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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

ECONOMIC GROWTH
AND PROSPECTS
OF
THE IVORY COAST
(summary and four volumes)

VOLUME II
AGRICULTURAL DEVELOPMENT

July 24, 1970

Western Africa Department

CURRENCY EQUIVALENTS

(a) Until August 11, 1969

US\$ 1.00	= CFAF 246.85
French Franc 1.00	= CFAF 50.00

(b) After August 11, 1969

US\$ 1.00	= CFAF 277.71
French Franc 1.00	= CFAF 50.00

ABBREVIATIONS USED

Caisse*	- Caisse de Stabilisation et de Soutien des Prix des Produits Agricoles
BNDA*	- Banque Nationale pour le Développement Agricole
SATMACT*	- Société d'Assistance Technique pour la Modernisation Agricole en Côte d'Ivoire
SODEPALM*	- Société pour le Développement et l'Exploitation du Palmer à Huile
SODEFEL*	- Société pour le Développement des Fruits et Légumes
SODEFOR*	- Société pour le Développement Forestier
CFDT	- Compagnie Française pour le Développement des Fibres Textiles
IFCC	- Institut Français du Café et Cacao
IRHO	- Institut de Recherches pour les Huiles et Oléagineux
IRCA	- Institut de Recherche du Caoutchouc
IFAC	- Institut Français de Recherche Fruitière Outre-Mer
IRCT	- Institut de Recherches du Coton et des Textiles Exotiques
IRAT	- Institut de Recherches Agronomiques Tropicales et des Cultures Vivrières
CTFT	- Centre Technique Forestier Tropical
ORSTOM	- Office de la Recherche Scientifique et Technique Outre-Mer
SMAG	- Salaire Minimum Agricole Garanti

* Semi-autonomous Ivory Coast Government Organizations.

BASIC DATA ON AGRICULTURE

<u>Area:</u>	323,837 km ²
Area suitable for agricultural use about:	280,000 km ²
(Area under cultivation - including fallow)	about 70,000 km ²
<u>Population:</u> (evaluation 1970)	
Total	4.98 millions
Urban	1.5 "
Rural	3.5 "
Density	15.5 per km ²
Growth	about 3 percent (including immigration)

Agricultural Production

(excluding fish and timber) at constant prices:	<u>1960</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
	(billion CFAF)				
	67.9	86.1	93.7	86.7	99.9
annual growth rate	/ _____ 5.7% _____ /				

Gross National Product:

	(billion CFAF)				
Total	130.5	214.0	232.7	247.3	289.1
Primary sector	61.0	84.4	88.1	86.1	99.1
Percentage of primary sector	47	40	38	35	34

Value of Agricultural Exports

(including timber)	36.9	61.4	71.7	73.2	96.4
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IVORY COAST

Map

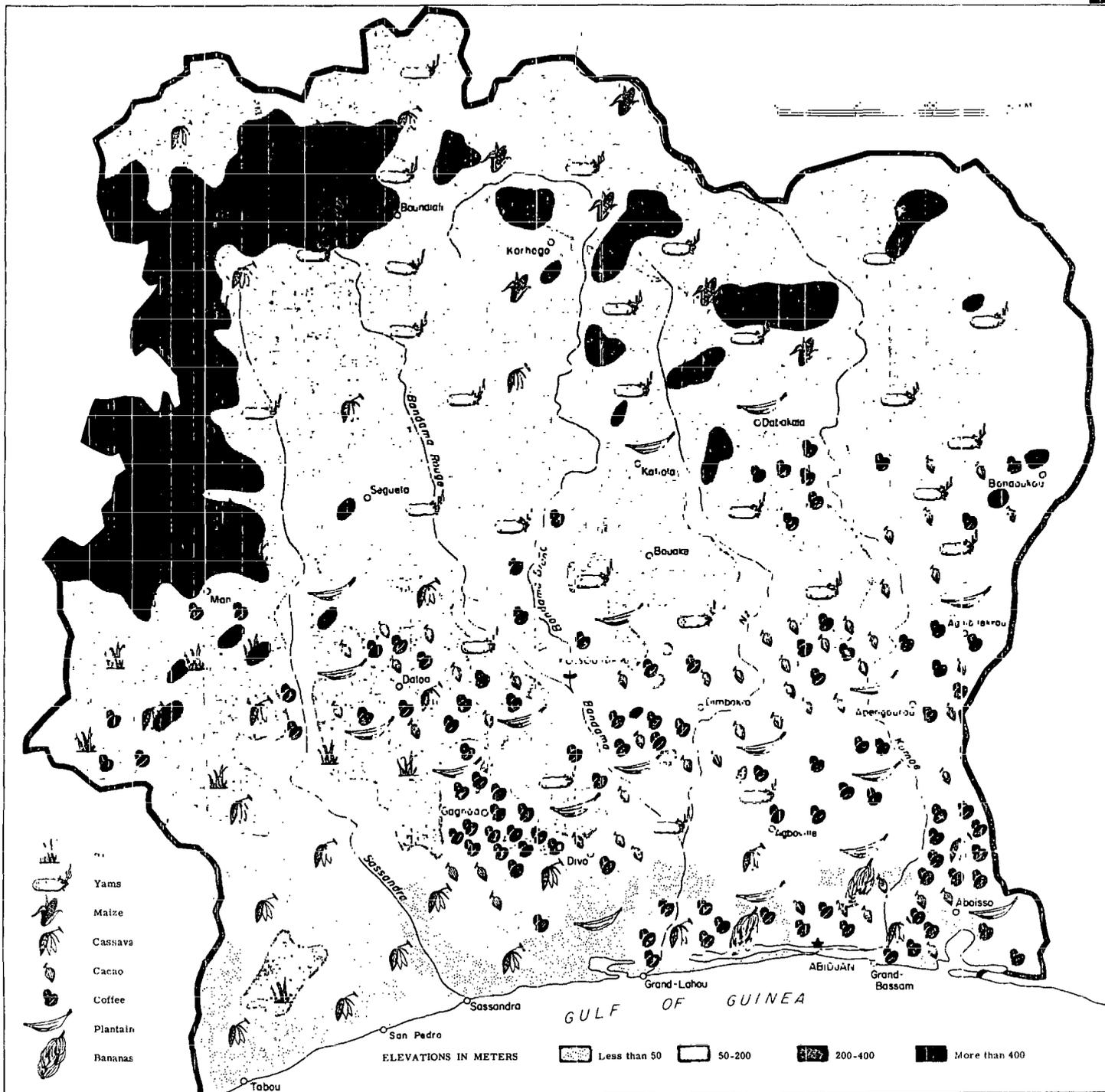


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This report is based on the findings of a mission, headed by Mr. L. de Azcarate, that visited the Ivory Coast in November/December 1969. It was chiefly written by Messrs. R. Bishop and R. Egli of the IBRD/FAO Cooperative Program.

SUMMARY AND CONCLUSIONS

1. The Ivory Coast is a country of vast agricultural resources that are still only lightly exploited. Rapid economic growth in the last decade has been favored by stable economic and political conditions that have stimulated an inflow of foreign capital and management and that have induced indigenous farmers to expand plantings and output of industrial and export crops. Although industries and services have developed very rapidly, agriculture remains the basis of the economy; 71 percent of the population lives in rural areas, and even if agriculture produces only 34 percent of GDP, it is the source of 67 percent of merchandise exports (timber provides another 25 percent) and it still supplies almost all staple food requirements apart from meat. Even if economic development continues unabated, the relative importance of agriculture will not change much in the next five years.

2. The volume of agricultural production has risen at an average annual rate of 5 percent during the period 1960-1968; industrial and export crops led with an increase of 7 percent per year, and food crops production rose at 3.1 percent or slightly more than the rate of population growth. Exports of coffee and cocoa have been very strong; and the competitive position of the Ivory Coast has benefitted from the economic and political disturbances in Ghana and Nigeria, which have been slow in expanding output and exports. Timber production, which stabilized at about 2.5 million m³ in the mid-1960s, rose to 3.5 million m³ by 1968, and fishery output, which rose in the early 1960s as the fleet expanded, has now stabilized at about 65,000 tons.

3. The evidence available suggests that the increase in average annual output per head in the Ivory Coast agricultural sector has been due to a shift in the distribution of the agricultural population to the more fertile forest areas that produce high value cash crops than to basic changes in technology. Immigration from the savannah countries has also contributed a great deal.

4. The Government's agricultural policy has been to encourage the production and sale of industrial and export crops, and the crop oriented research and extension services have been notably successful agents for implementing this policy. However, the Government has not had any overall program for increasing the production of food crops which was expected to rise in response to market forces. This policy for food crops appears to have been reasonably successful for the first part of the 1960s, but it seems that market forces alone have not been able to induce an adequate expansion in food output in recent years. The evidence is scanty, but retail food prices started to increase noticeably from 1966 and the import statistics show that since 1964 local production has not been able to meet the demands for fresh vegetables, milk products, meat and meat products, etc.

5. For the future, despite the great effort on agricultural diversification made by the Government, particularly in regard to oil palm development, the mainstay of the economy will continue to be coffee, cocoa, and timber. For cocoa the major problem is the uncertainty of the world market situation, but reasonable forecasts suggest that at current prices

demand for cocoa will expand steadily and that the Ivory Coast can raise exports at least during the next five years. For coffee it seems reasonable to expect that the International Coffee Agreement will be maintained and therefore the expansion of output and of exports will be maintained, but more slowly than in the past. There will have to be adequate and cheap supplies of agricultural labour for industrial crop production in the forest zones.

6. For forestry the future is not bright because of the implications of the present rate of exploitation upon the rapidly dwindling resource base. There are three possible policies: (a) to continue to exploit the various resources unchecked and use the returns to promote economic development in the rest of the country, or (b) to spin out the resources as much as possible, in the meantime trying to develop uses for tree species, which are now considered unsuitable, or (c) to try to augment existing resources by system of plantations. Whichever policy or combination of policies is adopted, more effective direction over the forest sector needs to be exerted.

7. The Government has committed resources to three large investment projects - the Kossou Hydropower Dam project, the development project for the southwest region (San Pedro Project), and the continuing expansion of Abidjan. These commitments have considerable implications regarding the type and speed of agricultural development and at the same time indicate the options open to the Government for its agricultural activities.

8. The rapid urbanization foreseen over the next decade poses important agricultural problems. It is expected that urban consumption of foodstuffs will more than triple during the next ten years. Unless there is to be an expansion in imports, this implies the need to increase the marketable surplus of food crops and the productivity of manpower employed in growing food crops. Although the northern region has good agronomic possibilities for increasing output of cereals for human consumption, no satisfactory farming system using modern techniques has yet been devised for that area. Thus unless this problem can be solved, there will have to be continuing reliance on the forest areas to produce a marketable surplus of food to supply the towns, particularly Abidjan. This implies the need for a continuation of the present flow of labor to the forest areas and also perhaps more emphasis than at present on encouragement of food crop development by the Government, especially in the fields of research and extension. It will also be necessary to increase the capacity of the food distribution system.

9. The need to maintain the rhythm of development raises in a particularly acute form the question of regional priorities. For the immediate future the rhythm of development seems most likely to be maintained if agricultural development activities are concentrated in the south rather than the north, and in the southwest rather than the southeast, where there is beginning to be a shortage of unoccupied land. In general, therefore, the decision to develop the southwest appears justifiable from an agricultural point of view, but in the long run the north also will have an important part to play, in view of its potential

for both crop and livestock production. However, in order to utilize this potential it will be necessary to devise a farming system which overcomes the interrelated deficiencies in the present system consisting of low labor productivity, labor bottlenecks, small farm size, small commercial surplus and low farm family income.

10. In carrying out its policies in the past, the Government has utilized the services of a number of semi-autonomous agencies dealing with specific crops and created in rather an ad hoc fashion in response to specific needs. This has now reached the stage where there is a real danger of confusion and overlap particularly at the farm level, and in addition these agencies are tending to develop a momentum and policy of their own not always in accordance with the overall needs of the agricultural sector. For the sake of good policy execution in the future it seems to be necessary to find a way of retaining the undoubted technical efficiency of these agencies, at the same time as enforcing adequate policy and financial control at the center as well as coordinated action at the farm level.

11. As regards prices, the Government has attempted to maintain stability, or at least insulation from world market fluctuations, at the farm level for most commercial and industrial crops by means of legally fixed prices. In order to tailor this policy more accurately to requirements in the future, it will be necessary to collect more information and data on farm management conditions.

12. In general the conclusion of the Report is that the agricultural policies and actions the Government seems to be adopting are generally justifiable in the light of the present situation, with the possible exceptions of food production and forestry exploitation. In any case, even with these exceptions, it seems possible to look ahead to continuing progress of the agriculture which will perhaps not be quite as fast as in recent years but will still be very satisfactory.

I. OVERALL DEVELOPMENTS

A. Growth of Agriculture Development in the recent past

1. In the Ivory Coast, agriculture (including forestry and fishery) is the largest economic sector, contributing one-third of GDP and about 90 percent of exports. In 1965, over 75 percent of the population is rural. During the last ten years there has been a striking increase in agricultural production. From 1960 to 1967 the gross value of output of the agricultural sector increased by about 50 percent in current prices as shown in the following table :

	<u>Gross Value of Agricultural Output</u> (Current Prices of CFAF million)			
	<u>1960</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>
Total:	69,366	100,111	104,413	104,200
<u>of which</u>				
Root crops	21,553	29,471	27,582	28,077
Coffee	13,508	18,757	19,406	13,778
Timber	6,504	16,709	16,734	19,963
Cocoa	7,669	7,086	10,664	9,039
Cereals	5,586	7,547	8,193	9,698
Banana	1,743	2,923	3,293	3,813
Fishery	1,643	2,940	2,885	3,139

2. No official index of agricultural output is published, but the mission made its own estimates using constant prices and various published production figures. These estimates, relating only to food, and industrial and export crops, are shown in the following table:

	<u>Value of Agricultural Output (1960=100)</u>				
	<u>1960</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Total:	100	127	138	128	147
Food Production	100	118	118	124	128
Industrial and export	100	138	163	133	171

3. Between 1960 and 1968 food production increased at just over 3.1 percent per annum. The overall growth rate of industrial and export crops is estimated to have been about 7 percent per annum. The combined rate was about 5 percent per annum. Separate indices based on production estimates for timber and fishery are as follows:

	<u>1960</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Timber	100	253	253	294	337
Fishery	100	133	139	135	133

Agriculture in the economy

4. In spite of the growth shared by all parts of the agricultural sector, its relative importance in the economy has declined steadily. In 1960, the primary sector contributed about 47 percent of GDP, but by 1968 this proportion had fallen to 34 percent. However, the raw or semi-processed products sectors have not lost any importance as a source of foreign exchange: in 1965 they provided 94 percent of total commodity export earnings and in 1968 they provided 92 percent. The most important export by value is coffee which averaged about CFAF 30 billion per annum over the period 1966-68, followed by timber, about CFAF 22 billion, and cocoa, about CFAF 15 billion. In quantitative terms, timber is first with exports of 3 million m³ in 1969, then coffee, 215 thousand tons, followed by bananas, 150 thousand tons and cocoa, 120 thousand tons.

5. The rapid growth of the secondary and tertiary sectors, notably transport and marketing was a result in large part of the growth of agriculture but it also constitutes a structural change in the economy which will have repercussions in the future. It might be expected that this structural change, of which one symptom is increasingly rapid urbanization, might lead to stresses which would be reflected in the relative prices of foodstuffs in the town. While quantitative evidence is scanty, it is significant that the retail price index for foodstuffs in an African family budget rose by 40 percent from February 1960 to the end of 1968. Given the rapid rate of economic development, this increase is relatively moderate, taking the period as a whole. However, it is faster than for farm prices, as indicated in the national accounts, or for other retail prices. Even allowing for weaknesses in the data, this seems to suggest that there may have been either/or both, increasing difficulties in food distribution and growing food deficiencies in the towns.

Growth of various agricultural sectors

6. For traditional basic food crops such as yams, cassava and plantains, the increase in output is not well documented. In general, it is assumed that output has increased at the same rate as the agricultural population (i.e. no change in productivity per caput). This would imply that there had been declining ability to meet the requirements of the population as a whole, but the evidence is not conclusive. Special mention should be made of rice where there was an extensive promotion campaign and production more than doubled between 1960 and 1968; by comparison other cereals (maize, millet and sorghum) have been somewhat stagnant.

7. As regards commercial crops, sales of coffee fluctuated widely, partly as a result of natural conditions and partly in response to price movements. The basic productive capacity, however, has certainly risen as a result of new plantings unofficially estimated at about 2 percent per annum. The official view is that this trend is now being offset by declining productivity of coffee bushes on account of age and the productive potential is therefore stabilizing at about 230,000 tons. Cocoa sales also rose rapidly in the early part of the period, but the rate of increase then slowed down and the official view is that present productive capacity is about 150,000 tons. In the latter part of the period, the main burden of maintaining the growth rate in agriculture has fallen on the secondary crops such as pineapples, oil palm and cotton where rapid increases in output have been recorded. Output of pineapple and improved oil palm bunches increased by about 50 percent and of cotton nearly trebled between 1966 and 1968 (Statistical tables, Table 3).

8. Output of timber also rose remarkably from a level of 1 million m³ in 1960 to about 3.5 million m³ in 1968 and an estimated 4.5 million m³ in 1969 (Statistical tables, Table 3). Fishery output rose rapidly in the first five years of the decade, but thereafter stabilized at about 65,000 tons per annum.

Imports of foodstuffs

9. Although the Ivory Coast is a predominantly agricultural country with a low caput income, foodstuffs imports are higher than might be expected averaging annually over 11 billion CFAF in 1966-68 excluding live animals which move freely into the Ivory Coast from neighboring countries, and so do not fully appear in the trade statistics. The most important group of food imports is cereals which averaged about CFAF 3.6 billion annually during the four years 1965-1968. Next in order come beverages, sugar and dairy products, all of the order of 1.5 billion, and imports of livestock also are estimated to be of the same order.

10. There is some evidence of a tendency to increasing foodstuff imports. After a period of reasonable stability in imports of foodstuffs (both volume and value) from 1960-63 there was an apparent rising trend to 1966 followed by wide fluctuations. Whatever the basic trend, it is, the mission believes, affected by special factors. For instance, between 1964 and 1968 the value of imports of milk and egg products rose by 56 percent, of sweets by 62 percent, of fresh vegetables and fruits by 34 percent, of conserved fruits and vegetables by 35 percent, of cereal preparations by 60 percent (Statistical tables, Table 6). This situation is in part a reflection of the large and growing European population mainly resident in Abidjan, and the increasing number of affluent Africans.

B. Selected Crops and Commodities

Coffee

11. The first coffee plantations, established around 1930 were in the hands of European planters, but their holdings only totalled about 30,000 ha, and it was not until African farmers took to coffee planting after the war that the industry really increased rapidly. By 1950 there were about 200,000 ha by 1960 about 400,000 ha, and by 1965 about 600,000 ha of coffee. Since 1965 the planting rate has slowed down to an estimated 15,000 ha per year. The Government claims that the slowing down on the rate of plantings means that the average age of the trees is progressively increasing and natural productivity falling. In order to maintain this productivity the Government considers that annual plantings should be of the order of 30,000 ha.

12. Coffee can be grown throughout the forest area as well as in forest galleries in the savannah zone. It is mostly grown in association with cocoa, and is mainly concentrated in the southeast. It is said to be largely grown on small holdings, and it is believed that there are 200-250 thousand small holdings of 1-5 hectares in size, but concerning farm size and income distribution (and indeed about many other important features not only of coffee but of agriculture in general) there is a surprising lack of firm data. The total area now under coffee is officially estimated to be 665,000 ha but as this is calculated on the basis of assumed yields related to sales of coffee by the farmers, the area figure must be subject to a fair margin of error. Present planted area is possibly about one third of the total land suitable for coffee from the point of view of soils and climate. This area has not yet been accurately assessed however, and in any case except in the not yet developed south western region much of it would probably not be freely disposable by the present occupiers for further coffee planting. So far only unselected planting material has been used, with an inherently low productivity which could not be raised substantially even if there were better management. Thus, a first step in raising yields must be to introduce genetically better yielding bushes. At present practically the only input for the establishment and maintenance of a coffee plantation is labor. A family can take care of a plantation of up to 2 ha, but larger plantations require hired labor, especially for harvesting. After planting, the tree receives practically no care; adult trees are not pruned; and there are few other inputs. Under these conditions yields are low, of the order of 300-400 kg/ha and the economic life of the trees is short, 15-25 years. It is estimated that the establishment and maintenance, up to production of a small holder plantation requires about 300 man/days per ha, and maintenance of the bearing plantation, including harvest, about 80 man/days per year. At a yield of 400 kg. one hectare provides a gross income of about CFAF 38,000 per ha, and net income, excluding labor cost, is about CFAF 36,000 per ha.

13. Coffee processing is also primitive. The dried berries are decorticated in the villages with small hullers. This work is costly and of low quality. Sorting, done manually, is laborious and inefficient. Storage facilities are concentrated in Abidjan and are inadequate in the interior.

14. One of the main controversies concerning the implementation of the Government coffee program is whether in the future coffee should be grown under intensive or extensive cultivation methods. Not enough data on coffee farm management are available to give a clear answer to this question. However, since the indications are that intensive coffee growing would require a higher labor input than by traditional method, and labor is more of a bottleneck than land, the mission thinks that in the future most of the coffee in the Ivory Coast will be produced by traditional methods.

Cocoa

15. Cocoa is the oldest cash crop in the Ivory Coast. It developed slowly until the mid-fifties and then production increased rapidly after the opening of the port of Abidjan. From the beginning cocoa was a small holder crop and it is estimated that in 1968 there were about 100,000 cocoa planters in the Ivory Coast.

16. In many ways, cocoa is grown under the same conditions as, and mostly in association with, coffee. No census exists of cocoa plantations and the estimates of cocoa area vary greatly according to the sources. The Ministry of Agriculture statistics indicate that there are about 350,000 ha of cocoa plantations, whereas the IBRD mission appraising a cocoa development project estimated that the cocoa plantations cover about 450,000 ha. Also, estimates of yearly planting rates vary from 10,000 to 16,000 ha. These discrepancies are mainly due to variations in yield estimates from which the planted area is deduced. These figures may be compared with the estimate of 1.5 million ha of land suitable for cocoa, but the same observations about development potential apply as for coffee, with the exception that the bushes already planted do respond to better management.

17. As with coffee, labor is by far the largest input in establishing a plantation. Establishment and maintenance of the plantation require the same amount of labor as coffee, about 300 man/days per ha, but maintenance of the bearing plantation requires less than half the number of man/days per year than coffee, i.e. about 30. Money operating costs are slightly higher than for coffee, about CFAF 3,000/ha because plant protection is necessary. The gross income for a yield of 400 kg/ha is of the order of CFAF 32,000.

18. The characteristics of traditional coffee and cocoa growing, namely very low financial costs for the establishment of the plantation and low labor input for maintenance of the producing plantation, are to a large extent responsible for the spontaneous development of smallholder plantations

19. Considerable technical assistance, backed up by credit, is given to cocoa farmers. For instance, Government assists farmers, if organized in groups of 25 or more, in the purchase of sprayers and spraying material.

For this reason, cocoa yields are thought to have increased gradually in the last few years from 300 kg/ha to 400 kg/ha. This is far below what might be achieved since IFCC considers that with existing cocoa bushes and improvement management it should be possible to reach 700 kg/ha; the Bank appraisal mission estimates that yields can be increased on an average to 600 kg/ha.

