

UNITED NATIONS
ECONOMIC
AND
SOCIAL COUNCIL



Distr.
LIMITED

E/CN.14/INR/125
11 August 1966

Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA
Sub-regional Meeting on Economic
Co-operation in West Africa
Niamey, 10 - 22 October 1966

THE BEVERAGES INDUSTRY IN THE WEST AFRICAN SUB-REGION

M66-1087

TABLE OF CONTENTS

CHAPTER		<u>Paragraph</u>
I	FOREWORD -- HISTORICAL AND GENERAL	1 - 7
II	GENERAL SURVEY OF BEVERAGE PRODUCTION IN THE COUNTRIES OF THE SUB-REGION.....	8 - 35
III	DEMAND AND DISTRIBUTION OF SOFT DRINKS, BEER AND OTHER ALCOHOLIC DRINKS	36 - 54
IV	CONSUMPTION PATTERNS IN THE SUB-REGION COMPARED WITH THOSE OF SOME SELECTED COUNTRIES.....	55 - 59
V	FUTURE DEMAND FOR BEVERAGES IN THE SUB-REGION	60 - 80
VI	MANUFACTURING CAPACITY: PRESENT STRUCTURE - FUTURE PROSPECTS	81 - 87
VII	CREATION OF ADDITIONAL MANUFACTURING CAPACITIES - INVESTMENTS - GROSS OUTPUT - VALUE ADDED - TOTAL WAGES	88 - 113
	BIBLIOGRAPHY	

CHAPTER I

FOREWORD - HISTORICAL AND GENERAL

Foreword

1. Two main groups of drinks are generally described as beverages. The first group, non-alcoholic beverages, includes mineral water, aerated waters, lemonades and flavoured waters. The other group, alcoholic beverages, includes wine, cider, beer and distilled alcoholic beverages.
2. This paper will deal with non-alcoholic beverages in general; the latter group will be divided and beer will be treated separately from other alcoholic beverages.
3. It is difficult to obtain data on beverages; for example, to a great extent, the volume of production, raw materials required, value added and labour force are to a great extent not available.

Historical and general

4. There are so many legends connected with the origin and history of spirits. In this respect we may offer here only a few of the fascinating, contradictory tales. But one fact emerges clearly: every civilization had its liquor. Egyptian carvings and paintings depict distilling apparatus. Shahs of India sipped liquors made from flowers in 800 B.C. The great philosopher, Aristotle, has mentioned liquor, and legend has it that Alexander the Great passed the first loving cup... as a peace gesture between Macedonians and Persians. George Washington was one of the early American distillers. Below are given a few examples of how the different liquors have got their names which are still used in commercial processes and spread as internationally well-known industrial products can be briefed in some examples.

- (a) Whiskey: the word "whiskey" evolved from "uisge" or "usque" both of Celtic origin. As early as the 12th century, the Irish drank "uisge beath beatha", the Scots called it "uisge bah" either way the word means "water of life".

- (b) **Vodka:** Both Russia and Poland claim the birthplace of this potable almost as old as the Slavs themselves. But its name stems from the Russian "vodk" meaning "little water". At one time vodka was made from potatoes, but American vodkas are made from grains.
- (c) **Gin:** A 17th century professor at Holand's Legden University, experimenting with distilling (or mixing a batch of home brew), is credited with discovering "genievre", French for "juniper", a berry which gives gin its flavour. It was the English who shortened the name to gin.
- (d) **Rum:** Originally "rhum" began as a by-product of sugar manufacturing. It was probably the first liquor distilled in colonial US.

5. The brewing of beer is a very ancient industry and has been practised for thousands of years by the Egyptians and the Assyrians. The process still awaits solutions for many problems associated with brewing. Scientific studies of brewing began only about seventy-five years ago. The two main factors necessary in brewing technique are based partly on well established scientific facts and partly on empirical knowledge gained from years of practical experience.

6. Brewing can be classed among the agricultural industries since it draws its materials from this source; thus a part of this study will deal with the role of the agricultural sector and its efficiency to feed the requirements of brewing with quality raw materials (mainly barley). From the economic point of view, brewing is an extremely important industry linked with the agricultural sector. On a world-wide scale, about 300 million hectolitres (6,600 million gallons) of beer are produced annually, for which about five million tons of cereals and about 50 million kilogrammes (1,000,000 cwt.) of hops are used. In some European countries, the brewing industry occupies a significant place among industries; for example, it is particularly important in

Belgium, since it is the third largest industry of the country, coming immediately after metal founding and coal mining. Considerable amounts of beer are consumed annually in Europe. The per capita annual consumption of beer in three European countries is as follows:^{1/}

<u>Country</u>	<u>Per capita annual consumption of beer</u> (litres)
Belgium	140 (250 pints)
UK	75
Germany	75

7. In the world market of soft drinks there are quite a number of products where substances other than alcohol are doing the function of adding taste, stimulating and flavour materials. In some of these drinks sugar is added and in others no sweet materials are included. Soft drinks are sold under a wide variety of commercial names, some of which are widely known throughout the world (e.g. Coca-cola, Pepsi-cola). Pepsi-cola which was originally an American drink, is now being produced in more than 98 countries. The Pepsi-cola formula was created in 1896 by the owner of a drug store, Caleb Bradham in the small town of New Bern, North Carolina. The basis is cane sugar, vanilla, essential oils, spices and cola nut. Although the principal basis of ingredients for the Pepsi-cola syrup formula is well known, the exact details are a well-kept secret. The Pepsi-cola organization has two chemists who alone know the exact details of the formula.^{2/} Also in almost every country where soft drinks are produced there are, in addition to the internationally known soft drinks, many local commercial names.

^{1/} A Textbook of Brewing, by Jean de Clerck, Volume 1, 1957.

^{2/} Food Processing and Packaging, August 1963.

CHAPTER II

GENERAL SURVEY OF BEVERAGE PRODUCTION IN THE COUNTRIES OF THE SUB-REGION

8. There exists in most countries of the sub-region a beverage industry which produces beer and different kinds of soft drinks. Temperature and weather conditions are the main factors influencing location of factories producing these drinks.

Nigeria

9. There are five factories producing beer, two^{1/} of them employing between 500 and 999 workers and the other three between 200 and 499 workers. Another factory is preparing stout, with a labour force falling in the 200-499 range. There are many factories producing drinks other than beer. Data on these plants are presented in the following table:

TABLE 1
Number, size and products of beverage manufacturers in
Nigeria

No. of factories	Labour force engaged	Main products
1	200-499	Coca-cola - Fanta - Sundowner - Schwepps
1	200-499	Krola - Tango - Sundowner - Pepsi-Cola
3	100-199	Tricola - Sword Brand - Mirinda - Mineral water
7	50-99	Bottled drinks - Krola - Tango - Sundowner Schwepps - Seven-up - Howdy - Coca-cola - Fanta - Sprite - Pepsi-cola - Mirinda
7	10-24	Seven-up - Howdy-Kola - Soda water - Mineral water - Flavoured mineral waters
1	25-49	Bottled Beverages.

(Total annual output of these factories is 125 million bottles)

Source: A list of major manufacturing plants in Nigeria.

^{1/} One of these two breweries, which cost £ 2 million, was opened on 6 March 1963. It was financed by Arthur Guinness Son & Company Limited and the United Africa Company (Overseas Review, April 1963).

Niger

10. There are four factories producing non-alcoholic drinks located in Niamey, and one in Zinder. The capacity of production in Niamey is excessive, but other parts of the country scarcely get sufficient quantities to satisfy their requirements. A part of the local demand for these drinks is covered through imported non-alcoholic drinks (around 300 tons annually) from Nigeria. For the moment, none of the internationally known marks (Coca-cola, Schwepps, Canada dry, etc.) is produced in Niger. Niger imports all these internationally known brands from abroad. This insufficient local production of non-alcoholic drinks results in high costs to the consumer; even for drinks which carry no trade marks, the prices are 2-3 times higher than in neighbouring countries. For example, a normal bottle^{1/} of lemonade or citrus bearing no trade mark which costs 17 fr. in Kano (Nigeria), costs 30 fr. in Niamey (Niger) and 50 fr. in Maradi (Niger). All the beer consumed in Niger is imported, primarily from Dahomey and France. Nigers consume about 55 per cent of these imported amounts; the rest is said to be consumed by the foreigners. The consumption of beer in 1964 was estimated at about 15,000 HL^{1/}, and the beer consumption of the Nigers is expected to reach 15,000 to 20,000 HL in 1970.

Togo

11. The production of beverages is confined to two factories producing aerated drinks in Lomé (see Table 2). The capital invested in these two factories amounted to 46 million francs CFA. A total of 76 permanent salaried labourers are engaged in the two factories; the total payment is 14 million francs CFA annually.

TABLE 2

Aerated Waters and Soda Production in (HL) in Togo

Year	Aerated waters	Soda	Total
1961	958	5300	
1962	1565	6328	
1963	2010	6810	8820

Source: Inventaire Economique du Togo, 1964.

^{1/} Le potentiel industrielle du Niger.

Senegal

12. Aerated waters and beer are produced in Senegal. The following table shows the development of their production.

TABLE 3
Production of Aerated Waters and Beer in Senegal

	Unit	1959	1960	1961	1962	1963
Beer	: 1000 HL	102.8	82.5	88.7	97.2	108.7
Aerated waters	: 1000 HL	75.8	88.8	117.5	132.6	145.2

Source: Les programmes d'action, 1965, Titre IV.

