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PRE-PROJECT ASSESSMENT OF THE AGRICULTURE AND RURAL DEVELOPMENT SECTOR IN THE PEOPLE'S REPUBLIC OF THE CONGO: FINAL REPORT

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FINAL REPORT

ON THE

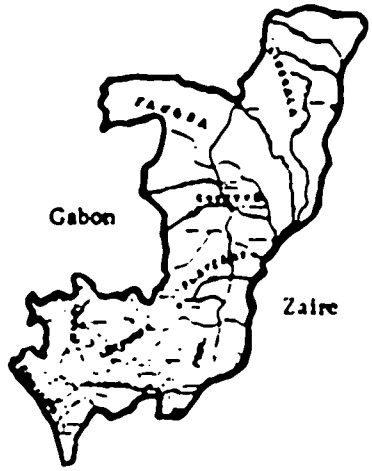
PRE-PROJECT ASSESSMENT

OF THE AGRICULTURE AND

RURAL DEVELOPMENT SECTOR

IN THE

People's Republic of the Congo



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SEPTEMBER 1980

Submitted to: U.S. Agency for International Development, Washington, D.C.

FINAL REPORT

on the

PRE-PROJECT ASSESSMENT

OF THE AGRICULTURE AND

RURAL DEVELOPMENT SECTOR

in the

PEOPLE'S REPUBLIC OF THE CONGO

September 1980

Prepared for

the

U.S. Agency for International Development
Washington, D.C.
under
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Work Order No. 3

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PREFACE

In response to a request from the Government of the People's Republic of the Congo for assistance to provide a framework for its development activities and foreign assistance in Agriculture and Rural Development, Development Associates, under contract to the Agency for International Development (AID), organized a five-member team which spent the month of July 1980 in the country to conduct a study on the agricultural sector. The specific purpose of the study, as outlined in AID's contract scope of work, was "to conduct a Pre-Project Agriculture and Rural Development Assessment in the People's Republic of the Congo (GPRC) that will provide a rationale for a medium-term (3-5 years) and long-term development assistance strategy in the agriculture area to help the GPRC in its socio-economic development efforts."

In addition to extensive discussions with the Congolese Government officials in Brazzaville, especially in the Ministry of Rural Economy and in the provinces, the team had the benefit of interviewing a large number of representatives of international organizations such as UNDP, IFAD, FAO, IBRD, FAC, and FED. The team made short trips to Pointe Noire, Loubomo, Kinkala, and the surrounding area of Brazzaville in order to observe agriculture practices and to interview local farmers and managers of cooperatives. The team leader spent three days in Paris, obtaining information on the balance of payments as well as French and the Common Market assistance to the Congo.

This report, although an agriculture sector assessment, puts some emphasis, under AID mandate, on the target population: the small farmers who until now have been neglected by the central government in terms of both resources and research.

There are five parts to the report. The Overview (Part One) summarizes the historical, sociological, economic and financial conditions which impact on agriculture. The agricultural sector itself is assessed in Part Two, and within agriculture, the targeted population, or the small farms subsector, is discussed in Part Three. Constraints to small farmers' development and U.S. assistance strategy are discussed in Parts Four and Five. Since it is not the prerogative of the team to analyze the health issue, the report only touches on the subject (Part Three, Section B.3).

Throughout the Congo, government officials, international organizations' representatives and private enterprises were extremely helpful and cooperative and their assistance is gratefully acknowledged.

The team was generously and cordially assisted by the U.S. Embassy in Brazzaville, especially by Ambassador William B. Swing and the Economic Counselor, Mr. Michael Fleitcher; the director of CARE/Congo, Mr. Tom Zopf, and his deputy, Mr. Paul McVey, were also very helpful in providing information, documents and logistical support to the team. To all of them, the team expresses its profound expression of gratitude and appreciation.

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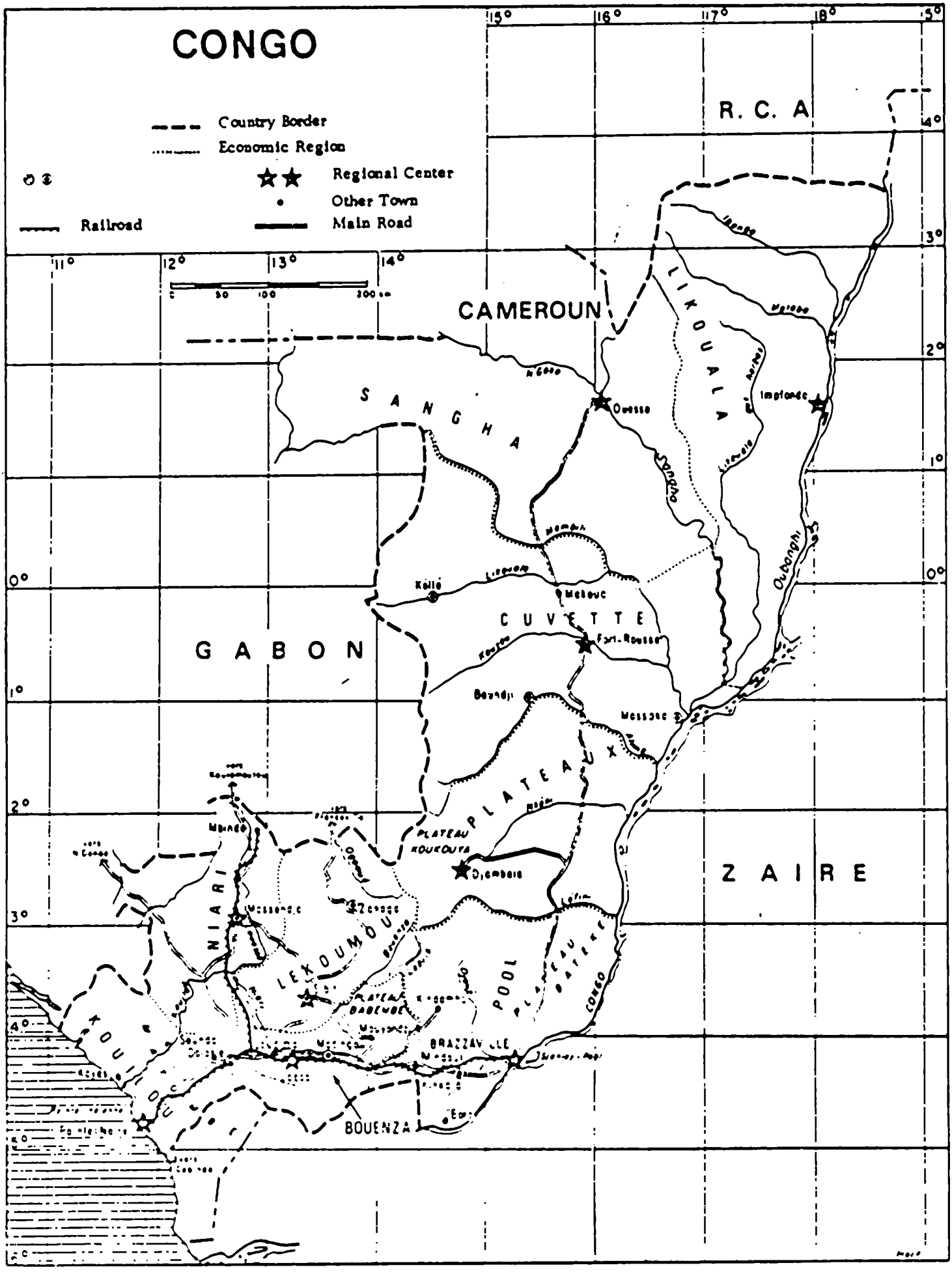
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Country Border
Economic Region
Regional Center
Other Town
Railroad
Main Road
R. C. A
CAMEROUN
GABON
ZAIRE
SANGHA
LIKOUALA
CUVETTE
PLATEAUX
NIARI
LEKOUMOU
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KOUILOU
BOUENZA
Ouesso
Impfondo
Kelle
Mbeoue
Fort-Rousset
Owando
Djambala
BRAZZAVILLE
Oubangui
Sangha
Likouala
Niari
Lekoumou
Pool
Kouilou
Bouenza

THE PEOPLE'S REPUBLIC OF THE CONGO: BASIC DATA

GEOGRAPHY

AREA: 132,000 sq. mi. (slightly larger than New Mexico).

CAPITAL: Brazzaville (population 300,000).

PEOPLE

POPULATION: 1.5 million (1980 estimate).

ANNUAL GROWTH RATE: 2.3%

ETHNIC GROUPS: 15 groups, 75 tribes; major groups are Bakongo, Bateke, M'Bochi, Sangha.

RELIGIONS: 48% Animist, 47% Christian, 5% Moslem.

LANGUAGES: French (official), Lingala, Kikongo.

EDUCATION: 80% of primary school-age children enrolled, one of the highest rates in Africa. Literacy rate 50%. University at Brazzaville.

LABOR: About 600,000 economically active, 37% in agriculture. About 17% unemployment.

GOVERNMENT

TYPE: People's republic.

INDEPENDENCE: August 15, 1960.

DATE OF CONSTITUTION: January 3, 1970.

POLITICAL PARTY: Congolese Labor Party (PCT).

SUFFRAGE: Universal.

POLITICAL SUBDIVISIONS: 9 Regions, divided into districts, and capital district.

ECONOMY

Officially follows Marxist model. An entrepot for Equatorial Africa.

GDP: $1 billion at current prices in 1979, a 34% real increase since 1970.

ECONOMY (continued)

AGRICULTURE: Accounts for 11% of GDP (1979) and 6% of net exports. Provides livelihood for 43% of population. Only 2% of usable land cultivated. Cash crops comprise rice, maize, coffee, cocoa, oil palm and sugar.

DEVELOPMENT PLAN: No formal development plan since 1968. Forthcoming Five-Year Plan (1982-1986).

NATURAL RESOURCES

LAND: About half the size of Texas, extending from the west coast of Africa northeast across the Equator. Rugged terrain between the coast and plateaus presents an obstacle to transportation.

CLIMATE: Equatorial climate, hot and humid. Wet (February to May, September to December) and dry seasons. Rainfall decreases away from the coast.

MINERALS: Petroleum production 2.8 million metric tons in 1980, Potash production ended in 1977. Limited gold, copper production. Estimated billion ton high grade (60-66%) iron ore reserves in Zanaga.

FORESTRY: Cover 50% of total area. Log production 180,000 cubic meters, processed wood 130,000 cubic meters in 1978. Veneer and pulp production becoming more important.

BASIC ECONOMIC FACILITIES

TRANSPORTATION: National transportation agency (RNTP) responsible for rail and water transport and ports. Many navigable waterways, 285 km. of railroad and 7,600 km. of roads (558 km. surfaced). Pointe-Noire, main seaport; Brazzaville river port. Two international airports and about 40 lesser fields.

COMMUNICATIONS: Automatic dial telephone in Pointe-Noire and Brazzaville. Radio, TV-Congo. International radio and wire communications available. About 75,000 radio receivers.

POWER: Nationalized utilities since 1967. Almost unlimited hydroelectric potential. Thermal units serve Pointe-Noire and Loubomo while hydro facilities for Brazzaville constitute 70% of installed capacity. Over 40,000 kW capacity; over 110 million kWh consumed 1972. Sowanda project (230 MW, expandable to 830 MW) under study. Bouenza dam (72 MW) began production during 1978.

ABBREVIATIONS

AGIP	- Agenzia Generale Italiana di Petrolio
BAD	- Banque africaine de développement
CEGI	- Compagnie d'études économiques et de gestion industrielle
CENAGES	- Centre national de gestion
CSPAF	- Caisse de stabilisation des prix des produits agricoles et forestiers
DAE	- Direction de l'agriculture et de l'élevage, Ministère de l'économie rurale
FAC	- Fonds d'aide et de coopération (France)
FED	- Fonds européen de développement
FIDA	- Fonds international pour le développement agricole
IDR	- Institut de développement rural
IRAT	- Institut de recherches en agronomie tropicale
MER	- Ministère de l'économie rurale
OCB	- Office congolais du bois
OCC	- Office de cacao et du café
COT	- Office congolais du tabac
OCV	- Office des cultures vivrières
OFNACOM	- Office national de commercialisation
ONCPA	- Office national de commercialisation des produits agricoles
ORSTOM	- Office de la recherche scientifique et technique outre-mer
PCT	- Parti congolais du travail
RNPC	- Régie nationale des palmeraies du Congo
RNTP	- Régie nationale des travaux publics
SIACONGO	- Societe industrielle et agricole due Congo
SICAPE	- Societe italienne-congolaise d'armement et de pêche
SMAG	- Salaire minimum agricole garanti
SMIG	- Salaire minimum interprofessionnel garanti
SNE	- Societe nationale d'energie
SNEB	- Societe nationale d'exploitation du bois
SOCOBOIS	- Societe congolaise du bois
SOCOMAB	- Societe congolaise de manutention du bois
SOCOTON	- Societe cotonniere nationale
SONATRAB	- Societe nationale de transformation du bois
SONEL	- Societe nationale d'elevage
SOTEXCO	- Societe textile du Congo
SYBETRA	- Syndicat belge des entreprises de travaux
UCB	- Union congolaise des banques
UDEAC	- Union douanière et économique de l'Afrique centrale
UEB BETOU	- Unite d'exploitation du bois de Betou
UNDP	- United Nations Development Program
WHO	- World Health Organization

EXCHANGE RATES

Currency Unit: CFA Franc (CFAF)

Throughout this report, the following rates have been used:

1969	US$1 = CFAF 256
1970	US$1 = CFAF 277
1971	US$1 = CFAF 276
1972	US$1 = CFAF 252
1973	US$1 = CFAF 230
1974	US$1 = CFAF 240
1975	US$1 = CFAF 214
1976	US$1 = CFAF 239
1977	US$1 = CFAF 246

1978 and onwards: US$1 - CFAF 226

PART I
AN OVERVIEW

PART I

AN OVERVIEW

I. THE COUNTRY AND THE PEOPLE

A. Historical Setting

The People's Republic of the Congo became fully independent on August 15, 1960, after having voted in 1958 to become an autonomous member of the Franco-African Community. The Congo also signed agreements with regard to defense and co-operation with France, and with respect to the coordination of various economic, financial, and cultural measures with the other states in the former French Equatorial Africa. In 1959 the Equatorial Customs Union (Union Douaniere Equatoriale--UDE), including Chad, The Central African Republic, Gabon, and the Congo, was formed. In 1962 Cameroon joined the UDE members in a common customs arrangement, and in 1964 the same five countries created the Central African Customs and Economic Union (Union Douanière et Economique de l'Afrique Centrale--UDEAC), which was to become effective on January 1, 1966. These countries share a common currency (Communauté Financiere Africaine Franc--CFAF) linked to and freely convertible with the French franc at the rate of 50 to one.

French penetration of the country began when Savorgnan de Brazza set out from Libreville in Gabon on the first of three expeditions in 1875. In 1880 he reached the Congo river and made a treaty with Makoko, the paramount chief of the Teke people, placing the latter under French protection and granting the French the site of present-day Brazzaville. In 1882 France created the French Congo, which comprised both Gabon and the modern Congo, and made Brazza its commissioner. The borders of the Congo with Cabinda, the Belgian Congo, and Cameroon were established by international treaties in 1885 and 1887.

In the beginning, the rapid expansion of their conquests had obliged the French to rule indirectly through the native political institutions. After 1900, however, they started to eliminate them wherever possible, substituting direct control by French officials. The consequences for the native political institutions are clearly expressed in the following passage from a Government circular dated August 15, 1917:

> ...but the village chiefs, poor devils designated as responsible by the family chiefs, carefully selected by the administration, maintained both because of lack of personnel and to keep contact with the population, became poorly paid petty officials who were transformed into miserable despots, endowed with European means of constraint in order to satisfy formerly inconceivable demands (taxes, portierage, forced labor); dispossessed of their former prestige, in fact they had no power of their own of any sort, for there are not two authorities in the circle, French authority and native authority; there is only one. Only the commandant of the circle commands; he is the only one responsible. The native chief is only an instrument, an auxiliary.
>
> (Quoted in Amin & Coquéry-Vidrovitch, p. 26).

This policy of direct rule resulted, according to Coquéry-Vidrovitch, in a structure in which:

> ...from the local chief to the Governor General, passing through the administrator of the subdivision, the administrator of the circle and the governor of the colony, a strictly hierarchical pyramidal system defined French authority; the african was involved only at the level of the village. (p. 27).

As France gradually extended its control over the interior, it encountered numerous administrative difficulties, leading in the years 1905-1910 to a reorganization of all its territories in central Africa into the Federation of French Equatorial Africa, comprising Moyen-Congo, Gabon, Oubangui-Chari, and Chad. Brazzaville was made the capital both of Moyen-Congo and the Federation. Because the capital of the Federation was located there, Moyen-Congo benefited considerably at the expense of the other members with respect to

construction of a railroad and Government buildings and the provision of public services. This proved to be, however, a very mixed blessing.

The aim of the French Government, driven by European industrialization and international competition, was from the start to exploit the supposed wealth of the Congo at the least possible cost. In 1899 60,000,000 francs were thought to be sufficient to guarantee the success of 41 private societies to which the Government accorded full rights of exploitation (except in mines) for thirty years over 70% of the 700,000 km^2 making up the country (then including Gabon). Unfortunately, this expectation was based on the wildest of demographic estimates. In 1901 it was thought that the presumed 10,000,000 inhabitants would produce 10,000 metric tons of rubber and 200,000 ivory tusks. The concessionaires were supposed to organize plantations on 9/10 of their land and make the peasants cultivate 2/3 of the 1/10 left to them in commercial crops. An attempt was made to plant rubber trees to replace the wild ones, but the project was abandoned in 1912 after almost 1,000,000 had planted. (Admin & Coquiry-Fidicvitch: 43 ff.)

The pacification of the country proceeded slowly (it was not complete till the end of the First World War) and neither the Government nor the private companies had the knowledge or were willing to commit the resources that might have allowed them to succeed in producing the expected wealth.

After the war, the Government decided to develop the infrastructure necessary for the evacuation not only of produce from the Congo, but from the whole Federation. At the time they pushed the commercial development of certain crops (rubber and palm kernels in particular) and food crops (especially manioc) to feed the laborers involved in construction activities. The railroad from Pointe Noire to Brazzaville was started in 1921 (at first with forced labor) and

finished by 1934. Plans to expand foreign-owned plantation agriculture throughout the country were frustrated during the thirties by the depression and its aftermath and finally the second world war. The scope of this effort was consequently reduced and confined essentially to the south where an appropriate infrastructure was built up. The structure of rural society and traditional subsistence agriculture were left unchanged, except for the effects caused by an increasing exodus of young men toward the cities.

During the Second World War the Federation became a stronghold in sub-Saharan Africa for the Free French Forces under General de Gaulle, with Moyen-Congo serving as a base and transit area for the produce of the rest of the Federation. Under Felix Eboue from French Guyana as governor-general, various social and political reforms were made, many of which were incorporated into the constitution of the Fourth French Republic. Further reforms were made in 1945-46 and 1957, gradually increasing the automony of the country and enlarging the electorate to all adult Congolese.

During the post-war period, the French continued to push the development of the Congo along the lines already established. From 1946-1959 a hydroelectric dam was built on the Djoue River to supply Brazzaville, the ports of Pointe Noire and Brazzaville were built, as was the airport for Brazzaville, roads were constructed between Pointe Noire and Sorinda, Dolisie (now Loubomo) and Gabon, and between Brazzaville and Kindala. Postal service, telegraph, telephone, and radio were built or expanded, and cities were provided with electricity and water. In Brazzaville a hospital was built, lycees and colleges funded and in Pointe Noire a center for endemic diseases was established. Banks, insurance companies, and oil companies established themselves in the southern cities and various light industries were started: cigarettes, beer, spinning, canning, sawmills, shipyards, aluminum articles, etc. At the same time the import-export business thrived. Exports of agricultural

products were dominated by wood, sugar, and palm oil. Much of what was manufactured was also exported as well.

Bertrand describes the "vocation" of the Congo for foreign (principally French) capital in these terms:

> ...a country destined to insure the majority of activities of a staging post for capital in the Customs Union. On the one nand services, both technical and financial, are much better developed there than elsewhere; numerous small metal working shops and various services begin to function, while almost half the credits destined for the Customs Union are delivered to the Congo. On the other hand transit activities rapidly expand, necessitating the enlargement of the port of Pointe Noire, the increase of the carrying capacity of the railroad and the river fleet on the Congo and the Ubangi; Comilog (Compagnie Miniere de l'Ogoue) begins construction of a railroad connecting southern Gabon (region of Franceville) to the Congo-Ocean line to evacuate manganese ore. Finally a certain number of small and medium-sized industries produce for markets of the Customs Union (cigarettes, beer, etc.) or even the entire Community (sugar). (Bertrand, p. 86)

A further large scale industrial project was planned in 1956-57 that would have made the Congo the most important industrial center in francophone Africa. Power for the project was to come from a major hydroelectric installation on the Kouilou River 70 km. north of Pointe Noire. A major element of the project, however, was to be the production of aluminum from Guinean bauxite, and Guinea's refusal to join the Community seems to have stymied the construction of the dam.