Forestry

20. The forestry sector has been one of the mainstays of development of the Ivorian economy in the last few years. Growth in output has been very rapid, as has also growth in exports (Statistical Tables, Tables 5 & 12). From 1960 to 1967, the value of output of the forestry sector grew from 5 to 9 percent of the value of total Ivorian GNP and varied between 15 and 26 percent of total exports. In addition the State obtained from the forestry sector about 10 percent of total taxes.^{1/} Production probably reached about 4 million m³ in 1969 of which 3 million m³ was exported as roundwood. The remainder was processed, of which the equivalent of 300,000 m³ was consumed in the country.

21. The densely forested area totalled about 8.3 million ha in 1966. The volume of standing timber in this area is estimated at about 200 m³/ha., but the proportion utilizable commercially is small, between 16 and 20 m³/ha., or about one tree per ha. The proportions of various categories of utilizable timber are given as follows:

	<u>S.W.</u>	<u>Rest</u> million m ³	<u>Total</u>
Category I	14	27	41
Category II	17	63	80
Category III	24	70	94

22. The Category I timbers, being more valuable, are exploited more intensely than the others. In 1966, for example, nearly 65 percent of production was Category I, while only 5 percent was Category III. Even within Category I, there is very uneven exploitation of different species with sipo alone accounting for over 30 percent of total forest production in 1966. This intense selective exploitation has resulted in imminent exhaustion of certain species. In 1968, it was estimated for instance, that assamela stocks would be exhausted in 3-4 years and sipo in 8 years, at the then going rate of exploitation. Besides commercial exploitation, it

^{1/} Figures taken from Ressources Forestieres et Marche du Bois de la Côte-d'Ivoire, CTFT, 1968

is estimated that each year about 300,000 ha of forest area are cleared for agricultural purposes causing a loss of one million cubic meters.

23. To some extent the very intense activity of the past few years is due to fortuitous factors which all combined to concentrate European demand on the Ivory Coast. Among these factors may be mentioned the closing of the Suez Canal, which tended to improve the competitive position of the Ivory Coast by comparison with Far Eastern producers; the reduction in production in Ghana because of depletion of resources, and interference with commercial operations in Nigeria and Equatorial Guinea. Even if these factors do not continue to operate and there is some slackening in activity, there is the basic policy issue of how to face up to exhaustion of stocks.

24. The forestry industry is almost entirely in the hands of the private sector. It displays a great variety of organizational structure. Basically forests are exploited under concessions which are allotted by the Government to lumber companies, on payment of appropriate fees. Each concession covers 5 km². The lumber company specifies the species it wishes to exploit.

25. Once the named species have been exploited, the concession expires and may be transferred to another company. The activities of the lumber companies may vary from simple felling to complete integration of felling, transport, processing and export. Many companies are integrated or have close associations with processing operations in Europe; this raises difficulties for the development of domestic processing industries. It is estimated that only 30-40 percent of timber production is carried out by producers who are not exporters. In 1966, there were 118 forest enterprises, of which 22 accounted for 15 percent of production, 30 cut between 10,000 m³ and 15,000 m³ per annum and 66 less than 10,000 m³ per annum. In 1966, there were 56 wood conversion companies.

26. To carry out afforestation and to advise the Ministry of Agriculture on forestry problems, the Government agency SODEFOR was created in 1967. It is financed by a 2 percent tax levied on the f.o.b. value of export logs, which is expected to yield about CFAF 400 million in 1969. This amount covers the current expenses of SODEFOR and permits reafforestation of about 2,000 ha per year. The main species planted are teak and acajou. For both species good planting techniques have been developed, teak being planted in clear stands while acajou is introduced into natural stands. The cost is about the same for both, of the order of CFAF 130,000 per ha. Trees are expected to reach maturity after 60 years for teak and 80 years for acajou and to yield about 300 m³ per ha. The return on investments is low, estimated at about 6 percent for teak and about 4 percent for acajou.

Oil Palm

27. Until the war, natural palm groves were the only source of palm oil in the Ivory Coast. After the war a few private estate plantations were established and are now in full production. Oil production increased

from 18,500 tons in 1960 to 30,000 tons in 1969. Production of oil from natural groves is thought to be about 7,000 tons. Production of palm kernels increased from 15,000 tons in 1960 to 22,500 tons in 1968. In general, soil, climate and topographic conditions are reasonably good for oil palm in fairly widespread areas in the South, though yields are unlikely to reach the level of the best in Malaysia.

28. In 1962, the Government launched a large oil palm development program, in which IBRD has participated. This program will comprise, by 1970, 42,000 ha of estate plantations and 21,000 ha of outgrower plantations. Both estate and outgrower plantations follow modern cultural practices. Because the majority of trees are still young, full yields have not yet been reached, but no major technical problems have arisen. Plantation yields will, it is anticipated, be about 16 tons of bunches and 3-3.5 tons of oil per ha, depending on location and type of plantation. The estates are equipped with modern facilities to process their crop and the harvest from outgrowers. The palm outgrower plantations follow intensive cultivation methods. They require high initial investments of the order of CFAF 150,000 per ha and outgrower plantations are possible only with the provision of credit. The outgrower has to provide 260 man/days per ha for the establishment of the plantation and 35 man/days per year for maintenance before production. Usually he has to hire labor during the establishment period. The labor requirement for maintenance and harvest of the bearing plantation amounts to 60 man/days per ha. The gross income of one hectare of plantation producing 12 tons of bunches is expected to be CFAF 60,000.

29. By 1970, most of the land suitable for estates east of the Sassandra River will have been taken up, though there may still be possibilities for smallholder development. West of the Sassandra River surveys are going on to determine the extent of the potential area for development of oil palm. As regards yields, work on improvement is continuously in progress, leading to increases estimated to average about 3 percent per annum.

Coconut

30. Till about 1960 there were only small village plantations along the coast which produced coconut mainly for fresh consumption. After 1960 improvement of these plantations was undertaken with the object of producing copra. At present there are about 7,000 ha of old village coconut plantations, and about 7,000 ha of young coconut plantations not yet in production. In 1967, a coconut development program similar in concept to the oil palm project was started, also with IBRD participation. It includes 4,500 ha of estate plantations and 3,000 ha of outgrowers plantations. This project will be completed in 1970 bringing the total area under coconut palms to 17,000 ha. So far no major technical or organizational problems have arisen.

31. The establishment of a coconut plantation requires high initial investments, mainly for land clearing, of the order of CFAF 190,000 per ha,

but labor requirements are low, 90 man/days per ha for establishment and 10 man/days per year for maintenance before production. Maintenance of the producing plantations, including harvest and preparation of copra, requires 60 man/days per year. When the plantations come into production yield is expected to be 2.7 tons copra per hectare and gross income about CFAF 75,000 per ha. The low labor input for coconut growing makes this crop attractive for smallholders.

32. The best ecological conditions for the coconut palm prevail along the sea coast, and surveys of areas suitable for coconut growing are continuing, both outside the coastal belt and west of the Sassandra River, but final results are not yet available. However, according to preliminary estimates 40,000 to 50,000 ha could be planted in the coastal belt alone, mainly as outgrower plantations.

33. The possibility of considerable improvements in yield, principally through nutrition and breeding, has been demonstrated. On established village plantations, yields can be increased from 600 kg of copra per ha to 1,800 kg/ha through adequate fertilizer applications, mainly potassium. Also, improved local varieties give yields of 2,500 kg of copra per ha and hybrids with a yield of 3,200 kg/ha have recently been developed. Thanks to the use of irrigation, production of hybrid seed is being considerably accelerated and it is expected that from 1971 on, only such seed will be distributed.

Cotton

34. Until 1960 the Ivory Coast produced only a small quantity of barbadense (Mono) cotton. In 1960, hirsutum (Allen) cotton was introduced and production rapidly and steadily increased to 48,000 tons of seed cotton in 1968. The production of barbadense cotton has declined from 7,000 tons in 1960 to 2,500 tons in 1969 and is expected to disappear.

35. The introduction of hirsutum cotton was intended to provide a cash crop to the population of the savannah and thus increase their cash revenue. In support of this policy, the Government is making a substantial research and extension effort linked with free distribution of inputs and a high and guaranteed price. The farmer has to pay CFAF 4,800 per ha for seed and fertilizers and he gets pesticides and application equipment valued at CFAF 7,400 per ha free of charge. The labor requirement is 150 man/days per ha. With high average yields of about 900 kg/ha gross return is about CFAF 30,000 per ha and after deduction of the cost of seed and fertilizers, the net return excluding labor cost is about CFAF 25,000. This would fall to only about CFAF 17,500 without subsidy.

36. IRCT is in charge of cotton improvement, and improved varieties are regularly released. An outstanding characteristic of the variety 444.2 planted at present is its high fiber content of 40-41 percent. CFDT is in charge of commercial seed production, extension, collection, processing and marketing of cotton. The extension service financed by

FED is not charged to the farmers. At present, CFDT operates four cotton gins with a capacity of 80,000 tons.

Rice

37. Cultivation of rice is practised throughout the Ivory Coast, in the forest as well as in the savannah. The total area under rice is now about 260,000 ha. Rice is grown under three different conditions:

- (1) Upland rice - dependent completely on rainfall.
About 90 percent of the rice area is upland rice.
- (2) Irrigated rice - with complete water control.
There are no large irrigation projects in the Ivory Coast. However, in the southern savannah zones, forest galleries can be transformed into permanently irrigated rice fields with good water control, producing two or even three rice crops per year. In the northern savannah zone the same is done in certain forest galleries, but the water supply is assured for only one crop per year.
- (3) Flood rice - using natural flood waters, principally in the area of Odiéné and Boundali.

Irrigated and flood rice occupy about 10 percent of the rice area and produce about 20 percent of the total.

38. The Government has actively promoted rice production for the last five years. In general, the same means have been adopted as for cotton, namely, vigorous research and extension, together with support for more use of inputs and a guaranteed price.

39. For yields of about 1,800 kg/ha, upland rice requires the use of improved seed and fertilizers valued at about CFAF 4,000 per ha available on a loan basis to farmers entering the credit scheme. Labor requirements are of the order of 200 man/days per ha. The gross income is CFAF 36,000 per ha, leaving a net income of about CFAF 32,000 after deduction of the cost of seed and fertilizers.

40. The potential for development of irrigated rice is not well known. There are no major irrigation works in prospect though some irrigation has been proposed in connection with Kossou. The area under forest galleries, which can be economically converted into rice paddies has not been assessed while the growing of flood rice is a recent development and there is not yet sufficient experience to show whether it is economical. In any case, irrigated rice is a labor-intensive crop requiring 300-400 man/days ha, which may put it at a disadvantage by comparison with upland rice which requires only about 50 man/days ha.

41. The potential for upland rice is dependent on its association with production of tree crops, i.e. cocoa and coffee, in the forest areas. When new areas are planted to coffee and cocoa, two or three successive intercrops of rice and other food crops are taken until the bushes cover the ground. Afterwards rice is grown on cleared ground with a long fallow rotation. Shortening of the fallow, e.g. by taking some land for more coffee or cocoa, runs the danger of soil degradation, erosion and lowering of rice yields. Thus, it seems likely that there is scope for some increase in rice output as new land is put under coffee and cocoa.

42. IRAT has only recently started research on rice in the Ivory Coast. For upland rice a selected local variety (Moreborecan) is planted at present, which yields 700 - 800 kg/ha paddy under traditional cultivation methods and 2,000 kg/ha under intensive cultivation. The same variety when planted on the naturally flooded river banks yields 1,000 - 2,500 kg/ha depending on the timing of the floods. For irrigated rice, IRRI (International Rice Research Institute) varieties have been introduced, mainly IR. These varieties are susceptible to Piricularia in the Ivory Coast and are not satisfactory.

43. SATMACI provides a combined extension and credit service. While the extension results have been satisfactory, they still cover only about 30,000 ha of irrigated and upland rice. Further, the credit record has been bad as regards payment. SATMACI is also in charge of rice processing and marketing. It operates four rice mills with a capacity of 70,000 tons and pays a guaranteed price. However, since the farmers prefer to sell to private rice processors who pay a better price for paddy than SATMACI, it receives only a small proportion of the rice produced, which is often of poor quality. Thus its mills work far below capacity.^{1/}

Bananas

44. The export banana industry was developed mainly by European planters who, for political reasons, left Guinea and established themselves in the Ivory Coast. Lately, efforts have been made to promote African outgrower plantations in the surroundings of the existing packing plants, especially in the irrigated area around Agneby. Banana exports have increased gradually from 130,000 tons in 1960 to 184,000 tons in 1968. Over half of the exports go to France and have customs preference in that country.

45. Bananas for export are produced in six different centers, two near the coast and four as far as 100 km inland from the port of Abidjan. There are 19 packing houses. Export bananas are produced in large plantations owned mostly by Europeans who have their own packing houses and by smaller African planters who deliver their crop to the packing houses.

46. Natural conditions for banana production are not as favorable in the Ivory Coast as, for instance, in Central America. High inputs of fertilizers are required and nematodes are a serious problem. These two

^{1/} Despite this, SATMACI has ordered four new mills in 1969.

features, as well as decentralized production are mainly responsible for high production and packing costs. Average yields vary between 25 and 35 tons/ha according to area.

47. So far there are only a few outgrower banana plantations and it is doubtful whether their number will increase. Establishment costs are high, about CFAF 80,000 per ha and operating costs, mainly for pest control, fertilizers and plastic bags, are also high - about CFAF 140,000 per year. Labor input is very high, of the order of 350 to 450 man/days per ha. Although the gross income is about CFAF 400,000/ha the net income, excluding labor cost, is only about CFAF 180,000/ha.

48. IFAC is in charge of research on bananas and is working mainly on phytosanitary problems. Extension service to African farmers is provided by SODEFEL, a newly created government agency in charge of promotion of fruit and vegetable production.

Pineapples

49. The main production centers are around Ono on the coast and at Tisate further inland. Each of these centers has a canning factory; the total capacity of these two is 115,000 tons. A third factory is under construction, with a capacity of 60-70 thousand tons.

There are three types of pineapple production:

- (1) Industrial plantations established by the canning factories;
- (2) Outgrower plantations around the canning factories working on a contract basis; and
- (3) Production of pineapples for fresh export. This production requires high technical skill and is mostly carried on by European planters. About one-sixth of total output falls into this category.

Yields are generally high - of the order of 75 tons per ha - and cultivation methods adequate. Since the Ivory Coast has favorable conditions for pineapple growing, and the present area covers less than 2,000 ha, there would appear to be room for substantial expansion.

Livestock

50. The numbers of livestock in the Ivory Coast can only be estimated indirectly. The most thorough attempt to collate all available information, made by SEDES in 1968, resulted in figures which disagree in some respect from those of the Ministry of Animal Production. The SEDES estimates of numbers of animals and meat produced in the Ivory Coast are as follows:

	<u>Cattle</u>	<u>Sheep and Goats</u>	<u>Pigs</u>	<u>Poultry</u>	<u>Total</u>
Number '000	350	1,400	100	6,000	
Meat tons	3,200	4,200	2,000	7,000	16,400
Offal tons	800	600	200		1,600

About two-thirds of the cattle are found in the northern part of the country where trypanosomiasis is not a serious problem. In the rest of the country, small herds of trypano resistant cattle (N'Dama, Baoulé, Lagunaire) exist, but regular outbreaks of pleuropneumonia cause severe losses all over the country. Potentially, the carrying capacity of the savannah area appears to be high; there may eventually be good possibilities for increasing cattle production. The present offtake estimated officially at 10 percent - is low, due largely to poor husbandry. Farmers who own cattle generally entrust them to nomadic Peuhls, who are paid in kind in the form of milk and other products from the herd. During the dry season cattle have to range widely in search of water, and mortality is often high.

51. Sheep and goats are distributed much more evenly over the whole country, being found wherever there are people, mainly in very small flocks of 2 to 4 head. Modern poultry production appears to be getting underway, but in 1967 local production of eggs of high yielding strains was only about 200,000 per year. There is virtually no modern pig industry, though the Ministry has developed a breed from the local scrub pigs.

52. Because of the small size of the domestic livestock industry, the Ivory Coast is largely dependent on imports for its supplies, particularly of beef:

	<u>Production and Imports of Beef</u>	
	1960	1965
Cattle:	thousand head	
Production	28	38
Imports	79	115

At the present time only about one-sixth of the beef and one-half of the mutton and goat meat consumed in the Ivory Coast comes from the national herd; the rest is imported. A large proportion of the meat imports enter the country as live animals, as shown in the following table:

	<u>Recorded imports of live animals and meat</u>	
	<u>1967</u>	<u>1968</u>
Live animals ('000 head):		
Cattle	123	158
Sheep and goats	175	249
Meat (tons)	683	811

These animals originate mainly from Upper Volta, Mali and Niger, and are imported either on the hoof, by train or by truck.

53. In the view of the Ministry of Animal Production, the chief obstacle to livestock development is disease. The disease problem is certainly of great importance, but no longer a barrier to cattle development. Trypano-tolerant breeds such as the N'Dama and Baoulé can be used in the savannah where the tse-tse fly is a problem and satisfactory progress has been made in regional programs for the eradication of rinder pest and pneumonia, in which the Ivory Coast is collaborating.

54. Important as these disease problems are, the mission feels that other constraints are equally significant in assessing the possibilities of development. These are: (a) about one third of the country is covered with forest; (b) the number of cattle at present in the country is rather small and thus only a relatively small absolute increase in output can be expected; (c) in the savannah areas, where grazing conditions are most favorable, satisfactory solutions for development have not yet been worked out, especially as regards animal husbandry and grassland management; and (d) most importantly, even in the savannah areas there is no tradition of animal husbandry, and institutions concerning animal ownership and management are not conducive to development. Some work is being done on some of these problems, for instance, a small beginning is being made on ranch development, but none of them are amenable to quick solution and only small results are likely to follow from the Government's efforts during the next decade. The livestock service appears to be insufficient in number and interested mostly in disease control rather than in animal husbandry and range management. The mission gained the impression that no clear plans exist for a forceful development of the cattle industry and that the efforts made so far are scattered in too many directions to produce good results.

Fishery

55. Fishery output over the last five years has been running at a level of about 65,000 tons per annum of which it is estimated that about

5,000 tons come from inland fisheries. A very rough estimate puts the level of artisanal production at about 20,000 tons while the remainder is produced by modern commercial fishing vessels on the high seas. Production of fish showed a fairly rapid increase from about 50,000 tons to 65,000 tons between 1960 and 1965, after which it tended to stabilize. Most of the production is for local consumption though a small amount of dried fish is exported to Ghana. Of the industrial fish caught, a large proportion is consumed fresh locally. The increase in output of fish coincided with the increase in the number of fishing vessels. The law provides for the registration of the fishing vessels under the Ivorian flag, but in fact there is only one wholly Ivorian-owned firm with seven vessels.

56. A number of foreign companies use the facilities of Abidjan port for transshipment and to obtain water and stores. However, this is mainly an enclave activity and the fish produced - mainly tuna - does not enter into the Ivorian economy. There is one Ivorian-Japanese firm that cans tuna fish; some is consumed locally and in 1965, 312 tons were exported to France. There is also a budding export-oriented shrimp industry. An Ivorian company started fishing in the last year and it may be expected that there will be rapid development of this activity.

57. This brief review of the main features of past development and physical potential now existing, suggests that the Ivory Coast has been relatively successful in making use of its opportunities. The concentration on coffee and cocoa at first provided a strong impetus for development, while more recently diversification into other crops, especially oil palm has begun to show results.

58. However, it seems clear that the time has now come when a conscious effort at new departures must be made. The brake which the growing scarcity of unowned land in the southeast applies to further settlement and to planting of cocoa and coffee and development of food crops and the approaching end of the forest resources all indicate that for the three most important agricultural sectors, a turning point has been reached and that something new must be attempted.

59. The most obvious possibilities still outstanding are in the southwest, where the same pattern of development as in the southeast could be repeated, and in the north where the potential for cereal and livestock development has so far scarcely been touched. It will be important for the Ivory Coast to make as good use of its opportunities in the future as in the past. The rest of this paper is an attempt to point-up some of the most important factors for achieving this.

II. FACTORS IN AGRICULTURAL DEVELOPMENT

A. Environment

Physical characteristics

60. The Ivory Coast is situated on the Gulf of Guinea and has an east-west coast line of some 600 km; from north to south the country is approximately 800 km. About one-half of the country is covered with a hot humid Guinean forest; average annual temperature is 26°C or 27°C with only about 6°C annual variation; rainfall is 1,400-2,000 mm in two rainy seasons - May to July and September to October. The remaining area of the country is largely a savannah zone, becoming progressively drier from south to north and covered with scrub and savannah grasses in the north. Average temperature is again 26°C, but annual variation reaches 20°C. Rainfall, averages 1,100 mm per year, but is concentrated in a single rainy season from May to October.

61. In general, the Ivory Coast has a regular topography, rising gradually from the sea in the south to about 500 m in the north. In the west, round Man, are the only hills with peaks rising to about 1,000 metres. The major rivers: the Bandama, the Ikomoe and the Sassandra, all rise in the savannah zone and run to the south. They provide important means of access to the forest zone.

62. The soils of the Ivory Coast vary from the deep heavily leached ferralitic soils and ferisols of the forest zone to the shallower poorer sandy soils of the savannah. The forest soils respond well to fertilizers, but when they are cultivated the main problem is to maintain the organic content. The soils of the savannah often have lateritic accumulations (lumps and hard pans) just below the surface. These lateritic accumulations scarcely hamper traditional cultivation, but they make mechanical cultivation expensive and sometimes impossible. Mechanical cultivation of the savannah tends to compact the soils, to render them less permeable, and to increase erosion.

Agricultural potential and land use

63. From an agricultural point of view the Ivory Coast can be considered as falling into two main regions: the south, where the natural vegetation is tropical forest, and the north, with savannah grassland. There are, of course, transitional areas between these two main regions.

64. In the south there are good conditions for perennial tree crops as well as annual food crops such as yams, taro and cassava, and upland rice. In the north, except under special conditions, perennial crops cannot be grown, but there is nevertheless considerable potential not only for food crops such as yams, maize, sorghum and millet, but also for commercial crops like cotton and groundnuts. However, at the same level of technology in both regions, i.e. with labor the main input, agriculture in the south

gives a higher farm family income than in the north. This is because income per ha is higher from perennial tree crops than from annual crops, and because a farm family can cultivate a larger holding in the south than the north (Statistical tables, Tables 11, 12), since labor requirements for perennial crops are lower than for annual crops, once the heavy and arduous tasks of opening up the forest and planting the perennial crops have been completed. In the north, a farm family cannot overcome the constraint imposed by low incomes per ha by taking in more land, even where it is freely available, because of the labor bottleneck.

65. Throughout the Ivory Coast there is a low level of land utilization. As recently as 1963 only about 1/4 of the land which could be used for agriculture was actually being cultivated. Food crop production - even including the large areas under fallow each year - took up only 22 percent of the agriculturally useable land and all the cash crops only another 6 percent. However, there are considerable variations between regions (Stat. Table, Table 18) and even where there is a favorable man/land ratio it is not safe to conclude that there is land still available for agricultural expansion.