Value added in the beverage industry is estimated as follows:^{1/}

	<u>1962</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>
Million francs CFA 1000	1120	1160	1210	1280	1370	

Sierra Leone

13. Distilleries began operations in Sierra Leone in 1963. The Wellington Distilleries Limited (the Government owns more than 50 per cent of the shares) began production in March 1963, has an annual output of 1,200,000^{2/} bottles of whiskey, gin and Schnapps produced from a blend of imported concentrates and locally distilled spirit "Omele".

14. Sierra Leone Brewery Ltd. in Wellington near Freetown is manufacturing beer which is now on sale throughout the country. This new brewery which cost £800,000 is capable of producing 7,000 bottles of beer an hour^{3/}. The number of persons engaged at the end of 1964 was 167. A total of 273 workers are engaged in carbonated water industries^{4/}.

^{1/} Deuxième plan quadriennal de développement économique.

^{2/} Overseas Review, March 1963.

^{3/} Overseas Review, April 1963.

^{4/} Sierra Leone Quarterly Statistical Bulletin, 1964.

Ivory Coast

15. Beer and aerated water industries have existed in Ivory Coast for several years. There are two factories producing beer and aerated waters. Ice blocks are also produced in those factories. The first factory (Bracedi) was established in 1939, the second began production in 1956 under the name 'Solibra'.

16. A third factory "Sabeci", producing Coca-Cola using imported concentrates, was established in 1957.

17. Annual production is 30,000 HL of beer and 175,000 HL of non-alcoholic beverages.

18. The beer factories are not working at full capacity. Although half of the capacity is utilized, production reached its peak in 1961, then in 1962 dropped back to its 1960 level. In 1963 it began to rise once more but still fell below the 1961 level (see Table 4).

TABLE 4

The Development of Beer Production in Ivory Coast
(1960 = 100)

1960	100
1961	143
1962	105
1963	127

There are two kinds of locally produced beer; one is of average quality; the other has the advantages of the imported kinds, a fact which resulted in a discernible decrease of beer imports in the last few years^{1/}. Three thousand tons of beer were imported in 1956. Imports dropped to 626 tons in 1960 (64 millions francs CFA). The amount imported is likely to remain stable to meet the demand of special classes. During the last years,

^{1/} As reported in "Perspectives de développement économique et social 1964".

it was reported that wine imports increased by 12 per cent as an average annually (20,000 tons of wine, apperitif and other alcohols with a value of 1630 million francs CFA were imported in 1960).

19. In the same year Ivory Coast imported 1000 tons of mineral waters and 20 million francs CFA was spent to import 3,000 tons of lemonade and aromatic gaz waters.

Ghana

20. More detailed information about the beverage industry are available in Ghana. Two spirit distilleries (one commenced production in 1961, cost G£454,397), two beer factories, and four factories producing soft drinks and carbonated water are in operation. The Coca-Cola Company which started in 1965 has been followed by a Pepsi-Cola factory. One of the two breweries, which is now 25 years old, was established in Accra by Swiss business interests and is capable of supplying one-third of the country's requirements. The second brewery, in Kumasi was built at the end of the 1950's with a minority stock interest held by the Government. The cost of Kumasi Brewery was G£240,000 (the private Ghanaian shares accounted G£210,000 whereas the Government holds 30,000 shares).

Dahomey

21. For five years a factory producing beer, lemonade and aerated waters has operated in Cotonou. Its capacity of production allows for future expansion and utilisation of additional investments. It is understood that this factory has been classified in the category of "priority enterprises"^{1/}. The production in 1964 reached 980,226 HL of beer and 38,744 HL of aerated waters.

Upper Volta

22. One brewery (Bravelta) exists in Upper Volta. Non-alcoholic beverages are also produced in this factory. There are no distilleries in Upper Volta.^{2/}

^{1/} Aspects économiques, Dahomey, 1963

^{2/} Information given by recent ECA mission.

TABLE 5

Number of Establishments, Gross Output, Value Added, Persons Engaged, Total Wages, Salaries, Value of Sales; and Value of Gross Additions in Fixed Accets in Beverage Industry in Ghana

Production	No. of establishments			Gross Output in current prices (1000 £G)			Value Added in current prices (1000 £G)			Average No. of persons engaged		
	1962	1963	1964	1962	1963	1964	1962	1963	1964	1962	1963	1964
Spirit distillery	2	2	2	1104	1540	1483	524	503	489	292	353	378
Beer Brewery	2	2	2	3534	4540	4662	2487	3210	3310	813	824	898
Soft drink and carbonated water	4	4	4	510	865	986	227	450	553	322	471	1120
				5148	6945	7131						
				Total wage and salaries 1000 £G			Value of sales 1000 £G			Value of gross additions to fixed assets 100 £G		
				1962	1963	1964	1962	1963	1964	1962	1963	1964
Spirit distillery				65	69	74	1258	1448	1345	32	32	
Beer Brewery				247	335	324	3535	4530	4684	77	82	
Soft drink and carbonated water				62	89	193	493	850	985	4	2	

Source: Industrial Statistics, 1962-64; published May 1965.

Liberia^{1/}

23. Brewing of beer is carried out by a modern brewery established in Monrovia. The ownership of the brewery is Liberian and Swiss. The plant also produces a number of soft drinks. The production of both beer and soft drinks is destined only for consumption in Liberia.

^{1/} Industry in Liberia: Description, Structure and Planning Implications (E/CN.14/AS/I/1/3); report submitted by the Government of Liberia to the Symposium on Industrial Development in Africa, Cairo, January-February 1966.

24. The brewery employs 166 persons with a capacity of 900,000 - 1,000,000 gallons of beer annually. At the beginning of 1963, only a fraction of this capacity was used. However, after the introduction of a protective tariff in March 1963, which had the effect of nearly doubling the price of foreign beer, consumption of local beer increased considerably and at present the capacity is nearly fully utilized. Plans for the expansion of the brewery are now in process.

25. All raw materials with the exception of water are being imported. as are the bottles, crown corks and cartons.

26. The rejects of about 360 tons per year are sold as animal feed and fertilizer.

27. The total value of beer produced is in the range of US\$ 2 million.

28. Total employment in the brewery and the total wage bill represent about 1 per cent of the total employment and the total annual wage bill in industry, respectively. The distilling of spirits for rum is carried out in some 50 distilleries. One unit of significant size and technically well equipped is situated in Monrovia and uses imported brown sugar as fermentation raw materials. The other distilleries, situated mainly around White Plains, Millburg and Arthington, use locally grown sugar cane which is crushed in small installations and ferment and distill the cane juice. Approximately 20 of these enterprises use small diesel or gasoline engines of 2-4 horsepower and employ on an average five workers. Some 30 other enterprises use hand presses and employ on an average one worker. Distillation is usually carried out in upper sheet stills manufactured in local workshops.

29. The distillery situated in Monrovia has an annual capacity of about 25,000 gallons of rum. Currently about 60 per cent of this capacity is used. The annual capacity of the rudimentary units located outside Monrovia is about 80,000 gallons of rum of relatively low concentration.

30. The total value of rum produced by all establishments is in the range of \$110,000 per year. Total employment in the distilleries

represents about 1 per cent of the total employment in industry. The wage bill for these establishments is only about 0.5 per cent of the total wage bill for the industrial sector. A modern distillery is assumed to be in operation at the end of 1965.

31. Soft drinks are now produced in six establishments. In 1962-1963 only two establishments were in operation. All the soft drinks plants are located in Monrovia and are equipped with modern installations. All except two work under franchise contracts, producing internationally known brands (Coca Cola, Canada Dry, Mission, Seven-up).

32. One of the soft drinks plants is operating as an annex of the brewery, using fermentation carbon dioxide. A second company is operated as a subsidiary by a major agricultural concession. The third plant is Liberian-owned. A further two establishments are owned by Lebanese enterprises. All these units produce only for internal consumption. The production is of satisfactory quality and moderately priced, but in most cases profits are marginal owing to keen competition. The soft drinks industry employs at present about 180 persons. The capacity for soft drinks production at the beginning of 1963 was in the range of 1,700,000 gallons per year. At that moment, utilization of capacity must have been nearly 100 per cent. At the beginning of 1965, the capacity of soft drinks production was nearly 5 million gallons per year and it is believed that it is utilized under 50 per cent.

33. Total employment in the soft drinks industry represents a little over 1 per cent of the employment in the industrial sector. The proportion of the wage bill to the total wage bill for industry is in the same range.

Mali

34. There are no breweries in Mali. One of the three soft drinks factories in Mali is State-owned. The State factory has a capacity of 900-2,000 bottles per hour and employ six workers.

Gambia

35. There is no beer industry in Gambia. One factory producing soft drinks (Coca Cola and Fanta), situated in the capital, started in the first half of 1966 with a capacity of 24,000 bottles per day. The factory works two days a week and the total investment outlay was £75,000.

CHAPTER III

DEMAND AND DISTRIBUTION OF SOFT DRINKS, BEER AND OTHER ALCOHOLIC DRINKS

Foreword

36. It is necessary to analyse the three main groups of beverages, namely soft drinks, beer and other alcoholic drinks. The reasons for this separate analysis are explained below:

- (a) The chemical and physical structure of the groups differs. On the one hand, "soft drinks" are free from alcohol; on the other hand, beer and other alcoholic drinks include different percentages of alcohol.
- (b) The raw materials used differ from one group to another.
- (c) The price level in each group is adapted to special demands. Whereas the price level of soft drinks always corresponds to the level of purchasing power of the masses in every nation, the price level for the same unit of beer is higher and that for other alcoholic drinks is even higher.
- (d) The producers of these drinks cater to different age groups of consumers. Generally the market for soft drinks is not limited to a special age group of population, but as for beer and other alcoholic beverages, most consumers are in the age groups over 15 years.