The net effect of all this development activity in the post-war years was to further unbalance the economy of the Congo. As Table I-1 shows, the urban population increased from an annual rate of 3.7% between 1950 and 1955, to 7.2% between 1955 and 1960. Rural population, on the other hand, which grew at an annual rate of 2.1% between 1950 and 1955, declined at a rate of .1% annually between 1955 and 1960. In 1930 Brazzaville had 17,000 inhabitants; in 1945,

Table I-1

URBAN AND RURAL POPULATION AND GROWTH RATES, POPULATION INDICATORS, 1950-1980
(In thousands and percentages)

	1950	1955	1960	1965	1970	1974	1976	1977	1978	1979	1980
TOTAL POPULATION (thousands)	815	885	969	1,069	1,191	1,304	1,365	1,396	1,428	1,461	1,495
RATE OF INCREASE (percentage/year)		1.7	1.8	2.0	2.2	2.3	2.3	2.3	2.3	2.3	2.3
URBAN POPULATION (thousands)	119	143	202	294	394	548	628	677	730	787	848
RATE OF INCREASE (percentage/year)		3.7	7.2	7.8	6.0	8.6	7.1	7.8 1/	7.8 1/	7.8 1/	7.8 1/
RURAL POPULATION (thousands)	696	771	767	775	797	756	737	719	698	674	647
RATE OF INCREASE (percentage/year)		2.1	-0.1	0.2	0.6	-1.3	-1.3	-2.4	-2.9	-3.4	-4.0
PERCENTAGE URBAN	14.6	16.2	20.8	27.5	33.1	42.0	46.0	48.0	51.0	54.0	57.0

1/ Estimates.

Sources: Population Census, 1974; IBRD; Programme d'Action du Gouvernement 1978/79; and Mission Estimates.

43,000; and in 1959, 100,000. Pointe Noire grew from a few thousand in 1930 to 12,000 in 1945 and 57,000 in 1959. According to Samir Amin,

> The Congo of 1958 is certainly no longer that of Celine; it is 'modernized', its population urbanised and proletarianized. But it is not 'developed'. The misshapen economy of this territory is not a national economy: it is neither structured, nor self-centered, nor self-dynamic. From a primitive country the Congo has become a true underdeveloped country; a peripheral region of the world capitalist system. (Admin & Coquery-Vidrovitch, p. 63)

After independence foreign investments declined, except in mining, forestry, and more recently oil, as they were redirected elsewhere in francopnone Africa. On the other hand, the urbanization of the population continued at a high rate. Whereas in 1960 the urban population was only 20.8% of the total, for 1980 it is estimated at 57%. The slowing pace of industrialization was not able to absorb this surfeit of labor, which tended to be taken up to a large degree by employment in the public sector, which rose from about 4,000 in 1960 to 25,500 in 1972 (Bertrand, p. 90). The basic imbalance in the economy created during the colonial period has thus worsened. An ever increasing total population, which rose from 969,000 in 1960 to 1,495,000 in 1980, cannot be fed by a rural population which has declined from 767,000 to 647,000 in the same period while still employing its traditional methods of agriculture on soils of declining fertility. Most of the food must be imported for the urban population at a high cost, which has only proved possible thanks to revenues derived primarily from exports of wood, potash (for a few years), and oil, and from international loans; which, as will be shown below, absorb through debt payments the major portion of these revenues.

B. Geographical Environment

The country extends for some 1,280 km. north and south of the equator between 3.6° N and 5° S latitude. At its maximum width,

it is only 480 km. and it has a coastline of only 160 km. Total area is approximately 342,000 km.^{2} About two-thirds of the country (65%) is covered with forest, the rest is savanna.

1. Major Geographical Regions

The main geographical division in the country is made by a line running northwest from Brazzaville, separating the north from the southwest. In the northeast, the Congo Basin extends from about 2^{o} S to 5.6^{o} N latitude, occupying some 150,000 km.^{2} It is in the form of a great amphitheater rising gradually from 280 to 370-380 meters. Covered to a large extent by flooded forests, the only means of access to most of the area is by the several rivers which drain into the Congo.

To the northwest the Sangha region is more elevated, from 400 to 900 meters with the Congo's highest peak, Nabemba, at 1,000 meters. The Bateke region, north of Brazzaville, is made up of a series of four plateaus between 600 and 860 meters in altitude. The landscape here is typically savanna. The Pool (also known as Plateau des Cataractes) is a hilly region west of Brazzaville with peaks reaching 600-680 meters. Northwest of the Pool is the Massif of Chaillu. Almost entirely forested, it consists largely of rounded hills with many streams and cataracts.

To the west of the Massif lie the plains of the Niari river, the most fertile region of the country. Separating these from the coastal plain are the Mayombe mountains, appalachian in form, from 30 to 60 km. in width, and reaching a maximum height of 930 meters.

Administratively, the country is divided into nine regions which accord only in part with the geographical regions just described: Likouala, Sangaha, Cuvette, and Plateaux in the

north; Pool, Bouenza, Lekoumou, Niari, and Kouilou in the southwest. (Map I-1)

2. Climate

The Congo has a typical Guienan forest climate, with an average annual temperature of close to 25°C. and precipitation generally above 1,200 mm. The southwest has from 1,200-1,700 mm of rain per year, a distinct dry season from May to September, and an annual variation in temperature of 4-6.° The central part of the country generally has a subequatorial climate with 1,600-1,800 mm of rain, a shorter dry season (1-3 months), and an annual variation in temperature of 1.5.° Within this general area, however, parts of the Bateke Plateaux receive 1,800-2,000 mm of rain, have a dry season of 2-3 months, and a greater temperature variation (2.5-3°). The northern third of the country, from just south of the equator, has an equatorical climate characterized by 1,000-1,800 mm of rain, no dry season, and a temperature range of 2-2.5.°

A more detailed coverage of the geography and climate of the Congo will be found in Part Two, Section II.

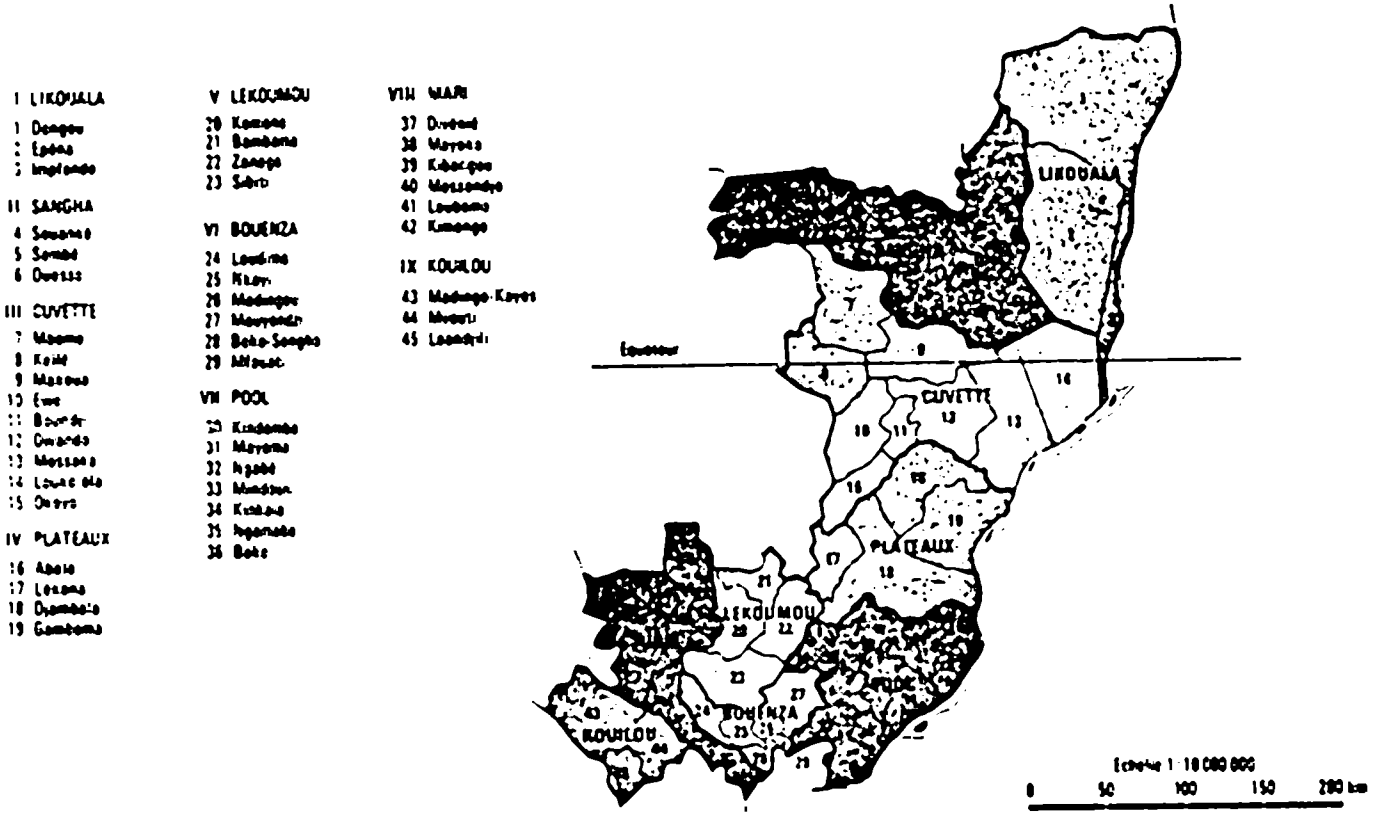
C. General Characteristics of the Population

1. Size and Distribution by Age and Sex

The total population of the Congo in 1980 is estimated to be 1,495,000, assuming an annual growth rate of 2.3% from the 1974 census total of 1,304,000 (Table I-1). This would mean an average population density of 4.37/km^2. It is a young population, with 80.3% of the total under 40 in 1974 and an average age of 25.2. There is a curious difference with respect to sex, however. For the rural population, a significant bulge existed in the middle years in favor of the women (20.8% of the population from 25-54

MAP I-1

Administrative Divisions



OLD AND NEW NAMES OF LOCATIONS			
Old Name	New Name	Old Name	New Name
BARATIER	KIBOUENDE	GUENA	BILALA
BRUSSEAUX	MASSENGO-LOUBAKI	HAMON	MADZIA
COMBA	KINGOYI	HOLLE	TCHITONDI
DE CHAVANNES	LOULOMBO	JACOB	NKAYI
DOLISIE	LOUBOMO	LE BRIZ	MOUKOUKOULOU
FAVRE	MOUMBOTSI	LES SARAS	MBOULOU
FORT-SOUFFLET	NGBALA	MARCHAND	MISSAFOU
FORT-ROUSSET	OWANDO	MARCHE	KINTEMBO
FOURASTIE	BILINGA	PATRA	NGONDJI
GARE THOMAS	TSIMBA	SAINT-PAUL	HINDA
GIRARD	MALEMBA	SIMON	KIELLE
		SITOU	MFOUBOU

Source: Jeune Afrique, 1977

as opposed to 12.6% for the men) (Table I-2). For the country as a whole, a total female majority of 54% as opposed to 46% for males (see Figures I-1 and 1-2 and Appendix I-6).

2. Geographical Distribution.

The population is very unevenly distributed over the country, 70% being concentrated in the southern 30% of the territory. Population densities (excluding Brazzaville) in 1972/73 ranged from 0.43/km^2 in the northern most region of Likoula to 9.43/km^2 in Bouenza, to the west of Brazzaville, against an overall rural density of 2.35/km^2. The overall rural density picture is shown in Map I-2. The uneven distribution of population is due not only to soil conditions and climate, but to the means of communication available. The railroad and road between Brazzaville and Pointe Noire have brought about the heaviest concentration of population in the country. Elsewhere as well, population is distributed in linear fashion along either roads or waterways. There also appears to be a strong tendency of concentration in urban and larger rural centers. The increase in urban population (in agglomerations of more than 2,000) is estimated at 7.8% per year, giving an estimated urban population in 1980 equal to 57% of the total. In 1974 Brazzaville (300,000) and Pointe Noire (150,000) alone accounted for some 35% of the total population. From 1960 to 1974 the number of villages declined from 6,000 to 4,300 and the average number of inhabitants rose from 100 to 134. This concentration was at least in part a result of pressure from the Government which seems to have continued a policy inaugurated by the French. In 1974 57.8% of the villages had less than 100 inhabitants but contained only 20.5% of the rural population. Villages from 101 to 500 inhabitants (38.5%) contained 57.1% of the population, and those from 501 to 2,000 (3.7%) contained 22.4%.

Table I-2

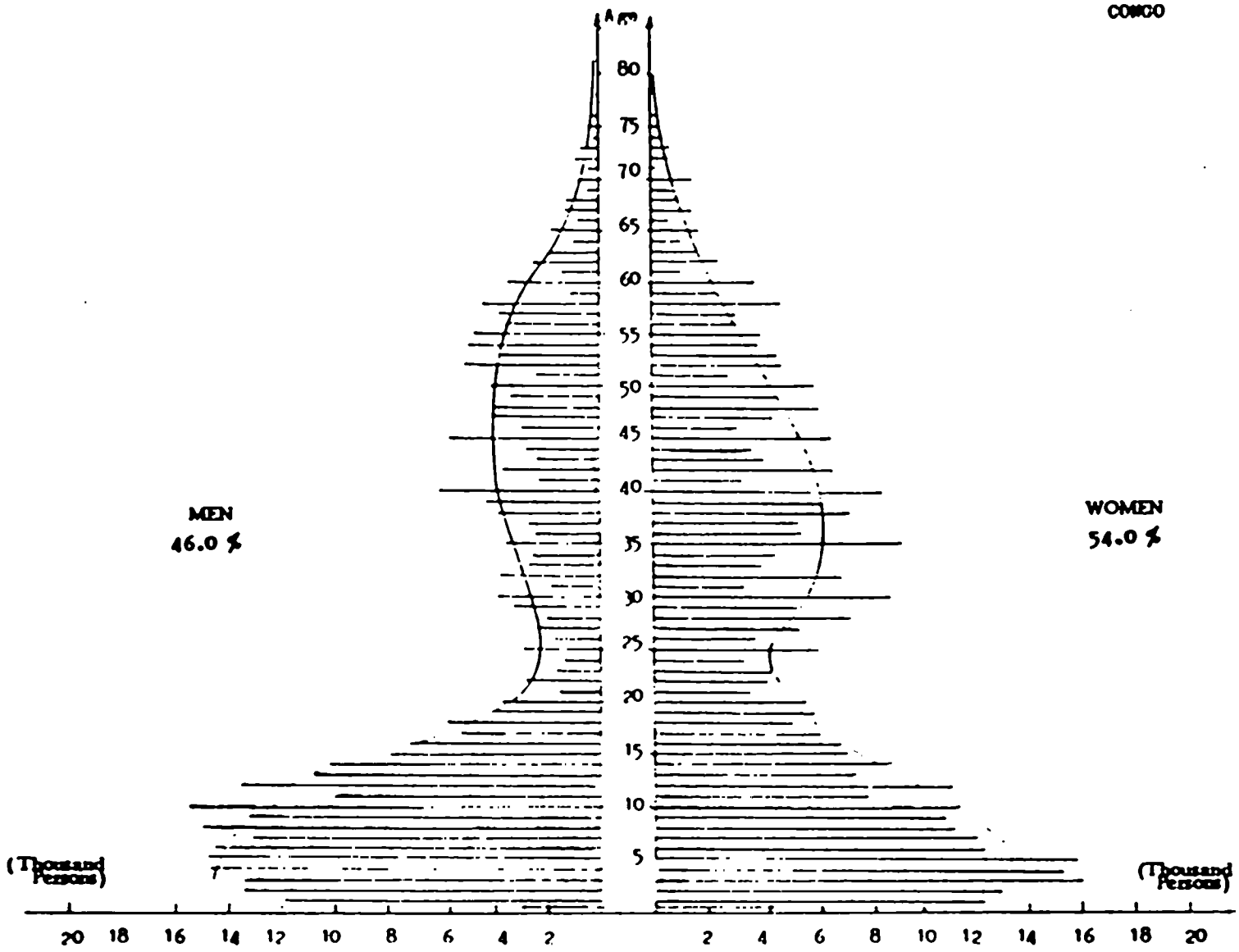
STRUCTURE OF RURAL POPULATION BY AGE AND SEX (IN PERCENTAGES)

AGE	KOUILOU	NIARI	LEKOUMOU	BOUENZA	POOL	PLATEAUX	CUVETTE	SANGHA	LIKOUALA	CONGO
				1) Males						
0-14	22.9	24.0	21.5	23.7	25.0	27.1	21.6	20.8	22.6	23.8
15-24	5.9	6.2	6.3	4.3	4.2	3.3	5.8	6.2	5.9	5.1
25-34	2.5	3.8	3.5	3.6	2.7	2.9	3.2	5.0	4.8	3.3
35-44	6.3	3.9	4.8	3.5	3.3	4.5	4.2	5.9	4.9	4.2
45-54	4.9	5.0	4.2	4.5	5.6	4.8	5.7	5.7	4.5	5.1
55-64	4.5	3.6	3.2	3.0	3.9	2.3	3.3	3.8	2.7	3.4
65 and above	0.9	0.9	2.0	0.7	1.1	0.5	1.5	1.0	1.7	1.1
TOTAL	47.9	47.4	45.4	43.2	45.8	45.5	45.4	48.4	47.2	46.0
				2) Females						
0-14	22.1	21.7	17.9	25.8	22.1	23.3	20.8	17.7	21.6	22.0
15-24	5.4	6.1	8.0	7.6	7.1	6.3	6.5	6.1	6.2	6.7
25-34	6.4	8.4	7.6	6.4	5.2	10.2	6.2	8.0	6.9	7.1
33-44	6.9	6.7	6.8	7.2	8.8	9.4	7.7	6.7	5.8	7.7
45-54	8.1	4.6	7.5	5.1	6.9	3.3	6.7	7.3	5.7	6.0
55-64	2.4	3.8	4.7	3.4	3.2	1.5	5.0	4.6	4.3	3.5
65 and above	0.8	1.3	2.1	1.2	0.9	0.5	1.6	1.2	2.4	1.2
TOTAL	52.1	52.6	54.6	56.8	54.2	54.5	54.6	51.6	52.8	54.0
GRANDTOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: FAO, Recensement Mondial de Agriculture (Congo); 1977.

Figure I-1

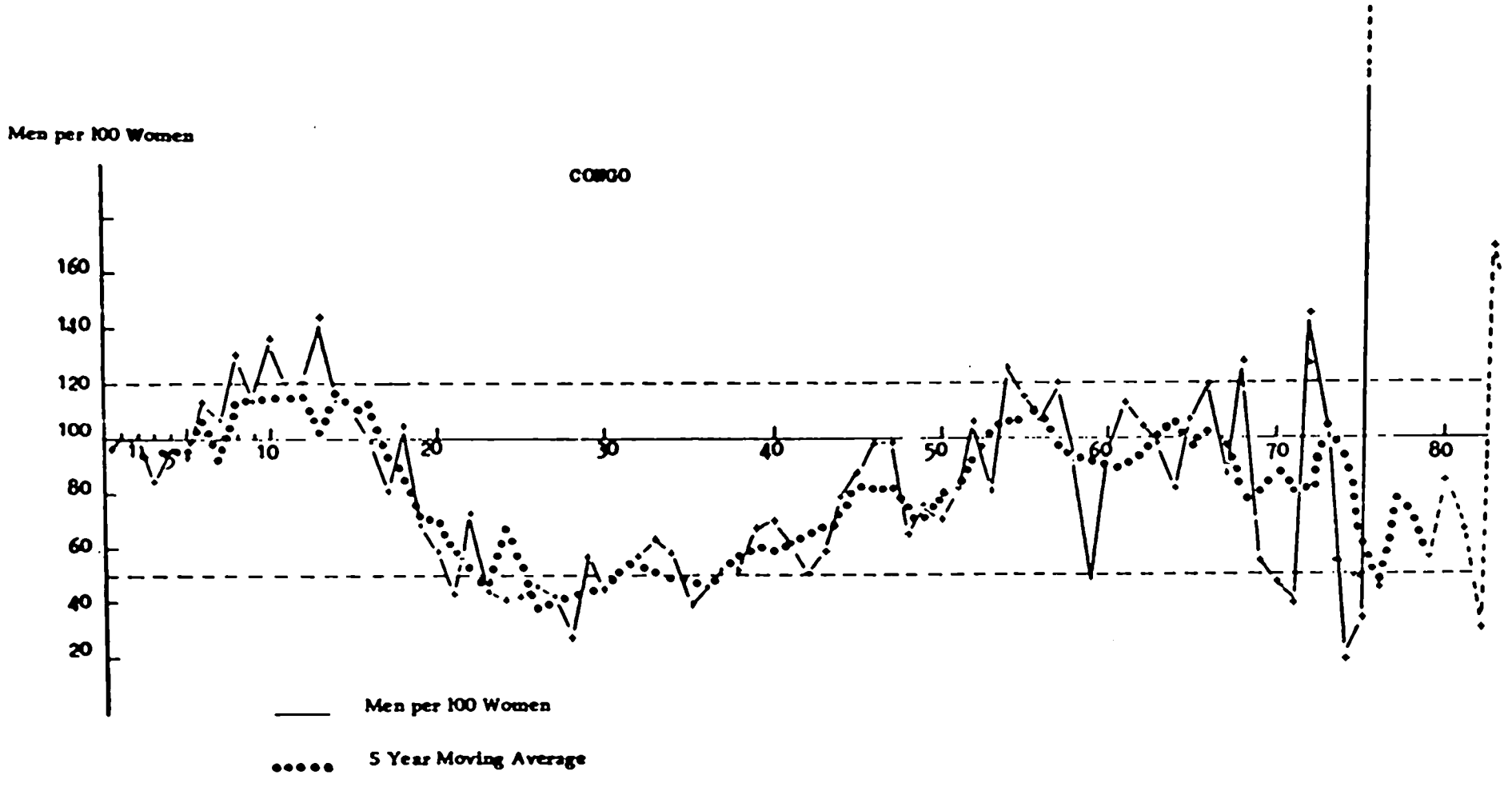
POPULATION PYRAMID



Source: FAO, Recencement Mondial de L'Agriculture (Congo), 1977.