66. In the north, the present system of agriculture permits one family to cultivate and effectively occupy only about 2 ha of crop land. As the overall population density is low, this leaves large areas of unoccupied land which could be cultivated if a satisfactory agricultural system were devised. The Government is trying various solutions, but so far there is not yet in sight one that can be accepted without reservations. Only in the so-called densely settled area round Korhogo is there any pressure of population on the land, but even here population density was only about 27 people/km² in 1965. In the southeast, although population density has not yet reached the point where there is no more potentially cultivable land, the inhabitants are now feeling that this point may soon be reached and are, therefore, tending more and more to put obstacles in the way of allocating land to new settlers. Thus, expansion of cultivated area must depend on existing farmers extending their cropped area. It is only in the south west that there are really large reserves of land suitable for agriculture which can be brought into production relatively easily.

Agrarian structure

67. The land tenure situation in the Ivory Coast appears to be going through a period of rapid evolution. The point of departure was the traditional system whereby land was held communally by an ethnic group with its cultivation rights being allocated by the chief; these rights could not be alienated during the period that the land was in cultivation. Such a system is admirably suited to the cultivation of subsistence crops under a system of shifting cultivation; it was not, however, so suitable for settlement and permanent cultivation. Therefore, superimposed on the traditional system has been the allocation of land by the Government for large scale plantation development and the allocation of land by the chiefs to individuals for the plantation of perennial tree crops. In

addition there have been minor modifications as, for instance, the development of small irrigated areas on the basis of security of tenure.

68. A further development now taking place is the spontaneous growth of share cropping whereby the cultivator of a block of perennial crops makes an agreement with his laborers to pay them by means of a share of the crop. When the crop has been poor, the laborers have in some cases agreed to accept rights in subsequent crops and this has been pushed to such an extent that in some cases the laborers, through their share of the crop, have become virtual landowners taking the place of the original cultivators. Because many of the paid laborers are immigrants ("foreigners") this has tended to lead to social tension.

B. Labor, Capital and Other Inputs

Population and Labor Force

69. In 1965, the total population of Ivory Coast was about 4,000,000 \pm 5 percent. Included in these figures are about 700,000 residents of foreign origin, of which 670,000 Africans (mainly from Upper Volta and Mali) and 30,000 Europeans (mainly from France). In addition, there were about 300,000 temporary foreign agricultural workers (including their families). Thus about a million foreigners were living in Ivory Coast.

70. The rural population is estimated to number about 3 million, while the only large town is Abidjan. It has an estimated 500,000 inhabitants at present, but is growing fast. The majority of villages in the rural areas have less than 500 inhabitants. The extreme north-eastern and south-western parts of the country are almost uninhabited. Temporary foreign agricultural labor is almost exclusively in the southern forest areas.

71. The population has been increasing relatively rapidly due to both natural growth and immigration. The natural growth of the population in 1965 was estimated as follows:

(in percentages)

	<u>Rural</u>	<u>Urban</u>	<u>Total</u>
Birth rate	4.9	5.2	4.9
Mortality rate	<u>2.9</u>	<u>2.5</u>	<u>2.8</u>
Natural growth	2.0	2.7	2.1
	==	==	==

72. Several simultaneous trends affecting the size and distribution of the population are observable: (i) Internal migration from one rural area to another; (ii) migration from rural areas to cities; and (iii) migration from abroad, partly to the agricultural zones and partly to cities. Originally the savannah had a greater and denser population than the forest; but once the forest area was opened up by timber exploitation and for the cultivation of perennial tree crops, a continuous flow of migrants began. On the whole, this flow as well as immigration to rural areas from abroad, has mostly been oriented towards the forest areas in the southeast. In 1965 there was a net balance of 100,000 internal rural migrants to the forest areas, and out of 300,000 permanent rural immigrants from abroad, 200,000 were in the southeast.

73. These population movements had two implications for agricultural development. First, the availability of migrant labor for hire was an added reason why the holdings in the forest areas could be larger than elsewhere. They need hired labor during the establishment period, but can also use it effectively later on with their regular agricultural calendar and high value production.

74. Second, the overall increases in incomes and in output per head in agriculture in recent years in the Ivory Coast have been due not so much to improvements in technology as to the migration of people - partly coming from outside the Ivory Coast - to the relatively more productive forest areas.

75. Obviously the continuation or otherwise of these population movements would be a significant feature in the future development of agriculture in the Ivory Coast. In fact, the Plan Esquisse projects an increase in the permanent rural population in the forest areas of 600,000 people (about 35 percent) between 1965 and 1980, plus another 140,000 temporary workers who would mostly be in the forest areas. In view of the importance of this factor for agricultural development, and therefore for general economic development of the Ivory Coast, it must be hoped that it will be possible to maintain these projections.

Wage Labor

76. A feature of the Ivory Coast, by comparison with neighboring countries, is the relative importance of wage labor. In 1968, hired workers in agriculture are estimated to have numbered 118,000 and they supplied, according to estimates made in 1965, about one-seventh of the total labor input. Of the hired workers, about one-sixth worked on large scale plantations and the remainder on family holdings. About 70 percent of hired workers are immigrants from outside the Ivory Coast.

77. Nominal wages are fixed by the Government. As from July 1968 the official minimum wage for field laborers was 231 CFAF per 8-hour day for a second class agricultural laborer. However, coffee and cocoa plantations are exempted from paying SMAGL^{1/} rates. In practice, laborers are paid in one of a number of different ways. There are payments by the month, by the day, by the task, or by a share of the crop. Monthly

^{1/} Salaire Minimum Agricole Garanti.

hired workers are, in fact, paid only once a year and this system shades into crop sharing. Only regular workers are paid in these two ways. Payment by the day or the task is confined to seasonal workers, mostly drawn from the neighborhood.

Investments

78. Public investment in agriculture has until recently, been a relatively small proportion of total public investment, as shown in the following table:

	<u>Public Investment</u>			
	<u>1960-66</u>	<u>1967-68</u> (billion CFAF)	<u>1969</u>	<u>1970*</u>
Agricultural sector	11.6	15.9	7.5	10.3
Total	107.3	53.4	30.7	46.6
Agriculture as percent of total	11	30	25	22

* Forecast (as of December 1969)

79. For the early part of the decade under review, there were no major public agricultural investment projects, the Government preferring other measures for promotion of agricultural output. The change since 1967-68 is, however, noticeable. (See Statistical Tables, Table 10).

80. The bulk of the public sector investments were in crop production and particularly in oil palm development, the area planted rising from about 24,000 ha in 1966 to about 60,000 ha in 1969. Between 1967-70 there was also an investment of about CFAF 630 million in cotton development, principally in gins. Investments in livestock and fishery were only 3 percent of sector investments; they included a fishing port, opened in 1963, and an extension now under construction.

81. According to the Plan Esquisse private investments in agriculture have been running at a rate of only about one-twelfth of public sector investment. There must, however, have been more substantial private investments in real terms in the past and there will be again in the future. For instance, from 1960-67 annual average plantings were of the order of 15,000 - 17,000 ha for coffee and about 16,000 ha for cocoa. At the level of technology involved, the investment was mainly in the form of labor. Since about 300 man/days per ha are required for the establishment of coffee and cocoa, the annual investment in new plantings, valued at the present SMAG rate of CFAF 231 per day, may be estimated at about CFAF 2,400 million. Actual investment expenditures in money terms were,

of course, much lower, in view of the employment of family labor and non-observance of SMAG by coffee and cocoa farmers.

82. By contrast, it seems likely that there was relatively little private investment in the food crop sector, even though there was a substantial expansion in rice. This investment was mainly in upland rice and consisted of forest clearance designed, in fact, primarily for coffee and cocoa planting. Thus, the investment is not additive. For irrigated rice, the investment per ha is more substantial, consisting of clearing and regulating swamplands. The cost is estimated at CFAF 100,000 per ha, but development seems to have been running at about only 2,000 ha per annum.

83. Private investment in such non-traditional crops as rubber, pineapples and bananas has been roughly estimated by the mission at about CFAF 7,000 million during the period 1960-67, including both cash and labor outlays.

84. Private investment in fisheries has taken the form of an increase in the fishing fleet from 50 vessels in 1960 to 70 vessels in 1964, representing a sum of about CFAF 370 million. There has been no change in numbers since then. As regards artisanal fishing, there are about 250 large pirogues for sea fishing, about 300 large pirogues for lagoon fishing and about 2,300 small pirogues. The imputed equivalent capital value of these craft may be put at about CFAF 11 million. Private investment has also gone into cold stores, freezers, smoking establishments and transport equipment.

Machinery and fertilizers

85. There seems to have been very little investment in agricultural machinery. In 1968, out of 3,274 tractors in the Ivory Coast only 283 are recorded as owned by agriculturists. (In the official records, the total number of tractors is assumed to be equal to all tractors' imports since 1956, even though a portion of these are presumably no longer in operation.) The years of maximum tractor imports were 1964, 1965 and 1966, after which there appears to have been some decline.

86. Consumption of fertilizers of all kinds was pretty stable between 1960 and 1963, imports running at something under 15,000 tons. After that, it rose relatively rapidly, imports averaging about 30,000 tons in 1967-68. Up to the present there is no local manufacture of fertilizers though there is a factory under construction with a capacity of 50,000 tons of mixed fertilizers per annum using imported raw materials.

C. Price Formation and Marketing

87. The Government intervenes actively in determining farm-gate prices for a number of commercial and industrial commodities - cocoa, coffee, rice, cotton, palm oil, copra, and less directly, for bananas and pineapple. The main government organization for price stabilization is the Caisse de Stabilisation et de Soutien des Prix des Produits Agricoles. (See Annex I).

88. For coffee and cocoa it fixes a single compulsory price to the producer at the beginning of each season and controls marketing and exports. In November 1969, the prices to the producer were CFAF/kg 95 for coffee and CFAF/kg. 80 for cocoa. Marketing, transport and other charges are also fixed, resulting in fixed f.o.b. prices about CFAF/kg 65 higher than the farm price. During the last few years, the Caisse has made large profits on exports and the profits are used in part to replenish the price stabilization fund and for social and agricultural development projects. Arrangements for price fixing exist also for cotton, palm oil, copra, export banana and pineapples and also for rice. (See Annex I).

89. The farm gate prices paid for selected commodities during the last ten years are listed below (for campaign beginning in year indicated):

	<u>Coffee</u>	<u>Cocoa</u>	<u>Seed Cotton</u> (CFAF per kg)	<u>Paddy</u>	<u>Pineapples</u> ^{a/}
1960	90	90	-	-	-
1961	75	65	-	-	-
1962	75	65	33.50	18	-
1963	90	70	33.50	18	-
1964	90	70	33.50	18	-
1965	75	55	33.50	18	-
1966	90	70	33.50	18	6.50
1967	90	70	33.50	20	6.50
1968	90	70	33.50	20	6.50
1969	95	80	35.30	20	n.a.

ε/ for canning delivered to the factory.

90. Cotton prices have remained unchanged, with the exception of a quality differential introduced in 1969, since the beginning of the cotton program. 1/ Cotton growing is subsidized by the Caisse to the amount of CFAF 7,400 per ha provided in the form of pesticides and application equipment. At the present farm-gate price the c.i.f. value European port

1/ Price was raised to 40 CFAF/kg in 1970.

per kg of fiber is CFAF 144 or US cents 23.8 per pound. Without subsidy this price would increase to CFAF 166 per kg or US cents 27.5 per pound of fiber.

91. Rice prices, for paddy as well as for hulled rice, are fixed by the Government. The farm-gate price for paddy is CFAF 20 per kg. and for hulled rice ex-mill CFAF 50 per kg. This is almost twice the price at which rice is imported, namely CFAF 28 per kg.

92. The prices paid for oil palm bunches are CFAF 5 per kg and for copra CFAF 28 per kg. These prices are based on c.i.f. European port price of US\$160 per ton of palm oil and \$165 for copra. So far, only small quantities have been exported.

93. Generally, it appears that the Government has attempted to maintain stability of prices in the belief, the mission was informed, that this alone was a major factor in encouraging development of production, particularly by smallholders. Apart from this, there does not appear to be any consistent policy in setting prices. For coffee and cocoa, farmers are insulated from world prices. Following devaluation,^{1/} there was an increase of approximately 5 percent to 10 percent in farm-gate prices of coffee and cocoa respectively, but the Caisse appears to have little intention to pass on to the farmers recent improvements in world prices. Cotton prices have been set at incentive levels, while the rice price has been set without regard to market considerations. Palm oil and copra prices were fixed in relation to cost of production estimates, and initially sufficiently low to be able to absorb a very large drop in world market prices without change in the price to the farmer.

94. To judge by the increases in output achieved, this rather unsophisticated and unsystematic approach seems to have established desirable price and income conditions in the commercial crops sector. In view of the lack of good farm management and farm income data, it is doubtful whether any other approach would have been possible. The most urgent need for a better information on which to support price policy is in respect of coffee and cocoa where there is a divergence of views about the effect of price changes on the level of output. The problem is complicated because (i) the two are mostly grown in association so that farmers' decisions concerning one affect output of the other; (ii) the long gestation period and high establishment but low operating costs mean that the short and long term effects of price movements could be different and even contrary; (iii) weather variations may have substantial effects on production which are not apparent till one or two seasons later. There is ample need for close analysis of this problem, but it has only recently begun to be approached, for instance in the National Coffee Plan. So far the Government has played rather safe by moving coffee and cocoa prices in the same direction, if not exactly parallel.

^{1/} CFA franc devaluation by 11.1% of August 11, 1969 in line with French franc devaluation.

95. It has also been helped by the fact that income per farm from coffee and cocoa was and is, much higher than from other crops, even if domestic prices are lower than world prices.

96. For food crops on the whole, there is little government intervention, while for meat, a tax on imports tends to encourage imports of live animals. Prices for cattle on the hoof coming from northern countries are about CFAF 100/kg live weight. This is relatively high by world market standards, but in the opinion of government officials, is too low to make cattle production attractive in the Ivory Coast.

97. It is possible that there may have to be some modification of price policies in the future. The growing disparity between farm prices and export prices for coffee and cocoa as a result of devaluation and rising world market prices, may mean that there will be pressure from farmers for substantial upward revisions, especially if expenditure on inputs rises with the introduction of more intensive methods. At the same time, as coffee and cocoa farmers are on the whole the most prosperous Ivorian farmers, an increase in prices here could not be justified mainly on social grounds. In addition, since part of the earnings of the Caisse can be utilized by the Government to finance development activities, there is considerable advantage for the Government in keeping these earnings as high as possible. But the use of price increases as incentives to foster production growth should be seriously considered.

98. On the other hand, the Government's rice and cotton support policies involve considerable budgetary expenditure which have to be considered with other economic and social problems in the North.

99. For retail foodstuffs prices, the Government intervenes in a limited way. There is nominal price control in the retail markets in the sense that maximum prices are fixed for some important foodstuffs such as milk, bread and meat. However, so far as the mission could ascertain, this price control touches only a very small proportion of the foodstuffs sold (mainly imported goods) and there has been no change in the government price schedule for some of the items affected since 1964.

100. In spite of the partial devaluation of August 1969, the Government decreed that there should be no general change in prices or marketing margins. However, modifications in the government price schedule were allowed as exceptions, but because the prices which had prevailed in retail markets were lower than the maxima fixed by the Government, and because of numerous exemptions to government fixed prices, there was no consistent pattern about the resulting price changes.

101. Because of government price intervention, there are wide differences between the marketing system for crops in the modern sector and for crops in the traditional sector. For coffee and cocoa the Government, through the Caisse de Stabilisation, stands ready to buy from the producer at a price determined in advance of the production season. The Caisse

is a monopolistic buyer, but uses the services of the marketing system which was already in operation before it was established. The Caisse pays the various agents, merchants, exporters, transporters, etc. for their services. The system works reasonably well, though there is some criticism of the centralization of storage facilities in Abidjan, and there may be rigidities which will hinder development, e.g. the opposition aroused by the Caisse proposals for centralized and efficient processing of coffee.

102. For pineapples, bananas, oil palm, copra and cotton, the producer is in a contractual relationship with a company which buys from him and which is responsible for the processing of the product. These arrangements appear to work reasonably satisfactorily. For oil palm and copra, the company is PALMIVOIRE, for cotton it is CFDT, for pineapples it is SALCI, and for bananas it is SODEFEL.

103. Price support for paddy is operated through SATMACI which stands ready to buy paddy for the mills which it owns. However, SATMACI does not have a monopoly and is in competition for both buying, milling and selling with private sector merchants ('Dioulas'). The official price makes no allowance for quality or for transport costs from the farm, and is also lower than that paid to the farmers by the Dioulas (20 CFAF/kg as against 25 to 30 CFAF/kg). As a result, farmers avoid selling to SATMACI if they possibly can, which means that on the one hand its mills do not get enough paddy to operate at a profit, and on the other hand SATMACI is unable to collect the repayments due from the farmers for their paddy crop production loans.

104. Wholesale prices of rice in the Ivory Coast are of the order of CFAF/kg 45 to 50. These prices are much higher than world market prices at which the country can import rice, about CFAF 28 per kg. However, all the rice, locally produced and imported, is sold at the domestic price. Thus surplus funds accrue from the sale of imported rice which are allocated to the rice development program.

105. For the traditional staple food crops, there is little reliable information on the way in which the market system operates. Substantial quantities of foodstuffs are moved to Abidjan (sometimes, the mission was informed, from as far as 200 km away), but the government services were unable to give the mission any information on the way in which foodstuffs marketing is organized. The mission was unable to find out, for instance, who finances the transactions, whether adequate finance is available, where the property changes hands, what are the transport arrangements, whether there is any degree of monopoly, etc. There has been no analysis of whether this system is efficient or inefficient and whether it would be able to cope with increased quantities without strain. However, the mission received the impression that there are wide seasonal and regional discrepancies in prices; that there are no properly organized wholesale markets; and that storage is primitive and wasteful. This suggests a possibility for positive action, but more information is necessary to indicate exactly what this should be.

106. For meat and fish, there is a double system. On the one hand, there is the supply of fresh fish and fresh meat to a small high value market, using modern techniques of cold storage and transport. Meat from animals slaughtered outside the country is imported by refrigerated transport (air, rail), and distributed through a cold chain. A cold chain also operates for fresh fish landed in Abidjan and marketed in Abidjan and the interior. Estimates of the quantities handled by this system vary widely; for beef, for example, they range from 1,500 to 3,000 tons per annum.

107. It appears that development here has been adequate to requirements. There are three companies operating cold stores in Abidjan; and CODAPAG has five refrigerated railway trucks whose capacity is largely adequate for requirements. However, there is no cold store at the airport. Production of ice, which rose rapidly during the early sixties, has now stabilized at about 70,000 tons, of which half is sold to the fishing industry. It is not clear whether lack of productive capacity is a bottleneck to greater ice input.

108. The traditional system caters to both the high and low value markets for meat, and to the low value markets only for fish. Merchants (Dioulas from Mali) import live animals on foot, in trains, and in trucks, and send them to the markets in the south. This system, though primitive, handled fairly large supplies. The following table* shows the relative importance of the different forms of transport:

<u>Type of Animal</u>	<u>Percentage imported by</u>		
	<u>Foot</u>	<u>Truck</u>	<u>Train</u>
Cattle	36	4	60
Sheep, goats	6	41	53

109. An estimate of relative transport costs* for live animals and for meat by different means from Ouagadougou is as follows:

	<u>Cattle</u>	<u>Sheep and goats</u>
	CFAF/kg ^{3/}	
Train ^{1/}	35	37
Truck ^{1/}	33	59
Refrigerated railway wagon ^{2/}	28	31
Plane (refrigerated) ^{2/}	55	62

^{1/} Live animals meat equivalent.

^{2/} Meat.

^{3/} Excludes taxes.

*Taken from SED ES study on transport costs. July 1968.

Comparably reliable figures for transport on foot are not available, but experts believe that for cattle the cost lies somewhere between that for truck and that for train.

110. The Government is preparing a program of abattoir construction in which the major items would be extension of the abattoirs at Abidjan and construction of a new one at Bouaké, plus a number of smaller ones, the latter being officially described as "social projects". However, according to the long-term projections of meat consumption in the Ivory Coast, it will certainly be necessary to provide for much greater slaughter capacity.

111. The present system which admits live animals free of dues but charges them on meat, encourages slaughter within the Ivory Coast. The figures of transport costs quoted above suggest, however, that it would be economically preferable to import meat rather than live animals. Thus there may be a case for locating extra slaughtering facilities not in the Ivory Coast itself, but in the neighboring countries whence the live animals originate.

112. The mission was unable to obtain detailed information on fish, but since the trade for the traditional market is mainly in dried fish, there are probably no particular problems. The level of "artisanal production" is estimated to be of the order of 20,000 tons per annum, while the amount of fish sold smoked or dried in 1967 and 1968 is estimated to have averaged somewhat under 40,000 tons out of a total of under 70,000 tons.

D. Government Services to Agriculture

Administrative Services and Extension

113. A striking feature is the very important part played by the semi-autonomous agencies by contrast with the Ministry of Agriculture. In principle, government services to agriculture are handled by the Ministry of Agriculture, covering agriculture and forestry; and the Ministry of Animal Production dealing with livestock and fishery, together with the two autonomous authorities dealing with the development of the Bandama river^{1/} and with the development of the southwest^{2/}, both of which are carrying out actions which will have major repercussions on agricultural development. In practice, the most important role is played by a number of semi-autonomous agencies which are nominally responsible to the Minister of Agriculture, but in fact have a great deal of independent power and responsibility. These semi-autonomous organizations are oriented towards specific crops, and thus SODEPALM, in association with PALMIVOIRE and PALMINDUSTRIE, is responsible for the development of palm-oil production and also for coconut palm development; SODEFEL is responsible for development of fruits and vegetables; SODEFOR is responsible

^{1/} Autorité de la Vallée du Bandama - AVB.

^{2/} Autorité de la Région du sud-ouest - ARSO.

for forest plantation; SATMACI for extension work on cocoa, coffee and rice; CFDT, a French fiber crop development organization, is responsible for cotton development, and there are a number of others (See Annex I). The importance of these agencies as compared with the Ministry of Agriculture is demonstrated by the fact that SATMACI has something like 2,500 extension workers, and the Ministry only about 35.

114. This system has apparently grown up in a rather ad hoc manner in the past in response to immediate needs and pressures of the moment. The time now seems to have come for a careful analysis of the present system and where it is likely to go.

115. A very definite advantage is the drive and expertise which has been applied to development of specific crops. The most notable example is SODEPALM, which by any standards has remarkable achievements to its credit, but not far behind comes SATMACI (in relation to cocoa) and CFDT for cotton. As against this must be set some major disadvantages, which may grow with time.