37. The total domestic demand for all beverages in the sub-region is estimated at 4,233,564 HL in 1963. Whereas the share of soft drinks in this demand was 22 per cent, the demand for beer was 60 per cent of this total; the rest (18 per cent) was for other alcoholic beverages (see Table 6).

TABLE 6

The Domestic Demand for all Groups of Beverages in the Sub-region
and Share of each Group in the Total (1963)

	\$ 1,000	HL	HL Per cent
Soft drinks	19,434	940,115	22
Beer	107,924	2,582,134	60
Other alcoholic beverages	17,246	711,315	18
Total	144,604	4,233,564	100

38. The total demand for the three groups was valued at US \$144.6 millions in 1963. These proportions do not, however, fully bring out the extent of the drinking habits of the population since the unit intake of these drinks varies rather widely.

Soft drinks

39. From the total domestic production of soft drinks, a very limited part is directed to export. The biggest part of this export comes through Nigeria. Although Nigeria has the biggest share of soft drinks production in the sub-region (Table 7), Liberia has the highest per capita share in domestic production (6.96 litres)^{1/}. The lowest per capita share in domestic production of soft drinks exist in Upper Volta (0.38 litres)^{1/}, just below Nigeria (0.43 litres)^{1/}.

40. The total domestic supply of soft drinks in the sub-region reached 850,104 HL^{2/} in 1963 providing 90 per cent (0.9 litres)^{1/} of the per capita share in the domestic demand (1 litre)^{1/}.

^{1/} See Table 10.

^{2/} See Table 7.

41. Liberia has the highest per capita consumption of soft drinks (7.88 litres)^{1/} in the sub-region. Next to Liberia are Ivory Coast and Senegal with per capita consumptions of 5.51^{1/} and 5.43^{1/} litres, respectively. The per capita consumption of these drinks is, by comparison, considered to be very low in Sierra Leone (0.02 litres)^{1/} and in Mauritania (0.06 litres)^{1/}.

42. Senegal has the highest share of imported soft drinks (see Table 7), followed by Ivory Coast and Liberia.

43. There is a limited import market for soft drinks in Sierra Leone and Mauritania. The total amount of soft drinks consumed in 1963 is estimated at 940,115 HL^{2/} for the whole sub-region. Nigeria's share was 238,802 HL, followed by Ivory Coast (201,804 HL).

44. The value of the total domestic production was US \$18 million in 1963 of which an amount valued at US \$48,000 was exported. The domestic supply has contributed with around US \$17 millions from the total domestic demand which amounted over US \$19 millions in that year (see Table 7).

Beer

45. In 1963 2,257,726 HL of beer was produced in the sub-region. Whereas Dahomey, with a population of 2.25 millions, has the highest supply of locally produced beer (980,226 HL), Nigeria with over 55 million people has a share of 700,000 HL in the sub-regional beer production. A limited beer export market can be recognized in the countries of the sub-region through the figures in Table 8.

46. The domestic supply of beer has a share of 2,233,430 HL from the total domestic demand which amounts to 2,582,134 HL. The amount of beer, imported beer, constitutes 13 per cent of the total domestic demand.

^{1/} See Table 11.

^{2/} Data for Niger, Guinea and Gambia are not included.

TABLE 7

Demand and Distribution of Soft Drinks
(1963)

US \$1,000

	Domestic Demand	Import	Domestic Supply	Export	Domestic production	HL				
						Domestic Demand	Import	Domestic Supply	Export	Domestic production
1. Dahomey	858	40.0	818	-	818	40,779	2,035	38,744	-	38,744
2. Mali	633	-	633	-	633	30,000	-	30,000	-	30,000
3. Mauritania	70	70.0	-	-	-	532	532	-	-	-
4. Niger	-	-	-	-	-	-	-	-	-	-
5. Nigeria	5,103	81.5	5,021	45	5,066	238,802	1,362	237,440	2,560	240,000
6. Upper Volta	402	25.0	377	3	380	19,154	1,254	17,900	100	18,000
7. Ghana	2,550	22.5	2,527	-	2,527	125,152	5,452	119,700	-	119,700
8. Togo	236	50.0	186	-	186	13,270	4,450	8,820	-	8,820
9. Sierra Leone	24	24.0	-	-	-	498	498	-	-	-
10. Senegal	3,620	555.0	3,065	-	3,065	182,638	37,438	145,200	-	145,200
11. Liberia	1,849	218.0	1,631	-	1,631	87,486	10,186	77,300	-	77,300
12. Ivory Coast	4,089	395.0	3,694	-	3,694	201,804	26,804	175,000	-	175,000
13. Guinea	-	-	-	-	-	-	-	-	-	-
14. Gambia	-	-	-	-	-	-	-	-	-	-
	19,434	1,481	17,452	48	18,000	940,115	90,011	850,104	2,660	852,764

47. Dahomey has the highest per capita share in domestic production (see Table 10) in the sub-region (43,34 litres). Liberia holds the second position with a per capita production around one-fourth as large as Dahomey's - 11.08 litres. The per capita share in the domestic production in Ghana and Sierra Leone is around one-tenth of the level in Dahomey. This share is almost insignificant in the case of Mauritania (0.97 litres). The value of the total domestic demand is around US \$107.9 million. The imported part of this demand has a value of US \$8,987 thousand, or 8.2 per cent of the value of the domestic demand.

48. Every country with no exception has a share in the imports of beer. Whereas Nigeria, the most populous country in the sub-region, has imported beer in a value around \$2.5 millions, Liberia, with 1.11 million people, has beer imports valued at US \$2 million.

Other alcoholic drinks

49. Three countries (Ghana, Sierra Leone and Liberia) in the sub-region produce other alcoholic drinks. 198,295 HL of the alcoholic drinks were produced in the sub-region in 1963 (Table 9). Ghana contributes the largest part of this production (around 90 per cent). Although other alcoholic drinks production does not exist in Upper Volta, the amount 2,400 HL were exported in 1963 which shows that the quantity imported in that year exceeded the domestic demand.

50. The imports of 515,420 HL of other alcoholic drinks cost the countries in the sub-region US \$12.9 million. Although only three countries produce other alcoholic drinks every country in the sub-region contributed to the imports, with varying shares. Whereas the domestic production in Ghana almost covers domestic demand (97 per cent) and in Sierra Leone covers over 70 per cent, it covers only 45 per cent in the case of Liberia.

TABLE 8

Demand and Distribution of Beer in the Sub-region in 1963

	US \$1,000					HL				
	Domestic Demand	Import	Domestic Supply	Export	Domestic production	Domestic Demand	Import	Domestic Supply	Export	Domestic Production
1. Dahomey	43,064	70.0	43,994	116	43,110	975,316	2,390	972,926	7,300	980,226
2. Mali	160	160.0	-	-	-	6,158	6,158	-	-	-
3. Mauritania	115	115.0	-	-	-	596	596	-	-	-
4. Niger	590	590.0	-	-	-	21,280	21,280	-	-	-
5. Nigeria	33,212	2,510.9	30,701	85	30,786	780,208	85,874	694,334	5,666	700,000
6. Upper Volta	2,020	530.0	1,490	49	1,539	70,469	37,869	32,600	2,400	35,000
7. Ghana	13,196	519.7	12,676	2.8	12,679	303,870	15,570	288,300	-	288,300
8. Togo ^{a/}	378	385.0	69	6.9	-	25,980	25,980	-	-	-
9. Sierra Leone	3,870	790.5	3,079	-	3,079	91,429	21,429	70,000	-	70,000
10. Senegal	5,240	460.0	4,780	-	4,780	124,835	16,135	108,700	-	108,700
11. Liberia	4,001	2,000.0	2,001	-	2,001	123,038	77,538	45,500	-	45,500
12. Ivory Coast	1,527	305.0	1,222	97	1,319	32,224	11,154	21,070	8,930	30,000
13. Guinea	394	394.0	-	-	-	21,640	21,640	-	-	-
14. Gambia	157	156.8	-	-	-	5,091	5,091	-	-	-
	107,924	8,987	98,936	357	99,293	2,582,134	348,704	2,233,430	24,296	2,257,726

a/ The negative domestic supply is due to the non-existence of local production of beer.

51. The amount of other alcoholic drinks imported by Ivory Coast is considered the highest in the sub-region and costs Ivory Coast around US \$4.7 million in foreign exchange.

52. Three countries in the sub-region each imported other alcoholic drinks valued at more than US \$1 million in 1963. Guinea had the smallest share in the imports of other alcoholic beverages (\$88 thousand).

53. The picture of demand differs from one country to another. The highest demand for other alcoholic drinks in the sub-region in relation to the number of people over 15 years of age - exists in Ivory Coast. 294,942 HL were consumed by 1.76 million people aged over 15 years in this country where the per capita share of 8.05 litres in the domestic demand is recognized as the highest. The 3.52 million people over 15 years old in Ghana consumed 189,655 HL which makes the per capita share in the d.d 2.58 litres from the 26.70 million people over 15 years old.

54. In Nigeria, from the 26.70 million people over 15 years old 15,935 HL were consumed so that the per capita share in the domestic demand drops to only 0.02 litres.