Figure I-2

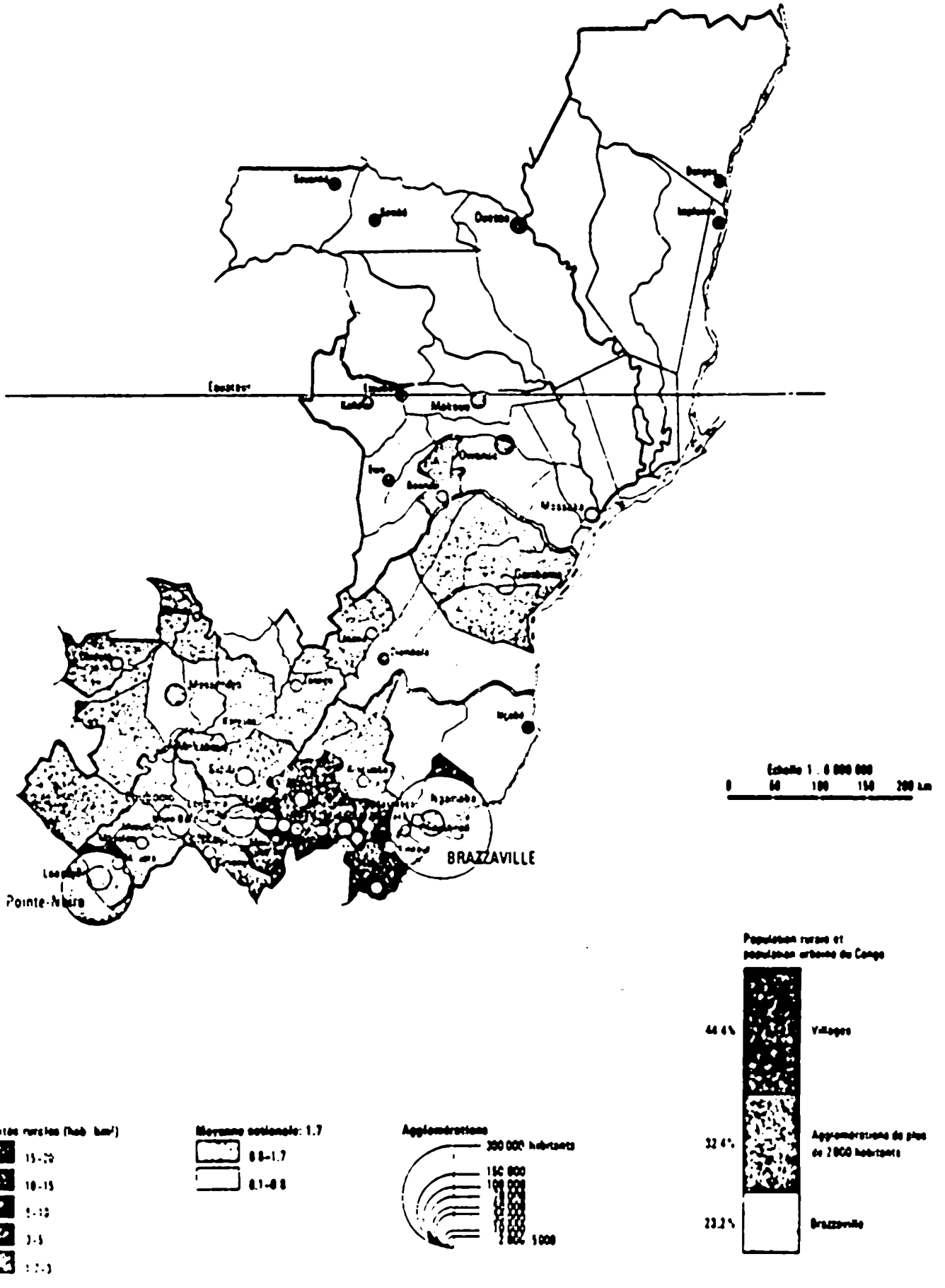
RATIO OF MEN PER 100 WOMEN



Source: FAO, Recencement Agricole de L'Agriculture (Congo), 1977

MAP I-2

RURAL DENSITY



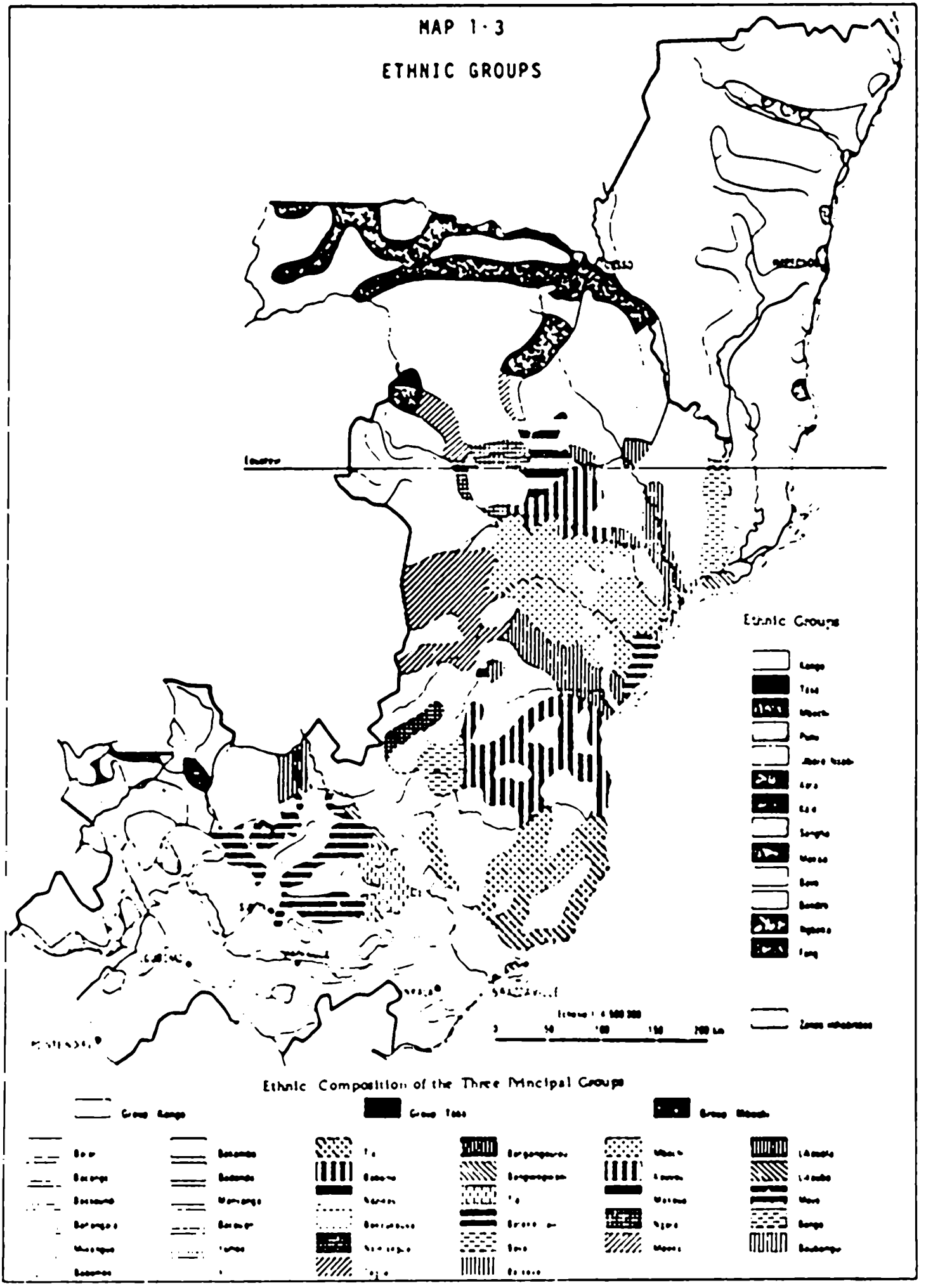
Source: Jeune Afrique

3. Ethnic Groups

An important aspect of the geographical distribution of the population is its division into a multitude of ethnic groups differing linguistically in varying degrees from each other. Jeune Afriques atlas of the Congo recognizes 74 such groups which it reduces to 13 whose distribution it maps (see Map No. I-3). Of these, 97% of the population speak so-called Bantu languages, whereas Pygmies, Ubangis, and foreigners (mostly west Africans) constitute only about 1% each. The largest of these groups, the Bakongo (which the atlas subdivides into 12 smaller ones), constitutes 48% of the population and is found between Brazzaville and the coast, particularly in the southern half of that area. The next largest group is that of the Bateke (equally divided into 12 sub groups), who constitute 22% of the population. They are found principally north of Brazzaville in the Plateaux region and the northern parts of the Pool, but also extend westward into Kekoumou. The Mboshi (subdivided into ten groups) make up 13% and are found principally in the Cuvette. French is the official language of the Congo, but in addition three lingua franca have developed in different regions of the country; Lingala for the Bateke and other Bantu peoples further north, Munukutuba for the Bakongo and other southern groups, and Sangho for those along the Ubangi river. The ethnic divisions within the country are reflected not only in the rural areas, but in the cities as well, where one tends to find distinct ethnic sections. A recent collection of short stories by a prominent member of the Government (Lopes, 1979) has as a major theme the solidarity of tribal groups in the face of the vicissitudes of modern life. Ethnic loyalties have important political ramifications as well, being clearly evident in the support for different political figures and factions since independence. The major division here has been that between the north and south, opposing essentially the Mboshi in the north (presently in control of the army and Government) to the Bakongo and Bateke in the south.

MAP 1-3

ETHNIC GROUPS



Source Jeune Afrique, 1977

II. ECONOMIC AND FINANCIAL CONDITIONS BEARING ON AGRICULTURE

A. Post Independence Economic Development

1. Background

At the dawn of independence in 1960, the Congolese economy was already burdened with an oversized service sector stemming from the fact that since 1905 Brazzaville had replaced Libreville (Gabon) as the administrative capital of the Federation of French Equatorial Africa (including in addition to the Congo, Cameroon, Central African Republic and Gabon). Much of the pre-independence economic activity in the urban area was, therefore, centered around the catering of services to the administrative sector of the French Federation. During most of the Colonial era Congo shared with the rest of the Federation investment funds appropriated annually by the French Treasury for public works. Since 1946 these funds were channelled through the French Investment Fund for Economic and Social Development (FIDES). The major portion of these funds were allocated for the construction of housing for civil servants, administrative buildings and infrastructure in the urban area with very little left for agricultural production and rural development.

2. The Sixties

The first task facing the Congolese economy after independence was to readjust the economy from being an administrative outpost of the French Federation into a fully independent economy with a development strategy more realistic and conducive to natural resources of the Congo. Subsequently, a Planning Committee was established within the Ministry of Finance and Economic Planning in order to formulate policy and development programs.

Because of the lack of data of basic information on the economy, one of the first tasks of the new institutions was to make factual studies and gather the basic data necessary for future programming and development. As a result of these studies, an interim plan, a Five-Year Development Plan officially called "The Interim Plan" was formulated.

The First Five-Year Plan (1964-1968) called for a total investment of CFAF 54.3 billion, of which 46% were allocated for industry and mining, 35% for economic and social infrastructure, and only 9% for agriculture (Appendix I-1). The plan was based upon an optimistic assumption of the inflow of foreign public assistance. As a result, when the plan came to an end in 1968 public sector investment had fallen far behind targets because of the lack of funds. Several projects, therefore, remained unfulfilled.

In the agricultural sector actual investment during the plan amounted to only 5% as compared to 9% originally planned. As a consequence, agriculture remained stagnant when the plan ended. The end of the plan also coincided with the change of the Government in 1968. The new Government headed by President Marien Ngouabi declared its intention to follow the "Scientific Socialist" approach to economic development. The Government also abandoned the second Five-Year Development Plan (1970-1974) which was to follow the Interim Plan.

3. The Seventies

During the seventies the Government moved to take over most of the existing enterprises in transport, energy, water and agri-industry. It also established new ones in agriculture, especially state farms and ranches. The Government also reinforced its control over the entire agricultural marketing system. At the end of the decade only some pockets of the modern

sector remained in private hands. These pockets exist in forestry, petroleum, and manufacturing, which traditionally had been the activities of the French sector. Having abandoned the second Five-Year Plan, development efforts in the Congo during the early 70's have followed pretty much investment guidelines issued by the Congolese Labor Party. During this period two important developments took place which significantly brightened the prospects for the Congolese economy. First, the exploitations of the potash mine at Holle beginning in 1969, and second, the off-shore oil exploration which began in 1972. The prospect of fiscal revenues from oil and potash induced the Government to embark upon ambitious development programs, and upon the expansion of the public sector. New enterprises, including the National Refinery and a system of state farms, were launched during the 1970-73 period.

In order to finance these projects the Government resorted to increased foreign borrowing. External debts were doubled in 1972, amounting to CFAF 74 billion or 83% of that year's GNP.

Both potash production and oil production reached peaks in 1974 when 2.4 million metric tons of oil were produced and 475,000 tons of potash were extracted. The favorable outlook of oil and potash further induced the Government to launch large investment programs. A Three-Year Development Plan (1975-1977) was promulgated calling for a total investment of CFAF 76 billion (Appendix I-1).

As soon as the plan was implemented, however, all the expectation of future revenues from the mining sector immediately proved to be overly optimistic. After a boom of 1974 oil production declined significantly during the following two years, while the Holle potash mine had to be closed in 1977 due to severe flooding.

As a consequence of heavy Government borrowing abroad to finance development projects, the Congolese Treasury ran into a serious liquidity problem during 1975-76, and the Three-Year Plan had to be postponed.

B. Structural Disequilibrium

1. Causes of Disequilibrium

The year of 1980 marked the beginning of Congo's third development decade during the post-independence era. Brazzaville, the capital, shows signs of prosperity, while at Pointe Noire, the country's only sea port and second largest city, commerce is thriving. The prosperity stems from the recovery of the oil sector beginning in 1978; with production reaching nearly three million tons in 1980, the country is again heading toward another boom which may continue through part or all of the 1980's.

Behind the facade of prosperity, however, the Congolese economy is in a state of serious disequilibrium. The oversized service sector in the economy has already been explained in terms of the traditional role of Brazzaville as a capital of the Federation of French Equatorial Africa. However, there are other factors.

First, the role of transport services in the economy. To a large extent, the Congolese transport development in the past was due to its location as a transport corridor for the neighboring countries, especially Gabon and Central African Republic, which ship timber, manganese, and other exported as well as imported products through the Congo. For this reason important economic activities in the Congo were directed toward transport services.

Second, the emergence of the mining sectors. The oil and potash sector has not only provided direct services and related employment, but through its income generation effect, increased

opportunities for services in the cities, especially catering to the expatriate sector.

Third, the Government's full employment policy. The rise in urban population has been too great to be absorbed by the private industrial and commercial sectors. To relieve the pressure the Government has committed itself to guaranteeing full employment to all graduates from high school who cannot find work in the private sector, thus greatly enlarging its personnel. The expansion of the state enterprise system, both in manufacturing and agriculture, has also contributed to the enlargement of the service sector.

In order to sustain a high level of Government spending and private consumption as well as high level public investment in face of stagnant production of goods, the country has had to resort increasingly to external sources in recent years. The resources gap between the domestic supply and the total claim on resources, which had been only 6% of the GNP in 1974, increased to 28% in 1975. Though the gap has been reduced somewhat in recent years it still accounts for nearly 20% of the GNP in 1978.

2. Implication: Behind the $500 Per Capita Income

One of the implications of the disequilibrium in the Congolese economy is its bearing on the per capita income. Quoting the Congolese per capita income as $500 for 1977, did donor countries, international institutions and foreign press have been placing Congo "among the highest income groups in tropical Africa." Nevertheless, looking through the structure of per capita income and against the background of the disequilibrium as described in the previous section, it is evident that careful attention must be paid when comparing the Congolese income with that of otner countries. As illustrated in Table I-3, the value

Table I-3

BEHIND THE $500 PER-CAPITA INCOME (1977)

SECTOR	CFAF (Billions)	Percent of Total	
Agriculture & Forestry	22.9	12.6	
Mining	27.3	15.0	= 42.4% Goods Component
Manufacturing & Construction	26.9	14.8	
Transport & Comm & Other Services	38.0	20.9	
Trade	25.3	14.0	
Government Services	24.3	13.4	= 57.6% Services Component
Import Taxes	17.0	9.4	
GDP (market prices)	181.7	100	
Less Indirect Taxes	26.7		
GDP at Factor Cost	155.0		
Less Factor Services (net)	-10.3		
GNP (market prices)	171.4		
Population (thousands)	1,396		
Per Capita GNP (in CFAF)	122,779		
Per Capita GNP (in current US Dollars)[1/]	500		
Per Capita Production of Goods (in current US Dollars)	224		
Per Capita Agricultural Income[2/]	130[2/]		

1/ 1977 Exchange rate: US $1=CFAF 246

2/ See Appendix I-2

SOURCES: Tables 1.1; Appendix I-2.

of goods production is exceptionally low, accounting for only 42.4% of 1977 GNP. That leaves 57.6% to the production of services. The lopsided distribution of sectorial contributions to GNP in the Congo is unique among the West and Central African economies.

On the basis of Table I-3, per capita income excluding service was estimated at only $244 which is less than half of the often quoted per capita income.

Within the 42.4% of the goods production component of the GNP, agricultural production, including forestry, accounts for only 12.6%. If forestry is excluded (forestry being exploited by expatriates and state enterprise), the agricultural component is only less than 10%. Per capita income in the rural sector is, therefore, estimated at $130 or amounting to only 26% of the 1977 national average.

If the current trend is allowed to continue, the Congolese economy is likely to become more and more imbalanced in the years ahead, favoring the modern sector and leaving the traditional sector to become more and more depressed.

C. Fluctuations in National Products

1. Gross Domestic Product (GDP)

Official data on national income in the Congo are fragmentary and are not available beyond 1970. National income data used in this report are from estimates by international organizations such as the World Bank, FAO and by the mission itself. As estimates they can only be interpreted as indicative of development trends of the economic sectors.

Table I-4, Figures 1-3 and 1-4, show the development of Gross Domestic Products (GDP), Gross National Products (GNP) and some major industry sectors in the 70's. GDP growth rates average at 11.3% during 1970-73. It soared to a record high of 33.5% in 1974, then slowed down considerably and steadily to 4.8% in 1977. Recovery took place in 1978 and growth rate again rose to 11.3% in that year. Preliminary estimates for 1979 show that another boom had begun and growth rate reached 29%. All indicators of 1980 performance suggest that current year growth may surpass that of 1979.

From 1970 to 1979 the least square estimate of the the growth rate for GDP is 13.76% and for GNP is 13.12%. The estimated equations are as follows:

$$\log GDP = \underset{(9.757)}{4.1515} + \underset{(18.671)}{0.1376T} \qquad R^2 = 0.978$$

and

$$\log GDP = \underset{(78.88)}{4.1364} + \underset{(15.52)}{0.1312T} \qquad R^2 = 0.968$$

T stands for time trend. The coefficients of T stand for growth rate for GDP or GNP as specified in equations. Time trend explains the growth pattern for GDP up to 97.80% and for GNP up to 96.80%. The numbers in parenthesis are the t statistic associated with the coefficients (A coefficient is significant at 95% level if t is higher than 1.96.)