- (1) Because of the weakness of the Ministry, policy control over the agencies is weak. It is difficult to point to specific examples, but there is no doubt that the stronger and more effective the agency is, the more it tends to promote and pursue ends which are justifiable in the context of its own operations, rather than in the interests of the agricultural sector or of the country as a whole. Some of the difficulties of SATMACI, for example, spring from the fact that it has accepted commitments in excess of its resources, while SODEPALM also is promoting oil palm projects over and above the limits of the development plan.
- (2) There is overlap and entangling of agencies. This affects operations at two levels: (a) technical responsibility is divided and uncertain. For instance, the Government is investigating the possibilities of livestock development by means of a pilot ranch in the northwest of the country. SATMACI has a contract for this investigation from the Ministry of Agriculture, but since it has no expertise in livestock, it has a sub-contract with the Ministry of Livestock Development to provide appropriate staff. This complex arrangement does not make for efficient project execution. (b) Impact at farm level. Since different agencies deal with different crops, it is possible that one farmer may have to apply to several agencies to obtain advice. This is both wasteful in personnel, and confusing to the farmer.
- (3) The interrelationships between the agencies, as well as the fiction that they are financially autonomous and operate on the basis of receipts covering expenditure, makes it extremely difficult to assess the true financial results of many government-sponsored operations in agriculture. For instance,

MOTORAGRI works within the framework of a scale of fixed charges laid down by the Government, but it is also required to bid competitively for contracts advertised on the open market. It can only be successful if it accepts "losses" on its commercial contracts which are counterbalanced by "surpluses", on paper, on its contracts with other government departments. To add to the confusion, the contracts with the Ministry of Agriculture include an item for depreciation of machinery which is never paid because this machinery was originally handed over by the Ministry of Agriculture to MOTORAGRI free of charge.

- (4) Because the system apparently provides an easy solution, there is a tendency to create a new agency as soon as a new problem comes up, witness the most recent proposal to confide rice development to SODERI, a new organization hived off from SATMACI. Thus the system seems to lead to rapid proliferation of agencies.

116. It is easier to diagnose the problems than to suggest a solution. Ideally one would like to maintain the benefits of the present system, while introducing other features which would avoid its disadvantages, by bringing about stricter policy and financial control and assembly of information at the center, and better integration between the agencies for field operations and for extension work. At the least this would seem to imply the need for considerable strengthening of the Ministry of Agriculture in both numbers and caliber of staff, as well as some mechanism for coordinating field work. These suggestions are very tentative, and there would seem to be a case for a thorough review of the whole system as a basis for making recommendations for changes in the future.

117. The present time would seem to be particularly favorable for such a review, in view of the fact that the Government, for a number of reasons, has already instituted investigations of parts of the system. There would also seem to be a very favorable opportunity to try out solutions in the southwest, where integration of development efforts is necessary, and in the savannah area where farmers grow various annual crops in rotation and require polyvalent advice concerning not only individual crops but the whole farm unit.

Agricultural Research

118. The Ivory Coast has no centralized agricultural research and extension service. These services are organized on a sectorial pattern by crops. This system is the result of the activities of the French Tropical Research Institutes, established for many years in the country, which have done excellent work in the improvement and introduction of specific crops. As mentioned elsewhere in this report, some notable results have been achieved in developing high yielding material as for instance, with oil palm, coconut, cotton and coffee. These Institutes work on a contract basis with the

Government. Their research is mainly oriented toward genetic improvement and the development of better cultivation methods; they also train the necessary extension officers. All these Institutes provide a good research service at relatively low costs to the country. Their cooperation should be retained for the future, for it would be extremely difficult and costly to obtain the same services from a national agricultural research institute. In the long run, however, it will be essential to build up full association of local staff in local research activities.

<u>Crop</u>	<u>Organization in charge of research</u>	<u>Organization in charge of extension and development</u>
Coffee	IFCC	SATMACI (since 1968)
Cocoa	IFCC	SATMACI
Oil Palm and Coconut	IRHO	SODEPALM
Rubber	IRCA	(Private and SAPH)
Banana	IFAC	SODEFEL
Pineapples	IFAC	SALCI
Avocado	SOPRODAV	SOPRODAV
Cotton	IRCT	CFDT
Rice	IRAT	SATMACI
Sugar Cane	IRAT	-
Maize and Yam	IRAT	-
Livestock	IEMVT	SATMACI
Forest Industry	CTFT	SODEFOR
Fisheries	ORSTOM	-

For a glossary of abbreviations see cover page.

On the whole there appears to be satisfactory integration of research and extension within the particular crop sector, but coordination between sectors is not good. This is part of the general problem of the structure of the extension services.

Credit

119. Institutional credit is supplied to farmers in two ways; first, on a product-by-product basis through the organization responsible for the development of the product in question; second, through the Banque Nationale pour le Developpement Agricole (BNDA) on an industry-wide basis.

120. The BNDA is the successor to the Caisse Nationale pour le Credit Agricole, which was wound up because of a very bad debt collection record and other irregularities. Since BNDA only commenced work in 1968, it is premature to come to definite conclusions about its effectiveness. In principle, BNDA is authorized to lend direct to farmers, both bridging (crop) loans^{1/} and development loans, as well as to institutions such as cooperatives, and to the semi-autonomous development agencies. BNDA has in fact commenced making bridging loans on a small scale. In the future, the scope of these credit operations will depend on the repayment record and the possibility of expanding the technical agricultural and field staff which is now a limiting factor. As regards support for the development agencies, this might take the form of participation in investment projects; there is some talk, for instance, of helping to finance a 4,000 ha oil palm plantation of SODEPALM.

121. Among the semi-autonomous agencies providing credit for specific crops, SATMACI coverage is the largest. It provides credit to cooperatives of cocoa farmers for purchase of insecticides and crop spraying machinery, and to rice farmers for purchase of seeds and fertilizers. In both cases, the supply of credit is associated with an extension effort to enable farmers to use the inputs effectively. SODEPALM, for coconut and palm oil, provide services such as land clearance and cultivation and supply of planting material on a credit basis reimbursable by the farmers at the time of delivery of the crop. In addition, there are other organizations working in a similar way, specialized on particular crops. Up to the present, however, there has been no credit oriented towards coffee.

122. The efficacy of this system has varied widely. In some cases - cocoa, cotton, oil palm - the repayment record is good, and on the whole the effort has been successful judged in terms of increased output. For rice, however, the repayment record has been bad, principally because the Government was not in control of the marketing channels. The intimate relationship of credit and crop development is, of course, a positive feature, and there would seem to be little point in disturbing this until or unless there is a revision of the functions of the autonomous agencies themselves.

^{1/} Prêts de soudure.

Education and Training

123. Agricultural technical education in the Ivory Coast is provided at three different levels; secondary education to form "Moniteurs agricoles", post secondary education for "Assistants agricoles" and higher education for "Ingénieurs agronomes".

124. Moniteurs and assistants are trained at the Collège Technique at Bingerville, and the ingénieurs agronomes at the Ecole Nationale d'Agriculture at Abidjan.

125. Students who have completed general primary school are admitted to the secondary agricultural courses. The curriculum consists of two years of agricultural training and one year of specialized training in agriculture, animal husbandry or forestry. On an average about 50 students graduate every year. In 1968 ten students each graduated in agriculture and forestry, and 15 in animal husbandry. The rest took up post-secondary education.

126. For the post-secondary agricultural course, primary and four years of secondary education are required. The curriculum consists of three years of general agricultural training and two years of specialized training in agriculture, animal husbandry or forestry. In 1968, 100 students graduated, about two-thirds were Ivorians and one-third were foreigners from neighboring countries. Forty specialized in agriculture, 12 in animal husbandry and 6 in forestry. It is planned to transfer this college to Bouaké and to increase its capacity to 250 students per year.

127. Higher agricultural education, for which the Baccalauréat is required, offers two years of general training and two years of specialized training for "Ingénieur des Travaux", three for "Ingénieur agronome" and four for "Ingénieur des Eaux et Forêts". About 10 students graduate each year from Ecole Nationale d'Agriculture. This appears to be a very small number of students trained in agriculture for a country whose economy depends mostly on agricultural production. However, in the opinion of government officials, the present output covers demand. This is so because the various research institutes in the country train extension agents for the implementation of specific agricultural development programs. For instance, IFCC trains extension officers for the cocoa and coffee programs carried out by SATMACI, and IRHO trains the extension staff for the various SODEPALM projects. Thus, the demand for people trained in agricultural techniques is limited practically to the requirements of the Ministries of Agriculture and Animal Husbandry.

128. With regard to agricultural engineers, there are at present 31 Ivorian and 118 expatriate engineers working in the Ivory Coast. The Government intends to replace gradually expatriates by Ivorians, and estimates that by 1975 about 300 agricultural engineers will be required. To satisfy this demand, about 20 engineers should graduate each year in the Ivory Coast, and the rest will be covered by students being trained in foreign universities, mainly in Europe.

Information about Agriculture

129. In considering the possibility of framing development programs and policies for agriculture which are adequate in scope and realistic in relation to possibilities, it is important to know whether the necessary information for this purpose exists. In various places through this report, it has been suggested that there are serious deficiencies in this respect. These mainly concern economic, social and statistical data, but there are also gaps in technical information which need to be filled by properly oriented research.

(a) Economic, social and statistical data. The situation in the Ivory Coast is somewhat paradoxical. Over the years a number of studies have been carried out which, the mission believes, were well executed and give good information about limited aspects or periods. For example, in 1962-64 a series of regional studies was carried out. These covered 80 percent of the country and gave information on land use, land tenure, cropping patterns, livestock, labor, and so on. Similarly, there are single studies on such matters as livestock marketing, forest marketing and resources, and others. These have yielded a substantial amount of information.

130. At the same time, there are major deficiencies. It is still possible for an official document to say about coffee, the most important crop in the country: "Le secteur de production est mal connu. Les réactions des planteurs aux variations des récoltes ou des prix sont presque ignorés; on se trouve dans un domaine où on a beaucoup plus constaté que prévu ..." (Quotation from "Le Plan Caféier National", document submitted to I.C.O.). Annual series of production statistics for individual crops are published by the Ministry of Agriculture, but there is no overall production index. There are only derived data on acreage of coffee and cocoa (sales to the Caisse divided by estimated yields), and on numbers of growers (for cocoa only, estimates based on membership of spraying group), and only sample survey information relating to a specific year on size distribution of coffee and cocoa parcels. For livestock, there appears to be only sketchy information on numbers (eye estimates and vaccination records); percentage offtake and production figures are very insecurely based, and give inconsistent results from year to year. For timber, the basic data relate to exports and milling; there is no information, so the mission was told, on actual fellings, stocks and waste. For agriculture as a whole, there has been no census of production or area.

131. Although there is reasonably good information about input/output coefficient for crops (referring however to only 1962-64), there is no way, except on a hypothetical basis, of combining this information to give a picture of the total farm situation. The information available in the Ivory Coast on farm income and labor requirements, which is all on a per ha basis, tells really very little about the income situation or labor requirements for typical farm units. As a result, there is no firm basis for policy recommendations concerning land use, cropping patterns or farm management practices designed to maximize labor returns.

132. Another major gap in information concerns marketing and prices in the important food crop sector. So far as the mission could tell, little is known about how food crops are marketed and how prices are formed (degree of monopoly etc. nor about farm-gate and retail prices, marketing margins and their breakdown). There is no channel for providing market data to the public, such as through a daily radio program of market information.

133. Other examples could be adduced to support the point that there are serious gaps in the information available for policy makers; these gaps may prove a handicap in formulating and carrying out an optimum agricultural policy, and will make evaluation of individual projects more difficult.

134. Specifically, effort on the items indicated below would go far to filling the gaps.

- (i) An agricultural census should be carried out, say, every ten years, giving by region information on area and yield of all crops, numbers of livestock, number and size distribution of farms, the types of agricultural equipment available, and the employment and conditions of employment of family and non-family labor.
- (ii) Farm management data should be collected regularly with appropriate breakdown by regions, by types of farming and by farm sizes. The emphasis should be on the farm as a unit. In the first instance, attention might be concentrated on the important coffee/cocoa sector.
- (iii) Information about the marketing system and price formation needs to be obtained urgently. Enquiries in this connection should be oriented towards market channels, transport methods, market systems, storage, financing operations, etc. As regards prices, information is required on farm-gate and consumer prices and on composition and size of price spreads.
- (iv) Information should be obtained on the tenure arrangements now prevailing with provision for a follow-up later in order to highlight changes.

(b) Technical Investigations

(i) Crops

135. Whereas for the main cash crops, technical agricultural research is adequate, this is not the case for food crops. IRAT, the specialized institute in charge of these crops, started to work in the Ivory Coast only in 1967. The proposed change from shifting to permanent cultivation in the savannah poses many new technical problems that are not solved.

136. The main fields that need intensified research are:

Crop improvement in rice, especially irrigated rice, maize, ground-nuts, cassava, yams, for yield, resistance to specific diseases and the development of early maturing varieties for double cropping in certain areas.

Development of adequate crop rotations for the different ecological zones.

Efficient use of fertilizers in relation to soil types and crop rotation.

The development and testing of economic and feasible agricultural equipment, particularly animal-drawn implements that would overcome seasonal labor bottlenecks, and experiments in the use of herbicides and the introduction of processing equipment.

(ii) Livestock

137. In this field relatively little has been done so far, and more research is needed on all the aspects of livestock production. The main problems are:

Disease control for cattle, sheep and goats.

Livestock improvement through adequate selection and breeding and, for sheep and goats, possibly the introduction of new breeds.

Pasture management and improvement. Study of the natural pasture and their carrying capacity and development of range management techniques.

Development of a pork and poultry industry based on locally available feed.

(c) Central Agricultural Information Unit

138. The mission believes that the unsatisfactory state of affairs concerning information about agriculture has arisen partly because there is no central unit charged with regularly collecting and analyzing useful information about agriculture in its widest sense, and with specifying those gaps in the information which might hinder the development effort.

139. It would be reasonable for such a unit to be located in the Ministry of Agriculture, where a strong department of research and studies would play a vital role in the policy-making function suggested above for the Ministry. It would provide the essential information necessary for policy formulation for agriculture as a whole, as well as for determining the correct lines of action and division of responsibilities between the different autonomous agencies. It would also be able to orient research and studies along the lines most needed for the development effort. The mission believes that it is urgent to set up such a unit as a first step in enabling the Ministry to carry out its policy-making functions efficiently.

III. POLICIES FOR AGRICULTURAL DEVELOPMENT

A. General Issues

140. In considering possible policies for future agricultural development, one major assumption must be made and one major commitment recognized. The assumption concerns government policy towards internal and external migration. The significance of this factor as regards agricultural development has been outlined above. For the purpose of assessing policies, it has been assumed that the Plan Esquisse projections will be more or less achieved. Without the limitations implicit in an assumption, the range of possibilities to be considered becomes too wide to be manageable.

141. The commitment is involved in three major ongoing development activities. These are the Kossou project, the San Pedro project, and the continuing growth of Abidjan. Briefly, as regards agriculture, Kossou implies a major resettlement and integrated agricultural development project; San Pedro, substantial development of perennial industrial crops and settlement on a large scale; and Abidjan, development of urban periphery agriculture such as market gardens, dairying or poultry on a large scale, as well as a great effort to expand staple food and rice production.

142. These three activities are so large relative to the Government's resources that they seriously limit its freedom of choice to carry out agricultural development not connected with them.

143. Briefly, the Plan Esquisse envisages expenditure on agriculture of about CFAF 45 billion from 1971 - 1975 inclusive, of which about CFAF 10 billion current expenses. Of the total expenditure, some CFAF 33 billion is to be devoted to specific crops in the forest zone. This may be compared with actual expenditure of about CFAF 3 1/2 billion annually during the period 1960-68 and about CFAF 7 1/2 billion in 1969. Plan Esquisse estimates, which were only preliminary, are subject to major revision, and in any case, admittedly did not contain figures for livestock and fishery nor for integrated rural development projects. By way of indication, the mission's own very rough estimates suggest that revisions or elimination of items already in the Plan Esquisse will bring the investment cost down to about CFAF 20 billion, while extra items not hitherto accounted for will offset this saving by some CFAF 18 billion. However, whatever the level of expenditure which will finally emerge, undoubtedly the general pattern will be one of overwhelming emphasis on industrial and commercial crops in the forest zone.

144. To the extent that coffee, cocoa and forestry will continue to be the mainsprings of development, and other promising secondary crops are in the forest zone, this general emphasis is probably correct, though obviously there may be reservations in detail about the quantitative targets or the means adopted to reach them. This detailed analysis is given in Section III, D. of this report. Meanwhile, it is apparent that the policies as formulated leave open three important issues: one is what to do about producing the

extra amount of food required by the growing urban population; another is whether the food, once produced, can be distributed properly; and the third is what should be done about the problem of the North.

Food Supply

145. The Plan Esquisse gives estimates of the increase in requirements of locally produced foodstuffs between 1965 and 1980, taking into account the growth of the population and the changing distribution between town and country. Since these estimates refer to locally produced foodstuffs, it follows that these amounts have been and will have to be produced by the rural population, which, as has been pointed out earlier, will form a diminishing proportion of the total population. Hence the per caput production of local foods by the rural population will need to be raised. The following table attempts to show some of the implications of this requirement, expressed in calorie terms as a convenient way of putting production and consumption on the same basis.

		<u>1965</u> (1000)	<u>1980</u>	<u>Increase</u> %
Population	Total	4,300	6,700	56
	Urban	980	2,640	170
	Rural	3,320	4,060	22
<u>Locally Produced Food</u>				
<u>Calories/day</u>				
Food consumption per caput		2,156	2,232	
<u>Million Calories/day</u>				
Food Consumption				
	By Total Population	9,271	14,954	61
	By Urban Population	2,113	5,892	179
	By Rural Population	7,158	9,062	26
<u>Calories/day</u>				
Food Production				
	Total per head of rural population	2,792	3,683	32
	Surplus per head of rural population	636	1,451	128

Note: The increase in average per caput food requirements in the above table depends only on the change in the urban/rural structure of the population,

and does not take into account the effect on food consumption of the increase in average incomes projected in the Plan Esquisse. Further, some of the rice at present consumed is imported, whereas the Plan Esquisse assumes that by 1975 all rice will be domestically produced. For these two reasons, the above table probably understates the increase in per caput food production required from the rural population.

146. As the above table indicates, the increase in per caput food production required from the rural population is nearly one third in 15 years. The disposable surplus required from the rural population rises much faster. Whereas in 1965 a rural worker had to produce about 30 percent as much again as he required to supply the needs of the urban population, by 1980, this figure would have to rise to 65 percent. This is a tremendous increase, but would not affect all food crops to the same extent. Using the Plan Esquisse estimates again, total requirements of cereals would rise by nearly 90 percent, whereas those for root crops by only 40 percent. In any case, the extra production required would be substantial, especially as it would be in the traditional food crops, which have been principally grown for subsistence and at a low level of technology. Furthermore, it will be difficult to propose solutions quickly since little work has so far been done in the Ivory Coast in developing feasible and economic methods of raising the productivity of such crops.

147. It is worth examining in more detail the implications of such a major increase in output per head. First, unless farmers and farm workers are prepared to work harder and longer than they do now, or unless there is a change in technology, they will not be able to cultivate any more land per head than at present, nor will there be any rise in yields. It is conceivable that if farm-gate prices rise, farmers might work more than they do now, and such a price increase might take place as a result of the urbanization foreseen, provided there were no imports. As has been seen, there is already some evidence of food price increases in the towns, but it is probable that only a small proportion of this is passed back to the producer, because of marketing imperfections.

148. As regards changes in technology, these might indeed involve improvement of the cropping pattern, higher inputs in the form of fertilizers, seeds and pesticides, and mechanization. So far, little has been done in this respect in the forest areas, while in the savannah where mechanization is essential to break the labor bottleneck which impedes utilization of other inputs, satisfactory methods have not yet been proven. One concludes that changes in technology leading to improved yields per head for food crops are likely to come about only slowly at the present rate of progress.

149. Second, changes in average labor productivity can be brought about by movements of workers from areas of low productivity to areas of high productivity. In so far as the South is an area where natural conditions are generally more favorable than in the North, continued migration to the south would contribute something to an increase in labor productivity.

But, as mentioned earlier, the possibility of the traditional areas in the southeast continuing to accept immigrants is becoming limited. Hence there is all the more urgency to open up new areas in the southwest for settlement.

Food Distribution

150. The projected increases in food supply and consumption imply a need for expansion of the food distribution systems. Taking 1965 as 100, by 1980 the volume of marketable surplus foodstuffs will be 270, a compound rate of increase of about 7 percent per annum. In some particular urban concentrations, e.g. Abidjan, the increase required will be even higher. The most important forms of extra capacity required are likely to be transport to and within cities, and wholesale markets and retail outlets both for raw food (markets and shops) and for cooked food (restaurants, canteens).

151. The latter is perhaps a minor element in the whole complex of food distribution, but nobody who has seen existing conditions in Abidjan can doubt that the present network will need substantial improvement to cope with the strain when Abidjan is larger and more industrialized, with more workers travelling daily further away from their homes and needing organized institutional feeding near their places of work. If it is assumed that by 1980 there will be not less than 50,000 employees in either factories or large offices requiring some sort of institutional feeding for one meal a day; if it is also assumed that the initial capital cost of the facilities required works out at \$100 per meal per day, then the total capital cost of this minor item alone would be \$5 million. Taking into account the sums which will also have to be spent on transport, market facilities and retail outlets, a fairly substantial sum will have to be added to the investment requirements of developing Abidjan.

152. The difficulty arises principally because Abidjan will grow so fast. Therefore, there would seem to be an urgent need to examine all elements of the food distribution system to determine the facilities required with estimates of investment and operating capital, and of personnel, organizational structure, hygiene, etc., and whether it will be necessary for the Government to take special measures, or whether the private sector alone can satisfy the requirements.

Regional Problems and Policies

153. There are two aspects of the regional policy problem. These are, first, to determine how much priority to accord the North in allocating development resources; second, to identify what development activities are technically and economically viable in the North. These two aspects are obviously interrelated, since the development priority of the North depends to some extent on the economic merits of individual projects in the North.

154. At present, the Government feels that it must give some degree of priority to the North. The rice and cotton operations have been an expression of this policy, and a number of pilot projects have been carried out in order to try to determine the most promising solution for application on a large scale. The problem is not easy. By comparison with the South, the present farming system gives per caput incomes which are much lower. Indicative estimates calculated by the mission put the gross value output per farm in the savannah region at about 75,000 CFAF per year compared with over 200,000 CFAF in two sample areas in Abengourou, a region rich in coffee, cocoa and timber (see Statistical Tables, Table 11). Soils are less fertile; the climate is less favorable for crop production; water is scarce; crop possibilities are more limited; markets and supply sources are distant; population is scanty; the economic and social infrastructure is thin; and sociological constraints inhibit the rational utilization of livestock resources and savannah grazing.

155. As result, the output mix is lower in value, techniques are more backward, the agricultural calendar involves higher labor peaks, and the area that can be cultivated by one family is often smaller. One solution chosen for the savannah region is to regroup farms round village centers that can be provided with water, electricity, schools and clinics, rightly felt to be strong inducements to villagers to remain where they are. At the same time, farm size is to be increased from between 2 to 2 1/2 ha on average to about 5 ha per family. Farming is to continue more or less in accordance with the traditional manner, with the exception that land clearance and some cultivations are to be done by machinery in order to overcome labor bottlenecks which would otherwise appear. This system has been tried out on a pilot scale at Bouaké; it is now proposed to execute a project of 12,000 ha at Makano as the first stage in the general application of such schemes in the North.

156. In the pilot scheme, not only the cultivated area, but also the yields were considerably raised, and the net farm income increased from an estimated CFAF 57,000 per family to CFAF 139,500. This is a great improvement, especially in the monetary income, because under the traditional system practically the whole production goes to auto-consumption whereas with the semi-mechanized system about CFAF 80,000 worth of the output is sold on the market. But even so, it is less than might be reasonably expected in the South, and still does not take account the full economic cost of the project in terms of initial capital investment, of operating costs carried by the Government of support cost for cotton.