TABLE 9

Demand and Distribution of Other Alcoholic Drinks - 1963

	US \$1,000					HL				
	Domestic Demand	Import	Domestic Supply	Export	Domestic production	Domestic Demand	Import	Domestic Supply	Export	Domestic production
1. Dahomey	960	960.0	-	-	-	26,533	26,533	-	-	-
2. Mali	120	120.0	-	-	-	3,873	3,873	-	-	-
3. Mauritania	115	115.0	-	-	-	252	252	-	-	-
4. Niger	295	295.0	-	-	-	12,260	12,260	-	-	-
5. Nigeria	1,490	1,490.0	-	-	-	15,935	15,935	-	-	-
6. Upper Volta	327	380.0	53	53	-	16,296	18,696	2,400	2,400	-
7. Ghana	4,765	712.0	4,053	-	4,053	189,655	5,325	184,330	-	184,330
8. Togo	1,060	1,060.0	-	-	-	23,400	23,400	-	-	-
9. Sierra Leone	444	242.0	202	-	202	12,696	3,504	9,192	-	9,192
10. Senegal	1,820	1,820.0	-	-	-	90,049	90,049	-	-	-
11. Liberia	965	860.0	105	-	105	15,346	10,573	4,773	-	4,773
12. Ivory Coast	4,685	4,685.0	-	-	-	294,942	294,942	-	-	-
13. Guinea	88	88.0	-	-	-	7,240	7,240	-	-	-
14. Gambia	112	112.0	-	-	-	2,818	2,818	-	-	-
	17,246	12,939	4,307	53	4,360	711,315	515,420	195,895	2,400	198,295

TABLE 10

Per capita Share in the Domestic Production, Domestic Supply
and Domestic Demand - 1963

	litres								
	Soft drinks			Beer			Other alcoholic drinks		
	Domestic produc- tion	Domestic Supply	Domestic Demand	Domestic produc- tion	Domestic Supply	Domestic Demand	Domestic produc- tion	Domestic Supply	Domestic Demand
1. Dahomey	1.72	1.72	1.81	43.56	43.24	43.34	-	-	1.18
2. Mali	.68	.68	0.68	-	-	.14	-	-	.08
3. Mauritania	-	-	0.06	-	-	.07	-	-	.03
4. Niger	-	-	-	-	-	.56	-	-	.32
5. Nigeria	.43	.42	0.42	1.25	1.24	1.40	-	-	.02
6. Upper Volta	.38	.38	0.41	.75	.70	1.51	-	.05	.35
7. Ghana	1.63	1.63	1.70	3.92	3.92	4.13	2.5	2.5	2.58
8. Togo	.56	.56	0.85	-	-	1.66	-	-	1.50
9. Sierra Leone	-	-	.02	3.21	3.21	4.19	.4	.4	.58
10. Senegal	4.32	4.32	5.43	3.23	3.23	3.71	-	-	2.68
11. Liberia	6.96	6.96	7.88	4.09	4.09	11.08	.4	.4	1.38
12. Ivory Coast	4.78	4.78	5.51	.89	.57	.88	-	-	8.05
13. Guinea	-	-	-	-	-	.64	-	-	.21
14. Gambia	-	-	-	-	-	1.59	-	-	.88
	.91	.90	1.00	2.41	2.38	2.75			.76

CHAPTER IV

CONSUMPTION PATTERNS IN THE SUB-REGION COMPARED WITH
THOSE OF SOME SELECTED COUNTRIESPer capita consumption in the countries of the sub-region

55. If we consider the average per capita consumption of the different groups of drinks in the sub-region, we find that this average is about 1 litre for soft drinks, and increases to 5.74 litres in the case of beer and to 1.58 litres for other alcoholic drinks^{1/} (Table 11).

56. The range of per capita consumption of soft drinks which averages 7.82 litres for the sub-region begins at .02 litres in Sierra Leone and ends with 7.88 litres in Liberia. The range is extremely wide 90.14 litres in beer per capita consumption, and beginning at .16 litres in Mauritania and ends at 90.30 litres in Dahomey.

57. For other alcoholic drinks, the range lies between .06 litres (Mauritania) and 16.75 litres (Ivory Coast). Fluctuations of consumption are recognized in every beverage group in the sub-region. These fluctuations might be due to various factors, such as:

(a) Different habits of beverage consumption as recognized in the following selected examples:

(i). The per capita consumption of beer in Nigeria is almost seven times higher than that of soft drinks and around 58 times larger than that of other alcoholic beverages.

(ii). Very low per capita consumption of the three groups of beverages exists in Mauritania, but beer consumption is to some extent higher than that of the other drinks.

(iii) Per capita consumption of soft drinks in Mali is higher than that of beer and other alcoholic drinks.

^{1/} For portion of population over 15 years old.

- (iv) Although "other alcoholic drinks" industry does not exist in Ivory Coast, a very high per capita consumption of these drinks is recognized (around ten times the average in the sub-region). A high per capita consumption of soft drinks is also noted.
- (b) Locally produced brands. There is a higher per capita consumption of other alcoholic drinks in Ghana and Liberia, where there is local production of these drinks.
- (c) Probability of unrecorded trade flow of beverages.

TABLE 11

Per capita Consumption of Soft Drinks, Beer and
Other Alcoholic Drinks - 1963

	Litres		
	Soft drinks	Beer	Other alcoholic drinks
		<u>a/</u>	<u>a/</u>
1. Dahomey	1.81	90.30	2.45
2. Mali	0.68	.29	.18
3. Mauritania	0.06	.16	.06
4. Niger	-	1.42	.82
5. Nigeria	0.42	2.92	.05
6. Upper Volta	0.41	3.16	.73
7. Ghana	1.70	8.63	5.38
8. Togo	.85	3.46	3.12
9. Sierra Leone	.02	8.70	1.20
10. Senegal	5.43	7.75	5.59
11. Liberia	7.88	25.63	3.19
12. Ivory Coast	5.51	1.83	16.75
13. Guinea	-	1.34	.44
14. Gambia	-	3.39	1.87
	1.00	5.74	1.58

a/ For population over 15 years old.

The very large deviation of per capita consumption of beer in Dahomey and that of other alcoholic drinks in Ivory Coast might conceal unrecorded trade flow of these beverages within the countries of the sub-region.

- (d) Patterns of beverage consumption by rural and urban population. The study made by FAO^{1/} shows that the expenditure on beverages and tobacco amounted to 4.8 per cent in familiar with an expenditure of 80-180 shillings per month and increased to 5.6 per cent in familiar with a total expenditure of 180 to 360 shillings per month. As for palm wine, it is represented by 1 per cent of the total expenditure in the first group and declined to 0.5 per cent of the total expenditure in the second group. The expenditure on other alcoholic drinks is represented by 0.6 in the first group and 2.2 per cent for the second group.

"A few studies have been made of budgets in rural areas, particularly in areas where industrial crops have been introduced. They indicate that while the family income has risen substantially, in many cases no improvement in food consumption and health can be observed, in fact, a deterioration of health and nutritional status has sometimes been reported, the greater part of the new income being spent on useless or luxury articles or beverages." ^{1/}

"The pattern of expenditure at different income levels was analysed in Ghana - Kumasi survey. The percentage spent on food did not vary greatly at different income levels. A main reason for the stability of food expenditure in the increasing expenditures on imported foods and/or drink and tobacco in the higher income groups. Similar results were obtained in a survey of household budgets undertaken in Freetown, Sierra Leone."

^{1/} FAO Africa Survey - Report on: The Possibilities of African Rural Development in Relation to Economic and Social Growth; Rome, 1962.

Per capita Consumption in the Countries of the Sub-region compared with that of some Selected Countries

58. As Table 11 shows, the per capita consumption of beer in the countries of the sub-region with the exception of Dahomey is in most cases far beyond the per capita consumption of beer in the countries mentioned in Table 12.

59. However, the per capita consumption of other alcoholic drinks in the sub-region is very near to the range of the per capita wine consumption for the countries included in Table 11, with the exception of France and Italy.

TABLE 12

Per capita Consumption of Beer and Wine in Selected Countries

	litres											
	Beer						Wine					
	1955	1956	1957	1958	1959	1960	1955	1956	1957	1958	1959	1960
Belgium	113.3	109.7	113.8									
Denmark	66.5	63.6	64.2				2.7	2.8	2.8	2.8		
Finland	6.9	6.9	7.1				3.4	3.0	2.6			
France	28.9	29.9	34.4	39.4			155.0	130.5	112.3	148.8		
Italy	3.5	3.2	3.8	3.4			119.3	126.7	83.9	111.7		
West Germany	65.5	70.7	81.8	85.2	91.5		9.1	8.7	9.8	14.6		
Netherlands	21.6	22.8	25.0	26.3			1.1	1.4	1.5	1.4		
Norway							1.2	1.2	1.2	1.2		
Austria	61.7	61.7	64.8	70.0	70.8		18.0	17.5	17.0	19.1		
Sweden	30.4	30.4	28.1	27.9	26.6		2.2	2.0	2.6	2.8		
Switzerland		51.7	53.3	58.0	60.8							
USA	80.4	61.1	60.7	58.8	57.6	57.9	3.4	3.4	3.4	3.4	3.4	
UK	69.0	80.4	80.1	79.5	78.9	79.0	1.1	1.2	1.3	1.3		
Hungary	18.9		31.4	31.6	33.9				29.3	29.4	35.0	
East Germany	69.0	65.0	76.6	76.5	81.0	76.0	1.7	1.7	1.8	2.0	2.5	
Poland	18.9	18.7	20.1	21.3	22.6	22.7	2.5	2.9	3.6	4.0	4.8	
Czechoslovakia	79.1	83.2	92.7	90.0	96.9	100.1	6.8	5.9	7.5	9.5	8.4	

Source: Development Coefficients for Foreign Economy (in Czch.); Prague, 1962.