2. Sectorial Growth

a. Transport

Traditionally, the Congo has played an important role in the transequatorial transport system that links Chad and the Central African Republic, and the interior of Gabon with the

Table I-4

GROSS DOMESTIC PRODUCT (GDP), GROSS NATIONAL PRODUCTS (GNP), 1970-1979
(In Billions of Current CFAF)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979 (Estimat.)
Agriculture and Forestry	12.1	12.5	14.1	14.2	15.0	18.1	19.4	22.9	25.6	29.0
Mining	1.5	1.9	3.8	9.5	32.6	25.8	31.0	27.3	33.8	71.0
Manufacturing and Construction	14.1	15.7	17.7	19.2	21.6	27.1	28.3	26.9	33.7	40.0
Transport, Communications and Other Services	18.0	20.3	23.0	25.2	28.6	33.2	33.6	38.0	41.7	47.0
Trade	10.4	12.0	13.4	14.6	17.4	21.2	22.4	25.3	27.6	31.0
Government Services	12.3	12.7	13.1	13.5	14.1	21.8	21.9	24.3	24.7	27.0
Import Taxes	6.0	7.3	6.0	6.4	7.7	12.4	16.8	17.0	15.1	15.0
GROSS DOMESTIC PRODUCTS (GDP) at market prices	74.5	82.3	91.0	102.6	137.0	159.6	173.4	181.7	202.2	260.0
Net Factor Services Payments	-1.9	-2.0	-1.7	-7.3	-5.2	-6.5	-9.7	-10.3	-17.7	-19.0
GROSS NATIONAL PRODUCT (GNP) at market prices	72.7	80.3	89.3	95.3	131.8	153.1	163.7	171.4	184.5	241.0

Sources: IBRD, Ministry of Planning and Mission Estimates.

Figure I-3

GROSS NATIONAL PRODUCT, 1970-1979

(In Billions of Current CFAF)

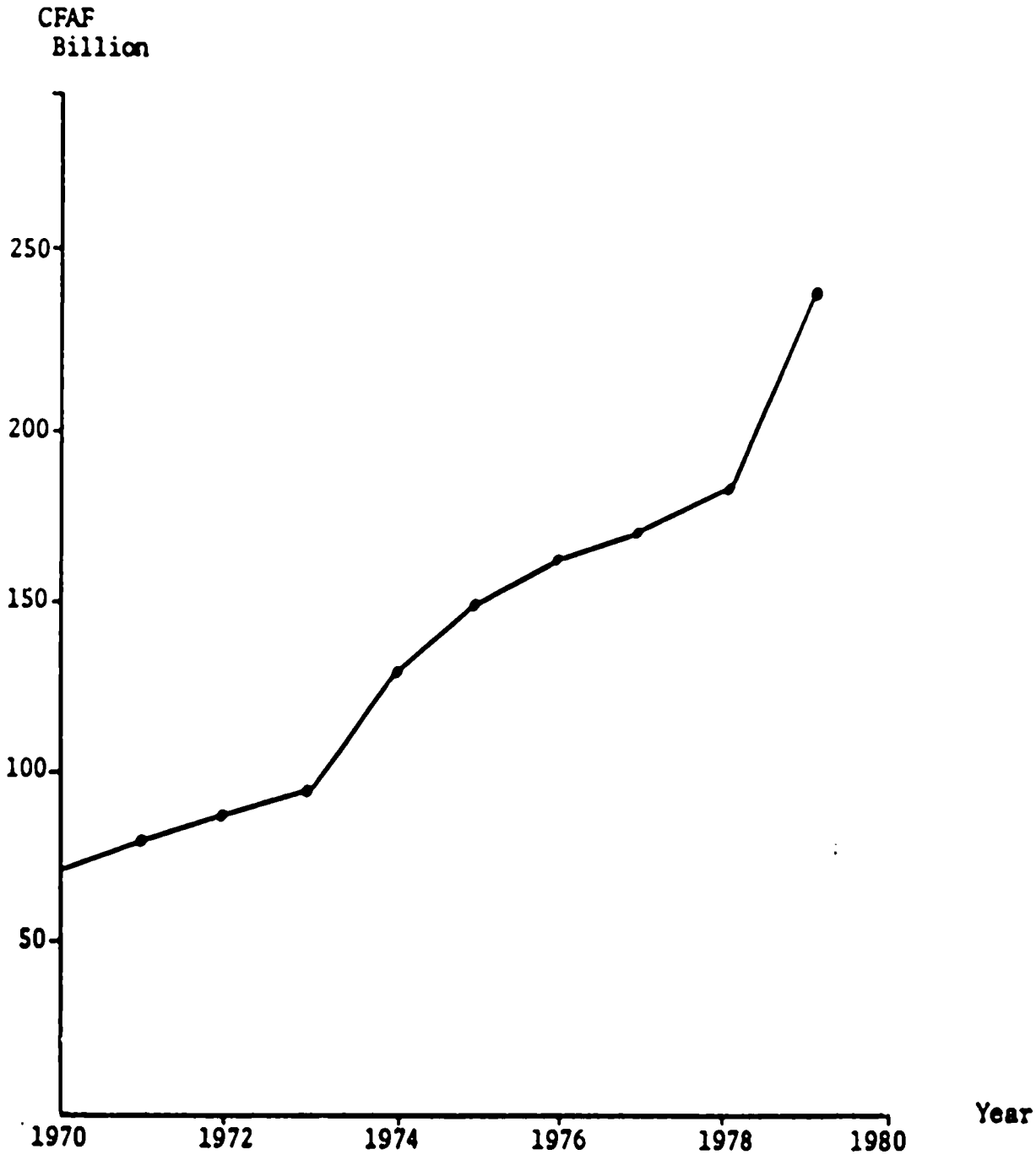
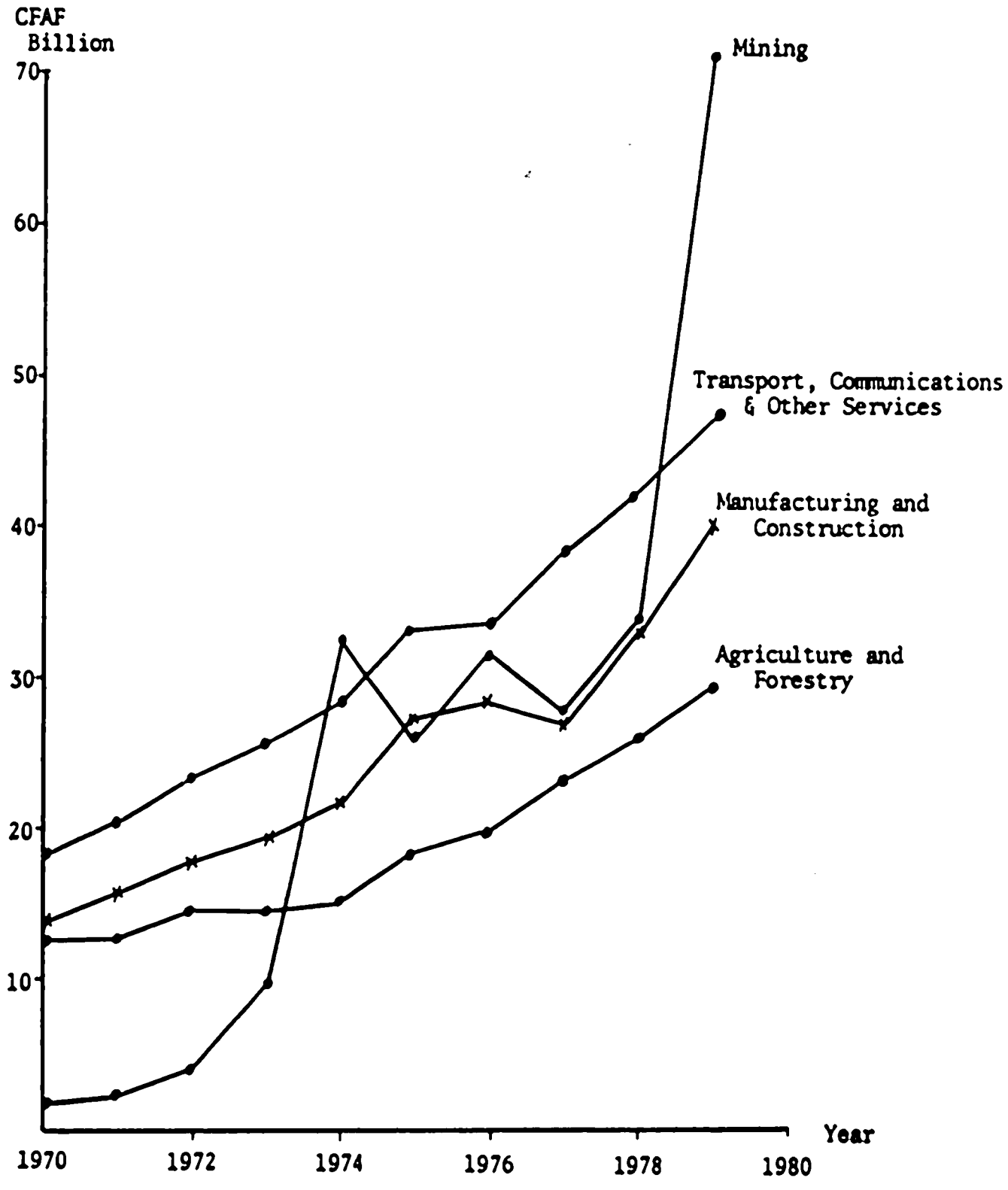


Figure I-4

GROWTH OF AGRICULTURE & FORESTRY; MINING; MANUFACTURING & CONSTRUCTION; TRANSPORT, COMMUNICATIONS & OTHER SERVICES 1970-1979
(In Billion of Current CFAF)



Atlantic Coast. Transequatorial system is comprised of a road, river and rail network with some 2400 kilometers in length, linking Fort Archambault with Pointe Noire in Congo via Bangui on the Ubangi River and Brazzaville on the Congo River. The system was maintained by the Transequatorial Communications Agency (TCA). The TCA was a public interstate agency created in 1959 to serve the Central African Republic, Chad, Congo, and Gabon. All the rail portion and almost all the river portion of the system were within the Congo's frontiers. As such, an important part of import and export of the neighboring Chad, Gabon and Central African Republic had to go through the transport system of the Congo.

In 1970 the TCA was dissolved and Congo as well as Chad established its own transport agencies, the Agence Transcongolaise des Communications (ATC) and the Agence Centra-africaine des Communications Fluviales (ACCF) for Congo and Chad, respectively.

At present the Congolese agency is comprised of a favorably located seaport at Pointe Noire, and river port facilities at Brazzaville, Mossaka, and Ouesso, some 500 kilometers of railway linking the main system with the Gabonese border. In 1970-73 the transport and communications sector accounted for about 25% of GDP. In 1974, however, because of the substantial increase in oil and potash production, mining took over as the leading sector. Transport recovered its dominant role again in the following year continuing through 1978.

From 1970-79 the overall growth rate of this particular sector is estimated as 10.42%, which is obtained from the following growth function:

$$\log y_1 = 2.8119 + 0.1042T \qquad R^2 = 0.993$$
$$(141.75)\ (32.01)$$

Y_1 represents the GDP component of transport, communication and other services. The numbers in parenthesis denote the t-statistic. This equation has 99.30% of explanatory power.

b. Mining

Mining emerged as an important sector beginning in 1969 with the production of potash at the Holle mine by the Compagnie des Potasses du Congo (CPC). The role of mining became more and more important wnen in 1972 oil production started. The share of mining in the GDP which had been only 2% in 1970 rose to 24% in 1974 and 27% in 1979.

There are three main oil fields: the Emeraude, the Loango, and the Likouala. The Emeraude field started production in 1972; the Loango in 1977; and the Likoudla in 1980. Production carried out by two foreign companies (one French--the ELF, and the other Italian--the AGIP) on a 63:35% basis. Oil productior reached 2.4 million metric tons in 1974, then declined to 1.8 million tons in 1975 and 1977 and 2 million tons in 1976. With the production of the Loango oil field, output again rose in 1978 to 2.4 million tons, and in 1980 with the Likouala field, production is estimated to reach 2.9 million tons.

From 1970-79, the GDP growth rate of mining sector is 41.24%, which is obtained from the following least square estimation of growth functions:

$$\log Y_2 = 0.3213 + 0.4124T \qquad R^2 = 0.856$$
$$(0.8668)\ (6.903)$$

where y_2 represents mining sector of the GDP component. This equation has 85.60% of explanatory power.

In sum, the mining sector will continue to be the leading sector in the Congolese economy until the known reserves become depleted toward the end of the 80's.

c. Manufacturing

Manufacturing consists mainly of wood processing and the production of a small range of import substitutions such as sugar, flour milling, cement, textile, plastic, and cigarettes. With construction, manufacturing contributed 19% to the GDP in 1970, then declined to 17% and 15% in 1978 and 1979, respectively, owing to the increased share of the mining sector.

During the seventies, manufacturing underwent important socialist transformation with the Government taking over a major number of production facilities such as sugar, energy, wood processing, fishing and building new factories such as cement, textile, and plastic. The emerging of the public sector was also accompanied by a sharp decline in production and capacity utilization.

In 1976 a study by UNDP on the financial conditions of public enterprises shows that all public enterprises with the exception of two companies, the SOCOTON and the OCB, were in a financial deficit, requiring substantial Government subsidies (see Appendix II-10.

Manufacturing and construction have an average 11.04% growth rate during the period of 1970-79. This growth rate is obtained from the least square estimate of the following growth equation for this particular sector:

$$\log Y_3 = 2.53\% + 0.1104\ T \qquad R^2 = 0.970$$
$$(59.79)\ (16.14)$$

Y_3 denotes the manufacturing and construction sector of the GDP components. The whole equation explains 97% of the growth pattern.

d. Agriculture

Agriculture plays a minor role in the economy. The share of agriculture including forestry which was 16% at the start of the 70's, declined steadily to 11% in 1979. In addition to the fact tnat transport and mining were the dominant sectors in the economy, there are other factors which have reduced the role of agriculture in the economy. Those factors will be analyzed in detail in later sections of this report.

The estimated growth rate of the agriculture and forestry sector was only 9.96% for 1970-79 period. This result is obtained from the following growth equation for agriculture and forestry sector:

$$\log Y_4 = 2.3151 + 0.0996T \qquad R^2 = 0.966$$

This equation explains 96.6% of the growth pattern of the agriculture and forestry GDP component.

D. Employment

The employment situation in the Congo reflects the structural imbalance of the economy itself, that is, the service sector has been the major source of employment.

There are no current data on the actual labor force and employment. Fragmentary data and estimates of the labor force

presented in Table I.5 show that the Congolese labor force is estimated at 336,000 persons in 1964, 550,000 in 1973, and 580,000 in 1977. During this entire period the employment situation is characterized by the fast growth of the cities and Government as a source of employment, thus draining labor away from agriculture.

As a consequence, agriculture, which provided labor for 60% of the workforce in 1966 -- the major source of employment -- declined to 41% in 1973 and 37% in 1977. Government, public enterprise, and private urban employment, which together accounted for only 21% of the labor force in 1966, more than doubled to 44% by 1973 and rose to 46% in 1977. Due to the increase in service related jobs in the urban area as well as the Government policy to absorb excess labor in the cities, unemployment declined from 19% in 1966 to 15% in 1973, but rose again to 17% in 1977.

Table I.6 shows the employment distribution in the Central Government sector between 1976-78. Government employees increased 17% in two years from 32,396 in 1976 to 37,928 in 1978; the figures excluded employment in the defense sectors, which are not available. It is evident that if the defense factor were included, total employment by the Central Government would be much higher than the one shown in Table I.6.

As was already explained elsewhere in this report, there are several factors explaining the mass defection from the agricultural sector:

First, because of the traditional role of Brazzaville as the administrative capital of the former French Equatorial Africa, the Government service sector has always been large.

Second, the role of the Government as an employer has been more and more important in recent years due to the expansion of the public and semi-public enterprise sector and to the socialist full-employment policy.

Table I-5

LABOR AND EMPLOYMENT IN SELECTED YEARS

	1964 2/		1973		1977	
	Thousand	Percent	Thousand	Percent	Thousand	Percent
Agriculture 1/	202	60	226	41	215	37
Government			22	4	41	7
Public Enterprises =	70	21	22	4	29	5
Private Urban 3/			198	36	197	34
Unemployed	64	19	82	15	99	17
TOTAL LABOR FORCE	336	100	550	100	580	100

1/ Including forestry.

2/ Estimates for mid-sixties.

3/ Including urban underemployed.

Sources: Bulletin Quotidien de l'ACI, May 5, 1966; 1974 Population Census; Ministere du Plan, Recencement Agricole 1972/73, and IBRD.

Table 1-6

EMPLOYMENT BY THE CENTRAL GOVERNMENT, 1976-78[1/]

	1976	1977	1978
Employed in			
Primary and secondary education	9,447	10,749	11,598
Defense	7,616	--	--
Health and social affairs	5,155	5,724	5,809
Rural economy	2,630	2,803	2,622
Finance	1,373	1,506	1,554
Post and telecommunications	1,335	--	--
Information and sports	1,049	1,202	1,286
Public Works, urban development and housing	589	680	586
Presidency	571	633	628
Congolese Labor Party	560	657	704
Justice and Labor	470	565	540
Foreign Affairs	414	495	476
TOTAL	32,396	35,883	37,928

1/ Employment figures in this table include only employees in the Central Government sector. They are not, therefore, the same as those in Table 1-5.

SOURCE: Ministry of Finance, IBRD.

Third, the deterioration in the agricultural sector itself has also been the prime motive behind the mass exodus from rural areas to the cities.

Fourth, the emergence of oil and the oil services related sector in the urban area

Fifth, the educational system which provides high school education only in the cities and its vicinity; those boys and girls who would like to pursue higher education have to go to urban centers in search of better opportunities.

In addition to the the problems caused by internal migrations, some 100,000 persons returned to the Congo after independence in 1960. Some of these were voluntarily repatriated functionaries who had been working in the other countries of the AEF, but the majority were Congolese expelled by Gabon in 1963 and Zaire in 1966. On the other hand, independence also brought the departure of several thousands of Europeans (particularly French Government officials and military) and people from Gabon, Benin, and Togo.

E. Fiscal Performance

The current fiscal picture in the Congo is rather bleak, characterized by a large current balance deficit as well as the overall balance deficit. Fiscal stability, which had been reached in the late 60's, disappeared as the Government opted for the socialist approach to economic development. Large socioeconomic programs, expansion of the state enterprise system, and a growing

civil service sector have all contributed to the steady rise in public expenditures.

In 1972, as oil production started, oil revenues began to flow into the treasury, reaching a peak of CFAF 16.7 billion in 1974, which represented 42% of that year's total revenues. The 1974 revenues were 81% higher than the 1973 level and 2.4 times the 1970 level. The spectacular rise in fiscal revenue fed expectations of future revenues and exerted strong pressure on Government spending. Consequently, in the same year, subsidies and transfers to public enterprises were quadrupled to CFAF 6.4 billion; and in the following year, Government expenditures on wages and salaries increased by 42% to over CFAF 20 billion, while capital investments increased more than fourfold to over CFAF 18 billion. There was, however, a sharp decline in oil production in the following two years due to geological problems at the oil fields; oil revenue declined by 18% and 31% in 1975 and 1976, while current expenditures continued to rise at 18% and 23% over the 1974 level. Added to current expenditures were investment expenditures, which more than quadrupled in 1975. In 1976 public investment was reduced substantially, but was still more than double the 1974 level. As a result of these tremendous increases in Government spending, the treasury ran a heavy overall deficit, reaching CFAF 20.4 billion in 1974 or more than triple the 1973 level.