157. The real bottleneck in the present system is labor, and this can only be broken by a change of technology. The proposed scheme does not go far in that direction. Hence the rise in incomes is limited. Moreover, much or most of the farm family's effort will continue to go on providing food for itself. Thus it is unlikely, if the proposed policy is followed, that the North will contribute to solving the food supply problem mentioned elsewhere in this report.

158. In short, the mission is not convinced that the solution proposed by the Government is viable. Is it then correct to conclude that the priority accorded to the North by the Government is unjustifiable? To this question there is a short-term and a long-term answer. In the short-term, the mission believes it ought to be possible to identify farming systems which were more viable than that suggested by the Government. Two alternatives might be considered for a start; one is the introduction of small machinery and animal traction and the integration of livestock in the farming system; the other is to establish large highly mechanized crop production and/or grazing units. Both types offer the possibility of continuous technological development and much higher per caput incomes than at present. However, they both present obvious managerial problems and also, since total output would be much higher, there is the danger of running into marketing difficulties. However, the forecast is that in the long run there will be a much larger market for the sort of cereals which can be produced in the North. Hence it can be concluded that eventually it will be economically justifiable to accord priority to the North.

B. Development Objectives

159. The Plan Esquisse sets out the provisional development objectives of the Government as of mid-1968. For agriculture these can best be summarized in the form of a table (values are at 1965 prices):

	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
			('000)		
Population Total		4,300	5,000	5,800	6,700
Rural		3,320	3,550	3,770	6,060
Labor Force Total		232	343	489	595
Agricultural		118	173	246	281
			<u>CFAF billion</u>		
GDP Total	142	214	317	470	636
Primary Sector*	63	84	106	134	168
Exports Total	47	73	109	160	221
Primary Sector*	40	57	75	85	107

*Note: According to the definition used by the Plan Esquisse, the Primary Sector includes Agriculture, Livestock, Forestry and Fisheries, but excludes Mining and processing of agricultural products.

160. During the period 1970 to 1980, the primary sector is expected to grow at a rate of 4.7 percent per annum, whereas the economy as a whole would expand between 6 and 8 percent. While agricultural exports would increase by over 40 percent, they would form a diminishing proportion of

total exports, declining from just under 70 percent to just under 50 percent. However, these figures understate the future importance of the primary sector, because in the Plan Esquisse only the exports of non-processed agricultural goods are attributed to this sector. It is envisaged that semi-processed agricultural products such as vegetable oils, cocoa paste and butter, instant coffee, etc. will play an increasingly important role in the future as export commodities, and these will depend on a growing agricultural sector.

161. Briefly the Plan Esquisse envisages the following output growth rates in percent per annum over the decade:

Export oriented and industrial crops	6 - 6 1/2
Forestry	2
Food production	3
Livestock	3 1/3
Fishery	12 at first falling to 5 1/2

The physical targets for some of the more important crops are given below:

	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
			('000 tons)		
<u>Foodstuffs</u>					
Paddy	160	250	395	613	750
Maize	147	180	207	266	329
Yam	1,150	1,300	1,432	1,578	1,790
Manioc	450	500	562	635	714
Plantain	490	600	674	760	855
<u>Industrial and Export</u>					
Coffee	136	213	230	265	360
Cocoa	85	115	194	262	340
Banana	85	133	150	175	200
Pineapple	20	44	114	148	175
Latex	-	4	12	19	36
Cotton	-	6	69	117	130
Copra	2	3	6	15	63
Oil palm bunches	58	74	206	850	1,600
Sugarcane	-	-	-	450	600
Fresh fish	48	64	93	155	205
<u>Forestry</u>			('000 m ³)		
Round wood	1,060	2,605	2,950	3,300	3,600

162. The Plan Esquisse is being revised^{1/}, and some of these targets have fallen by the wayside. For instance, the coffee production target for 1980 is now 300,000 tons, while forestry output in 1968 was already 3.5 million m³. Bearing in mind these revisions and based on its own estimates of production potentials and possibilities of execution, and the results of projects in the pipeline, the mission feels that the following production forecasts for the more important crops should be substituted.

	<u>1975</u>	<u>1980</u>
	(¹ 000 tons)	
Coffee	230	300
Cocoa	210	290
Banana	200	220
Pineapples for canning	160	200
fresh	40	60
Cotton lint	32	40
seed	48	60
Oil palm oil	157	172
kernel	41	44
Coconut copra	15	36
Timber (¹ 000 m ³)	4,000	2,000

Based on these and taking a view about other crops not shown in the table, the mission feels that overall agricultural output might expand slightly less fast than foreseen in the Plan Esquisse.

C. Major Development Projects

163. The Plan Esquisse objectives take shape in the form of specific programmes and projects for agriculture. The two most important of these, at any rate in terms of cost, are the Kossou project and the Southwest project. There are also a number of development activities related to specific crops, which in some cases are to be incorporated in the two main projects. It is convenient therefore to describe first these two projects and then to highlight proposals for specific crops.

San Pedro and Southwest

164. This project, as its name implies, is located in the southwest of the country, in the triangle formed by the Sassandra River, the Liberian border and the sea. The total surface is about 30,000 km², with a very low population density of about 2 people per sq. km². In fact, most of the people live on the periphery in small towns and villages, of which the port of Sassandra is the largest. Thus the interior is, or was until recently, virtually uninhabited. The whole area is covered with dense forest,

^{1/} The following is based on information available as of December 1969

constituting the last major reserve of forest resources in the Ivory Coast. However, exploitation is now going ahead rapidly, and it is likely that within eight or ten years the region will have been cut over at least once at the low intensity now considered economic. From the point of view of soils and climate, the area is similar to the rest of the south of the Ivory Coast, with possibly heavier rainfall, and the same sort of perennial and food crops could be grown there. However, the topography is more broken and may pose more problems in regard to mechanized or plantation agriculture than elsewhere.

165. Experience shows that immigration and settlement take place spontaneously once the area is opened. As soon as the forest penetration roads are built, families begin to appear along the route and the usual sequence of rough clearance, followed by rice and food crops, followed by coffee and cocoa begins. The population and land use situation is far from static; the time during which options in this respect are open to the Government is limited.

166. The San Pedro project started at the beginning of 1968 at a place where there had been a fishing village of 200 people. It consists, in the first stage, of the construction of a new port (quays, breakwaters, dredging), the building of 200 km of roads linking San Pedro with the rest of the Ivory Coast, and provision of the basic infrastructure for a town of 6,000 people. The total cost of this work, including various supplementary items and unforeseen expenditures, is now estimated to be CFAF 11,618 million (\$42 million). This phase is due to be completed by early 1971, though the first ship is expected to use the port early in 1970.

167. The second stage, due to start in 1970, consists of two main parts. One is further development of the town and port, i.e. expansion of the town to 25,000 inhabitants, provision of telephones and water supply, building an airport, etc.; the other is development of the interior, including further access roads. Present estimates are that these two items together will cost a further CFAF 9,546 million (\$34 million) up to end 1975.

168. According to present thinking, development of the interior would cost CFAF 5,392 million (\$19.5 million), and would include the following agricultural projects:

- (1) Development of five settlement areas, each capable of accommodating 10,000 - 15,000 people.
- (2) Two rubber planting projects covering 20,000 - 30,000 ha.
- (3) An oil palm project of about 15,000 - 20,000 ha.
- (4) A coconut project of 5,000 - 10,000 ha.
- (5) Development of 200,000 ha of forest on a sustain yield basis to support a pulp and/or paper factory.

These projects are described in more detail elsewhere. Here it is sufficient to say that some of these projects are still tentative, while for others good preliminary studies have been made. However, additional studies will be necessary for all of them before it will be possible to make firm estimates of cost and benefits, organizational structure, methods of financing and whether or not the projects are viable.

169. So far the five settlement areas have been delimited, and in some places soil surveys have been made. An area of about 100,000 ha has been surveyed for possible growing of oil palm or hevea, and about 40,000 ha have been retained as suitable. In the Nero perimeter a detailed survey is being carried out on 10,000 ha for hevea planting. A preliminary survey has been made along the coast for areas suitable for coconut palm planting, and a detailed survey of this area is planned for 1970-71. Practically no preparatory work has yet been done for the development of forest resources for the pulp factory.

170. In addition to these agricultural projects, mention should be made of the likelihood of opening up an iron-ore deposit some 280 km north of San Pedro. To do this may involve building a railroad to export the ore through San Pedro ^{1/}. This railroad could have a substantial impact on agricultural development in the areas traversed.

171. The Government expects that by 1980 there will be about 150,000 rural inhabitants in the Southwest. This matches reasonably well the assumed labor requirements of the agricultural projects mentioned above, as can be seen from the following table (based on minimum size indicated):

<u>Projects</u>	<u>1975</u>	<u>1980</u>
	<u>Number of Workers</u>	
<u>Cocoa</u>		
Settlers	9,000	16,000
<u>Oil Palm</u>		
Estate, labor	500	1,250
Settlers	350	900
<u>Coconut</u>		
Estate, labor	220	850
Settlers	200	700
<u>Hevea</u>		
Estate, labor	800	4,800
<u>Sub-total</u>		
Settlers	9,550	17,600
Labor	<u>1,500</u>	<u>6,900</u>
TOTAL	<u>11,070</u>	<u>24,500</u>

^{1/} near Bengolo

172. Assuming that a laborer's or settler's family has five members, this will represent a rural population of about 55,000 in 1975 and 125,000 in 1980. This does not account for the rural population that will engage mainly in food crop production to supply San Pedro.

173. In considering the Southwest project as a whole, two obvious questions present themselves. One is whether there is any economic justification for developing the Southwest either now or at some time in the future; the other is whether there is any economic reason why the particular combination of projects chosen should be more favorable than any other possibility. Concerning the first question, the mission has not made an analysis of the benefits and costs; the elements for doing so are not available. The costs are obvious; the possible benefits can only be vaguely perceived as yet, and can certainly not yet be quantified. However, in various places in this report, substantial reasons have been given for supposing that there will be real benefits. They all relate to the need to maintain the rhythm of growth provided for the economy as a whole by a dynamic agricultural sector, and the difficulty of ensuring this if development continues to be concentrated in the southeast, because of increasing population density and relative shortage of land in the long run, or is expanded to the north, where the immediate potential is much more limited. Thus in general the mission believes the decision to develop the southwest was correct from an agricultural point of view.

174. As regards the combination of projects, there is no reason why this group should be considered an indivisible package. The justification for their location in the southwest is to be found not in each other, but in the prior decision to develop the southwest, and in the availability of suitable land. The size of the project areas, the type of crops to be grown, the organization structure, etc. are all factors where decisions are taken for reasons not connected with each other or with San Pedro as such. On the other hand, the agricultural development of the southwest is considered by the Government, correctly the mission believes, as an integral part of the national agricultural development program, and the same general guidelines are applied to the southwest as to the rest of the forest area, namely to develop, as far as possible, well diversified agricultural operations.

Kossou

175. The Kossou project is located in the center of the country near Yamoussoukro, southwest of Bouaké. It is a hydro-electric project with a barrage across the river Bandama; the reservoir will cover 174,000 ha. The cost of the barrage, electrical installations, transmission lines, etc. is estimated to be about CFAF 29 billion (\$105 million). Work started on the barrage early in 1969; filling of the reservoir is expected to start in the first half of 1971 and will, it is estimated, take three to four years to complete.

176. Although the Kossou project as such has no agricultural components, its agricultural impact will be substantial and in many directions is not yet fully comprehended. For the time being, attention may be focussed on two aspects, namely the loss of production from the submerged area, and the need to resettle some 20,000 - 25,000 agricultural families, or about 120,000 people; other aspects such as fishery possibilities, better accessibility to some areas, or game parks and tourism, may require more emphasis in later years.

177. The loss of production is not accurately known, but a very rough estimate values this at about CFAF 3 billion per year:

	<u>Hectares</u>	<u>CFAF billion</u>
Annual crops	35,000	1.7
Perennial crops	<u>33,000</u>	<u>1.4</u>
Total	<u>68,000</u>	<u>3.1</u>

Included in this is the loss of production of an estimated 25,000 ha of coffee bushes. A survey, now in progress, should give more accurate information on this aspect by mid-1970.

178. Concerning the population likely to be affected, successive estimates have each raised the figure, but the number of 120,000 people now seems to be the generally accepted planning base. The revisions reflect partly successive improvements in basic data, and partly real changes in the situation because people have been coming back to their villages to establish a claim to whatever compensation the Government may give. A breakdown of the population likely to be affected is as follows:

	<u>Date by which people must be moved</u>		
	<u>Mid-1971</u>	<u>Mid-1972</u>	<u>Mid-1973</u>
Inhabitants of village sites inundated	22,000	40,000	
Inhabitants of villages which will lose some land		60,000	

So far no definite operational decisions have been taken concerning compensation and resettlement, but rather specific political commitments have been given that nobody affected by the project will suffer from it.

179. Thinking in the Government is that people in the project area should have a free choice between a number of alternatives varying roughly in attractiveness according to the amount of disruption. Thus somebody whose house and lands were inundated would have the option of moving to a new village site in the Southwest that would have full facilities including school, health services, water, etc., and would get both a house and land cleared for cultivation. Monetary compensation would vary in inverse proportion to the value of what was provided in kind by the Government. At the other extreme, a farmer whose land only was inundated would have the right only to take up new land of the same quality as he previously had, with compensation for any perennial crops destroyed.

180. Given these varied alternatives, and the fact that, up to now, little is known about the proportions of the population likely to opt for the various possibilities, no good estimate can yet be made of the total resettlement costs. The figure which is currently being discussed is CFAF 20 billion, but this estimate may well undergo major revision.

181. Some comments may be made. First, because of political pressures, expensive solutions may be chosen where cheap ones would have been technically acceptable. This applies to the standard of housing, land clearance and farm preparation, roads, village facilities and so on. Second, in so far as the people opt to stay as near as possible to their old village sites, a problem will arise because the southern Kossou area is already one of the more densely populated of the Ivory Coast. There may well not be enough unoccupied land available to accept the displaced cultivators. In this case, it may be necessary to envisage substantial technological changes, to bring income per farm family up to acceptable levels, given the constraint on cultivable area. This could perhaps be achieved by an integrated regional development project covering not only the displaced persons, but also the original inhabitants of the whole lakeside area, roughly estimated at 350,000 ha. Third, in so far as people move to areas of higher productivity, the population movements brought about by the Kossou project may well have a beneficial impact on agriculture which will quickly compensate for the direct loss of production from the project. There may be some reluctance of the people to move to different ecological conditions from those to which they are accustomed, but in view of the previous experience of migration in the Ivory Coast, this may not be a major problem. If they move to Abidjan, of course, this would aggravate the urban employment problem, while doing nothing for agriculture. So far, however, information is not available to make an evaluation of total agricultural effect of the project.

D. Crop Production Proposals

Coffee

182. For coffee production, the main proposal in the Plan Esquisse consists of planting each year from 1971 to 1980 about 20,000 ha of new coffee with high yielding varieties, 10,000 ha under traditional cultivation to yield 700 kg/ha and 10,000 ha under intensive cultivation to yield 2,000 kg/ha. The original production target set at 360,000 tons by 1980 has been revised to 300,000 tons in December 1969.

183. As indicated in Annex II, the mission believes this figure is still slightly too high in relation to export prospects. However, technically it should be possible to reach the target. IFCC has developed high yielding clones able to yield 700 kg/ha under traditional cultivation methods and 2,000 kg/ha under improved methods.

184. Preparation for implementation of this project, consisting of the establishment by SATMACI of budwood gardens in the main coffee-growing areas, has already started. SATMACI has also been charged with strengthening the extension service for coffee. The main query is whether it is economically advisable to promote coffee plantation under intensive cultivation methods. Not enough farm management data are available on coffee, especially on labor inputs, to answer this question with confidence. However, preliminary data suggest that intensive coffee growing would require about four times more labor/ha than coffee production by traditional methods. Since labor is the limiting factor for coffee production, this may well limit expansion of intensive coffee growing.

Cocoa

185. The Plan Esquisse proposed a target of 340,000 tons by 1979/80, with production 194,000 tons in 1969/70. However, actual output in that year was only about 150,000 tons. The production target for 1980 has, therefore, been revised down to 300,000 tons^{1/} Even this target is ambitious, but a good start has been made with the development by IFCC of high yielding planting material capable of yielding 1,500 kg/ha under improved methods and 700 kg/ha under traditional methods. The mission believes that as a result average yields will increase from the present 400 kg/ha to about 600 kg/ha, and that this, together with new plantings, will raise total output to 280,000 tons - 300,000 tons by 1980.

186. In order to reach this figure, the cocoa program includes:

- (i) continuation of technical assistance by SATMACI;
- (ii) regeneration of 47,000 ha by 1975; and
- (iii) planting 600,000 ha by 1975 with selected planting material under intensive cultivation.

As part of this program, a project has been submitted to IBRD for the regeneration of 58,000 ha plus 1,800 ha of new plantings by 1975. Appraisal by IERD of this project seems likely to be positive.^{2/}

187. In addition to the above, the Government has a separate cocoa project for the southwest involving the planting of an additional 48,000 ha by the new settlers by 1980. This extra project may prove a strain in view of requirements for planting material, but it is too early yet to judge the possibility of its execution. Besides, climatic conditions here do not appear best suited to cocoa because of excessive rainfall.

^{1/} December 1969.

^{2/} The IBRD project was approved and signed in May 1970.

Forestry

188. It is difficult to quantify the forestry proposals in the Plan Esquisse, since they involve mainly regulating or influencing the activities of the private sector. Furthermore, these are only proposals, and in so far as they involve restraining or limiting the output of the forest industries, the Government may have difficulty in adopting them.

189. According to forecasts of demand in the Ivory Coast's main export customers, made by CTFT, there should be a potential sustained market at current prices of between 2.8 and 3.2 million m³ (excluding the domestic market). However, this is much below the present level of exploitation and Government policy therefore includes the following main points:

- (i) limiting exploitation of certain species to specified quantities per annum;
- (ii) promotion of alternative species;
- (iii) control of forest clearance; and
- (iv) afforestation.

190. Judging by past experience it is unlikely that there will be much success with points (i) and (iii). In the first place, there needs to be a much stronger and more effective control organization, but even if there were, it is an open question whether the Forestry Department would be willing to enforce control measures. As regards (ii), there are proven possibilities for utilizing a much wider range of timber than at present. This is partly a question of promotion and consumer acceptance, and partly a question of relative prices. As species now utilized become more scarce, this is something which will tend to produce its own solution.

191. In the mission's opinion, it will be difficult for the Government to impose limitations on forest exploitation. Therefore, it is possible that timber exports will remain at the present high level for another four to six years, and then start declining because of an exhaustion of resources.

192. Concerning (iv), the Plan Esquisse proposes an afforestation program of 60,000 ha. Although a good deal of preparatory work has been done on this, the financial resources of SODEFOR, which would execute the program, are very limited, and the present rate of planting is only 2,000 ha per annum. The Government is still hoping to obtain external financing for a project covering 60,000 ha. The project report deals adequately with both technical and economic aspects. It was estimated that at the prices prevailing in 1967, total cost would amount to CFAF 7,454 million. Nine different species were considered for afforestation, and it was found that the highest internal rate of return could be obtained with teak (5 - 6 percent), and that other species like acajou, okumé, sipo gave a rate of return of about 4 percent. In spite of the low rate of return, the Government still considers that the project is essential for the long-term program of forest development, and would like to execute it.

Oil Palm

193. For the period 1971 - 1980, the Plan Esquisse originally proposed a palm oil expansion program involving yearly planting of 5,000 ha of estate plantations and 5,000 ha of outgrower plantations. This would have brought the total area to 128,000 ha by 1975 and 178,000 ha by 1980. The targets have now^{1/} been adjusted to 87,000 ha by 1975 and 136,000 ha by 1980. Between 1975 and 1980, most of the increase is to come from new outgrowers plantations. Furthermore, as agreed in connection with a Bank project (No. 611 - 613 IVC), the Government will consult with the Bank before engaging in programs beyond 76,000 ha.

194. The oil palm program under implementation by SODEPALM will reach its target for industrial plantations by 1970 and outgrower plantations in 1972. For 4,000 ha of outgrower plantations, financing is not yet secured.

195. The estate planting program as envisaged at present will occupy most of the area east of the Sassandra River prospected and found suitable for oil palm. The limiting factor is mainly that large estates cannot be established without the displacement of a large number of farmers.

196. Assuming maximum participation of outgrowers near the estates, there might be a possible additional area which could be used for oil palm growing of the order of 200,000 ha. West of the Sassandra River the Government intends to prospect 20,000 ha with a view to developing projects for block and outgrower plantations which might be ready for financing by 1973 or 1974. Financing of these studies is to be requested from FAC. IRHO has developed good planting material yielding about 15,000 kg/ha of bunches and SODEPALM has the practical experience for large-scale plantings of estate and outgrowers plantations.

197. From a technical and organizational point of view, implementation of these projects poses no problems. The main constraint on new planting in the future is not, however, technical possibilities, but the world market situation. Prospects are certainly not as bright now as they were a few years ago, and extreme caution would be necessary in undertaking any new developments. It is for this reason that the original projections of the Plan Esquisse have been scaled down. However, some modest plantings may still be justifiable, where for instance favorable ecological conditions, low opportunity costs for inputs, especially labor, or highly efficient management suggest that the project would still be competitive at low world market prices.

Coconut

198. The Plan Esquisse foresees an increase in the present area of 17,000 ha to 72,000 ha by 1980. This program is very ambitious, but the targets have not yet been revised, mainly because the response obtained so far from outgrowers to the coconut project under implementation is favorable, and coconut is practically the only crop suitable for agricultural development in the coastal belt.

^{1/} December 1969.

199. SODEPALM is preparing a project, which will be ready in 1970, for planting 10,000 ha of coconut with hybrid seeds to start in 1971. Financing of this project is not yet assured. In addition, the Government expects that by 1972 a project will be prepared for planting 4,000 ha of coconut in the southwest. The main bottleneck in implementing these projects is the availability of hybrid seed. Although IRHO is stepping up seed production through the use of irrigation, the quantity of seed to be produced will only permit the following rhythm of plantings:

1971	500 ha
1972	800 ha
1973	2,200 ha
1974	3,000 ha
1975	4,000 ha

The coconut program foresees an increase in the area of new coconut plantings at the rate of 5,000 ha per year. Now that the decision has been taken to use only hybrid seed for new plantings, this program will have to be retarded.

Cotton

200. Ecological conditions for cotton growing are favorable in the savannah and yields average 900 kg/ha of seed cotton which is high considering that it is grown by smallholders (average field size 0.76 ha). Through the gradual introduction of higher yielding varieties and improvement in pest control, it can be expected that average yields will reach about 1,000 kg/ha by 1975.

201. However, there is some evidence that even with very favorable Government support, farmers are becoming reluctant to expand further cotton production because of the limitations it puts on production of their own subsistence food crops. For instance, there are indications of resistance to the recent introduction of price quality differentials because of additional work involved in sorting for quality. In the view of the mission, this is a factor which will limit the speed at which further cotton development takes place.

202. The cotton production targets set by the Government - 100,000 t of seed cotton by 1975, and 130,000 t by 1980 - appear to the mission too high. These targets are based on an increase of the area planted by 10,000 ha between 1971 and 1975, and by 5,000 ha between 1976 and 1980. In view of the labor shortage in the savannah, a gradual increase of the planted area of 5,000 ha per annum seems more likely. This would result in a production of about 80,000 t of seed cotton by 1975 and 100,000 t by 1980.