CHAPTER V

FUTURE DEMAND FOR BEVERAGES IN THE SUB-REGION

Foreword

60. There are a variety of complex problems which can be involved in the calculation and interpretation of elasticity coefficients for beverages. First and foremost is the fact that variations in food expenditure and consumption, including drinks are associated not only with variation in income, but also with variations in family size and composition and with food or drink preference patterns. Moreover comparison of elasticity coefficients worked out from different family budget surveys is risky because of the lack of parallelism in the concepts and procedures used.

61. Other factors such as the effect of moving from rural circumstances to urban environment, the length of urban residence, the strength of influences modifying the traditional attitudes, and the degree of familiarity with the different kinds of drinks are all likely to be of considerable importance.

62. For the above reasons caution should be taken in drawing conclusions from the income elasticity estimates. Moreover, the facts given above emphasize the necessity for close attention in planning for future budget surveys.

Analysis of the Methodology

63. In spite of the above conceptions, a clear analysis of the different methods which facilitates the measurement of the size of future demands is necessary. For the expected demand, and its great importance reflected in its connexions with other economic expectations such as size of investment, amortization of the investments, foreign trade policies, etc., an explicit forecast is undoubtedly required.

64. Until sufficient data for forecasting the demand are available, we can justify and choose the most reliable method applicable in the circumstances.

TABLE 13
Demand of 1963 - Projection of Demand 1980^{1/} for the West African Sub-region
Soft Drinks - Beer - Other Alcoholic Drinks

	1963 Demand				1980 Demand				HL
	Soft drinks	Beer	Other alcoholic drinks	Total	Soft drinks	Beer	Other alcoholic drinks	Total	
1. Dahomey	40,779	975,316	39,298	1,055,393	60,353	1,443,467	58,161	1,561,981	
2. Mali	30,000	6,158	5,732	41,890	53,514	9,113	8,483	71,110	
3. Mauritania	532	596	287	1,415	606	679	327	1,612	
4. Niger	-	21,280	15,080	36,360	-	26,174	18,548	44,722	
5. Nigeria	238,802	780,208	26,133	1,045,143	391,635	1,279,541	42,858	1,714,034	
6. Upper Volta	19,154	70,469	22,977	112,600	27,007	99,361	32,397	158,765	
7. Ghana	125,152	303,870	314,827	743,849	207,752	504,424	522,613	1,234,789	
8. Togo	13,270	33,622	36,504	83,396	20,701	52,450	56,946	130,097	
9. Sierra Leone	498	91,429	21,329	113,256	837	153,600	35,833	190,270	
10. Senegal	182,638	124,835	124,268	431,741	252,040	172,273	171,490	595,803	
11. Liberia	87,486	123,038	17,187	227,711	97,984	137,803	19,249	255,036	
12. Ivory Coast	201,804	32,224	433,565	667,593	296,652	47,369	637,340	981,361	
13. Guinea	-	21,640	10,788	32,428	-	32,244	16,074	48,318	
14. Gambia	-	5,091	4,537	9,628	-	8,196	7,304	15,500	
Total	940,115	2,589,776	1,072,512	4,602,403	1,409,081	3,966,694	1,627,623	7,003,398	

^{1/} Applying population rate of growth.

65. This paper deals with three different procedures each of which might be applied for forecasting future demand. But, before giving any computation of the efficiency of each procedure, we might analyse all aspects of each to see which one could be usefully applied.

66. First procedure:- Applying population rate of growth.

67. Table 13 shows the picture of demand of beverages in 1980.

68. As shown in Table 13, the sub-regional demand for beer in 1963 as well as for 1980 exceeds that of soft drinks and other alcoholic beverages together.

69. The validity of this procedure might be affected by different factors. Recalling the factors a, b, c, and d mentioned in the preceding chapter under "per capita consumption in the countries of the sub-region", the figure of demand in Table 13 should be handled with care. In this respect, it is necessary to analyse every factor separately. Unless a change of habits of beverage consumption is anticipated, factor "a" might not be changeable to the extent that a complete upset of beverage consumption patterns in the different countries could be expected.

70. As for factor "b", a national supply of beverages competitive to imported brands might lead to an increase of consumption to the extent the consumption expenditure pattern allows [see paragraph 57 (d)].

71. As for factor "c", an increase of unrecorded trade flow which might lead to an increase of beverage consumption in the sub-region may not be expected. The reason for this is that the developing countries and the West African countries in between are trying to use every possibility to obtain a favourable balance of payments through a controlled foreign trade. Trade agreements which might take place and have taken place between the countries of the sub-region do reveal the inherent difficulties of an unrecorded trade flow.

72. Factor "d" can be assumed to be the one most influencing the demand picture. Industrialization programmes and urbanization policies change the patterns of consumption faster than any other factors. Expenditure on

TABLE 14

Projections of Demand 1980^{a/} for the West African Sub-region -
Soft drinks, Beer & Other Alcoholic Drinks

HL

	1963 Demand			1980 Demand			Total
	Soft drinks	Beer	Other al- coholic drinks	Soft drinks	Beer	Other al- coholic drinks	
1. Dahomey	40,779	975,316	39,298	83,638	1,999,398	80,560	2,163,596
2. Mali	30,000	6,158	5,732	63,600	13,055	12,151	88,806
3. Mauritania	532	596	287	1,266	1,418	683	3,367
4. Niger	-	21,280	15,080	-	46,178	32,724	78,902
5. Nigeria	238,802	780,208	26,133	506,260	1,654,040	55,402	2,215,702
6. Upper Volta	19,154	70,469	22,977	42,330	155,736	50,779	248,845
7. Ghana	125,152	303,870	314,827	271,580	659,397	683,175	1,614,152
8. Togo	13,270	33,622	36,504	29,061	73,632	79,944	182,637
9. Sierra Leone	498	91,429	21,329	1,071	196,572	45,857	243,500
10. Senegal	182,638	124,835	124,268	330,575	225,951	224,925	781,451
11. Liberia	87,486	123,038	17,187	227,463	319,899	44,686	592,048
12. Ivory Coast	201,804	32,224	433,565	532,762	85,071	1,144,611	1,762,444
13. Guinea	-	21,640	10,788	-	49,339	24,597	73,936
14. Gambia	-	5,091	4,537	-	10,182	20,364	30,546
Total	940,115	2,589,776	1,072,512	2,089,606	5,489,868	2,500,458	10,079,932

^{a/} Applying rates of growth in GDP.

beverages and tobacco is related to the size of total expenditure. A shifting to higher quality brands of beverages with special reference to imported ones is recognized in higher income groups. The above given facts reflected through factor "d" might lead to the analysis of the second procedure.

73. Second procedure:- Applying rates of growth in GDP. The estimated demand for every group of beverages by this procedure is higher in comparison to the first procedure. In fact, this procedure is not as technically sound as the first one. The reason for this is that the change of food and beverage consumption patterns is not only related to income changes, but also to other factors such as family size and structure, etc. (see foreword to Chapter V).

74. A very clear example which might support this concept is that of the per capita consumption of beer and wine in the countries mentioned in table 12. Although the per capita income of most of the countries included in the table is considered to be high, compared with that of the developing countries, a wide range of per capita consumption patterns of beer and wine is to be recognized.

75. The per capita consumption of beer in the USA (579 litres in 1960) where the per capita income is considered to be higher than in Belgium is much less than its counterpart in Belgium (1,138 litres in 1957). The per capita wine consumption in Italy (1,117 litres in 1958) is much higher than that in West Germany (146 litres in 1958) - where the per capita income is considered to be higher than its counterpart in Italy.

76. The above-given facts might invalidate the applicability of the second procedure for demand forecasts.

77. Third procedure:- Applying elasticity measures. Although as mentioned in the foreword of Chapter V, care should be taken by the calculation and interpretation of elasticity coefficients for beverages, an attempt was made to induce elasticity measures for forecasting the demand of beverages.

78. In many cases where elasticity studies for food, beverages, and tobacco have been made, figures of elasticity represent their group of commodities

TABLE 15

Demand of Beverages in 1980 based on Income Elasticity Estimates

	Per capita demand 1963			Elasticity		Per capita demand 1980			Population		Total Demand 1980		
	Soft drinks	Beer	Other al- coholic drinks	Soft drinks	Other al- coholic drinks	Soft drinks	Beer	Other al- coholic drinks	Total	Over 15 years	Soft drinks	Beer	Other alcoholic drinks
1. Bahomey	1.81	90.30	2.45			2.58	140.70	3.81	3.35	1.61	86,430	2,265,270	61,341
2. Mali	.68	.29	.18			1.04	.48	.30	6.48	3.11	67,392	14,928	9,330
3. Mauritania	.06	.16	.06			.11	.35	.13	.89	.42	979	1,470	546
4. Niger	-	1.42	.82			-	2.51	1.44	4.67	2.24	-	56,224	32,256
5. Nigeria	.42	2.92	.05			.58	4.40	.07	91.00	43.68	253,344	1,921,920	30,576
6. Upper Volta	.41	3.16	.73			.68	5.87	1.35	6.41	3.08	43,568	180,796	41,580
7. Ghana	1.70	8.63	5.38			2.21	11.99	7.47	12.13	5.82	268,073	697,818	434,754
8. Togo	.85	3.46	3.12	1.0	1.3	1.22	5.43	5.00	2.37	1.14	26,914	61,902	57,000
9. Sierra Leone	.02	8.70	1.20			.03	16.16	2.22	3.66	1.76	1,098	284,416	39,072
10. Liberia	7.88	25.63	3.19			20.56	79.27	9.86	1.24	.60	254,944	475,620	59,160
11. Senegal	5.43	7.75	5.59			7.43	11.47	8.27	4.63	2.22	344,009	254,634	183,594
12. Ivory Coast	5.51	1.83	16.75			9.24	3.87	35.48	5.38	2.58	497,112	99,646	915,384
13. Guinea	-	1.34	.44			-	2.28	.74	5.03	2.41	-	54,948	17,834
14. Gambia	-	3.39	1.87			-	4.80	2.64	.49	.23	-	11,040	6,072
Total	1.00	5.74	1.58			1.45	9.09	2.50	147.73	70.90	2,142,085	6,444,810	1,772,500

together. Separate elasticity figures for beverages as a group are difficult to obtain. Using some consumption expenditure patterns, a uniform elasticity measure for both beer and other alcoholic beverages is estimated to be 1.3. For soft drinks the elasticity is measured at 1.0. These two figures were applied to measure the demand of the three beverage groups for every country in the sub-region.