There was an institutional factor which also contributed to the current fiscal crisis and which has not been known to outside observers: the monetary and fiscal arrangement within the UDEAC grouping. Under the UDEAC rule, each Government of the member countries is allowed to borrow from the banking system under an annual credit ceiling; the ceiling of the current year is fixed as equal to 20% of Government revenues of the previous year. For example, the 1974 oil boom boosted the Congo's budget revenues to CFAF 40 billion; this implied a ceiling of CFAF 8 billion for 1975. Table 1-7 shows that is 1975, domestic borrowing by the Government to finance its deficit rose to CFAF 7.4 billion or almost 93% of that

TABLE I-7

FISCAL PERFORMANCE 1970 - 1980
(In Millions of CFAF)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979 Budget	1980 Est. 1/
Current Revenues	16,687	17,902	18,927	22,128	40,068	44.278	47,793	50,421	51,700	55,412	69,800
of which, oil	---	---	250	1,238	16,716	13,759	11,604	14,137	12,846	13,491	17,400
Current Expenditures	16,214	17,826	20,466	22,873	39,340	46,603	48,497	57,484	52,059	55,410	69,800
of which, wages	9,811	10,147	11,033	12,401	14,110	20,070	23,007	25,170	29,663	---	35,700
Subsidies and transfer	2,864	3,070	3,834	3,707	9,295	8,343	9,831	12,348	14,268	---	13,775
of which, to Public Enterprises	---	---	---	1,603	6,447	5,125	6,031	6,476	---	---	---
Current Surplus (+) or Deficit (-)	+473	+76	-1,539	-745	+728	-2,325	-704	-7,063	-359	+2	---
Investment Expenditures	1,001	2,093	2,495	3,445	4,119	18,194	8,454	2,468	3,000	10,180	16,420
Other Accounts (net)	-574	-464	-22	-166	522	126	608	-762	---	---	---
Overall Deficits (-)	-1,102	-2,481	-4,057	-4,356	-5,869	-20,393	-8,550	-10,293	-3,359	-10,178	-16,420
Financing by borrowing	-635	-563	-342	242	2,587	1,949	-2,758	-1,459	-1,210	6,531	11,500
Domestic Credit	387	324	2,834	1,272	-327	7,344	2,252	5,677	-3,536	1,782	4,920
Arrears	1,350	2,720	1,565	2,842	3,809	11,100	9,056	6,075	8,105	1,865	

1/Including; receipts and payments earmarked to the SYBETRA account in Brussels which are not recorded in the Treasury

SOURCE: Ministry of Finance; IBRD; Fonds de Finances, 1980

year's ceiling. The implication here is that high revenues of one year will automatically increase the Government's capacity to borrow in the following year.

In addition to domestic borrowing the Government has resorted to foreign borrowing to finance its growing deficit.

The 1975-77 budget crisis forced the postponement of the Three-Year development plan; as a result, the budget picture improved substantially. The revised 1978 budget showed a deficit of only CFAF 3.4 billion as compared to CFAF 20.4 billion in 1975 and CFAF 10.2 billion in 1977.

The improvement, however, seemed to be short lived; as oil production increased again in 1979-80, the overall budget deficit was estimated again to reach over CFAF 10 billion in 1979 and projected to reach CFAF 16.4 billion in 1980. The same phenomenon of "revenue feeding expenditures" is once more being repeated.

F. International Trade and Finance

In recent years the Congolese foreign trade and finance has also been influenced by the mining sector.

1. International Trade

a. Exports

On the trade side, prior to potash and oil production, exports of forestry products, mainly logs, had been the most important source of foreign exchange earning, accounting for 40% of total exports in 1970. Following the exploitation of potash mining in 1969, potash became an increasingly important export, and in 1973 reached CFAF 3.2 billion, constituting 11.4% of total exports. However, after reaching a peak of CFAF 6

billion in 1976, potash exports ceased totally as the mine was closed due to flooding.*

Beginning with oil production in 1972, crude oil has been the single major source of exports reaching CFAF 38.5 billion in 1974 (2.4 million metric tons), and accounting for 62% of total exports. Due to technical and geological difficulties, however, oil exports declined to nearly CFAF 28 billion and CFAF 31 billion in 1975 and 1976, respectively, or by 28 and 19%. Thanks to price rises and some production increases, oil export recovered in 1978. Oil production reached 2.7 million tons in 1979 and is expected to reach 2.8 million tons in 1980.

During the past two years the average oil price received by the Congo increased from $12.83 per barrel (January 1979) to $32 per barrel (June 1980), boosting oil export receipts estimated at CFAF 70.6 billion ($312 million) for 1979 and CFAF 117 billion ($518 million) for 1980, or tripling the 1974 receipts.

Agricultural exports, which consist mainly of coffee, cacao, sugar, palm kernels and tobacco, accounted for only 12% of total exports in 1970. This share declined to 6% in 1974 and further to about 5% during the following years.

Given the fact that agriculture is the main source of employment for almost half of the population, and the fact that agricultural exports represent the main source of monetary income to the rural area, it is clear that agriculture's share of the nation's income has deteriorated drastically in recent years.

*An American firm is currently negotiating with the Government for the reexploitation of the mine.

TABLE I-8

COMMODITY EXPORTS 1970 - 1980[1/]

(In Millions of CFAF)

	1970	1974	1975	1976	1979 (Estimated)	1980 (Projected)
1. Agricultural Products	1,505	3,897	2,962	2,941	5,465	7,675
of which, Coffee	(156)	(164)	(165)	(638)	(2,948)	(6,000)
Cocoa	(282)	(714)	(584)	(607)	(967)	
Sugar	(710)	(2,628)	(1,323)	(1,106)	(850)	(900)
2. Mineral Products	855	42,881	33,700	37,584	70,600	117,000
of which, Crude Oil	(60.5)	(38,499)	(27,904)	(31,003)	(70,480)	(117,000)
Potassium	(765.0)	(4,238)	(5,139)	(5,917)	....	....
3. Forestry Products	5,126	11,854	3,215	2,815	15,000	18,000
4. Other Products	5,065	3,905	5,391	6,778	4,970	2,500
Total	12,551	62,537	45,304	50,154	96,035	145,175

1/Data for 1970-76 are on the basis of customs records; as such they are somewhat lower than export figures in the Balance of Payments

SOURCES: Central Bank, IMF and mission estimates

b. Imports

Oil revenues have generated large fiscal expenditures as well as private income and employment which were translated into sharp rise in demand for imports in recent years; total imports reached CFAF 57 billion in 1974; though increased at a lower rate during 1975-1978, imports still averaged around CFAF 69 billion per year.

The 1979-80 boom induced another large jump in imports, estimated at CFAF 91 billion and CFAF 146 billion for 1979 and 1980, respectively. If the 1980 estimated imports actually materialize, the import bill would be more than double that of 1974.

Table 1-9 shows that capital goods and consumer items represent the most important components of imports, accounting for 53% and 24%, respectively, in 1970. The share of capital imports declined to 44% in 1976 while that of consumer goods declined slightly to 23%. Imports of capital goods declined somewhat in 1979 and 1980, to 42% and 44%, while those of consumer goods remained at around 23%. Raw materials which were only 15% of total import in 1970 increased to 23% in 1976, then declined gradually to 14% in 1980.

2. International Finance

a. The Balance of Payments

The sharp rise in imports was only partially a result of the growing mining sector. In addition, mining induced large increases in the Congolese purchase of foreign technical and other services related to oil and its exploration. All together, these developments add heavily to the balance of payments pressure.

TABLE I-9

COMMODITY IMPORTS 1970 - 1980
(In Millions of CFAF)

	1970	1974	1975	1976	1979 (Estimated)	1980 (Projected)
1. Consumer Items	6,980	10,188	13,470	15,083	17,500	21,400
of which, Food, Beverages and Tobacco	(2,909)	(4,441)	(5,007)	(5,585)	(6,400)	(---)
2. Petroleum Products	2,386	8,866	7,985	10,861	13,800	22,800
3. Intermediate Goods	4,315	10,098	15,439	10,648	12,400	13,200
4. Capital Goods	15,363	27,423	32,139	28,582	31,300	37,600
Total	29,043	56,575	69,033	65,175	75,000	95,000

SOURCES: Central Bank, IBRD, and mission estimates

TABLE I-10

BALANCE OF PAYMENTS 1970 - 1980
(In Billions of CFAF)

	1970	1974	1975	1976	1977	1978	1979 (Estimated)	1980 (Projected)
Exports, f.o.b.	17.1	63.5	49.3	52.9	61.5	69.5	96.6	145.9
Imports, c.i.f.	29.2	57.0	69.4	69.4	67.8	74.7	91.0	115.0
Trade Balance Surplus(+) or Deficit(-)	-12.1	+6.5	-19.9	-16.5	-6.3	-5.2	+5.6	+30.9
Services (net)	-7.1	-20.6	-32.5	-40.4	-44.2	-42.0	-54.5	-70.5
Private Unrequited Transfers (net)	-1.4	-12.3	-5.3	-5.5	-6.7	-0.9	-1.0	-1.0
Current Account Balance Deficit	-20.6	-26.4	-57.7	-62.4	-57.2	-48.1	-47.9	-40.6
Public Unrequited Transfers (net)	2.5	4.5	7.4	8.8	5.4	8.7	9.0	10.0
Capital Movement	17.3	30.4	44.8	39.9	38.1	33.3	---	---
Errors and Omissions	1.8	-6.1	1.7	8.9	3.9	0.2	---	---
Overall Balance Surplus (+) or Deficit (-)	+1.0	+2.4	-3.8	-4.8	-9.8	-5.9	---	---

SOURCES: Central Bank, IMF, and mission estimates

Thanks to the increase in oil receipts and a large inflow of foreign capital in 1974 (CFAF 30 billion) the overall balance of payments recorded a surplus of CFAF 2.4 billion in that year in spite of the large rise in imports. In the years following 1974, however, the balance of payments situation deteriorated drastically to an overall deficit averaging CFAF 4.3 billion during 1975 and 1976. In 1977 the BOP deficit reached a record high of nearly CFAF 10 billion, or more than doubled the 1976 level. Beginning with 1978, as oil export recovered, balance of payments improved and the 1978 deficit was reduced to CFAF 6 billion or by 40%.

Since 1975, there have been two distinct developments: the fast growing services payment item in the balance of payments and the steady decline in the inflow of foreign capital. Services payments, which increased from CFAF 7 billion in 1970 to CFAF 21 billion in 1974 and to over CFAF 54 billion in 1979 have been the dominant factor responsible for the outcome of the balance of payments.

According to the 1980 preliminary estimate, services payment would reach nearly CFAF 70 billion, or amounting to over 60% of the oil receipts, leaving not much left to finance the current year's import program estimated at CFAF 95 billion.

b. The Debt Burden

The current balance of payments situation has exacerbated the country's external debts burden, which has resulted mainly from foreign borrowing by the Government to finance large capital projects throughout the 70's, and especially since the 1974 oil boom. By the end of 1978 total external public debts stood at CFAF 152 billion as compared to CFAF 39 billion in 1970, or representing nearly a fourfold increase (Appendix I-3).

On a per capita basis external debts in 1978 reached CFAF 106,443 (U.S. $471) or nearly equal to the size of per capita income. The large amount of debts implies a heavy burden of debt servicing estimated to reach 20% of total export in 1978, a burden which appears to be very difficult for the Congolese economy to sustain. In that same year only 60% of debt services was finally financed.

G. The Other Side of Oil

In surveying the condition of the Congolese economy one factor stands out clearly in the economic development of the recent past and more so in the years to come: the dominant role of oil.

By the summer of 1980, almost all economic indicators in the Congo appeared to be following the leading oil indicator, from Government consumption to private consumption, from public programs to private investments, from money supply to prices, from exports to services and to balance of payments. In public and private discussions the subject seems to be centered around the bright prospect of the newly discovered Likouala oil field; in fact, oil production at the site began earlier than expected (Spring. 1980). Thanks to an oil price rise, total oil exports are expected to reach CFAF 117 billion this year compared to CFAF 38 billion received in the 1974 boom, or more than triple.

In spite of all these initial beneficial impacts, it remains to be seen whether from a long run economic development viewpoint, the discovery of oil has been as great a blessing to the Congolese as it appears to be. Several factors deserve elaboration:

1. The Limited Prospect of Production

Oil reserves are not only limited but geological conditions severely restrict oil output. For example, it is estimated that

there are 500 million tons of oil reserves at Emeraude, the first oil field, but only 15 million tons could be extracted during its lifetime. Most current estimates point to quick depletion of the oil fields by the end of this decade. The decline may take place as early as in the second half of the 1980's.

When oil no longer plays a leading role, the economic contraction which will certainly follow would be far reaching indeed. The inevitable downward adjustment of everything from Government payrolls to foodstuff imports would then be extremely painful. The economic crisis of 1977 following the decline of crude oil receipts of the two preceeding years may be taken as an illustration of the effect of decline in oil.

2. Some Indicators on the Effect of Oil

In the meantime, Table I-11 describes "the other side of oil" shows that oil has dramatically changed the structure of the economy as well as the pattern of consumption in a way which could not be permanently supported by the Congolese economy. Though indicators in the table are only estimates and all changes in the economy cannot be attributed to oil, the magnitude of economic changes during the past five years has certainly been dictated by the leading oil sector:

a. As a result of the oil-related fast expansion of income and employment generated in the cities, the rural exodus has been greatly intensified, to an annual migration rate of 2.9% during 1977-80 as compared to 1.3% during 1974-76. It is estimated that the current rate is between 3 to 4% per annum. Furthermore, the migrants are young men, leaving the old and women behind in the rural areas (average age: 40 years old).

Table I-11

THE OTHER SIDE OF OIL: SOME ROUGH INDICATORS

	1973	1976	1980	Average Annual Rate of Change (%) 1978-76	76-80
Draining Agricultural Labor Force:					
Agricultural Population (Thousand)	756	719	647 1/	-1.6	-2.5
Changing Consumption Pattern:					
Consumer Goods Imports (In Million CFAF)	8,187	15,083		28	
of which, Foods and Beverages	3,063	5,585		27	
Gasoline Imports (In million CFAF)	13	118		269	
Fiscal Pressure:					
Current Expenditures	22,873	48,497	69,800 2/	37	11
Investment Expenditures	3,445	8,454	16,420 2/	48	24
Employment in Public Sector (Thousand	44	70 3/		15	
Inflationary Pressure:					
General Price Index, City (1964=100)	145	201		13	
of which, Food Stuffs	148	199		11	
Manioc (foufou) (CFAF/kg)	55	133 3/		35	
Maize	125	179 3/		11	
Meat (Smoked)	694	2,000 3/		47	
Balance of Payments Pressure:					
Oil Exports (In Billion CFAF)	10	31	117 4/	70	69
Total Imports (In billion CFAF)	37	69	115 4/	29	17
Services (Net)	12	40	71 4/	78	19
Expectation: Rising Fast!					

1/ Estimated
2/ Budgeted
3/ 1977 Data
4/ Projected

Source: Related tables in Part I and mission estimates.

b. The Congolese traditional consumption has quickly changed in the cities from manioc toward subsidized, imported bread and rice, from dried fish toward subsidized meat, calling for an increase in imports of foodstuffs averaging 27%, and of gasoline, 269% per annum during 1973-76.

c. As has already been discussed, oil revenues have also exerted heavy pressure on Government spending. During the same period, current expenditures increased 37% per annum, while capital expenditures moved faster at an annual rate of 48%.

d. The high level of Government spending exerted inflationary pressure at the time when agriculture failed to produce more food to support the fast rising urban population. For example, the price of manioc increased at an annual rate of 35% and meat at a rate of 47% from 1973-76.

e. Analysis of the balance of payments in a previous section shows that though receipts from oil exports have increased dramatically, expenditures by the oil companies on exploration together with profits and dividends paid abroad by petroleum companies operating in the Congo have been mostly responsible for a dramatic rise in outward payments for services. For example, according to estimates of the Central Bank, oil exports in 1980 would reach CFAF 117 billion. Nevertheless, service payments would also reach CFAF 71 billion, or 61% of exports receipts.

f. Last but not least, the growing income and consumption induces rising expectations, which will inevitably render the call for austerity measures in the future more and more difficult.

It seems prudent, therefore, to prepare the economy and the population for the future by undertaking drastic measures to redress the situation. These measures call for immediate downward adjustments of both public as well as private consumption (and investment) and the revitalization of agriculture.

H. Planning for Future Development: Toward Agriculture

Many of the current fiscal and financial problems in the Congo have tneir roots in the development policy of the country since the country embarked upon the socialist path in the late sixties. As already analysed in this section, Government economic policies during the past two decades have had the effect of moving the country decidely away from agriculture and into the expansion of the modern sector. Since 1977, there has been some change in the direction of the Government's development strategy and more attention is now being given to agriculture.

In 1980 the Government launched a "Supplementary Development Program" to follow the Two-Year Action Program (1978-79) with a planned investment of CFAF 72 billion (U.S. $318 million). In contrast to all previous programs and plans, in the current programs the Government has accorded priority to the agricultural sector and allocated to it CFAF 9.4 billion or 13% of total investment (Table I-12). The current program calls for "dynamizing" the small holder sectors in order to restore its productivity, especially in food productions. The changing national priority in development policies reflects the Government's grave concern about the continued deterioration of structural disequilibrium and depression in agriculture. It is expected that agriculture's share of total investment in the forthcoming Five-Year Plan (1982-86) may be even higher.

TABLE I-12

PLANNING FOR DEVELOPMENT, 1978-80

	Two-Year Action Program 1978-1979		Complementary Program 1980	
	CFAF billions	Percent	CFAF billions	Percent
Agriculture, Forestry & Fishing	18.4	14.0	9.4	13.0
Industry and Mining	26.4	20.0	18.5	25.8
Economic Infrastructure	57.4	44.0	26.0	36.0
Social Infrastructure	5.8	5.0	8.7	12.1
Services	18.6	14.0		
Others	3.9	3.0	9.4	13.1
Total	130.5	100.0	72.0	100.0
Financing by:				
Domestic resources	49.0	37.0	27.0	38.0
External resources	82.0	63.0	45.0	62.0

Source: Programme Biennal d'Action Governmentale 1978-1979; Programme Complémentaire, 1980.

It remains to be seen, however, whether the investment allocated to agriculture actually materializes or ends up being much smaller than planned, as in previous years. The target for the 1980 plan calls for sharp increases in the production of corn (16,900 tons), palm oil (3,052 tons), cacao (2,900 tons), rice (9,248 tons), and ground nuts (3,800 tons). The Government intends to increase agricultural productivity by pushing the pre-cooperatives program to regroup dispersed farmers around the country, increasing extension services, increasing credit facilities, and improving rural roads.

PART II
THE AGRICULTURAL SECTOR

PART II
THE AGRICULTURAL SECTOR

I. AGRICULTURE IN THE CONGOLESE ECONOMY

A. A Shrinking Sector

From the economic and financial analysis in the previous section, one conclusion may be drawn: agriculture is shrinking in the Congolese economy. Table II-1 shows some rough indicators of a quickly declining agricultural sector.

1. Population

Since independence, the Congolese population has been growing at an annual rate of between 2 and 2.3%. The rural population, on the other hand, while increasing minimally until 1970, has been declining at an ever increasing rate since then. Thus, it had declined to an estimated 647,000 in 1980 from a total of 767,000 in 1960. Whereas the rural population constituted 79.2% of the total in 1960, it amounted to only 43% in 1980. The decline in the rural population reflects an increasingly important trend in migration toward urban areas. Rural/urban migration has long been a feature of Congolese life, as indicated earlier in the historical introduction, but the movement accelerated between 1955 and 1965, when urban population increased at rates between 7.2 and 7.8%. Migration appears to have slowed between 1965 and 1970, urban growth averaging only 6% annually. In 1970, however, the annual rate jumped to 8.6% and has remained high ever since.

The rate of migration in this period can be explained in terms of the expansion of the public sector and the maintenance of socialist full employment policy. The Government greatly increased its budget for education in the city schools while

Table II-1

AGRICULTURE: INDICATORS OF A SHRINKING SECTOR

	1960	1970	1974	1976	1977	1978	1979	1980
Agricultural Population								
Number (thousand)	767	797	756	737	719	698	674	647
Average Annual Growth Rate (%)	0.4	-1.3	-1.3	-2.4	-2.9	-3.4	-4.0	
As Percent of Total Population	79	67	58	54	52	49	46	43
Agricultural Production[1]								
Value (in billion of CFAF)	8.0[6]	12.1	15.0	19.4	22.9	25.6	--	--
As Percent of Gross Domestic Product	23	16[2]	11[3]	11	13	13[4]	--[4]	--[4]
As a Source of Employment to Labor Force (%)	60	60[2]	41[3]	37	37	37[4]	36[4]	36[4]
Agricultural Exports[5]								
Value (in million of CFAF)	851[6]	1505	2897	2941	3540	5220	5465[7]	7700[8]
As Percent of Total Exports	8[6]	12	6	6	6	8	6	5
Agricultural Income								
Per Capita Income (in thousand of CFAF)	11	15	20	26	32	37	43	--
As Percent of National Per Capita Income	27	25	20	22	26	29	26	--
Agricultural Prices								
Cocoa Producers Price (CFAF per Kg)	--	--	100	100	130	180	200	--
As Percent of Export Price	--	--	34	30	27	24	29	--
Coffee Producers Price	--	--	60	70	90	120	150	--
As Percent of Coffee Export Price	--	--	19	19	10	20	27	--
Financial Inflow to Agriculture								
Government Investment in Agriculture[1] (in million CFAF)	--	667[9]	781	595	142	9009[10]	9009[10]	9009[11]
As Percent of Public Investment Budget	--	7[9]	11	7	2	14	14	13
Agricultural Banking Credit[1]	--	188	498	942	692	787	1293	--
As Percent of Total Development Credit	--	2	3	5	3	4	6	--

[1] Including forestry; separate data for forestry are not available. Investment shown here is actual which is different from that of Table I-12.

