two sectors account for two thirds of manufacturing value addition in several countries. Despite the huge potentials in the two sectors, West Africa still lag behind in posting meaningful competition in the global market.

With the exception of Nigeria, the agri-foodstuffs industry processes just under 20% of national agricultural output. In textile sector, less than 5% of cotton from Mali, Burkina Faso and Benin is currently processed to any real extent, even though there is genuine potential to add significant value to the production value chain which is yet undeveloped due to internal and external factors. In many countries, there are little industrial capacities to process agricultural products (fruit and vegetables) and pastoral products (hides and leather), most of which are therefore treated by traditional, very low-productivity methods. In Guinea Bissau and Côte d'Ivoire for instance, all cashew nuts production is exported/marketed to Indian enterprises which take charge to shell, process and package the nuts.

Although, regional industrial policy is meant to facilitate industrial harmonization and growth, it has failed to move manufacturing sector to the path of prosperity. There is urgent need to negotiate industrial cluster formation in manufacturing or harmonization of process across countries in order to scale up the exploitation of manufacturing potentials in the region. One specific factor that has impaired manufacturing in West Africa is the lack of forward and backward linkages of manufacturing production. Application of the abundant raw materials to effect competitive manufacturing remains lacking. This constitutes impediments to competitive and tradable manufacturing outputs.

5.5 Trade

Like many other sectors of West African economy, trade was also of considerable antiquity. In many parts of West Africa there are clear distinctions between domestic and foreign trade. The two trades were organizationally different. Foreign trade is our main interest in this section. Trade between different countries and regions have been well developed by the beginning of the 19th century and had expanded significantly in the course of the century. Regional trading networks in the 19th century West Africa were complex and involved many staples. The literature is particularly rich on the salt and kola trades[27]. One of the most vibrant trading relations was between the Asante and the Sokoto Caliphate, the trade which were conducted through the cities called Salaga and Kano, each of them with population of between 40,000 and 50,000 by the mid 19th century.

The two ancient cities fulfilled two complementary functions. Salaga served as the bulking point and transit corridor for kola export and the northern imports, while Kano was the wholesale centre for kola distribution in Central Sudan (Lovejoy, 1980). Kola export from Asante was expanded to Sokoto as the then people of the caliphate sought alternative to alcohol[28]. In terms of volume, Sokoto annual kola imports from Asante by overland route

[27] Lovejoy, 1980, 1985
[28] Wilks, 1971

averaged between 70 and 140 metric tons at the beginning g of the 19th century, and grew to as much as 350 metric tons before the end of the century.

According to Zaleza (1997), most studies on the long-distance trade in the 19th century West Africa tended to ignore trade in grains and other food stuffs on assumption that grains and foodstuff belong to trading in the local market. Asante-Sokoto trade was not confined to kola only, Asante in addition export gold, guns, gunpowder and metal ware. Sokoto's export to Asante consisted of animals including horses, asses, donkey, goats among others. Sokoto also exported textiles and leather goods, dried onion leaves, and some North African re-exports, particularly silk.

These opportunities still exist in many areas of West Africa. For instance there are many locations in the region that could not produce enough grains for themselves, and so depended on imports to satisfy their needs. Grain was an important component of the early Trans Tuareg trade with exchange of thousands of metric tonnes annually. In addition, they also traded in textiles, swords, tobacco and kola in exchange for animals, salts and dates. Moors of the Western Sahara also bought grains from the Middle Niger Valley, while Maraka grain market, especially in Bamako grew rapidly from the late 18th century.

Trade was of great importance to States in generating revenue. Toll fees and trade taxes offer the States and important means of raising revenue. These were common in Oyo kingdom, and Senegambian region[29]. Tax was not an important consideration in Asante region with taxes paid in only few places[30]. The policy was intended to encourage trade which the states believe offers more benefits than the direct trade, including associated commerce like food and accommodation market to fulfil the needs of foreign trader. The traditionally known structures may be modernised to form the basis for modern trans-regional trade in West Africa. There are many traditional competitive strategies to be learnt from Dahomey and Asante among others in West Africa.

Modernization and increase in trade trend will create wider market for transport and communication. There are evidences of large potentials in the communication industry especially with very low telephone and internet coverage and access.

7.1 Conclusions

West Africa is a well endowed region with diverse of ecological, mineral and human resources to competitively produce various unique agricultural, mining and manufacturing products. Tracing the history of the region the diverse culture and tribes have antecedent superiority in technology of production in many core sectors now up-scaled and modernised in various part of the world, in many instances cut across countries in the region. The earlier West Africa rediscover it strength and pre-historic superiority on which modern science technology could be apply the better. Abundant deposits of minerals across countries require harmonization in order to re-model the industrialization framework. The region should consider clusterization of common productive activities. Regional product specific brokerage institutions and standards setting institutions could be created across countries for competitive trade. With the abundance of fertile land yet un-utilised and the teeming rural population potential for import substitution and trade in staple food is very high. Specific

[29] Arthin, 1979; Roberts, 1980
[30] Daku, 1971

staple foods cut across some region and could be basis for harmonization of production and trade in food to end food importation, attain food self-sufficiency and food security in the region. There are also significant possibilities in the cash crop integration and trade. The lack of sectorial integration in West Africa economies constitute a great impediments to manufacturing and agro-processing leaving useful manufacturing raw material to waste away or at the best subjected to domestic market. Developing countries of the region have well developed manufacturing structure that is capable of meeting the needs of the region in the areas of food, beverages and textiles yet these constitute the highest percentage on the import profile in West Africa. Industrial clusterization and integration based on comparative advantage is imperative to attaining regional self-sufficiency in basic foods and manufactures. The region many also take a cue from ancient regional trade as a means of rekindling regional trade. The lessons of informal trade routes in the early West Africa could be a nucleus to re-modelling intra-regional trade and industrial policies.

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