79. The figures of soft drinks and beer obtained in this procedure are higher than in the second procedure. Estimated demand of other alcoholic beverages is in the third procedure less than that in the second one but quite near to that in the first one.

80. A comparison of the total demand of every group of beverages obtained through the three procedures is shown in the following table:

TABLE 16

Comparison of Demand Projections of Soft Drinks, Beer and Other Alcoholic Drinks for the Year 1980

				HL
	Soft drinks	Beer	Other alcoholic drinks	Total
First Procedure	1,409,081	3,966,694	1,627,623	7,003,398
Second "	2,089,606	5,489,868	2,500,458	10,079,932
Third "	2,142,085	6,444,810	1,772,500	10,359,390

CHAPTER VI

MANUFACTURING CAPACITY: PRESENT STRUCTURE - FUTURE PROSPECTS

81. We have considered in the previous chapter three different procedures for evaluating the demand projection of the three groups of beverages. Now the difficulty of choosing the most appropriate method arises.

82. Apart from the purely economic criteria which can be applied to test the appropriateness of the matters, it is considered advisable to compare the results with the demand projections available in the plan documents of some of the countries. Such a comparison is possible in the case of Ivory Coast.

83. According to the information given in paragraph 18, the beer factories in this country are not working at full capacity and only half of the capacity is utilized. Whereas the domestic demand of beer in Ivory Coast was around 32,000 HL in the year 1963, the net import of beer was around 2,000 HL. Consequently, the domestic demand is almost covered by locally produced beer.

84. By further exploring this example, we find that the per capita consumption of beer was 0.88 litres in 1963, whereas the average per capita consumption for the sub-region as a whole was 2.75 litres in the same year.

85. It is observed from the plan programme of Ivory Coast that the forecast of beer consumption anticipates an increase of 7 per cent annually. On this basis, beer consumption in Ivory Coast will reach 92,160 HL in 1980. The per capita demand will then be 3.57 litres.

86. On comparing the demand figures for beer in Ivory Coast obtained by the previous procedures and the one obtained by using the country's plan we obtain the following results:

Demand Projection for Beer in Ivory Coast in 1980

First assumption	47,369 HL
Second assumption	85,071 HL

Third assumption	99,846 HL
Country's own forecast	92,160 HL

The figure in the country's own forecast will be seen to be between those of the second and third procedures. This result indicates the desirability of using either the second or the third procedure for evaluating the demand. Although generally the total demand forecast for beverages in the sub-region is a little less in the second procedure than in the third, it is **considered advisable to use the third one as reliable approach for forecasting the future demand, as this procedure takes account of different elements influencing the demand.**

87. The demand projections based on the third procedure for the subregion as a whole are given below:

Soft drinks	2,142,085 HL
Beer	6,444,810 HL
Other alcoholic beverages	1,772,500 HL
Total	<u>10,359,395 HL</u>

CHAPTER VII

CREATION OF ADDITIONAL MANUFACTURING CAPACITIES - INVESTMENTS - GROSS OUTPUT - VALUE ADDED - TOTAL WAGES

Creation of Additional Manufacturing Capacities

88. Chapter VI has already dealt with the estimation of total demand for the three groups of beverages in the different countries of the sub-region. Detailed examination of the present situation of beverage manufacture within the sub-region has also been made in Chapter II.

89. It is the intention to consider in this chapter the question of creation of additional manufacturing facilities so that the bulk of the additional demand for beverages could be met locally.

90. Country-wise data on demand and the share of imports in relation to demand for beverages in 1963 are furnished in Table 17. It will be seen from the table that the extent of imports varies widely amongst the different countries and also amongst the different types of beverages. Over the entire sub-region, however, imports have constituted 9 per cent in the case of soft drinks, 13 per cent in the case of beer and 72 per cent in the case of other alcoholic beverages. In the light of this situation and the anticipated possibilities for local development of industry, it is programmed that by 1980 the extent of imports in relation to the total demand will in no country exceed 9 per cent for soft drinks, 13 per cent for beer and 50 per cent for other alcoholic drinks. However, in respect of countries like Ghana where local production even for alcoholic drinks almost fully satisfies the total demand, the import possibilities have been kept down accordingly.

TABLE 17
Share of Imports in Relation to Total Demand 1963

	Per Cent 1963			Import Proposed Shares for 1980		
	Soft drinks	Beer	Other alcoholic drinks	Soft drinks	Beer	Other alcoholic drinks
1.Dahomey	4.00	.24	100.00	4.00	.24	50.00
2.Mali	-	100.00	100.00	-	13.00	50.00
3.Mauritania	100.00	100.00	100.00	9.00	13.00	50.00
4.Niger	-	100.00	100.00	-	13.00	50.00
5.Nigeria	.57	11.00	100.00	.57	11.00	50.00
6.Upper Volta ^{a/}	6.00	53.00	114.00	6.00	13.00	57.00
7.Ghana	4.00	5.00	2.00	4.00	5.00	2.00
8.Togo	33.00	100.00	100.00	9.00	13.00	50.00
9.Sierra Leone	100.00	23.00	27.00	9.00	13.00	14.00
10.Senegal	20.00	12.00	100.00	9.00	12.00	50.00
11.Liberia	12.00	63.00	68.00	9.00	13.00	34.00
12.Ivory Coast	13.00	34.00	100.00	9.00	13.00	50.00
13.Guinea	-	100.00	100.00	-	13.00	50.00
14.Gambia	-	100.00	100.00	-	13.00	50.00
	9.00	13.00	72.00			

^{a/} Re-export of other alcoholic drinks has been recorded (see Table 9).

91. Based on this programme, the additional demand for which capacity has to be created locally has been evaluated and furnished in Table 18. As will be seen from Table 18, the total estimated additional capacity by 1980 for the whole sub-region will be as follows:

Soft drinks	866,180 HL
Beer	3,678,500 HL
Other alcoholic drinks	1,101,970 HL

Size of Investments Required

92. It is important to estimate the number of units required for covering that part of demand expected to be satisfied by local production in order to obtain a clear picture of the investments required. It was difficult to find an investment pattern which showed the size of capacity related to the size of investment and vice versa. For example in Mauritania, where the size of the required capacities for soft drinks is 900 HL and in Sierra Leone where this size is 1,000 HL, there is no correspondence with the average sizes of soft drink factories found in the available literature. In the case of soft drinks we obtained two different sizes of factories. The first one costs US\$ 100,000 with an annual capacity of 7,000 HL; the second size costs US\$ 700,000, with a capacity of 72,000 HL annually. This approach has made use of both these sizes. In the countries like Dahomey, Mali, Mauritania, etc., where the capacity required is less than 72,000 HL of soft drinks annually, the first size, viz., small, in Table 19, has been applied. In the countries where the projected capacity exceeds 72,000 HL annually, both the first and second sizes of factories have been taken into consideration and the number of units required by applying the two different sizes is also shown in the table. Actually, it will be seen that different total investment in every case and for every country are obtained. This is due to the unit cost which is related to the size of production.

93. This method might give the choice for the countries with a projected demand over 72,000 HL to distribute their capacities according to their investment facilities as well as to the policy for location of the factories. Table 19 explains the above facts.

94. As will be seen from the table, the total costs by applying the large sized factories for the countries with required capacities of 7,200 HL and over will reach US\$ 8,900 thousand, whereas by applying small sized units for the same countries, the total costs will reach US\$ 12,300 thousand.