[2] Mid-1960's figure (average)

[3] 1973 figure

[4] Estimated rate of annual change: -1.1% (For 1977-1980)

[5] Excluding forestry

[6] 1963 figures

[6] 1963 figures

[7] Estimated

[8] Projected

[9] 1968 planned investment

[10] Average of planned investment for two-year Program

[11] Planned investment

Source: Mission Estimates; Related Tables in Part I; Central Bank, and BNDC

guaranteeing employment for high school graduates. As a result, young men left their villages for urban areas in search of employment and educational opportunities. Beginning with the 1974 oil boom, the modern sector in the cities became even more enlarged, offering more service related opportunities for young people. The rate of decline in the rural population was estimated at 2.4% between 1976-1977, increasing steadily to reach an estimated 4% in 1980.

The Government is concerned that as the mining sector continues to expand in the years ahead, the rate of migration might become more and more serious. To a casual observer who travels to Brazzaville and vicinity, this movement is clearly visible. While in Brazzaville, one may find plenty of young men driving taxis, serving in hotels, and restaurants; a short trip beyond the city limit, about 20 miles, one could hardly find one single young man cultivating the land. The movement away from agriculture is explained elsewhere in this report (see Part I).

2. Production

As rural population declines, so does agricultural production. The most important part of the migrants were young persons, leaving behind a labor force averaging 40 years of age and comprising mainly women to engage in cultivating the land. Agricultural production, which accounted for 23% of GDP in 1963, declined to 16% in 1970 and to less than 13% in 1980.

3. Source of Employment

In terms of employment sources for the labor force, agriculture, which had provided jobs for 60% of the labor force during the 1960's, declined to about 41% in 1974, and to about 36% in 1979-80.

4. Source of exports

In the same two years, agricultural exports only amounted to between 5 and 6% of total exports compared to 8% in 1960 and 12% in 1970. The marginal contribution of agriculture to exports explains the widening gap of income and welfare between the rural and the urban population.

B. The Socialist Option

1. Agricultural Transformation

The agricultural sector has undergone a profound transformation since the late sixties. Parallel with the emergence and growth of public and semi-public enterprise in the manufacturing and transport sectors, the growth of Government intervention in agriculture has gone unchecked. By 1980, the Government had taken over the marketing of all cash crops such as cocoa, coffee, maize, tobacco, and all agro-industries such as wood processing, palm oil processing, and sugar refinery.

On the production front, some 25 state farms of all sizes were established, covering nearly all agricultural production from the growing of fruit trees to the raising of cattle and chickens. The state also has a monopoly in forestry and ocean fishing. Table II.2 shows the locations, activities, and production of the 25 major state farms and ranches. The marketing of the cash crops is in the hands of the Office du Cacao et du Cafe (O.C.C.); marketing of tne food crops is the responsibility of the Office des Cultures Vivieres (O.C.V.); and tobacco of the Office Congolais du Tabac (O.C.T.).

The three marketing offices were established in 1978 as successors to the Office National de Commericalization des Produits Agricales (O.N.C.P.A.). These three institutions will

Table II-2

MAJOR STATE FARMS: LOCATIONS, PRODUCTS AND PRODUCTION TARGETS, 1980

Farm or Ranch	Locations	Products	Production Target (1980)
LOUDIMA FRUIT STATION	Loudima	Fruits	3,169 tons
		Fruit Plants	20,000 plants
SOCOTON	Nkenke (Bouenza)	Maize	1,660 tons
		Paddy	1,440 tons
		Cotton	260 tons
MAKOUA MANIOC FARM	Madingou (Bouenza)	Manioc	Exploration of 100 ha.
MANTSOUMBA MANIOC FARM		Manioc	822 tons
		Maize	75 tons
		Paddy	30 tons
SONEL	Gamaba	Pigs	957 heads
	Kombe	Pigs	1,510 heads
	U.A.B.	Pork	3,000 tons
	Loubomo	Pork	100 tons
	Massangui	Cattle	- -
	Louamba	Cattle	- -
F.E.D. RANCH	Louboulou (Bouenza)	Cattle	350 heads
	Louila (Pool)	Beef	90 tons
R.N.P.C.	Mokeko (Ouesso)	Palm oils	1,125 tons
	Kunda	Palm oils	318 tons
	Sibiti	Palm oils	79 tons
	Komono	Palm oils	80 tons
DIHESSE RANCH or O.R.D.	Loudima	Beef	- -
POULTRY FARM	Pointe Noire	Chickens, eggs	Not yet established
OWANDO FARM	Cuvette	Pork	Not yet established
		Chickens	Not yet established
SONAVI (With Cuba)	Mossendjo (Niari)	Chickens	193,772
	Loubomo	Chicks	109,115
	Loandjili (kouilou)	Eggs	207,850
	Mafouta (Pool)	-	
	Ouesso		
MILK FARM	Gamaba (Pool)	Milk	63,000 liters

Source: Ministry of Rural Economy

be dealt with in a later section on marketing. Appendix II-10 shows a financial accounting of the state farms and enterprises. All of them, with the exception of the SOCOTON, were in deficit, requiring financial subsidies from the state budget. The item "transfers to public enterprises" in the Central Government budget shows an increase from CFAF 1.6 billion in 1973 to CFAF 6.5 billion in 1977, or a threefold increase.

The result of the greatly enlarged state sector in agriculture is the declining role of the farmers in the national economy concentrating mainly on the growing of food crops for their own consumption. Cooperatives and pre-cooperatives are the socialist institutions by means of which the Government has endeavored to transform the peasant sector in order to minimize the adverse impacts on agricultural development of the highly dispersed population (see Part III, Section III on Cooperatives).

2. Government Institutions Affecting Agriculture

At present, Goverment policy toward agriculture is formulated and implemented by the Ministry of Rural Economy. Agronomic research is, however, the responsibility of the Ministry of Youth and Culture and Science, while agricultural training is that of the Ministry of National Education.

The Ministry of Rural Economy (MER) comprises four main departments (see Appendix II-1):

- Agriculture and Husbandry (DAE);
- Water and Forestry (DEF);
- Research and Planning (DEP); and
- Administration and Financing.(DAF)

The MER is also the supervisor of the four Government agricultural institutions:

- The Food Crops Marketing Office (Office des Cultures Vivrieres, or the OCV) (see Appendix II-2);

- The Cocoa and Coffee Office (Office du Cacao et du Cafe or the OCC) (see Appendix II-3);

- The Congolese Tobacco Office (Office Congolais des Tabacs, or the OCT); and

- The Agriculture and Forestry Stabilization Fund (Caisse de Stabilisation des Prix de Produits Agricoles et Forestiers, or the CSPAF).

The OCV and OCC were officially established in 1979 to take over the operation of the former Office National Pour la Commercialisation des Produits Agricoles (ONCPA). According to Government sources, the reason for the creation of these offices was the need to bypass its own bureaucracy in implementing agricultural policy. The OCV is entrusted with the function of marketing all food crops. At present it is concerned mainly with the marketing of maize, ground nuts and rice, leaving other subsistance crops such as manioc, yams, and plaintain bananas to private traders. The OCV is also involved in the distribution to farmers of such items as seeds and fertilizers. The OCC and OCT have overall responsibility in marketing and increasing production of the major cash crops: coffee, cocoa, and tobacco.

The Agriculture and Forestry Stabilization Fund (CSPAF) was created in 1979 to undertake the stabilization function of agricultural producers' prices; it is the successor of the former Caisse de Soutien a la Production Rurale.

The operations of the OCV and OCT will be discussed in some detail later in this report.

C. Land Utilization

According to FAO's 1972/73 agricultural census and its 1977 analysis of this census, from which this section derives, there are around 200,000 hectares or 2% of total cultivable land which are under cultivation. Of these, 30% is in monoculture and 70% is under mixed cultivation.

Most of the land in monoculture (62.7%) is for the cultivation of manioc. The amount of area in monoculture varies considerably according to region. In Likouala, for example, only 14.1% of the farmland is in monoculture, while in the Plateaux, it is 36%. In the Sangha region, cocoa is the most common monoculture, while in Lekoumou one-fourth of the area is devoted to rice. On the average, there are 3.2 crops which are grown in association with each other. Again there is regional variation. For example, the average is 2.9 for Sangha and 3.8 for the Kekoumou.

On the national level, the distribution of land for various crops is as follows:

Tubers	43.9%
Other Food Crops	22.7%
Cereals	11.7%
Oil Crops	7.7%
Others	14.0%

Among the tubers, manioc is clearly the dominant crop; among other food crops it is plancains; in the cereal group, it is maize and among oil crops, peanuts.

On the regional level, land utilization patterns vary greatly.

The most important agricultural region is the Pool. Twenty percent of all the land cutlivated in the Congo is found here as is 22.5% of

all of the farms. The least important region agriculturally is Likouala with only 3.9% of the cultivated land and 3.2% of the farms. The differences between the two regions are great. Pool has five times the amount of land under cultivation and seven times the number of farms as Likouala.

The percentage distribution of land for various crops in each of the regions is shown in Table II-3. According to the FAO census, the characteristics of each region are summarized as follows:*

- Kouilou - (9% of the total number of farms, 9% of the total developed land area). As in many other regions, manioc is the dominant crop representing about 50% of the area cultivated. It is also the second largest producer of pimento in the country (18%) with about 3.1% of the land area devoted to that crop. It is also the most important sweet banana producing region, accounting for 27% of the national total or 4.2% of the developed area.

- Niari - (16.2% of the total number of farms, 17.3% of the developed land area). Niari is the most important maize producing area in the country with 20% of the national crop. Taro and another root crop known as Macabo represent 37% of the national total. Other major crops of the area are peanuts (25% of the national production), plantains (20%), and beans (47%). Given the number of farms and the area under cultivation, the Niari is the second most important agricultural region in the country.

- Lekoumou - (7.3% of the total number of farms, 8.7% of the developed land area). Kekoumou has about the same area under cultivation as Kouflou. Manioc is again the principal crop, but the proportion of land devoted to yams is the highest in the country. This is also true for gourd seeds, other food crops and rice, which make this region the second most productive in the country.

- Bouenza - (12.6% of the total number of farms, 13.6% of the developed land area). The leading producer of tuber crops other than manioc, such as white potatoes (25% of the national total) and peas (54% of the national total). Although manioc is the dominant crop, maize covers a higher proportion of land (14.8%) than in any other region. A higher proportion of peanuts is produced in this area than anywhere else in the Congo.

*FAO, Recensement, pp. 162-164.

TABLE II-3

LAND UTILIZATION BY REGIONS (IN PERCENTAGE)

CROPS	KOUILOU	NIARI	LEKOUMOU	BOUENZA	POOL	PLATEAUX	CUVETTE	SANGHA	LIKOUALA	CONGO
Maize	10.4	12.5	11.1	14.8	9.7	9.2	7.6	9.0	6.1	10.6
Rice	-	0.9	2.4	0.9	2.0	-	1.4	-	-	1.1
Other Cereals	0.0	0.0	-	0.0	0.0	-	0.0	0.1	-	0.0
Yams	7.4	9.1	12.2	8.6	9.5	4.6	8.1	4.1	2.0	8.1
Taro and Macabo	5.3	4.9	2.0	0.2	0.8	0.3	1.9	2.0	5.2	2.3
Manioc (less than 1 year old)	17.5	15.1	13.0	14.2	18.4	18.9	16.4	12.6	12.3	15.9
Manioc (more than 1 year old)	17.1	15.7	11.4	14.0	19.0	19.8	14.8	12.2	13.5	15.9
Other Tubers	3.2	1.2	2.1	3.1	1.0	1.7	1.4	0.3	1.0	1.7
Peanuts	2.7	7.4	6.1	8.9	4.8	5.0	2.1	1.6	0.2	5.1
Gourd Seeds	1.5	2.3	4.1	2.5	3.8	2.0	1.5	0.2	1.0	2.4
Other Oil Crops	-	0.0	0.4	0.3	0.0	-	1.1	-	-	0.2
Plantains	7.9	9.8	8.1	6.7	3.8	6.3	9.7	22.9	18.5	8.4
Beans	1.7	3.4	0.7	2.1	0.5	0.6	-	-	0.0	1.2
Peas	0.1	1.7	-	5.0	0.7	0.2	0.0	-		1.1
Okra	0.1	0.0	0.0	0.2	0.9	0.0	0.0	0.5		0.3
Pimento	3.1	1.3	1.9	0.5	2.2	0.2	0.5	3.1	1.7	1.5
Tomatoes	1.0	0.4	0.9	0.6	1.5	0.3	0.1	0.1	0.0	0.7
Sugar Cane	2.0	2.4	2.8	0.5	0.4	3.1	5.4	2.7	7.7	2.3
Other Food Crops	8.0	7.3	10.1	5.4	7.4	8.9	7.9	3.6	4.4	7.2
Pineapple	4.6	1.4	4.4	7.2	8.3	6.8	7.6	0.9	6.2	5.5
Oil Palm	0.1	0.1	0.8	0.5	1.8	1.1	2.2	0.3	6.5	1.2
Avacatos	0.4	0.3	0.2	0.3	0.4	0.3	0.4	0.9	1.6	0.4
Sapoutier	0.5	0.4	0.8	0.6	0.6	0.7	1.1	0.2	1.9	0.7
Sweet Bananas	4.2	0.6	0.7	1.0	1.7	1.5	1.6	0.4	1.3	1.4
Cocoa	0.1	0.1	0.0	-	-	-	1.0	20.2	3.9	1.6
Coffee	0.1	0.3	1.7	0.6	0.0	2.3	2.5	-	0.9	0.8
Tobacco	0.1	0.9	1.3	0.2	0.9	5.2	2.8	1.0	0.0	1.3
Other Crops	0.8	0.5	0.9	1.1	0.7	1.0	0.9	0.7	3.8	0.9
TOTAL...	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Recensement Agricole 1972/73; FAO.

- Pool - (24.2% of the total number of farms, 21.3% of the developed land area). Pool is the most important agricultural region in the Congo. It is not surprising that of the 28 crops listed, the Pool area is first in production of 13 of them. Among them rice is 41% of the national harvest, okra 64%, tomatoes 48%, and pineapple 32%. The proportion of land devoted to the last three crops is the highest in the country.

- Plateaux - (10.5% of the total number of farms, 9% of the developed land area). The amount of land developed here is the same as in Kouilou. The area cultivated, however, is 10.5% as opposed to only 8.6% for Kouilou. This region is characterized by a larger proportion of manioc than elsewhere. It is the same for tobacco which makes this region the largest producer of this crop, with 35% of the national total.

- Cuvette - (11.7% of the total number of farms; 10.9% of the developed area). Cash crops are important in this region. One-fourth of the area cultivated in sugar cane and one-third of the area in coffee are found here making the Cuvette the most important producer of these crops. The actual land area devoted to tnese crops is small: 5.4% of all of the land area developed is in sugar cane, 2.5% for coffee.

- Sangha - (5% of the total number of farms, 6.4% of the developed land area). This is the only region where three crops, manioc, plantain, and cocoa cover 2/3 of the land area developed. Although cocoa is only third in importance, the region is the largest producer of this crop, 81.7% of the national harvest). Cocoa is the only crop in the Congo that is so concentrated in one area. Plaintains are more important here than in the other regions.

- Likouala - (3.5% of the total number of farms, 3.9% of the developed land area). This is the least populated region of the country and shares with Lekoumou the privilege of not being first in the production of any crop. The percentage of area planted in sugar cane, oil palm, and avocado is among the highest in the country, but in production those crops would be ranked third, second, and fourth, respectively. In contrast, with only 0.9% of the developed area in cacao it is the second largest producer in the country.

D. Agriculture Research

Basic agronomic research has not been a priority in the Congo. Indeed this important input to rural development could be said to have been abandoned entirely from 1964 to 1975. Responsibility for all scientific research in the Congo falls under a combined Ministry of Culture, Sports, and Science. This unusual arrangement would seem

to be a reflection of the Government's previous lack of interest in the subject. In 1975, working with the Ministry of Culture, Sports, and Science, the French Government began a program to assist the Congolese in reestablishing agricultural research. Activities have centered about the agronomic station in Loudima. This station, which served the large French farms during the colonial period, was abandoned in 1964. Initially research was aimed at assistance to the state farms, but in recent years a new emphasis has been placed on research that will be of help to the small farmer. Until the 1977-78 season, Loudima publications, what few there were, had an unprofessional quality to them. Since that season, however, there has been a marked improvement in the quality of work published. The 1977-78 report, which just became available this year, includes a number of studies that would appear to be of potential benefit to agriculture in the Congo and could, if properly disseminated, help the small farmer target group.

Starting with manioc, the country's staple crop, the Loudima laboratory has begun a program of selection for resistance to the most serious disease problems, cassava bacterial blight (Xanthomonas manihotis) and anthracnose (Glometella manihotis), in collaboration with the ORSTOM office in Brazzaville. In addition, work is being done to improve genetic resistance to mealy bug, another common problem of the small farmer. Improved germplasm from the International Institute for Tropical Agriculture in Ibadan, Nigeria, has been introduced for testing, although initial results seem disappointing. Of 14 disease resistant varieties introduced from Nigeria, only three proved to have any resistance to Congolese races of the pathogens. Another 1500 genotypes from Nigeria are being multiplied for further testing, and a collection of 83 Congolese land races has been made to help in the search for genetic disease resistance.

Other research includes a maize improvement program, again in collaboration with Ibadan. One of the problems of the maize program

is that farmers grow maize first to eat fresh as a vegetable, with use as an animal feed being a secondary consideration. Improved types that have been introduced such as ZM 76 have been found unsuitable for human consumption, in spite of higher yields, and, therefore, have encountered resistance by farmers.

Other programs at Loudima include a peanut improvement program that is looking for higher yielding alternatives to the Rouge du Congo types that were originally developed in the Congo and then reintroduced in the sixties. The station is also attempting the difficult task of simultaneously raising both oil and dry weight yields through selection. These two traits frequently have negative correlations with each other.

The 1977-78 report of activities at Loudima does not mention any research in the area of rice, but the FAO in their 1979 report states that work on both medium- and short-term varieties was being done at the station. The short season types introduced were Durado, Precose, and IRAT 10 (95 days to maturity). Medium types introduced were Moroberekan (140 days) and Ignape Catato.

Other activities listed in the 1977-78 report of activities at the station include a small scale mechanization program attempting to see if maintenance and cost problems can be overcome at the village level to improve cultural practices, and a very well done soil mineral deficiency study.

There is also a small soybean introduction and adaptation program that would appear to be somewhat misdirected. Soybeans do not do well in areas with high night time temperatures, friable, infertile soils, or low light intensities. All of these conditions exist in the Congo. Furthermore, soybean seed does not store well at high temperatures. Data from the Loudima station indicates that the best germination rates obtained for soybean seed, stored the required five months from one growing season to another without refrigeration,

is somewhat less than 50%. In the United States, varieties with germination rates of less than 95% are considered uneconomical.

Overall the research program looks sound. There has been some criticism from ORSTOM personnel that the germplasm collections for manioc and peanuts are not being done in a systematic manner. This can be attributed to dependence on local peasants for help in collection and a lack of biochemical assays in distinguishing types. Currently only phenotypic traits such as leaf shape, petiole and stem color, and tuber irregularities are used. Facilities for the more common biochemical tests (protein analysis, lipids, etc.) simply do not exist at this point.

The administration of the station is refreshingly simple. The Congolese director is a soils agriculturalist. He supervises five Congolese agriculturalists, each assigned to a different crop or technical area, and two French agronomists. Facilities include a small laboratory, five irrigated hectares to make up for the station's somewhat typically dry location and, soon, a cold storage area. Plans include opening additional testing centers in Odziba and other locations to obtain test results that take into consideration the variation in climate from one part of the country to another. French funding for the station is certain through 1981 and is likely to continue thereafter.

Unfortunately, these laudable efforts take place in a near vacuum. Information from the testing program is not disseminated to the small farmers and improved selections are not distributed. Published reports go unread by even such a likely audience as the director of the agronomy service and his assistants. The director seemed informed as to the scope of work being done at Loudima when questioned about its activities. Other officials at the Ministry of Rural Economy dismissed the work at Loudima as "marginal." Most of this lack of communication can be explained by the fact that agricultural research is not done within the Ministry of Rural

Economy. In conversations with workers from the Loudima station it appeared that contacts with the Ministry of Rural Economy were limited, and that ministry employees seemed uninterested in their work.