Rice

203. The rice production targets are based on the assumption that by 1975 production should cover the demand forecast for that period. The revised targets are 550,000 tons of paddy by 1975 and 700,000 tons by 1980. The corresponding areas planted would be:

	<u>1975</u>	<u>1980</u>
	(1000 ha)	
Irrigated rice	33	33
Upland rice	300	470
Flood rice	12	12

204. As maintained before, it is uncertain whether the areas foreseen for irrigated rice are really available, and whether production of flood rice will continue. Shortcomings in production of irrigated or flood rice could be compensated by increased production in the area planted under upland rice. In general the targets seem reasonable. To attain them, a smaller annual increase in production would be required than during the last eight years.

205. On the one hand, IRAT has only just started research on rice in the Ivory Coast. For upland rice, a selection from local varieties named Morebarecan is planted at present. This yields 700 to 800 kg/ha of paddy under traditional cultivation methods and 2,000 kg/ha under intensive cultivation. The same variety is planted on the naturally flooded river banks and yields are 1,000 to 2,500 kg/ha according to the timely arrival of the floods. For irrigated rice, IRRI (International Rice Research Institute) varieties have been tried, but were found unsuitable. It is reasonable to suppose that better results will be achieved after a further research effort.

206. On the other hand, a number of constraints are in force. To achieve the targets requires a continuation of the present extension efforts which are extremely costly. Any possibility of reducing these costs should be examined. A possible solution may be to unify extension services for rice and cotton which overlap in most of the rice growing areas.

207. Rice processing and marketing will also need complete revision. It seems unlikely that SATMACI can continue to operate in this sector in the future as in the past. The Government is aware of this problem and is examining possible solutions, including the establishment of a new rice development organization, SODERIZ.^{1/} Rice price policy should also be re-examined. The fact that SATMACI pays lower prices for paddy than the private rice merchants do, is one factor in the low throughput of the SATMACI rice mills and their inefficient operation. Possibly the margin between paddy and rice prices would permit SATMACI to pay the market price for rice and compete with private merchants for a larger share of the rice market.

^{1/} The decision to create SODERIZ was taken in early 1970.

208. Furthermore, unless internal rice prices can be brought into line with world market prices, elimination of imports would involve the Government in loss of the benefits it obtains from the present system of perequation. For every ton of import substitution, the Government would lose about CFAF 20,000 revenue at present price relationships.

209. Finally, projected demand should be carefully studied, with particular reference to price elasticity. To the extent that prices are reduced in the future, demand may exceed present forecasts.

Banana

210. The production targets set out in the Plan Esquisse for 1975 have already been surpassed, but the long-term prospects for the banana industry of the Ivory Coast are uncertain. Much will depend on the continuation of preferential prices on the French market, and to what extent the Ivory Coast can improve productive efficiency so as to be able to compete with other countries belonging to the Franc zone, namely the French Antilles and Cameroon. ^{1/}

211. The main development objective at present is to reduce production costs for export bananas. The following measures are envisaged for the near future:

- (i) Regrouping of the scattered banana-growing centers on the marshlands in the lagoon area near Abidjan;
- (ii) Intensification and regionalization of production methods, mainly in the field of disease and pest control.

212. The possibility of finding better conditions for export banana production in the vicinity of San Pedro than near Abidjan, is being explored. It is planned to plant 1,000 ha of banana near San Pedro as part of the development project for the southwest. In two or three years' time, it will be possible to judge whether it will be feasible to establish an export banana industry around this area.

Pineapples

213. The original production targets of the Plan Esquisse have been revised upward and are:

	<u>1970</u>	<u>1975</u>	<u>1980</u>
	-----'000 tons -----		
Pineapples for canning	100	160	200
Fresh pineapples for export	14	40	60

^{1/} Recently (early 1970) the Ivory Coast signed an important agreement with UK for the supply of bananas. This followed a dispute between UK and West Indies supplies over a question of prices.

In view of the present market outlook these targets seem reasonable. The present canning capacity is almost fully used and the new factory under construction by a West German firm appears to have an assured market for its factory production in West Germany. Fresh pineapples which in the past were mostly exported to France, have recently been sold in West Germany and Italy, which are rapidly expanding markets.

Livestock

214. The Plan Esquisse makes the following projections of meat production and consumption:

	<u>1970</u>	<u>1975</u> ('000 tons)	<u>1980</u>
<u>Beef</u>			
Consumption	40.0	50.0	80.0
Production	3.7	4.7	5.6
Deficit	36.3	45.5	74.4
<u>Mutton and goat meat</u>			
Consumption	14.2	17.0	22.4
Production	6.9	9.2	12.6
Deficit	7.3	7.8	9.8

215. The existence of a rapidly growing deficit on the domestic market, and the availability of large supplies of animal foodstuffs, both in the form of natural pastures and of by-products from the oil seeds and milling industries, encourages the belief that it would be worth attempting to develop to a much higher level the Ivorian livestock industry. Given the prospective meat deficit all over West Africa, development in the Ivory Coast would not adversely affect its existing trade partners (Mali, Upper Volta, Niger). The Government's development proposals consist of three points:

- (1) Establishment of large ranches in the savannah;
- (2) Promotion of a smallholder cattle industry; and
- (3) Cattle production in palm plantations.

(1) Establishment of large cattle ranches may be promising because it permits application of advanced techniques for disease control and pasture management, but sufficient land with high natural potential and no land tenure obstacles needs to be identified. It may also be difficult to obtain adequate foundation stock. The SATMACI ranch at Sipilo is giving satisfactory results on a small scale. At present BDPA in collaboration with IEMVT is carrying out a survey to determine the most promising areas for cattle production.

(2) The creation of smallholder cattle enterprises is being tried by SATMACI. So-called "noyaux d'élevage" are formed by giving to selected farmers 20 head of cattle with the idea that they will return to SATMACI the same number of cattle within a period of about 11 years. So far results have been poor. The main obstacles are that the Ivorian farmer does not know how to handle cattle, and cattle production in such small nuclei requires very close and costly supervision. Such enterprises are most promising within the framework of integrated agricultural development programs, as is being tried in the Bouaké pilot project, but only slow progress can be expected.

(3) Cattle production in palm plantations is, for the country, a new concept that has become possible because of the newly established large oil palm and coconut plantations. More experience of this type of enterprise is necessary before its feasibility can be assessed. An FAO expert is investigating this problem with the collaboration of IRHO and SODEPALM.

216. In view of the large meat deficit of the country, the planned increase in production appears modest. However, because the actions proposed for the development of meat production are even more modest, it is even doubtful whether the targets will be achieved. Ecological conditions in the savannah areas are promising for cattle production and therefore, in the mission's opinion, possibilities here should be explored much more vigorously. In addition, it would be desirable to pay more attention to the animals with a quicker turnover such as poultry and pigs, including also proposals for the development of domestic feedstuffs industry.

Rubber

217. Future development of rubber planting is entirely dependent in the first place on the involvement of private firms. The targets set out in the draft development plan are mainly based on the interest manifested by the Michelin (French) and Goodyear (U.S.) companies in rubber planting in the southwest. The idea is that these firms would manage the plantations and produce rubber to their specifications. Such a connection with the rubber industry is expected to provide sure markets for the future rubber production of the Ivory Coast.

218. Preparation of the Michelin project based on an estate plantation of 10,000 ha is well advanced. Detailed investigations of the selected area near the Nero river are under way, and IRCA is establishing budwood nurseries in the southwest.

219. The Goodyear project is in a preliminary stage of preparation. The tentative plan is for a project covering 13,700 ha in the Grand Bereby area, of which 1,650 ha in an industrial block and the remainder smallholders. Planting would be at the rate of 2,000 ha per annum. Goodyear would manage the agricultural operations and build and run the processing factory itself. The large smallholder element in the Goodyear project may raise problems of implementation, and it seems that the Government would prefer a much larger proportion of industrial plantation. Goodyear is understood to be flexible on this.

220. According to the results of investigations so far, natural conditions for rubber growing in the southwest appear to be very good. There are thus reasonable prospects that the properly managed projects would be competitive on world markets and thus economically viable. It appears justified to assume, therefore, that one or both of these projects will be executed during the next decade.

IV. PRODUCTION PROSPECTS AND EXPORT PROJECTIONS

221. A number of conclusions emerge from this review of the situation and prospects of the agricultural sector of the Ivory Coast. The first and most important is that by and large the rhythm of development of the last few years is likely to be maintained, though probably with some slight slowing down. As regards individual commodities in general, though with some important exceptions, the right policy decisions seem to have been taken and the right lines of action are being pursued. The biggest question marks hang over the important forestry and food crops sectors. As regards forestry, it seems to be urgently necessary to define a credible policy and make a serious attempt to enforce it. For food crops, it is necessary to draw out the implications of rapid urbanization as regards production and distribution of food, and take appropriate measures of implementation.

222. With these considerations in mind, the mission has attempted to assess the impact of the growth of agricultural production on exports. The details are given in Annex No. II, and the figures are summarized in the following table^{1/}:

	<u>1967-8</u>	<u>1975</u> (CFAF million)	<u>1980</u>
Coffee	30,642	42,730	47,670
Cocoa: beans	16,648	30,960	40,560
paste	933	933	933
butter	2,435	2,435	2,435
Oil Palm: oil	30	4,268	4,382
kernel	140	1,209	1,250
Copra	101	319	994
Rubber	595	1,260	1,620
Banana	3,091	4,900	5,390
Pineapple: canned	2,005	4,536	5,670
fresh	526	1,800	2,700
Cotton: lint	1,168	2,144	2,640
seed	154	1,056	1,320
Cola nuts	1,046	1,000	1,000
<u>Total Agriculture</u>	<u>59,714</u>	<u>99,500</u>	<u>118,564</u>
<u>Timber</u>			
Assumption A. Logs	19,664	15,120	12,800
Processed	3,283	6,327	7,695
<u>Total</u>	<u>22,947</u>	<u>21,447</u>	<u>20,495</u>
Assumption B. Logs	19,664	23,520	4,800
Processed	3,283	6,327	7,695
<u>Total</u>	<u>22,947</u>	<u>29,847</u>	<u>12,495</u>
TOTAL: Assumption A	82,661	120,947	139,059
Assumption B	82,661	129,347	131,059

^{1/} Some of these figures have been revised subsequently (see table in Annex II) but these do not significantly affect results.

223. On this basis, the value of agricultural exports, excluding forest products, would increase from about CFAF 60 billion in 1967-68 to CFAF 100 billion in 1975 and to CFAF 119 billion in 1980. This would represent an average annual increase of 7.5 percent between 1967-68 and 1975, and of 3.6 percent between 1975 and 1980. If forest products are added to the agricultural products, the increase in export value changes according to the assumptions as follows:

- (a) If timber production is limited, the export value will increase at a fairly regular pace from CFAF 83 billion in 1967-68 to CFAF 121 billion in 1975 and CFAF 139 billion in 1980.
- (b) If timber production is not limited, the export value will increase rapidly from CFAF 83 billion in 1967-68 to CFAF 129 billion in 1975, and thereafter it will stay at about the same level, reaching CFAF 131 billion in 1980.

224. Because timber that has been the fastest growing export cannot be expected to maintain the same pace of growth in the future total exports will also increase less rapidly than in the past decade. This, however, should not obscure the fact that for all other agricultural products and for total agricultural production and exports, including timber, the projected trend is quite satisfactory and will remain the main growing force in the economy.

ANNEX I

AUTONOMOUS AGENCIES CONNECTED WITH AGRICULTURE

1. The Ministry of Agriculture covering agriculture and forestry and the Ministry of Animal Production covering livestock and fisheries have mostly administrative functions; for actions at the farm level they depend almost entirely on semi-autonomous agencies that deal in specific sectors with the organization and implementation of agricultural development programs. These autonomous agencies, that are responsible to the respective ministry, work mainly on the basis of conventions (contracts with other organizations). For this reason the ministries have practically no agricultural extension or research services. Thus these functions, which in other countries are normally carried out by the Ministry of Agriculture, in the Ivory Coast are in the hands of autonomous organizations. In addition to extension and/or research in certain cases they also handle agricultural credit. The following autonomous organizations are connected with agricultural development.

Caisse de Stabilisation et de Soutien des Prix
des Produits Agricoles (Caisse)

2. This organization constituted in 1966 has as its main objective to stabilize prices of agricultural products.^{1/} In practice it restricts active intervention for the time being to coffee, cocoa and cotton. In addition to its main function of price stabilization, the Caisse also ensures the application of international agreements, organization and control of marketing and processing within the country and improvement of quality and production. It intervenes directly in coffee and cocoa marketing. For the improvement of cocoa production, consisting mainly of pest control and regeneration, the Caisse has a convention with SATMACI. Cotton improvement, processing and marketing is done on a contract basis with CFDT.

3. The resources of the Caisse which come from the difference between its buying and selling price are not used only for price stabilization, but also for the implementation of development projects. By statute, the net profits of the Caisse after paying for the current cost of all operations have to be allocated as follows:

- 60% to price stabilization reserve funds;
- 15% to Budget Spécial d'Investissement et Equipement (BSIE) for economic development projects;
- 15% to BSIE for social projects;
- 10% to Banque Nationale pour le Développement Agricole (BNDA).

4. The net results of the operations of the Caisse were: in 1965/66, a loss of CFAF 3,600 million and a surplus of CFAF 125 million in 1966/67; CFAF 3,013 million in 1967/68 and 4,000 million in 1968/69.

^{1/} Previously, there were separate caisses for individual products.

For 1969/70, a net surplus of at least CFAF6,500 million is anticipated, the increase being mainly due to the effect of devaluation and rising coffee and cocoa prices.

5. The actual amounts of products dealt with by the Caisse are:

	('000 tons)					1/
	<u>1965/66</u>	<u>1966/67</u>	<u>1967/68</u>	<u>1968/69</u>	<u>1969/70</u>	
Coffee purchase	273	288	131	205	250	
exports	177	165	198	177		
stocks	120	210	113	96		
Cocoa purchase	113	150	147	144	140	
exports	113	148	145	134		
Cotton purchase			32	42	27	

6. In the field of quality improvement, the action of the Caisse has given good results with cocoa. Whereas in 1964/65, 72 per cent of the cocoa exported was grade 1, in 1967/68, it had increased to 94 per cent. Nothing has so far been done to improve coffee quality but the question is under study.

Banque Nationale pour le Développement Agricole (BNDA)

7. BNDA was founded in 1968 to succeed the Caisse Nationale pour le Crédit Agricole which was closed mainly because of very bad debt collection records. The question of CNCA's liabilities and assets are not yet resolved and the bank is still in the stage of organization so that it is not possible to give a judgment on its activities. The designed role of the Bank is to make long-term loans up to ten years, medium term loans up to five years and short-term loans up to ten years. Loans can be extended to state organizations, private companies or individuals and to agricultural cooperatives and farmer associations.

8. The capital of the bank is CFAF 250 million and it has the possibility of borrowing money. The rates of interest charged are 6 per cent for long-term loans, 5.5 per cent for medium-term loans and, depending on conditions, 5.25-10 for short-term loans. So far, the Bank has financed the operations of the semi-autonomous agency SODEFEL dealing with fruit and vegetable improvement and of SALCI, a private firm in charge of pineapple development. It has started to make loans to groups of farmers. In 1968, CFAF 125 million and in 1969, CFAF 185 million were lent to farmers. These loans were made to 285 farmer groups reaching about 5,000 people. These so called bridging loans are mainly necessary for cacao farmers.

9. The repayment record has so far been irregular and does not permit to draw conclusions. The chief element of these loans is

1/ Estimates.

collective responsibility of all farmers in a group. Depending on experience with these bridging loans, it is possible that BNDA will consider giving development loans to farmers, both medium and long-term. However, at present the medium and long-term loans are restricted to autonomous agencies. One project in mind is a loan to SODEPALM for the development of 4,000 ha. of outgrower oil palm plantations.

10. Future prospects for BNDA will depend mainly on a decision on how to handle agricultural credit. Up to now most of the agricultural credit for small holders has been distributed through semi-autonomous agencies in connection with extension work for specific agricultural development programs. If in the future agricultural credit should be centralized in one single organization, BNDA may have an important role to play but so far it has only a small agricultural field staff that would not be able to organize large agricultural credit projects.

Société d'Assistance technique pour la Modernisation
agricole de la Côte d'Ivoire (SATMACI)

11. SATMACI was created in 1958 in recognition that the Ministry of Agriculture was not well equipped for the implementation of agricultural development programs. Its main objectives are to provide extension service, organize the distribution of agricultural supplies and to provide credit.

12. Since 1959, SATMACI has been in charge of the implementation of the following:

1. Cocoa program since 1959, capsid control and regeneration of old plantations.
2. Coconut and oil palm program since 1960; these activities were later taken over by SODEPALM.
3. Ranching operations, since 1962.
4. Rice program, since 1965
5. Banana program, since 1966, recently taken over by SODEFEL.
6. Pineapple program, since 1967, now continued by a private firm, SALCI.
7. Coffee program, started in 1969, involves so far only multiplication and distribution of improved planting material.

13. The interventions of SATMACI, although they are organized on a sectorial basis, aim always at general rural development. They comprise the following main activities.

1. Training of extension officers.
2. Soil and cadaster surveys.
3. Sale of agricultural supplies and equipment through its supply centers.

4. Provision of credit.
5. Commercialization of agricultural products, so far only for rice.
6. Improvement of roads and building of water points.

For all these activities SATMACI has a permanent field staff of about 2,500 persons, mostly extension officers, and employs 1,500 to 3,000 seasonal laborers.

14. SATMACI plays a pioneer role for the development of agricultural production. In many cases it has initiated the development of a specific crop and at a certain stage of progress a new specialized autonomous agency was created for further development. This has been so far the case for oil palm, coconut, banana and pineapples and the creation of a specialized agency for rice (SODERIZ) has been decided (early 1970).

15. The method of operation of SATMACI is at the beginning of each year to enter an agreement with the appropriate government department to carry out a specific development activity. Since its development in 1959, SATMACI has concluded some 60 of these conventions, as they are called, with the Government, but at present only a limited number is still in force. The main conventions cover cocoa, rice, production, marketing and milling and livestock. There are also a number of other minor conventions which cover a wide variety of things such as the purchase of zebus, and purchase of quinine, but they do not essentially affect the character of operations that SATMACI carries out. The mission formed the impression that the technical operations of SATMACI are reasonably efficient and effective. However, the financial organization and situation of SATMACI is unsatisfactory.

16. Financial statements do not fully reflect the conditions of SATMACI because of shortcomings in the accounting system, delays in updating accounts and lack or inadequate assessment of the value of a number of items of assets (account receivable, inventories) which are reportedly over-evaluated. There is no proper recording of credit operations, and statements of loans made and repayment records are only approximate. Such records are clearly unsatisfactory.

17. The major features of the financial performance and conditions of SATMACI are its unprofitability, a small equity and an imbalance between the various elements of assets and liabilities. Losses as shown by the provisional balance sheet at 31 July 1969 amount to CFAF 162 million; adjustments on receivables and inventories would increase this amount markedly. Furthermore, there are no prospects of reducing losses on operations (especially processing and marketing of rice) during the foreseeable future.

18. Fixed assets and accumulated losses are not covered by adequate resources, e.g. equity or long-term resources. As of 31 July 1969, the related imbalance was about CFAF 393 million, compared with CFAF 370 million as of 31 December 1968. Short-term credits make good the imbalance. Because of increased losses and delays in Government payments (the red tape in this regard is incredible), SATMACI has to request larger and larger lines of credit from its bankers, the BNDA being called upon for re-discounting.

19. The reasons for this state of affairs are fourfold. First, the Government has been extremely slow in financing the actions which SATMACI had undertaken as a result of the conventions. The delay has been anything between 4 and 9 months. As a result, SATMACI was forced to have recourse to short-term bank loans in order to bridge the period before the Government paid its dues. Secondly, the actual costs of the operations which SATMACI undertook to carry out were very often underestimated. Thus, even when SATMACI was paid in full for its actions, it made a loss on the transaction. This loss was, however, not taken into account when applying for the short-term bank financing for the operations. Third, the interest charged by the commercial banks for this short-term financing was an unforeseen expenditure for SATMACI which added unnecessarily to its costs.

20. The fourth reason for SATMACI's difficulties has been the rice operation. Here, SATMACI provided credit for rice farmers (for which in fact the repayment record was very poor), but because the farmers were under no obligation or compulsion to sell back to SATMACI the rice they produced, SATMACI did not have any effective means to cover its loans. At the same time, SATMACI became involved in the operation of a number of rice mills which were planned on the basis of its throughput capacity calculated according to the area of rice which SATMACI hoped to include in its extension and credit activities. In fact, the rice acreage never reached this total and for the reasons just mentioned, the quantity of rice sold to SATMACI by the farmers fell far short of what was expected. Thus the rice mills ran much below capacity and were unable to operate at a profit.

21. This highly unsatisfactory state of affairs obviously cannot be allowed to continue if there is to be any effective development program for those commodities with which SATMACI is concerned. The occasion should be taken to revise thoroughly the total concept whereby agricultural development activities are undertaken in the Ivory Coast. Various solutions are discussed in the main report.

Société pour le Développement du Palmier à Huile (SODEPALM) ^{1/}

22. SODEPALM is concerned with the development of palm oil and copra production. It is in charge of the various oil palm projects started in 1962 and the coconut projects started in 1967. These programs are on schedule and the first phase is expected to be completed by the end of 1971.

^{1/} Includes PALMIVOIRE (management company) and PALMINDUSTRIE (palm oil factories' owner). SODEPALM is the plantations' owner.

23. SODEPALM engages directly in industrial plantations of oil palm and coconut and provides extension service, credit and supervision for outgrower plantations. So far no major technical or financial problems have arisen. One of the main difficulties seems to be collection of the bunches produced by the outgrowers. The existing road network around the estates has proved inadequate for regular collection of the bunches and the improvement of the road network will cause large unforeseen additional expenses.

24. In the future, SODEPALM will continue to run the oil palm and coconut estates and will expand plantations according to the targets set by the Government. This will include an extension of the outgrower plantations around the existing estates and most likely the establishment of new estate plantations in the South West.

Société pour le Développement des Fruits et des Légumes (SODEFEL)

25. SODEFEL covers principally bananas, vegetables and various fruits. Up to the present, SODEFEL has been mainly engaged in extension activities and in formulating a development program for fruits and vegetables. Because of lack of resources, this has been on a relatively limited scale, but it is hoped to engage directly in development after the fashion of SODEPALM.

26. The development program would be oriented on three main lines:

- (i) to improve the production of those vegetables which are already locally produced, such as spinach, peppers and ladies' fingers;
- (ii) to develop production of vegetables which can be produced locally, but which are now imported, such as tomatoes and lettuce;
and
- (iii) to improve marketing of fruits and vegetables through the introduction of correct varieties and by improvement of transport grading, packing and marketing facilities.

Société pour le Développement forestier (SODEFOR)

27. SODEFOR is responsible for the forest replanting program and advises the Ministry of Agriculture on forest problems. Its funds come from the proceeds of an export tax of two per cent on the value of exported roundwood and amount to about CFAF 400 million per year. These limited funds restrict the activities of SODEFOR and during the past few years they have permitted the replanting of only 2,000 ha per annum.