TABLE 18

Part of Estimated Demand Covered by Local Production for 1980 - Existing Capacity 1963 -
Estimated Additional Capacity Required by 1980

	Part of Estimated Demand Covered by Local Production for 1980			Existing Capacity 1963			Estimated additional capa- city required by 1980		
	Soft drinks	Beer	Other alcoholic drinks	Soft drinks	Beer	Other alcoholic drinks	Soft drinks	Beer	Other alcoholic drinks
1. Dahomey	83,000	2,258,000	31,000	38,700	980,000	-	44,300	1,278,000	31,000
2. Mali	61,000	13,000	5,000	30,000	-	-	31,000	13,000	5,000
3. Mauritania	900	1,000	300	-	-	-	900	1,000	300
4. Niger	-	49,000	16,000	-	-	-	-	49,000	16,000
5. Nigeria	252,000	1,711,000	18,000	240,000	700,000	-	12,000	1,011,000	18,000
6. Upper Volta	41,000	157,000	24,000	18,000	35,000	-	23,000	122,000	24,000
7. Ghana	257,000	663,000	426,000	119,700	288,300	184,330	137,300	374,700	241,670
8. Togo	26,000	54,000	29,000	8,820	-	-	17,180	54,000	29,000
9. Sierra Leone	1,000	247,000	34,000	-	70,000	9,192	1,000	177,000	24,800
10. Senegal	313,000	224,000	92,000	145,200	108,700	-	167,800	115,300	92,000
11. Liberia	232,000	414,000	39,000	77,300	45,500	4,773	154,700	368,500	34,200
12. Ivory Coast	452,000	87,000	458,000	175,000	30,000	-	277,000	57,000	458,000
13. Guinea	-	48,000	9,000	-	-	-	-	48,000	9,000
14. Gambia	-	10,000	3,000	-	-	-	-	10,000	3,000
Total	1,718,900	5,936,000	1,384,300	852,720	2,257,500	198,295	866,180	3,678,500	1,101,970

HL

TABLE 19

Estimated Additional Capacity Required by 1980 - Unit Cost According to the Size of Unit -
Number of Units Required - Total Costs and Number of Labours

	Required addition- al capa- city HL	Small and Large Sized Units ^{a/}						Soft Drinks				
		Kind of unit	No. of units	Unit cost 1000\$	Total cost 1000\$	No. of workers		No. of units	Unit cost	Total costs	No. of workers	
						1963	1980				1963 ^{b/}	1980
							Estimated					
					Estimated		Estimated					
1. Dahomey	44,300	small	6	100	600	140	240	6	100	600	140	240
2. Mali	31,000	small	4	100	400	132	160	4	100	400	132	160
3. Mauritania	900	small	1	100	100	-	40	1	100	100	-	40
4. Niger	-	-	-	-	-	-	-	-	-	-	-	-
5. Nigeria	12,000	small	2	100	200	540	80	2	100	200	540	80
6. Upper Volta	23,000	small	3	100	300	90	120	3	100	300	90	120
7. Ghana	137,300	big	2	700	1,400	471	360	19	100	1,900	471	760
8. Togo	17,180	small	2	100	200	76	80	2	100	200	76	80
9. Sierra Leone	1,000	small	1	100	100	-	40	1	100	100	-	40
10. Senegal	167,800	big	2	700	1,400	340	360	24	100	2,400	340	960
11. Liberia	154,700	big	2	700	1,400	180	360	22	100	2,200	180	880
12. Ivory Coast	277,000	big	4	700	2,800	360	720	39	100	3,900	360	1,560
13. Guinea	-	-	-	-	-	-	-	-	-	-	-	-
14. Gambia	-	-	-	-	-	-	-	-	-	-	-	-
				8,900	2,329	2,560						4,920

a/ It is estimated that a small unit has a capacity of 7,000 HL annually, and a big unit has a capacity of 72,000 annually.

b/ This figure was in most cases not available; consequently, an estimate has been made.

95. The number of workers for 1963 as well as the estimated number for 1980 for every country in the sub-region are also given in Table 19.^{1/}

96. In the case of beer we have obtained three sizes of factories, the first two assumed as small-scale units and the third as a large one. The capacities chosen are 21,000 HL, 50,000 HL and 100,000 HL of annual production, respectively. The output calculations are based on 300 working days and one shift for eight hours per day. Wherever the additional capacity required by 1980 was about 50,000 HL or less, we have recommended a small sized unit only. In cases where the additional capacity is nearly 100,000 HL or more, we have suggested the setting up of large sized units. On this basis, details relating to number of additional units, investments involved, employment potential, etc., have been worked out and are given in Table 19a.

97. It will be seen that there are for the entire sub-region 31 large sized units and seven small sized units. The setting up of the 38 units will involve an investment of US\$ 77,369 million. These units will provide employment to 12,760 workers by 1980.

98. The case of Dahomey requires special mention in the context of wide divergence between actual and apparent consumption; the apparent consumption being unrealistically higher in the context of the over-all sub-regional consumption pattern. This may be due to unrecorded movement of drinks from Dahomey to neighbouring countries. This inference is to some extent strengthened from the lower levels of consumption in some of the neighbouring countries. We did not intentionally rectify the apparent consumption figures for Dahomey, since such an adjustment would affect the over-all sub-regional consumption. The estimation of the additional capacity required for Dahomey in 1980 of 1,278,000 HL should thus be viewed in the light of the above picture. Table 19a mentions the setting up of 12 large sized units in Dahomey. This does not mean that all the 12 units should be located in Dahomey but should, on the other hand, be distributed among the countries around Dahomey.

^{1/} For Niger no data were available except the following information given in the "Comptes Economiques 1981": "Les Boissons: Cette branche comprend une seule activité, celle de la production des boissons gazeuses, effectuée par de petites entreprises. La production est estimée d'après les chiffres fournis par le Ministère de l'Industrie et du Commerce."

TABLE 19a

Estimated Additional Capacity - Number of Small and Big Units Required -
Unit Cost and Total Costs

	Required additional capacity	Small and Large ^{a/}	Number of Units	Cost of Unit 1000\$	Total costs 1000\$	Beer	
						No. of workers required	
						1963 ^{b/}	1980 Estimated
1. Dahomey	1,278,000	big	12	2,240	26,880	1,800	1,200
2. Mali	13,000	small	1	375	375	-	120
3. Mauritania	1,000	small	1	375	375	-	120
4. Niger	49,000	small	1	1,701	1,701	-	150
5. Nigeria	1,011,000	big	10	2,240	22,400	1,500	2,000
6. Upper Volta	122,000	big	1	2,240	2,240	150	200
7. Ghana	374,700	big	3	2,240	6,720	824	7,400
8. Togo	54,000	small	1	1,701	1,701	-	150
9. Sierra Leone	177,000	big	1	2,240	2,240	167	200
10. Senegal	115,300	big	1	2,240	2,240	200	200
11. Liberia	368,500	big	3	2,240	6,720	166	600
12. Ivory Coast	57,000	small	1	1,701	1,701	120	150
13. Guinea	48,000	small	1	1,701	1,701	-	150
14. Gambia	10,000	small	1	375	375	-	120
	3,678,500				77,369	4,927	12,760

a/ It is assumed that the small unit has either a capacity of 21,000 HL annually and costs around US\$ 375 thousand or a capacity of 50,000 HL annually and costs US\$ 1,701 thousand. The big unit is assumed to produce 100,000 HL annually and the cost is around US\$ 2,240 thousand. In every case eight working hours per day and 300 working days annually are taken into account.

b/ In only a few countries were figures available. For the other countries, estimates have been made.

99. In the case of other alcoholic drinks, it was already explained that the programme for local development of the other alcoholic beverages industry will be such as to produce an additional 10 million HL by 1980. Information on the level of optimum capacity on this branch of industry is very limited. It is observed that in Sierra Leone, the one factory which was built in 1963 cost US\$ 168,000 for a capacity of 9,000 HL annually of whisky, gin and Schnapps. On this basis we have estimated the number of additional units, investment and employment necessary in the different countries of the sub-region for realizing the 1980 target capacity. The details are furnished in Table 19b. As will be seen from this table, the figures for Ivory Coast appear to be too high. This is because of the very high consumption of alcoholic drinks in 1963 (see Table 9). It has not been possible to modify the 1963 consumption figure for want of details.

Gross Output, Value Added and Total Wages

100. The beverages industry plays a special role in the economy of some West African countries. In Ghana for example, the beverages industry lies in the third position after manufacture of wood and furniture and tobacco as contributed with around US\$ 14, US\$ 20 and US\$ 20 million in the value of gross output in the years 1962, 1963 and 1964, respectively. As reported in Ghana Economic Survey 1963, "In absolute terms, however, the greatest expansion was in the production of beer followed by the production of corrugated aluminium sheets. The value of beverage and tobacco (excluding spirit) in this country has increased by 19.8 per cent in the year 1963 as compared with 1962."^{1/}

101. In Ivory Coast the value of beer and soft drink production reached 1,062 million francs CFA (around US\$ 4.4 million) in 1962; it is estimated to have reached US\$ 7.6 million in 1965 and is expected to reach US\$ 10.3 million in 1970.

^{1/} Economic Survey Ghana, 1963, page 91.

TABLE 19b

Estimated Additional Capacity - Number of Units -
Total Costs and Number of Workers

	Required additional capacity	Number of Units ^{a/}	Unit cost 1000\$	Total cost 1000\$	<u>Other Alcoholic Drinks</u>	
					Number of workers	
					1963	1980 Estimated
1. Dahomey	31,000	3	170	510	-	60
2. Mali	5,000	1	170	170	-	10
3. Mauritania	300	-	-	-	-	-
4. Niger	16,000	2	170	340	-	30
5. Nigeria	18,000	2	170	340	-	35
6. Upper Volta	24,000	3	170	510	-	45
7. Ghana	241,670	26	170	4,420	353	462
8. Togo	29,000	3	170	510	-	55
9. Sierra Leone	24,800	3	170	510	40 ^{b/}	45
10. Senegal	92,000	11	170	1,870	-	176
11. Liberia	34,200	4	170	680	40 ^{b/}	65
12. Ivory Coast	458,000	50	170	8,500	-	875
13. Guinea	9,000	1	170	170	-	17
14. Gambia	3,000	1	170	170	-	10
	1,101,970			18,700	433	1,885

^{a/} The only available information about size and investment required for a unit to produce other alcoholic drinks is the factory built in Sierra Leone in 1963 which cost US\$ 168,000 with a capacity of 9,000 HL of whisky, gin and schnapps annually.