It might be noted that a program of extensive Manioc research was conducted at the state farm at Mantsoumba from 1972-74. This joint effort by what was then the Ministry of Agriculture and Animal Husbandry and the French Bureau pour le Developpement de la Production Agricole (BDPA) produced a technical report that in the most part centered around economic aspects of the state farm, such as man hours required, and the profitability of certain crops. Some very well arranged, purely agronomic studies on manioc and corn were also done. Although it is our understanding that BDPA is still active in the state farm sector, no further studies have been published. Again, there is no evidence that the results of this work were disseminated to small farmers. Emphasis was on industrial manioc and corn production methods, more suited to the state farms, which unfortunately have not been very productive.

Occasional agronomic research is done by one UNDP expert who has been in the country for eight years. He has worked mostly with peanuts and potatoes. Recently he has also started a soybean introduction program that has not been at all successful.

II. AGRONOMIC AND ENGINEERING ASPECTS

A. Climatic Resources

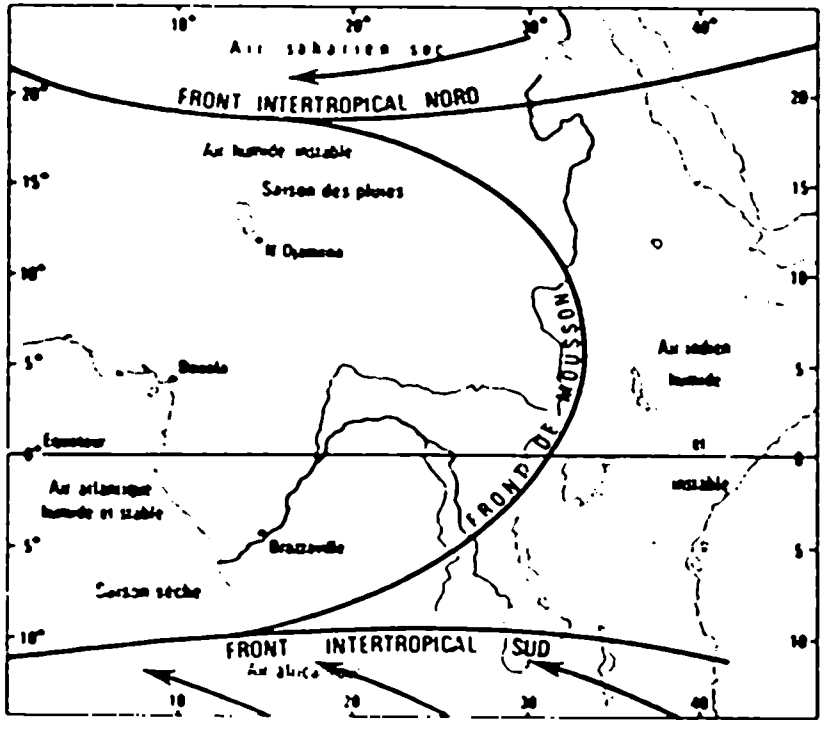
The People's Republic of the Congo has a forest type Guinean climate characterized by higher precipitation and temperatures during the months of October through April. Weather variations throughout the year are affected mainly by the movement of air masses surrounding the country. Two centers of high pressure, the Saharan and South-African, are formed as a result of dry and warm air masses moving, in general, towards the west (see Figure II-1). A high pressure center originating in the Atlantic (the Saint Helena), carries moist warm air north and eastward onto the continent between the two other high pressure centers. The contact of these air masses produces the Northern and Southern Intertropical fronts. In betwen these, a monsoon front is formed by the contact of the Atlantic air, and air coming from the Indian Ocean, which is equally warm but dried in part by its passage over the continent from east to west.

1. Seasons

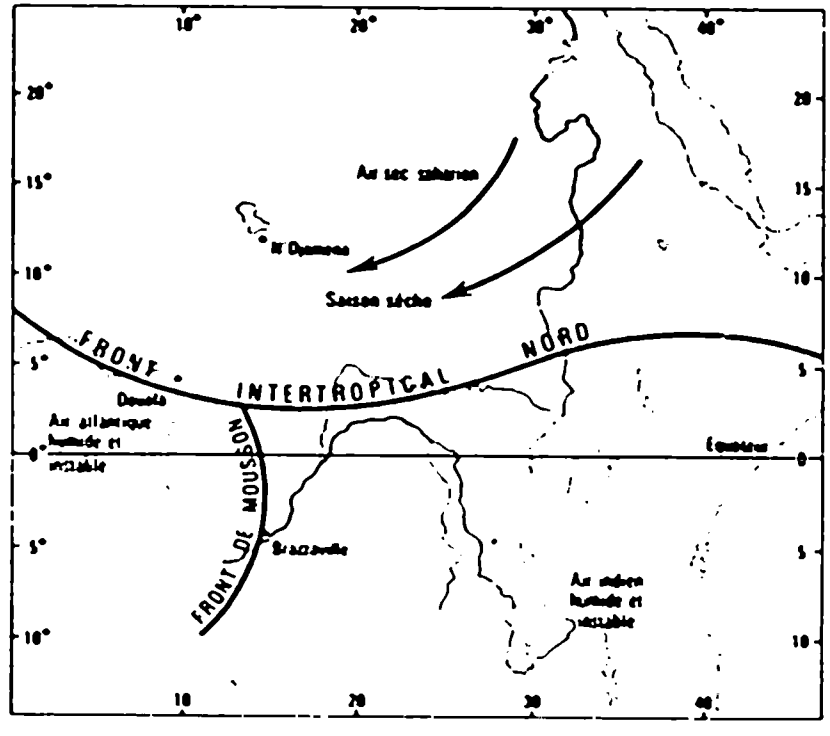
The southern winter occurs during the months of June through September. During this period the monsoon front covers the entire country extending into Africa, while the Northern Intertropical front recedes as far as 20°N (see Figure II-1a). Along the Atlantic coast, an upwelling of cold waters from the depths cools the advancing air, which is then reheated over land and absorbs great quantities of water vapor. The outcome is a stable atmosphere with scarce precipation. This results, for most of the country, in dry seasons, characterized by dew and morning mists, minimum temperatures below 20°C, and a low ceiling of gray clouds most of the day. Figure II-2 shows the duration of the long dry season, in days, which occurs between the months of June and September. For the extreme northern part of the country, however, this is the rainy season.

Figure II-1

POSITION OF AIR MASSES DURING SOUTHERN WINTER AND SUMMER



(a) WINTER

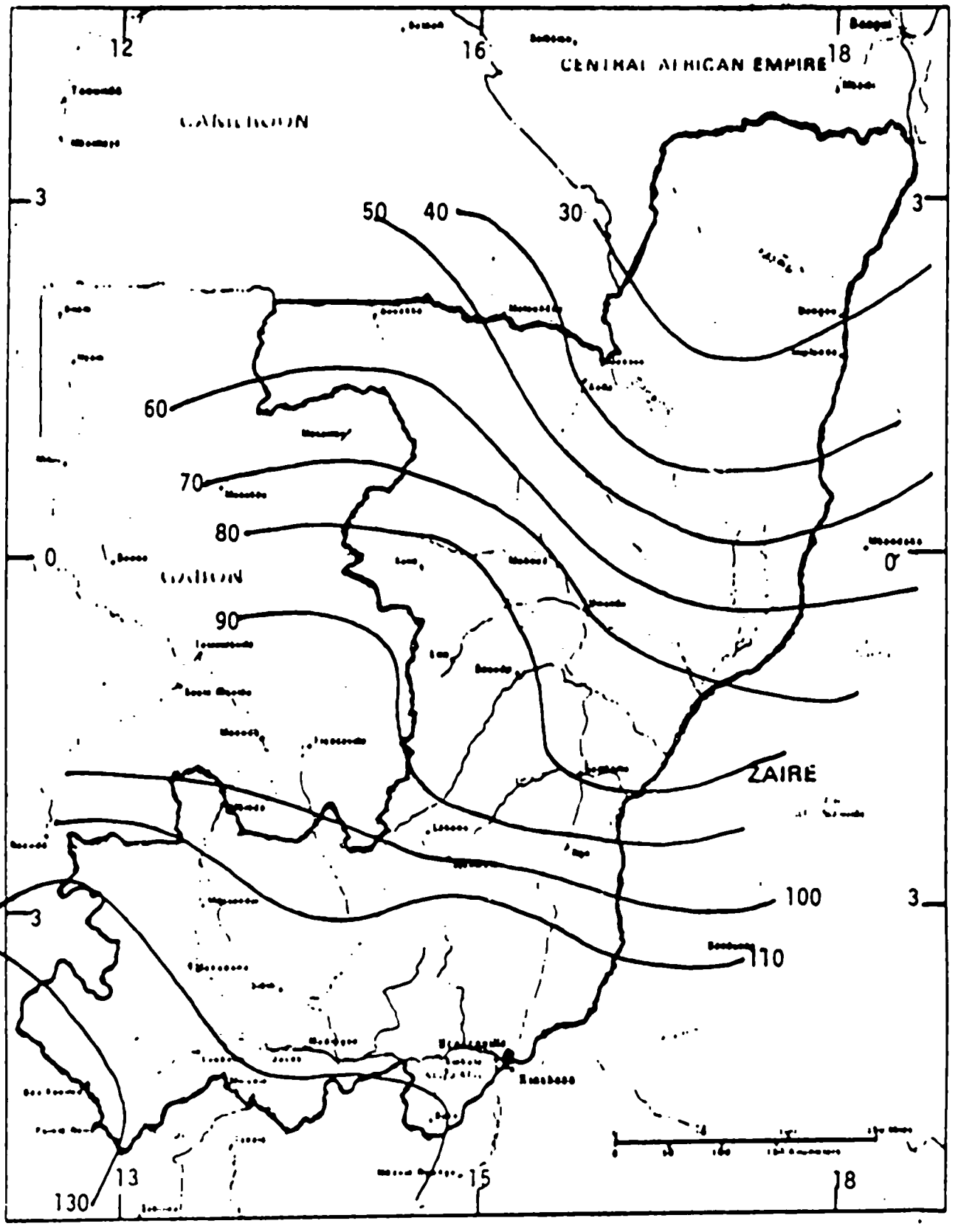


(b) SUMMER

Source: Jenne Afrique, 1977.

Figure II-2

DURATION OF LONG DRY SEASON IN DAYS



Source: Jeune Afrique, 1977.

Following the dry months, the dry Saharan air masses push the Intertropical Northern front towards the equator. Rains move progressively southward, covering central and southern portions of the country. The temperatures are high. This is the beginning of the rainy season, with storms, showers, sudden tornados, interspersed with hot days. The rains cover the entire country with more than 100 millimeters per month.

In the month of December, the Equatorial African Monsoon front is at its extreme western position, and the Atlantic winds reach only a small portion of the continent (see Figure II-1b). At this time the rains are less frequent and less intense, with interruptions which might last several months, producing the so-called short dry season. Figure II-3 shows the duration in days of the short dry season in the northern portion of the country together with the dates at which this dry season ends. The Intertropical Northern front advances to a position near the equator. Saharan dry winds then invade the northern portion of the country, where precipitation reaches its annual low point.

In January, as the monsoon front moves towards Central Africa, the rains increase, covering the whole country, and the temperatures are high. This corresponds to the long rainy season in which rainfall levels of over 200 millimeters are registered during some months.

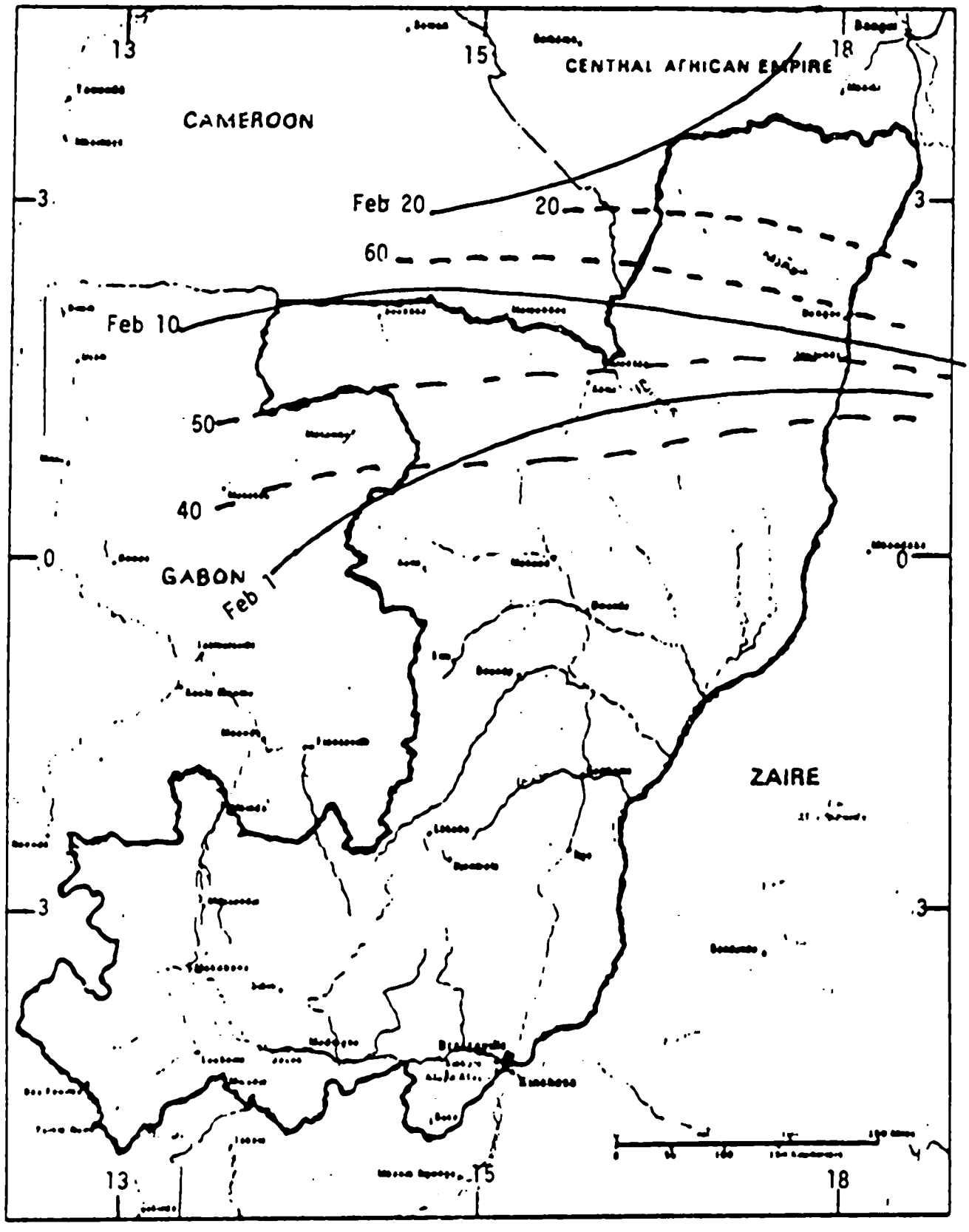
2. Rainfall

As discussed above, the Congo has a variable rainy season throughout the year. The pluviometric regime always shows two distinct peaks, the first one occurring between March and May, and the other one between September and December. There are never more than four absolutely dry months between these peaks.

Although precipitation generally exceeds 1,200 millimeters per year, there are local factors such as altitude, latitude, and

Figure II-3

DURATION IN DAYS AND ENDING DATES OF SHORT DRY SEASON



Source: Jeune Afrique, 1977.

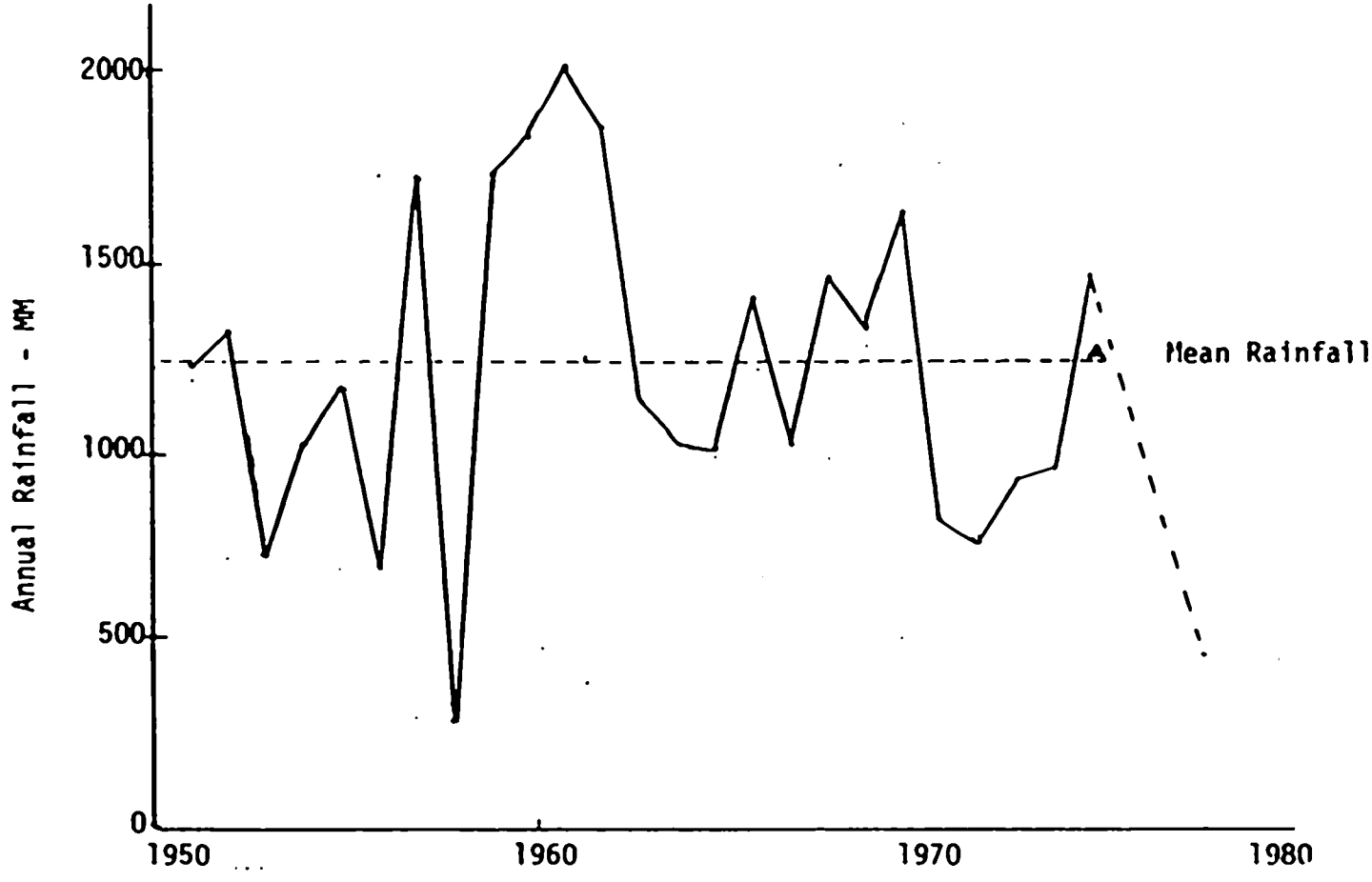
orientation of slopes, which affect the general precipitation patterns. For example, the valley of the Niari, perhaps the most fertile and potentially the most productive valley agriculturally, has a relatively dry zone (less than 1,200 millimeters per year) west of the Mayombe mountains, while the Mayombe mountains themselves, the Chaillu massif, and the Plateaux of Bateke, receive from 1,200 to 2,000 millimeters of rain a year.

Yearly variations in precipitation are also observed in the Congo. They are especially noticeable in the West and Northwest of the country. In 1958, the area around Pointe Noire received only 299 millimeters of rain instead of the usual 1,300 millimeters. During the same year, Boko, southwest of Brazzaville, received 826 millimeters rather than tne expected 1,290. In the northern portion of the Congo, annual variability is less important, showing a steadier pluviometric regime. Here, unusually long dry periods are less common. On the other hand, this area has experienced uninterrupted diluvial rains which have caused famine at times when they should normally have been more spaced.