28. SODEFOR has worked out a reforestation project of 60,000 ha for which it is attempting to find investment finance. The future development of SODEFOR will depend to a large extent on whether new sources of finance can be found for afforestation, because timber exports are expected to decline in the future and this will reduce the export tax revenues on which the activities of SODEFOR depend.

MOTORAGRI

29. MOTORAGRI is an autonomous agency which is mainly responsible for providing mechanical cultivation for agriculturists. It does this both for private individuals and for other government services, such as SATMACI or the Ministry of Agriculture. MOTORAGRI operates in very much the same way as SATMACI, that is to say by means of conventions passed with various other organizations. It is extremely difficult to see whether this organization is operating efficiently. Since the cost of its operations is entirely covered beforehand by the convention, there is no possibility of a loss being incurred through its operations. However, it seems clear that there will be a need for financing for MOTORAGRI when the time comes to replace its equipment.

30. It was created in March 1966 and provided by the State^{1/} with the necessary equipment. Since then, there has been some provision of additional equipment but the normal setting aside of an amount for replacement of worn out equipment has not been carried by MOTORAGRI itself. The only quantitative measure of efficiency which the mission could obtain was that its tractors were said to work on average approximately 1,500 hours per annum. There is some evidence that its bids are not competitive with the other commercial operators, for instance, SODEPALM, when it had to do forest clearing operations, preferred to deal with private sector contractors rather than with MOTORAGRI.

31. At present MOTORAGRI claims to be carrying out about 90 per cent of its work for the government services and 10 per cent for the private sector. Of that work done for the government services, 30 per cent is done by convention with SATMACI, 20 per cent for the secteurs pilotes of the Service de Vulgarisation of the Ministry of Agriculture, and 50 per cent for the Service Civique of the Ministry of Armed Forces.

32. MOTORAGRI has 250 tractors with the appropriate equipment. The main operations by type of work during the last four years are listed below:

^{1/} More precisely by CSSPA.

	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u> ^{1/}
		(hectares)		
Land clearing	2,600	4,300	5,600	5,500
Deep ploughing	2,500	3,400	3,500	4,000
Cultivation	660	2,500	4,400	4,500
Harrowing	1,000	13,600	11,100	13,000
Sowing	-	2,800	3,000	6,300
Bush roads (km)	400	880	750	930
Excavations (m ³)	21,000	30,000	37,000	25,000
Village sites cleared (number)	8	102	12	-

^{1/} Forecasts
Source: MOTORAGRI

Agricultural research institutes

33. In the Ivory Coast, agricultural research is carried out mostly by French research institutes established in the country. These institutes have originated and provide the technical basis for most of the on-going agricultural development programs. They work in close collaboration with the semi-autonomous agencies concerned and provide the necessary technical assistance. So far, these institutes have done excellent work and can be considered one of the main elements that have enabled the country to carry out large agricultural development programs.

34. These institutes work on a contract basis with the Government of the Ivory Coast. In general the arrangements are that the Government pays half of the expenses for the current activities and the other half is paid by French bilateral assistance. For special studies, surveys or investigations, individual financing arrangements are made. The agricultural research institutes working in the Ivory Coast and their main activities are listed below.

Office de la recherche scientifique et technique outré-mer (ORSTOM)

35. ORSTOM is mainly concerned with basic research, both in the field of technical and human science. The main contributions of interest to agriculture are soil and vegetation surveys and climatological studies. In the field of human sciences, it has made several socio-economic studies which provide the basic information, especially for the rural development projects planned for the savannah area. In general, ORSTOM provides basic ecological and socio-economic information. So far the technical information has proved adequate for the

planning of agricultural development projects but the social and economic studies should be intensified to provide a better basis for the preparation of the vast rural development programs that the Government has in mind.

36. In addition to these investigations, ORSTOM is in charge of the Oceanographic Institute located in Abidjan and carries out marine biology research on behalf of the Ministry of animal production for the improvement of the fishing industry.

Institut français du café et du cacao (I.F.C.C.)

37. I.F.C.C. is in the Ivory Coast in charge of cocoa, coffee and cola improvement. It has developed high yielding planting material for coffee and cocoa and improved cultural methods for both crops. It gives technical assistance to SATMACI for the implementation of the coffee and cocoa programs and is in charge of training the necessary extension officers for these programs. At present, I.F.C.C. is carrying out a special study on coffee processing that will provide the technical basis for a large project for the reorganization and improvement of coffee processing and marketing.

Institut de recherches pour les
huiles et oléagineux (I.R.H.O.)

38. I.R.H.O. has been working in the Ivory Coast since the end of the War on improvement of the oil palm and later started to work on coconut. It has been very successful in developing high yielding planting material for both these crops. I.R.H.O. provides technical assistance to SODEPALM and produces all the planting material for the on-going projects. In addition, it trains the staff necessary mainly for outgrower plantations. I.R.H.O. made the necessary field survey for the coconut and oil palm programs and is working on the selection of suitable sites for these crops in the south-west for future palm plantings.

Institut de recherche du caoutchouc (IRCA)

39. IRCA is in charge of the development of rubber production. So far, it has developed high yielding planting material and given technical assistance to the few established rubber estates. During the last years it has prospected the south-west for suitable areas for hevea plantations. If the large rubber projects for the south-west are implemented, IRCA will have an important role to play, especially for the Goodyear project. For this project large areas of outgrower plantations are envisaged and it is likely that IRCA will be in charge of training the necessary extension officers to advise and train outgrowers in rubber production.

Institut français de recherche fruitière outre-mer (IFAC)

40. IFAC is in charge of research on tropical fruits. It has played an important role in the development of banana and pineapples as export crop. At present it is preparing in collaboration with SODEFEL a program for centralization and rationalization of export banana production. IFAC has been introducing and improving other promising tropical fruits. It appears likely that thanks to the work of IFAC and the good and regular transport facilities that the port of Abidjan offers, it will be possible in the future to develop other fruit crops than banana and pineapples for export. Most promising are avocados and papaya.

Institut de recherches du coton et des fibres exotiques (IRCT)

41. So far, IRCT has worked mainly on cotton. It has a vast cotton breeding program and new improved varieties are regularly released. Much attention is also paid to pest control which is the main technical production problem in the Ivory Coast. IRCT works in close collaboration with the Compagnie Française pour le Développement des Fibres Textiles (CFDT) which is in charge of cotton development in the Ivory Coast.

42. At present, IRCT is also carrying out a technical and economic study on kenaf production that should provide the basic data for a reorganization of possible reorientation of the kenaf project of the Société Ivoirienne Agricole et Industrielle du Kénaf (SIVAK) which is not performing satisfactorily.

Institut de recherches agronomiques tropicales et des cultures vivrières (IRAT)

43. IRAT has since 1967 a contract with the Government to run the agricultural experiment stations of Bouaké, Ferkéssédougou, Man and Gagnoa and is the only institute working on annual food crops. It has so far concentrated its efforts on the improvement of rice, maize, yam and cassava, and in addition it is working on general agronomic problems concerning agriculture in the savannah.

44. It is too early to give an opinion on its achievements but there is no doubt that the work that IRAT is carrying out is essential for the implementation of the rural development programs that the Government has for the savannah area. IRAT also participates in the preparation of the sugar projects for which tentative sites have been selected near Ferkéssédougou and Bouaflé.

Institut d'élevage et de médecine vétérinaire tropicale (IEMVT)

45. IEMVT is in charge of research in the field of animal husbandry and runs the Centre de recherche zootechnique of Bouaké - Minankro. It works mainly on cattle and pasture improvement and provides technical assistance to SATMACI for the management of two cattle ranches. In view of the magnitude of the problems on all the aspects of animal husbandry, the present program of work of this institute appears to be too restricted. A much larger research effort will be required to increase and improve animal production in the Ivory Coast. IEMVT is collaborating in a survey to identify the best sites for large scale cattle production and it is planned to establish at Abidjan a parasitology laboratory of which IEMVT would be in charge.

Centre Technique Forestier Tropical (CTFT)

46. CTFT is in charge of research in the sector of forestry. In the past, it has carried out vast forest inventories that have provided the basic data for the formulation of the Government's forest policy. The Centre has also carried out research and developed good techniques for afforestation that are now applied by SODEFOR. The work carried out on timber technology contributes to the effort that is being made to promote the use of species of which the Ivory Coast has still large reserves.

47. For the last five years CTFT has conducted research on fast growing forest species. These investigations will provide the technical basis for the planned pulp project in the south-west.

PROJECTIONS OF EXPORTS FOR AGRICULTURAL AND FOREST PRODUCTS

A. General

1. Individual projections have been made for all the main agricultural and forest products. Estimations of quantities are based on forecasts for on-going or planned programs. The production targets of the Government for the decade 1971-80 have been set out in a draft development program published in May 1968. These targets are under constant review and on many of them no final decision has yet been taken. The quantity forecasts given below are based on the Government's five-year plan, insofar as they appeared feasible and economically justified to the mission. To permit a comparison with the present situation, the average volume and value of exports for the years 1967 and 1968 are listed for each commodity.

2. Prices for 1967 and 1968 were taken from the customs' statistics which do not reflect always the real export volume and value for each commodity because there are unregistered exports mainly to the neighboring countries in the North and for some commodities the f.o.b. prices are higher or lower than indicated in the customs' statistics. However, it is not possible to adjust these prices for each commodity. The prices for 1975 and 1980 are mainly based on current Bank forecasts for world markets.

3. Taking into account that there are plans to establish in the near future an oil seed crushing industry, the mission compared the export value of seed and of oil and cake for palm kernels, copran and cotton seed. The difference is small, of the order of 200 million CFAF in 1975 and 300 million CFAF in 1980, and therefore the export of seeds only has been assumed.

4. Two assumptions have been made for future timber exports. The Government intends to limit the exploitation of timber because of declining forest resources. The mission doubts whether it will be possible to impose such limitations and has made two forecasts, one based on demand forecast and the other on the envisaged limitations of timber removal.

5. In Table 1 of this Annex, production and export values are summarized taking the two above-mentioned assumptions into account. In addition, the value to the producer of total production of agricultural export products is listed, based on the farm-gate prices prevailing in November 1969. In the forecasts of the value to the producers of export crops those prices are taken as constant.

B. Projections by products^{1/}

Coffee

6. The quantity projections are based on the program to plant each year between 1971 and 1980, 20,000 ha of coffee with improved planting material. In the mission's opinion all this coffee will be grown under traditional cultivation methods and will yield 550kg/ha in the fourth year and 700 kg/ha thereafter. The replanting rate has been, during the last five years, of the order of 17,000 ha. per year in spite of the fact that coffee planting was restricted. Therefore an annual replanting rate of 20,000 ha in the future seems reasonable.

7. In the future, as at present, part of the coffee will be sold to quota markets and part to non-quota markets. These sales have been projected as follows, based on information from ICO.

Sales to:	<u>1975</u>	<u>1980</u>
Quota markets ^{2/}	190	215
Non-quota markets	30	50

Based on Bank forecasts, the assumed prices for quota markets are US c/lb 37 in 1975 and US c/lb 34 in 1980 c.i.f. New York. For non-quota markets an arbitrary price assumption of US c/lb 27 has been made.

8. Projections of production, consumption and exports are:

<u>Coffee</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production	186	230	300
Local consumption	5	10	20
Exports total	181	220	280
to quota markets	n.a.	190	215
to non-quota markets	n.a.	30	50
Surpluses	-	-	15

Prices:

to quota markets CFAF/kg f.o.b.	n.a.	202	188
to non-quota markets " "	n.a.	145	145
Export value f.o.b.	<u>30,642</u>	<u>42,730</u>	<u>47,670</u>

^{1/} All quantities are listed in thousands of metric tons and export values in millions of CFAF.

^{2/} Estimate based on information from International Coffee Organization (London).

Cocoa

9. The quantity forecasts are based on a government program to plant each year from 1971 to 1980, 10,000 ha of cocoa with improved planting material and to regenerate part of the existing plantations. In addition to this program, new plantings will be established in the South-West. The Bank cocoa project that has just been approved (May 1970) is part of this program. During the last five years the planting rate has been of the order of 10,000 ha per year and therefore this long range program appears feasible. The use of improved planting material and the regeneration of existing plantations is expected to increase average yields from 400 kg/ha at present to 500 kg/ha by 1975 and 600 kg/ha by 1980, implying yields on new plantings of about 1,000 kg/ha.

10. The quantity of locally processed cocoa beans that are exported in the form of cocoa paste and butter is not expected to increase because there are no plans to expand in the future the grinding capacity of the existing mills.

11. The price assumptions are based on the Bank forecast of US c/lb 30 in 1975^{1/} and US c/lb 27 in 1980 c.i.f. New York.

12. Projections of production and export are:

<u>Cocoa</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production	143	210	290
Locally processed	30	50	30
Exports of beans	113	180	260
Price: beans CFAF/kg. f.o.b.	196	172	156
Export value:			
beans	16,648	30,960	40,560
cocoa paste	933	933	933
cocoa butter	2,435	2,435	2,435
Total export value f.o.b.	<u>20,011</u>	<u>34,328</u>	<u>43,928</u>

Oil palm produce

13. Forecasts of quantity are based on the on-going projects including the Bank palm project which will be completed in 1971. No other new plantings are envisaged before 1974 and these new plantations, if undertaken, will come into production after 1980. The forecasts include production from natural oil palm groves. At present, only small quantities of palm oil and kernels are exported but those exports will increase rapidly till 1975 and then at a lower pace till 1980.

^{1/} Last Bank forecasts are USc/lb.25.3 for 1975 and USc/lb.30 or the average for the five-year period 1971-1975.

14. Price forecasts are those made by the Bank for the above mentioned project (see Report TO-603c, annex 8) and which have not been changed since then. These prices are c.i.f. European port for palm oil US\$160.00 and for kernels US\$136.00 per ton.

15. The production, consumption and export forecasts are:

<u>Palm oil</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production	30	157	172
Local consumption	29.5	47	57
Exports	0.5	110	115
Price CFAF/t. f.o.b.	60,000	38,800	38,100
Export value f.o.b.	<u>30</u>	<u>4,268</u>	<u>4,382</u>
 <u>Palm kernels</u>			
Production - export	9.4	41	44
Price CFAF/t. f.o.b.	36,200	29,500	28,400
Export value f.o.b.	<u>340</u>	<u>1,209</u>	<u>1,250</u>

Coconut

16. Forecasts of quantity are based on on-going projects, part of which is the Bank palm project. New plantings are planned from 1972 onwards but they will influence coprah production only after 1980. Price forecasts are those made by the Bank for the palm project which are still valid, namely US\$165.00 per ton of coprah c.i.f. European port.

17. The production and export forecasts are^{1/}

<u>Coprah</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production	7.5	15	36
Local consumption	4	6	8
Exports	3.5	9	28
Price CFAF/t. f.o.b.	-	35.500	35.500
Export value f.o.b.	<u>101</u>	<u>319</u>	<u>994</u>

Rubber

18. Forecasts of quantity are based on the existing plantations with average yields of 1000 kg/ha. Out of a total of 12,500 ha only 7,000 ha were in production in 1968 and it can be expected that all these plantations will be in full production only by 1977-78. No new plantings will be made before 1974 and they will come into production only after 1980. The price assumption is based on current Bank forecast of US c/lb. 16 c.i.f. New York for 1975 and 1980.

^{1/} Revised forecasts are slightly higher (May 1970):
see footnotes Annex II, Table 1.

19. It is expected that the whole production will be exported as follows:

<u>Dry rubber</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production - Export	6.4	14	18
Price CFAF/kg f.o.b.	93	90	90
Export value f.o.b.	<u>595</u>	<u>1,260</u>	<u>1,620</u>

Bananas

20. No production targets have yet been set by the Government for export bananas. Their program foresees a concentration and rationalization of production but no extension of the area planted. The mission has arbitrarily assumed that production will increase by about 20 per cent between 1971 and 1980. For prices, it is expected that the Ivory Coast will continue in the future as in the past to sell about half of its export to France where it gets a preferential price of CFAF 42 per kg. c.i.f. French port and the rest at world market prices of CFAF 35 per kg. c.i.f. European port. These prices correspond to an average f.o.b. price of CFAF 24.5 per kg.

21. The export forecasts are:

	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Banana exports	145	200	220
Price CFAF/kg f.o.b.	21.5	24.5	24.5
Export value CFAF	<u>3,091</u>	<u>4,900</u>	<u>5,390</u>

Pineapples

22. Quantity forecasts are based on present export trends for fresh and canned pineapples. The canning capacity is being increased by about 60 percent and fresh pineapples, which in the past were exported mostly to France, are finding a good market in West Germany and Italy. Prices are expected to stay on an average at the present level during the next ten years.

23. The export forecasts are:

<u>Canned pineapples</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Exports	32	72	90
Price CFAF/kg f.o.b.	63	63	63
Export value f.o.b.	<u>2,005</u>	<u>4,536</u>	<u>5,670</u>

<u>Fresh pineapples</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Exports	14	40	60
Price CFAF/kg f.o.b.	44	45	45
Export value f.o.b.	<u>526</u>	<u>1,800</u>	<u>2,700</u>

Cotton

24. The Government intends to increase cotton production substantially during the next ten years. It is planned to increase the area planted to cotton by about 10,000 ha per year from 1971 to 1975 and by 5,000 ha per year from 1976 to 1980. This would result in a production of 100,000 t of seed cotton by 1975 and 130,000 t by 1980. In the mission's opinion these targets are too ambitious, mainly because of a shortage of labor in the savannah, which could be overcome only by big changes in cultivation methods. Such changes are expected to take place slowly and it is therefore assumed that production of seed cotton will reach only 80,000 t by 1975 and 100,000 t by 1980.

25. There is a project, in an advanced stage of preparation, to establish a new textile factory that will increase local consumption of lint by 12,000 t per year.

26. The price assumptions are based on the Bank forecasts. They are for lint 25 US \$/lb in 1975 and 24 US \$/lb in 1980 c.i.f. European port, and for cotton seed US \$94.00 per ton c.i.f. European port.

27. The production, consumption and export forecasts are:

<u>Cotton lint</u>	<u>1967-68</u>	<u>1975</u>	<u>1980</u>
Production	11	32	40
Local consumption	2	16	18
Export	9	16	22
Price CFAF/kg f.o.b.	130	134	120
Export value f.o.b.	<u>1,168</u>	<u>2,144</u>	<u>2,640</u>
 <u>Cotton seed</u>	 <u>1967-68</u>	 <u>1975</u>	 <u>1980</u>
Production - Exports	7	48	60
Price CFAF/t f.o.b.	22,000	22,000	22,000
Export value f.o.b.	<u>154</u>	<u>1,056</u>	<u>4,320</u>

Timber

28. For quantity forecasts, two different assumptions are made: one based on the forest policy that the Government intends to follow and the other on demand forecasts. The two assumptions are:

- (a) That log removal will be limited to about 3 million m³ per year. This would allow timber production to be kept at this level beyond 1980;
- (b) That timber exploitation will not be limited. In this case production will increase rapidly, as already happened in 1968 and 1969 (estimated production in 1969: 4 million m³). According to demand projections made by CTFT in 1967, timber production should reach 3.6 million m³ by 1975. Although the present high demand can to a certain extent be explained by political factors, in the mission's opinion timber production, if not limited, will be of the order of 4 million m³ by 1975 and will decrease thereafter due to exhaustion of the resources.

29. The average price for export logs is expected to decrease because future exports will include a higher percentage of low value species than at present. It is arbitrarily assumed that the present (1969) f.o.b. price of about CFAF 8,700 per m³ will fall to CFAF 8,400 in 1975 and CFAF 8,000 in 1980.

30. The quantity of locally processed logs should reach 1.2 million m³ by 1975 according to a CTFT forecast and the mission estimates that it will reach 1.4 million m³ by 1980.

31. The export forecasts for these two assumptions are:

<u>Assumption a)</u>			
<u>Logs</u>	<u>1967/68</u>	<u>1975</u>	<u>1980</u>
Production '000 m ³	3,248	3,000	3,000
Locally processed ('000 m ³)	850	1,200	1,400
Exports ('000 m ³)	2,398	1,800	1,600
Price CFAF/m ³ f.o.b.	8,200	8,400	8,000
Export value f.o.b.	19,664	15,120	12,800

<u>Processed timber</u>			
Exports ('000 m ³)	192	370	450
Price (CFAF/m ³) f.o.b.	17,100	17,100	17,100
Exports value f.o.b.	3,283	6,327	7,695

<u>Assumption b)</u>			
<u>Logs</u>	<u>1967/68</u>	<u>1975</u>	<u>1980</u>
Production ('000 m ³)	3,248	4,000	2,000
Locally processed ('000 m ³)	850	1,200	1,400
Export ('000 m ³)	2,398	2,800	600
Price (CFAF/m ³) f.o.b.	8,200	8,400	8,000
Export value f.o.b.	19,664	23,520	4,800

Processed timber as under assumption a)

Cola nuts

32. The cola nut export market has been quite stable over the last five years and is expected to stay at its present level. Exports amount to about 25,000 t per year, valued at 1,000 million CFAF.

Other agricultural products

33. The export of other agricultural products amounted to less than 500 million CFAF per year in 1967/68. It is not expected that new crops will be developed during the next ten years that would produce a substantial export volume. Efforts are being made to develop an avocado and a citrus oil industry for export, but even if both of these speculations develop well, they will produce an export volume of less than 500 million CFAF per year by 1980.

PROJECTIONS OF EXPORTS OF AGRICULTURAL
AND FOREST PRODUCTS

Crop or Commodity	Production '000 t			Increase %		Exports '000t			Prices CFAF f.o.b. kg.			Export Value million CFAF			Farm gate price CFAF/kg.	Value to producer million CFAF													
	1967-68	1975	1980	1967-68 1975	1975-80	1967-68	1975	1980	1967-68	1975	1980	1967-68	1975	1980		1967-68	1975	1980											
Coffee: quota markets	186	230	300	4.0	5.5	181	220	280	-	202.-	188.-	30,642	42,730	47,670	95.-	17,670	21,850	28,500											
non-quota markets										145.-	145.-																		
Cocoa beans	143	210	290	5.6	6.7	113	180	260	146.-	172.-	156.-	16,648	30,960	40,560	80.-	11,440	16,800	23,200											
paste												933	933	933															
butter												2,435	2,435	2,435															
Oil palm: oil	30	157	172	27.0	4.0	0.5	110	115	60.-	38.8	38.1	30	4,268	4,382	5.0	150	3,925	4,300											
kernel	9.4	41	44	13.0	1.5	9.4	41	44	36.2	29.5	28.4	340	1,209	1,250	kg														
Coconut copra	7.5	15	36	10.5	19.0	3.5	9	28	-	35.5	35.5	101	319	994	28.-	210	420	1,008											
Rubber	6.4	14	18	12.0	5.0	6.4	14	18	93.-	90.-	90.-	595	1,260	1,620	65.-	416	910	1,170											
Banana	145	200	220	4.7	2.0	145	200	220	21.5	24.5	24.5	3,091	4,900	5,390	20.-	2,900	4,000	4,400											
Pineapples: canned	75	160	200	11.5	4.6	32	72	90	63.-	63.-	63.-	2,005	4,536	5,670	6.50	488	1,300	1,430											
fresh	14	40	60	16.2	8.5	14	40	60	44.-	45.-	45.-	526	1,800	2,700	30.-	420	1,200	1,800											
Cotton: lint	11	32	40	16.5	4.2	9	16	22	130.-	134.-	120.-	1,168	2,144	2,640	33.50	904	2,680	3,350											
seed	16.5	48	60	16.5	4.2	7	48	60	22.-	22.-	22.-	154	1,056	1,320	cotton														
Cola nuts	60	60	60	-	-	25	25	25	36.-	36.-	36.-	1,046	1,000	1,000	20.0	2,092	2,000	2,000											
SUBTOTAL Agricultural products																													
												59,714	99,500	111,564		36,690	55,085	71,158											
Timber	<u>'000 m³</u>					<u>'000 m³</u>			<u>CFAF/m³</u>																				
Assumption A																													
Logs	3,248	3,000	3,000			2,398	1,800	1,600	8,200	8,400	8,000	19,664	15,120	12,800															
Processed timber						192	370	450	17,100	17,100	17,100	3,283	6,327	7,695															
SUBTOTAL																													
Timber												22,947	21,447	20,495															
Assumption B																													
Logs	3,248	4,000	2,000			2,398	2,800	600	8,200	8,400	8,000	19,664	23,520	4,800															
Processed timber						192	370	450	17,100	17,100	17,100	3,283	6,327	7,695															
SUBTOTAL timber																													
												22,947	29,847	12,495															
TOTAL Assumption A												82,661	120,947	139,059															
TOTAL Assumption B												82,661	129,347	131,059															

1/ Revised estimate: 50,000 tons taking account of planting program, as explained in para. 199 of main text.