^{b/} Estimated.

TABLE 20

Gross Output - Value Added and Total Wages in the Countries of the Sub-region - 1963

'000 US\$

	Soft drinks			Beer			Other alcoholic drinks		
	Gross output	Value added	Total wages	Gross output	Value added	Total wages	Gross output	Value added	Total wages
1. Dahomey	775	403	80	43,220	30,559	3,189	-	-	-
2. Mali	606	315	62	-	-	-	-	-	-
3. Mauritania	-	-	-	-	-	-	-	-	-
4. Niger	-	-	-	-	-	-	-	-	-
5. Nigeria	4,844	2,520	498	30,763	21,750	2,270	-	-	-
6. Upper Volta	363	189	37	1,525	1,078	113	-	-	-
7. Ghana	2,422	1,260	249	12,712	8,988	938	4,312	1,408	193
8. Togo	170	88	17	3,050	2,157	225	-	-	-
9. Sierra Leone	-	-	-	4,703	3,325	347	172	56	8
10. Senegal	2,930	1,525	301	2,034	1,438	150	-	-	-
11. Liberia	1,550	806	159	1,271	899	94	86	28	4
12. Ivory Coast	3,536	1,840	363	-	-	-	-	-	-
13. Guinea	-	-	-	-	-	-	-	-	-
14. Gambia	-	-	-	-	-	-	-	-	-
Total	17,196	8,946	1,766	99,278	70,194	7,326	4,570	1,492	205

Total Gross Output - US\$ 121,044 thousand
Total Value Added - US\$ 80,632 thousand
Total Wages - US\$ 9,297 thousand

TABLE 21

Estimated Additional Gross Output - Value Added and Total Wages in the Countries of the
Sub-region for the Year 1980^{a/}

'000 US\$

	Soft drinks			Beer			Other alcoholic drinks		
	Gross output	Value added	Total wages	Gross output	Value added	Total wages	Gross output	Value added	Total wages
1. Dahomey	886	460	87	56,000	39,200	3,920	713	228	30
2. Mali	620	322	61	600	420	42	115	37	5
3. Mauritania	18	9	2	50	35	4	-	-	-
4. Niger	-	-	-	2,200	1,540	154	368	118	15
5. Nigeria	240	125	24	44,500	31,150	3,115	414	132	17
6. Upper Volta	460	239	45	5,400	3,780	378	552	177	23
7. Ghana	2,746	1,428	271	16,500	11,550	1,155	5,558	1,779	231
8. Togo	344	179	34	2,400	1,680	168	667	213	28
9. Sierra Leone	20	10	2	7,800	5,460	546	570	182	24
10. Senegal	3,356	1,745	332	5,070	3,549	355	2,116	677	88
11. Liberia	3,094	1,609	305	16,200	11,340	1,134	687	220	29
12. Ivory Coast	5,540	2,880	547	2,500	1,750	175	10,534	3,370	438
13. Guinea	-	-	-	2,100	1,470	147	207	66	9
14. Gambia	-	-	-	400	280	28	69	22	3
	17,324	9,006	1,710	161,720	113,204	11,321	22,570	7,221	940

a/ 1963 prices.

Total Gross Output - US\$ 201,714 thousand
Total Value Added - US\$ 129,431 thousand
Total Wages - US\$ 13,971 thousand

102. In Liberia the total wage bill in the breweries represents about 1 per cent of the total wage bill in the whole industry.^{1/}

103. As will be seen from Table 20, the total gross output in the beverage industry is estimated to be US\$ 121,044 thousand in the year 1963 whereas this total for total value added is US\$ 80,632 thousand and for total wages US\$ 9,297 thousand in the same year.

104. The additional gross output of beverages in 1980 is estimated to reach US\$ 201,714 so that the total gross output in that year will reach US\$ 322,758 thousand. The value added is estimated to reach US\$ 210,063 thousand and the total wages is estimated to reach US\$ 23,268 thousand (see Tables 20 and 21).

Conclusions

105. It will be evident from the previous chapters that beverages are one of the major items of consumption in the sub-region. Development of this industry in the sub-region on the lines indicated in Chapter VII will make this industry one of the important industries in the different countries of the sub-region.

106. Creation of capacity, although considered on a country-wise basis, should be viewed from the sub-regional approach, and there are good prospects for co-operation amongst the countries. In this way the combined programme of expansion of the beverages industry can be realized.

107. In the development of the three different branches of the beverages industry, it is essential that as far as possible locally available raw materials should be increasingly used. The setting up of a central beverage research institute will thus be highly beneficial. This institute can explore the possibilities of adapting local raw materials for use in the industry. For example, in the matter of soft drinks, particularly of foreign brands like Coca Cola and Pepsi Cola, the essential raw materials (mainly the concentrates, flavour and colouring materials) would have to be imported even in the future at a fairly heavy cost. This cannot be a healthy development. The

^{1/} See paragraph 28.

proposed research institute should, therefore, investigate the possibilities for manufacturing concentrates from locally produced raw materials, or develop other concentrates suiting the tastes and preferences of the people of the sub-region.

108. In regard to beer, this institute should experiment on the different types of basic raw materials such as high quality malt, so that the ultimate cost of beer is kept low. Today, for example, Liberia is importing all the raw materials for beer industry, except water. This is not a happy situation. The proposed research institute could be found useful in developing largely local inputs for the breweries.

109. In regard to other alcoholic drinks like wine, whisky, etc., Sierra Leone and Liberia have already developed a local base; the former has developed a locally distilled spirit, viz., "Omole", to be used together with the imported concentrates to produce different alcoholic beverages other than beer.

110. Some distilleries in Liberia are using locally grown sugar cane which is crushed in small installations and fermenting and distilling the cane juice, whereas the most significant and technically well-equipped distillery situated in Monrovia is using imported brown sugar as fermentation raw material.

111. From the above-given facts, the proposed research centre can undertake the responsibility to use local products and create local concentrates which can substitute for imported ones.

Bottle Manufacture

112. The consumption of bottles for the beverage industry is very large. The proposed development of beverages in the sub-region would require the parallel development of the bottle-manufacturing industry. This is dependent on the availability of proper raw materials, silica, etc. The bottle-manufacturing industry may develop in those countries which are well suited for the purpose. Local manufacture of bottles, apart from ensuring regular supply of bottles, will also bring down the cost of bottles.

CO₂, crown corks, etc.

113. As soft drink production is based mainly on CO₂, the development or expansion of this industry is also very necessary. Steps should also be taken for developing local manufacture of crowns. There is scope for sub-regional co-ordination in regard to the manufacture of these items.

BIBLIOGRAPHY

1. A Textbook of Brewing, by Jean de Clerck (Translated by Kathleen Barton-Wright), Volume I.
2. Revue de l'embouteillage et des industries connexes; Revue bimestrielle, No. 77; janvier 1966.
3. Brasserie - Rédaction - Administration - Publicité; janvier-décembre 1965, janvier et février 1966.
4. Le petit journal du Brasseur; 24 décembre 1965 - janvier, février et mars 1966.
5. L'Echo de la Brasserie; janvier, février et mars 1966.
6. The Breweries Journal and Hops and Malt Trades' Review; January-December 1965; January-March 1966.
7. Brasserie et Malterie de Belgique; janvier 1966.
8. Beverages; Volume 5, No. 1, July 1965, and Volume 6, No. 1, February-March 1966.
9. American Brewer; October 1965.
10. Food Processing and Packaging; January-December 1963, 1964, 1965.
11. Overseas Review; January-December 1961, 1962, 1963.
12. Compendium des Statistiques du Commerce Extérieur des Pays Africains et Malgache, 1962, 1963, 1964.
13. Statistiques Douanières Commerce Spécial République du Mali, 1963.
14. Ten-Year Plan of Economic and Social Development of Sierra Leone, 1962/63 - 1971/72.
15. L'action Politique du Parti Démocratique de Guinée. La Planification Economique; 1960.
16. Plan de Développement Economique et Social, République Togolaise 1966-1970.
17. Economie et Plan de Développement, République du Niger, 1962.
18. Rapport sur le Plan Quinquennal de Développement Economique et Social de la République du Mali, 1961-1965.

19. Rapport Général sur les Perspectives de Développement du Sénégal; juillet 1960.
20. The Gambia Government Development Programme 1964-67.
21. Economie et Plan de Développement, République de Côte d'Ivoire; mai 1961.
22. Economie et Plan de Développement, République du Sénégal; mai 1964.
23. Statistiques du Commerce Extérieur du Cameroun, 1961.
24. Progress Report 1964, National Development Plan, Federal Republic of Nigeria.
25. Economic Survey; Ghana, 1962, 1963, 1964.
26. Industry in Liberia; document presented by the Government of Liberia to the Symposium on Industrial Development in Africa; Cairo, 27 January - 10 February 1966.
27. Annuaire Statistique, République du Niger, 1963.
28. External Trade Statistics of Ghana, 1963.
29. Bulletin de Statistique, République du Dahomey, 1965.
30. Plan Quadriennal de Développement Economique et Social, République Islamique de Mauritanie 1963-1966.
31. Seven-Year Development Plan of Ghana, 1963/64 - 1969/70.
32. Bulletin Mensuel de Statistique, République de Haute-Volta; mars 1964.
33. Bulletin Mensuel de Statistique de Côte d'Ivoire; février 1964.
34. Ghana - Handbook of Commerce and Industry, 1960.

- - - - -