2/ Revised estimate: 42,000 tons and CFAF 1,500 million.

STATISTICAL TABLES

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Table 1: VALUE OF AGRICULTURAL PRODUCTION (EXCLUDING
FISH AND TIMBER) AT CONSTANT PRICES
(CFAF million)

	<u>1960</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Paddy	2,880	4,500	4,950	6,120	6,570
Mil and Sorghum	845	748	764	780	796
Fonio	100	140	140	140	140
Maize	1,764	2,160	2,340	2,640	2,724
Yams	16,100	18,200	18,480	18,900	19,474
Cassava	4,050	4,500	4,635	4,680	4,824
Plantain	4,410	5,400	5,535	5,580	5,751
Cocoa yam	945	1,120	1,120	1,134	1,169
Sweet potatoes	144	160	160	168	176
Local peas	84	91	98	105	112
Fruits and vegetables	2,500	3,000	3,000	3,200	3,300
Cattle	364	507	533	598	598
Sheep and goats	483	707	805	753	753
Pigs	180	201	303	381	381
Poultry	775	930	1,085	1,240	1,240
Coffee	12,330	19,170	23,040	14,130	24,480
Cocoa	5,950	8,050	11,410	9,030	9,940
Cola	680	740	800	800	1,000
Banana exportation	1,700	2,660	(2,880	(3,740	(3,860
Banana consumption	60	100			
Pineapples	300	660	915	1,260	1,305
Latex	260	260	325	390	455
Karite	48	72	72	72	96
Cotton (Allen)		240	360	880	1,400
Cotton (Mono)	189	221	158	95	95
Tobacco (smallholders)					
Tobacco (Industrial)	140	140	210	140	210
Groundnuts	480	640	600	600	620
Caprah	56	112	112	168	196
Oilpalm (Natural palm trees)	7,920	8,415	8,415	8,580	7,755
Oilpalm (selected palm trees)	290	370	315	425	490
Total	67,867	86,054	93,660	86,729	99,910
Foodstuffs	(36,464)	(44,204)	(44,048)	(46,419)	(48,008)
Industrial and export crops	(30,403)	(41,850)	(49,612)	(40,310)	(51,902)

Source: National accounts (for prices)
Ministry of Planning
Other sources (for quantities).

Table 2: AGRICULTURAL PRODUCTION
(thousands of metric tons)

	ACTUAL				PLAN TARGETS			
	1960	1965	1966	1967	1968 ¹	1970 ²	1975 ²	1980 ²
Paddy	160	250	275	340	365	395	613	750
Mil and sorghum	52	46	47	48	49	52	58	65
Fonio	5	7	7	7	7	8	9	10
Maize	147	180	195	220	227	207	266	329
Yams	1,150	1,300	1,320	1,350	1,391	1,432	1,578	1,790
Cassava	450	500	515	520	536	562	635	714
Plantain	490	600	615	620	639	674	760	855
Cocoa yam	135	160	160	162	167	172	185	200
Sweet Potatoes	18	20	20	21	22	22	25	28
Local peas	12	13	14	15	16	15	17	20
Fruits and vegetables	100	120	124	128	132	160	210	280
Cattle ^{5/}	28	39	41	46	46	30	38	45
Sheep and goats ^{5/}	276	404	460	430	430	600	800	1,100
Pigs ^{5/}	60	67 ^{4/}	101	127	127	87	103	127
Poultry ^{3/}	5	6	7	8	8	8	11	15
Game	23	23	23	23	23	18	16	14
Coffee	137	213	256	157	272	230	265	360
Cocoa	85	115	163	129	142	194	262	340
Cola	34	37	40	40	50	40	45	50
Bananas (exported)	85	133	(144)	(187)	(193)	150	175	200
Bananas (other)	3	5	(((6	7	8
Pineapple	20	44	61	84	87	114	148	175
Latex	4	4 ^{4/}	5	6	7	12	19	36
Karite	2	3	3	3	4	3	3	3
Cotton (Allen)		6	9	22	35	69	117	130
Cotton (Mono)	6	7	5	3	3	3	1	-
Tobacco (smallholders)	(((((3	4	4
Tobacco (Industrial)	(2	(2	(3	(2	(3	1	1	2
Groundnuts	24	32	30	30	31	39	50	62
Coprah	2	4	4	6	7	6	15	63
Oilpalm (Natural palmtrees)		255	255	260	235	264	248	260
Oilpalm (selected palmtrees)	58	74	63	85	98	206	850	1,600
Sugar cane	-	-	-	-	-	-	450	600
Kenaf	-	-	-	-	-	5	16	20
Sisal	-	-	-	-	-	-	1	2
Avocados	-	-	-	-	-	-	1	2

^{1/} Largely mission estimates

^{2/} Plan forecasts

^{3/} Details on eggs or meat not available

^{4/} Ministry of Agriculture, crop year 1966-67 shows 92.3

^{5/} Numbers slaughtered in 000

- = Unknown or negligible

Source: National Accounts; Plan Esquisse; and other varied sources.

Table 3: AREA AND OUTPUT ESTIMATES FOR SELECTED CROPS

		<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>Forecasts</u> <u>1969</u>
OIL PALM					
planted)		24,300	38,500	50,800	60,000
in production) (ha)				11,100	
f.f.b. (thousand tons)		63,400	85,300	97,800	
COCONUTS					
planted)		-	12,400	15,400	17,900
in production) (ha)		-	7,100	7,500	
coprah (tons)		-	4,800	5,200	
COFFEE					
production (thousand tons)		256	157	272	
COCOA					
production (thousand tons)		163	129	142	
COTTON					
planted (ha)		23,600	38,000	48,000	57,000
seed cotton (tons)		14,000	25,000	41,700	51,000
BANANA					
production (tons)		-	186,800	192,700	150,000
PINEAPPLE					
production (tons)		60,800	83,700	91,800	-
RUBBER					
planted)		11,600	12,100	12,600	12,700
tapped) (ha)		5,800	7,000	8,500	
production (tons of latex)		4,900	5,900	7,000	
KENAF					
planted (ha)			400	700	
fiber (tons)			150	500	
TOBACCO					
production (tons)		2,600	2,200	2,500	
SUGAR					
cane		-	-	-	
sugar		-	-	-	
RICE					
production (thousand tons paddy)		275	340	365	

Note: - not available

Source: various

- 1/ Add "others" say 1000 ha
- 2/ Of which SODEPALM, 39,487 ha in 1968, and 48,987 in 1969
- 3/ Plus "others" say 800 ha
- 4/ Plus private blocs industriels, about 1000 ha
- 5/ Official CFDT figure
- 6/ Figure adjusted by comparison with National Accounts

Table 4: VOLUME OF SELECTED AGRICULTURAL EXPORTS

(thousand tons)

	<u>1960</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Bananas	72.6	133.4	125.9	128.3	131.7	142.6	147.3
Pineapples (fresh)	3.0	2.9	4.2	4.6	6.8	10.0	13.7
Pineapples (canned and juice)	8.0	13.7	18.0	20.7	27.0	32.5	31.8
Coffee (green)	148.5	182.1	204.3	185.7	181.5	149.0	214.4
Cocoa (beans)	62.9	99.7	124.3	126.4	124.3	105.2	121.5
Palm kernels	16.4	10.4	12.8	14.9	9.4	10.1	8.7
Natural rubber	-	0.4	1.6	2.8	5.5	5.8	7.0
Cola nuts	7.7	9.3	17.3	23.1	28.4	26.3	24.8

Source: Bulletin Mensuel de Statistique
IBRD "Memorandum of the Economic Situation of the Ivory Coast (July 1968)"

Table 5: VALUE OF SELECTED AGRICULTURAL EXPORTS

(CFAF billions)

	<u>1960</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Bananas	1.3	3.5	3.1	2.8	2.8	3.0	3.1
Pineapples (fresh)	0.1	0.1	0.2	0.2	0.3	0.4	0.6
Pineapples (canned and juice)	0.5	0.9	1.2	1.3	1.6	2.0	2.0
Coffee (green)	18.8	24.5	31.7	25.9	30.2	25.4	35.9
Cocoa (beans)	8.7	11.3	14.5	10.9	13.1	13.8	19.4
Palm kernels	0.6	0.3	0.3	0.5	0.3	0.3	0.4
Cola nuts	0.4	0.4	0.7	1.0	1.1	1.1	1.0
Natural rubber	-	-	0.2	0.3	0.6	0.6	0.6
Tropical wood	6.5	12.4	17.9	18.5	<u>18.6</u>	<u>21.8</u>	<u>25.8</u>
Total Agricultural Exports					71.7	73.2	96.4

Source: Bulletin Mensuel de Statistique

Table 6: VALUE OF IMPORTS OF SELECTED FOODSTUFFS

<u>GENERAL</u>	<u>1960</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
	(billion CFAF)					
Rice	.9	2.0	2.2	3.1	0.9	1.9
Wheat and wheat flour	1.0	1.5	1.3	2.3	1.3	1.4
Sugar	1.0	1.3	1.3	1.2	1.2	1.4
Milk and egg products	.6	1.0	1.1	1.2	1.4	1.6
Beverages (including wine)	.8	1.6	1.6	1.6	1.5	1.8
<u>DETAIL</u>		(million CFAF)				
Sweets and candies		102	89	84	92	186
Canned fruits and vegetables		333	353	409	410	450
Cereal preparations		197	225	229	245	316
Canned meat and fish		304	316	324	287	375
Fresh vegetables and fruits		<u>556</u>	<u>570</u>	<u>671</u>	<u>673</u>	<u>745</u>
Total foods, beverages, & tobacco (billion CFAF)		10.0	10.3	12.6	9.3	11.3

Source: Bulletin Mensuel de Statistique and
IBRD, Memorandum on the Economic Situation and Prospects,
Ivory Coast (July 1968).

Table 7: VOLUME OF IMPORTS OF SELECTED FOODSTUFFS

(thousand tons)

	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
Rice	58.1	77.9	83.2	24.1	47.2
Wheat	71.0	63.6	112.8	61.7	64.0
Wheat flour	12.5	0.1	0.1	0.1	0.1
Sugar	23.7	31.1	35.7	32.1	36.8
Milk and egg products	8.1	9.1	10.1	11.5	13.3
Beverages	40.4	38.4	39.5	33.9	40.6

Source: Bulletin Mensuel de Statistique

Table 8: AGRICULTURAL PRICES: FARM-GATE

(CFAF per kg.)

	National Accounts ^{a/}							Plan Esquisse ^{b/}	
	1960	1961	1962	1963	1964	1965	1966		1967
Paddy	18	18	18	18	18	18	18	18	18
Millet	16	16	16	16	16	16	16	16	(16.25
Sorghum	17	17	17	17	17	17	17	17	(
Fonio	20	20	20	20	20	20	20	20	20
Maize	12	12	12	12	12	12	12	12	12
Yams	13	13	13	13	13	14	13	13	14
Cassava	8	8	8	8	8	9	8	8	9
Plantain	8	8	8	8	8	9	8	8	9
Cocoyams	7	7	7	7	7	7	7	7	7
Sweet Potatoes	8	8	8	8	8	8	8	8	8
Local peas	7	7	7	7	7	7	7	7	7
Irish potatoes	-	-	27.5	27.5	27.5	-	-	-	-
Cattle CFA/head	13000	15000	13500	13500	13000	13000	not available	13000	13000
Sheep and Goats	1350	1600	1750	1750	1750	1750	"	"	1750
Pigs	2550	3000	3000	3000	3000	3000	"	"	3000
Poultry CFA/kg.	150	155	160	155	155	155	"	"	155

Plan Esquisse

Coffee	90
Cocoa	70
Cola	20
Banana	20
Pineapple	
for canning	8
fresh local	15
fresh export	30
Latex	65
Karite	24

Plan Esquisse (continued)

Cotton (Allen)	40
Cotton (mono)	31.5
Tobacco (peasant)	120
Tobacco (industrial)	70
Groundnuts	20
Copra	28
Oil Palm (natural palm trees)	3.3
Oil Palm (selected palm trees)	5

a/ Farm-gate prices used in Comptes de Nation
b/ Farm-gate prices used in Plan Esquisse

Table 9: INDEX OF PRICES OF FOOD CONSUMED BY AFRICAN FAMILIES 1/ 1960-1969

February 1960 - 100										
<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
									<u>Jan.</u>	<u>Feb.</u>
106.5	123.0	118.7	118.3	118.9	122.4	127.6	126.6	134.8	140.1	141.8
		<u>1967</u>	<u>1968</u>	<u>1969</u>						
January		130.8	121.9	140.1						
February		127.8	137.8	141.8						
March		129.4	128.5	-						
April		131.8	131.6	-						
May		131.6	131.8	-						
June		131.7	130.3	-						
July		129.3	132.8	-						
August		126.0	140.8	-						
September		120.0	142.7	-						
October		118.1	134.6	-						
November		119.5	139.9	-						
December		123.5	145.0	-						

1/ In Abidjan

Source: Bulletin Mensuel de Statistiques.

Table 10: PUBLIC INVESTMENT

(CFAF millions)

	Plan Forecasts			Actual ^{b/}			1965 ^{c/}	1969 ^{d/}	1970 ^{c/}
	1960-66	67-70	60-70	60-66	67-68	60-68			
I. Agriculture	9,654	30,750	40,395	10,399	14,906	25,305	8,805	6,762	
Forests and soils	790	1,650	2,440	366	512	878	338	338	
Livestock	455	1,600	2,055	548	347	895	539	287	
Fishing	250	480	730	292	122	414	153	148	
Total agricultural development	11,140	34,480	45,602	11,605	15,887	27,492	9,835	7,535	10327.4
II. Economic infrastructure ^{a/}	42,950	45,450	88,400	51,402	20,479	71,881	20,148	15,480	23128
III. Cultural development	8,150	8,550	16,700	7,298	2,678	9,976	2,200	1,500	4350
of which agricult. education	890	1,000	1,890	764	184	948	244	154	
IV. Public health infrastructure	1,880	5,850	7,730	1,812	2,013	3,825	1,200	575	1223.5
V. Social infrastructure	340	670	1,010	203	186	389	105	165	272
VI. Administrative infrastructure	16,710	8,800	25,510	22,243	5,954	28,197	2,013	1,600	2910
VII. State participation	6,650	7,550	14,000	6,456	3,800	10,256	1,847	1,720	2247
VIII. Studies and research	5,300	4,850	10,230	5,529	2,178	7,707	2,221	2,175	2158
TOTAL	93,120	116,000	211,090	107,312	53,359	160,671	39,569	30,750	46615

^{a/} Roads, bridges, ferries, buildings, ports and lagoons, airports, water, electricity, post and tel., railway.

^{b/} Includes expenditures not included as part of the Plan.

^{c/} Planned.

^{d/} Forecast actual.

Source: Private working paper

Table 11: THE NORTH AND THE CENTER-SOUTH:

ECONOMIC CHARACTERISTICS 1962-1964

	DENSITY OF SETTLEMENT		AGRICULTURE	
	Population (persons/km ²)	Farms (farm/km ²)	Size of farm (hectare)	Gross output per farm ^{1/} (CFAF thousands)
<u>THE NORTH</u>				
Korhogo	9	0.9	3.25	75
(Korhogo S.3)	-	-	(2.45)	(43)
Odienné	7	0.5	-	-
(Odienné S.1)	-	-	(2.35)	(84)
<u>CENTER-SOUTH</u>				
Bouaké	24	3.5	2.35	-
Daloa	12	1.7	3.25	-
Man	15	2.1	2.05	-
Abengourou	13	1.6	-	-
(Abengourou S.2)	-	-	(7.25)	(202)
(Abengourou S.4)	-	-	(7.10)	(211)

^{1/} Physical outputs indicated in Fiches Analytiques varied by mission at 1963 national accounts imputed farm-gate prices. Figures in brackets refer to regional substratum; figures without brackets apply to the region as a whole. The fragmentary nature of this table is a good demonstration of how difficult it is to use existing survey material for farm management analysis.

Source: Ministry of Planning and SEDES Agriculture: Synthèse des études régionales 1962-1964, Fiches Analytiques.

Table 12: THE NORTH AND THE CENTER-SOUTH:

SIZE DISTRIBUTION OF FARMS

<u>Hectare</u>	<u>NORTH</u>		<u>CENTER-SOUTH</u>	
	<u>Korhogo</u> 3	<u>Odienné</u> 1	<u>Abengourou</u> 2	<u>Abengourou</u> 4
	(percentage of farms in different groups)			
' 1	20,4	21.0	2.0	3.8
1 < 2	36,0	30.8	7,3	2.6
2 < 3	18.1	23,2	16.1	12.7
3 < 4	9.9	12,4	10.1	11.7
4 < 5	6,5	{	8,0	19.1
5 < 6	6,0	{7,5	15,2	10.2
6 < 7	{	{	{	{
7 < 8	{11.6	{4,1	{10.1	{7.7
8 < 9	{	{	{	{
9 < 10	{.8	{	{11,3	{13.0
10 < 12	{	{	4.9	3.8
12 < 16	{.7	{1.0	8.0	5.1
16 < 20	{	{	3.1	6.5
20 -	{	{	3.9	3.8

Source: Ministry of Planning - SEDES

Table 13: FORESTRY

	<u>Total Production</u>	<u>Exported logs</u> (1000 m ³)	<u>Processed logs</u>
1960	1030	810	220
62	1090	1030	260
63	1775	1445	330
64	2270	1860	410
65	2605	1905	700
66	2610	1820	790
67	3025	2175	850
68	3470	2620	850
69 ^{1/}	4000	3000	1000

^{1/}Estimates

Source: National accounts

Table 14: FISH PRODUCTION AND UTILIZATION

(thousand tons)

	<u>1960</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
<u>Production</u>						
Trawlers	10	13	16.5	14.7	16	17
Sardine boats	19	24	28	27.3	31.8	28
Small craft	19	19	19	20	20	20
Total	<u>48</u>	<u>56</u>	<u>63.5</u>	<u>62</u>	<u>67.8</u>	<u>65</u>
<u>Utilization</u>						
Subsistence	8	8	8	8	8	
Sales: fresh	6.7	8.7	11	9.7	10.7	
smoked	8.3	9.8	11.1	10.9	12.2	
dried	16	19.5	27.6	22.9	26.5	
Exported: dried	9	10	5.8	10	10	
Total	<u>48</u>	<u>56</u>	<u>63.5</u>	<u>62^{a/}</u>	<u>68^{a/}</u>	

a/ Small amounts also sold to a local processing firm.

No. of vessels 50 70 70 70 70

Source: National accounts, and
Annual Production in Ivory Coast -
Ministry of Animal Production

Table 15: AVERAGE VALUES FOR PRINCIPAL EXPORT COMMODITIES

(CFA francs per kilogram)

	<u>1955</u>	<u>1960</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u> (2 months)
Coffee	141	127	155	139 ^{1/}	166	170	167	165
Cocoa	147	139	117	94	106	132	160	193
Timber ^{2/}	7.4	9.6	11.7	11.8	11.9	11.8	11.9	12.4
Bananas	14.0	17.7	24.8	21.8	21.4	21.4	21.2	21.4

^{1/} Excluding irregular exports. Average export price for all exports, including irregular = CFAF 126 per kilogram.

^{2/} Important mix change with manufactured wood products now more important than earlier.

Source: March 1968 IBRD Mission: calculations, based on official export figures.

Table 16: DOMESTIC FOOD PRODUCTION AND CONSUMPTION

	<u>1965</u>	<u>1980</u>
	(thousands of people)	
Urban population	980	2,640
Rural population	<u>3,320</u>	<u>4,060</u>
Total population	4,300	6,700
	(cal/hd/day)	
Food consumption	2,156	2,232
1965: Total calories produced:	9,271 million calories/day	
production calories by the rural population:	2,792 calories per hd/day	
total calories consumed by the urban population:	2,113 million calories per day	
1980: Total calories produced:	14,954 million calories per day	
calories produced by the rural population:	3,683 cal/hd/day	
calories consumed by the urban population:	5,892 million cal/day	
Percent change 1965-1980		
Production calories per hd rural population	31.9 %	
Consumption of calories by the urban population	178.8 %	

Table 16: DOMESTIC FOOD PRODUCTION AND CONSUMPTION

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	(thousands of people)	
Urban population	980	2,640
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Total population	4,300	6,700
	(cal/hd/day)	
Food consumption	2,156	2,232
1965: Total calories produced:	9,271 million calories/day	
production calories by the rural population:	2,792 calories per hd/day	
total calories consumed by the urban population:	2,113 million calories per day	
1980: Total calories produced:	14,954 million calories per day	
calories produced by the rural population:	3,683 cal/hd/day	
calories consumed by the urban population:	5,892 million cal/day	
Percent change 1965-1980		
Production calories per hd rural population	31.9 %	
Consumption of calories by the urban population	178.8 %	

Table 17: AGRICULTURAL STRUCTURE BY REGIONS

	East	Center	Center West	West	Odienné	Korhogo
Total area km ²	47,730	21,300	51,180	30,780	61,450	33,230
Usable agricultural area km ²	35,800	10,650	38,380	22,255	27,650	14,950
Area in production km ²	7,950	6,460	7,500	3,560	3,850	3,600
Area cultivated km ²	5,672	1,740	2,798	1,333	1,140	9,390
Number of parcels	640,000	422,000	266,000	122,000	161,000	111,000
Number of farms	78,300	75,000	85,800	64,500	31,300	28,700
Agricultural population	597,000	518,000	557,000	449,000	431,000	263,000
Active agricultural population	239,000	217,000	249,000	187,000	198,000	132,000
Cultivated area as percent of usable agricultural area km ²	15.8	16.4	7.3	6.0	4.1	6.3
Number of farms per km ²	1.6	3.5	1.7	2.1	0.5	0.9
Number of agricultural popula- tion per km ² agricultural land	16-1/2	48-1/2	14-1/2	20	15-1/2	17-1/2

Source: Coffee Development Program. These figures are believed to have been derived from the population report of 1965, the districts referred to are as shown in the attached map.