The annual rainfall at the coastal city of Pointe Noire is depicted in Figure II-4. The long term mean rainfall of 1,238 millimeters is also included for comparison. This figure shows the variability of the annual rainfall with the minimum value of 299 millimeters corresponding to the drought of 1958, and the maximum of 2,048 millimeters in 1961. Out of the 25 years shown, 14 years fell under the mean or "normal" rainfall. Annual precipitation at Loubomo in the Niari Valley is shown in Figure II-5. Here the variability over the years is less than that shown for Pointe Noire. The mean annual precipitation is also 1,238 millimeters, but the minimum, which occurred in 1958 and 1971, was 801 millimeters, and the maximum was 1,666 millimeters. In the North, the rains are, in general, more

Figure II-4

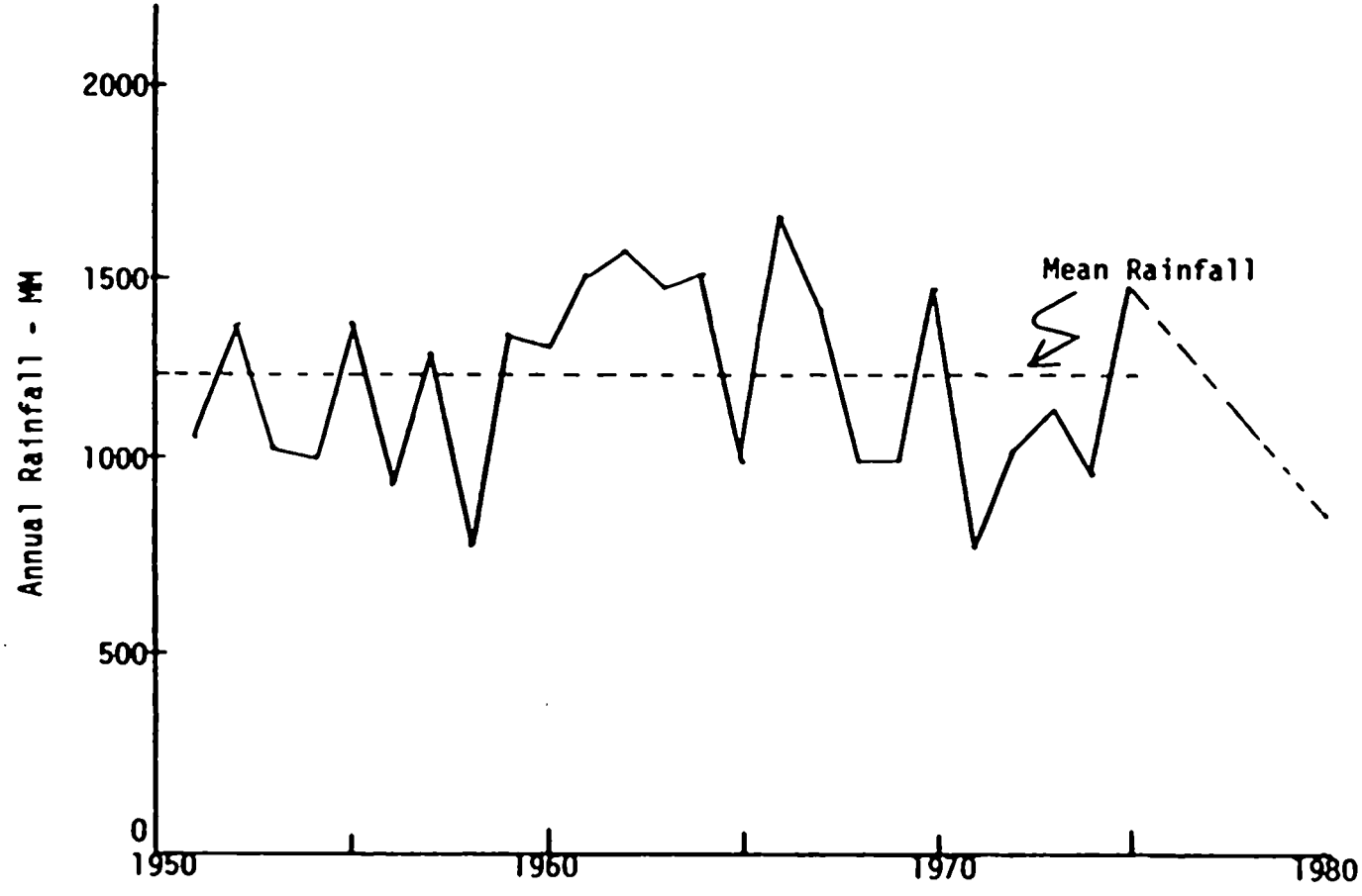
ANNUAL RAINFALL VARIABILITY AT POINTE NOIRE
1950-1975



Source: Moliniere, M. and B. Thebe, Donneé Hydrologique en Republique Populaire du Congo, ORSTOM, Brazaville, 1977; DA Mission.

Figure II-5

ANNUAL RAINFALL AT LOUBOMO
1950-1975



Source: Same as Figure II-4.

uniform from year to year, as is shown by the records for Impfondo on the northwest edge of the Congo (Figure II-6).

The annual rainfall distribution within the country is depicted in the map of isohyets, Figure II-7, showing equal mean annual precipitation values. Although the Congo seems to have sufficient water for agriculture, with lower values in the Southwest, an analysis of the monthly rain distribution shows a distinct dry season occurring from June to September.

Figure II-8 shows the mean monthly rainfall for a 25-year period for Loubomo, Mouyondzi, and Brazzaville, representing the rainfall variability for the Southern Congo.

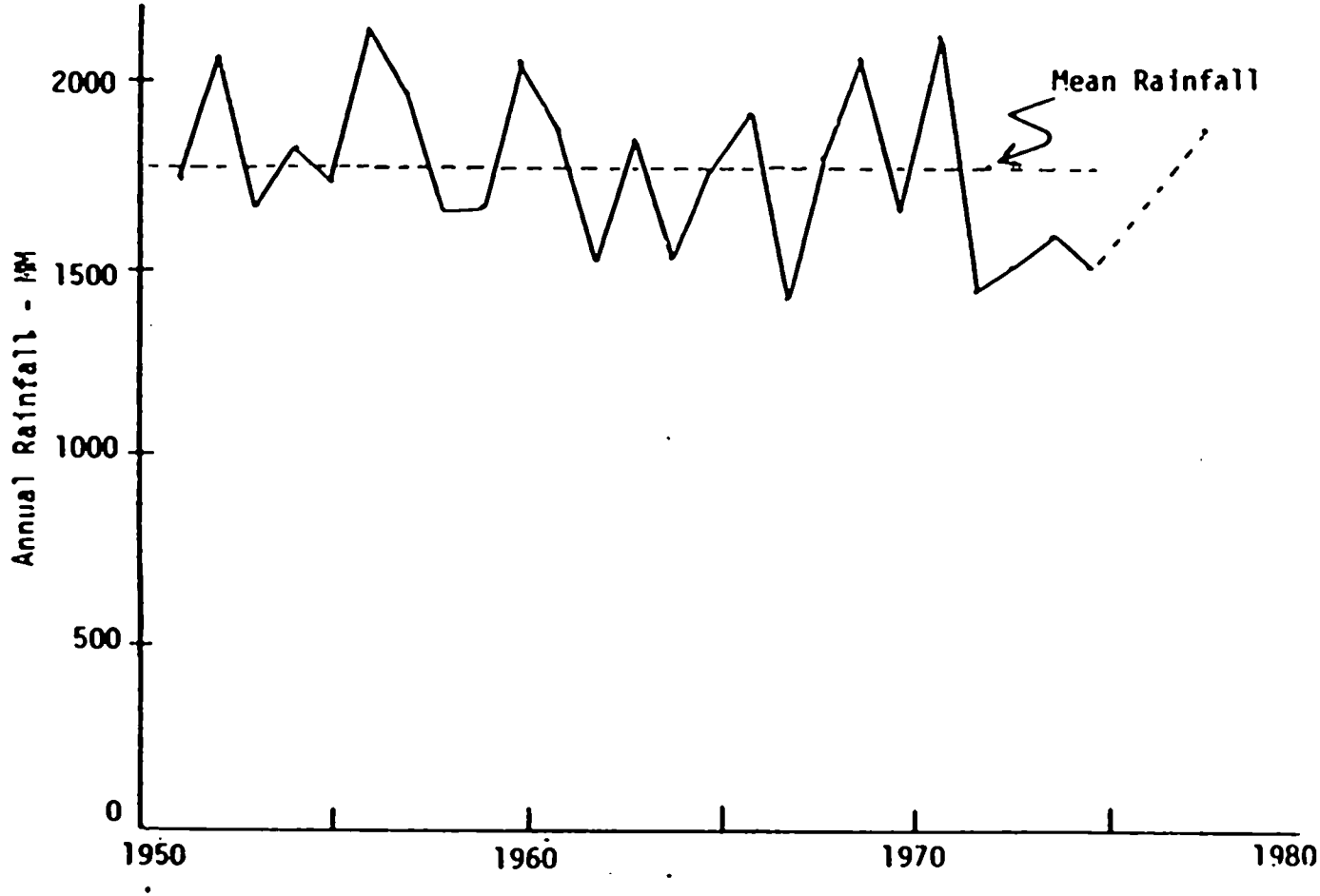
Figure II-9 shows the monthly variability for Mpouya, Owando-Makoua, and Ouesso. The appropriate locations of these stations are depicted in Figure II-10. Examining Figures II-8 and II-9, it can be seen that the length of the dry season increases as one moves north, where the dry season is shifted to the months of December and January with a minimum precipitation never below 50 millimeters.

3. Evapotranspiration

Evapotranspiration is the quantity of water used consumptively by the growing vegetation. This includes the water utilized in the process of transpiration and the evaporation of free water from the surrounding soil and plant leaves. When the ground is completely covered by a green short-growing crop, such as grass, and has a continuous supply of water, the evapotranspiration is said to be Potential (ETP). Real or actual evapotranspiration (ETA), on the other hand, represents the amount of water used by a crop which might be growing under conditions different from the potential. Usually actual evapotranspiration is less than the potential transpiration.

Figure II-6

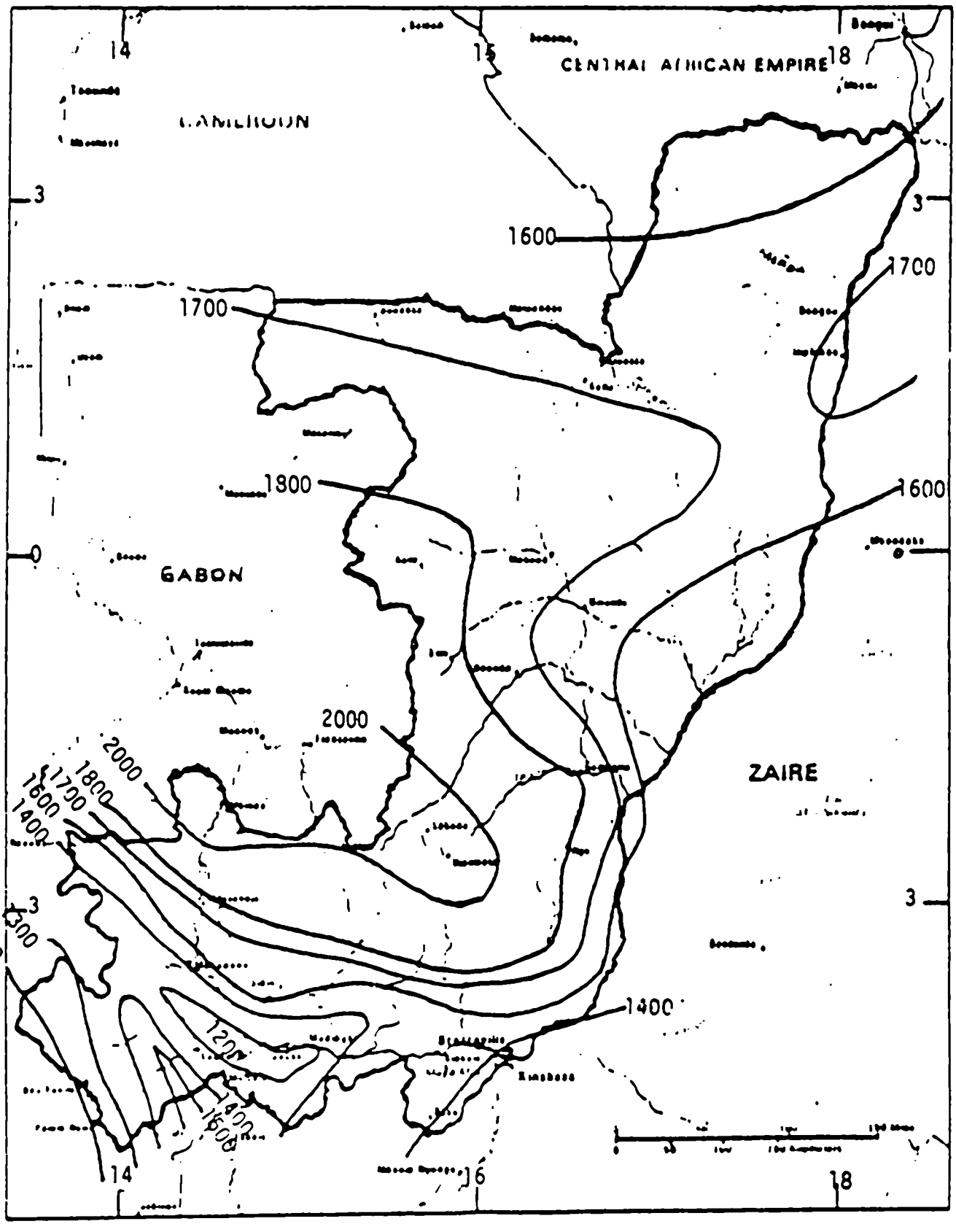
ANNUAL RAINFALL AT IMPFONDO
1950-1980



Source: Same as Figure II-4.

Figure II-7

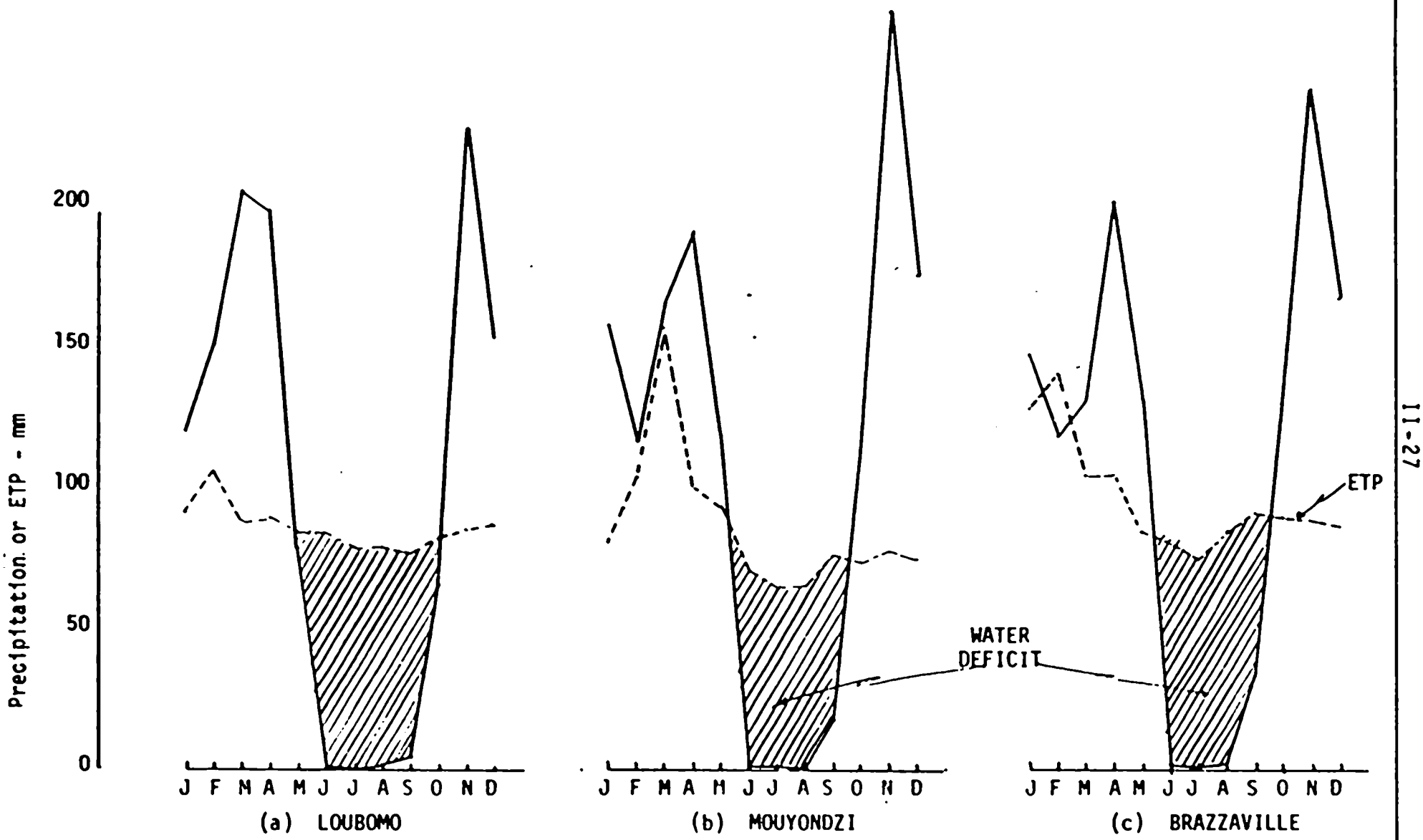
MEAN ANNUAL PRECIPITATION IN MM
(1951-1975)



Source: Jeune Afrique, 1977.

Figure II-8

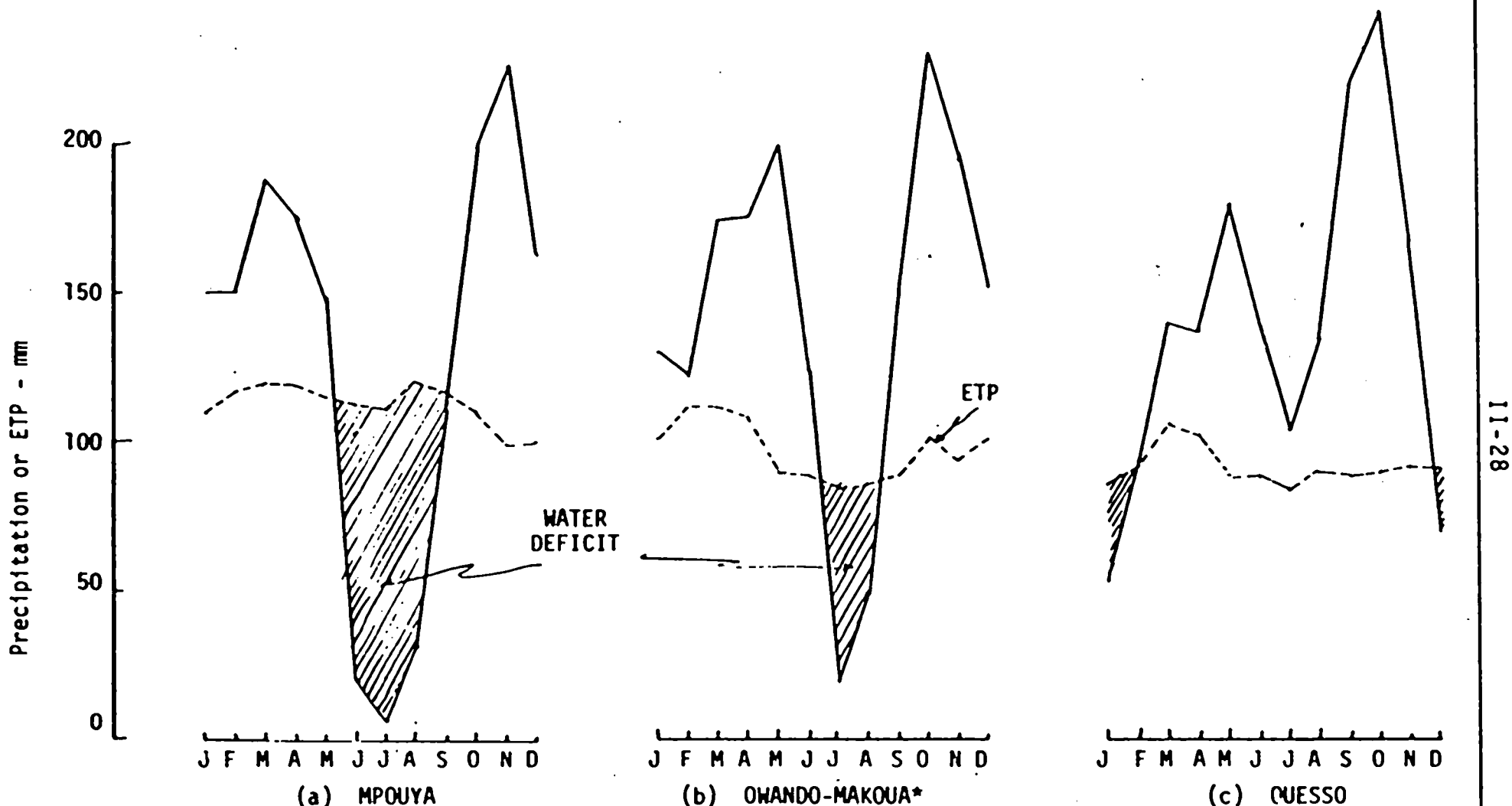
MEAN MONTHLY VALUES OF PRECIPITATION AND POTENTIAL EVAPOTRANSPIRATION (ETP)



Source: Same as Figure II-4.

Figure II-9

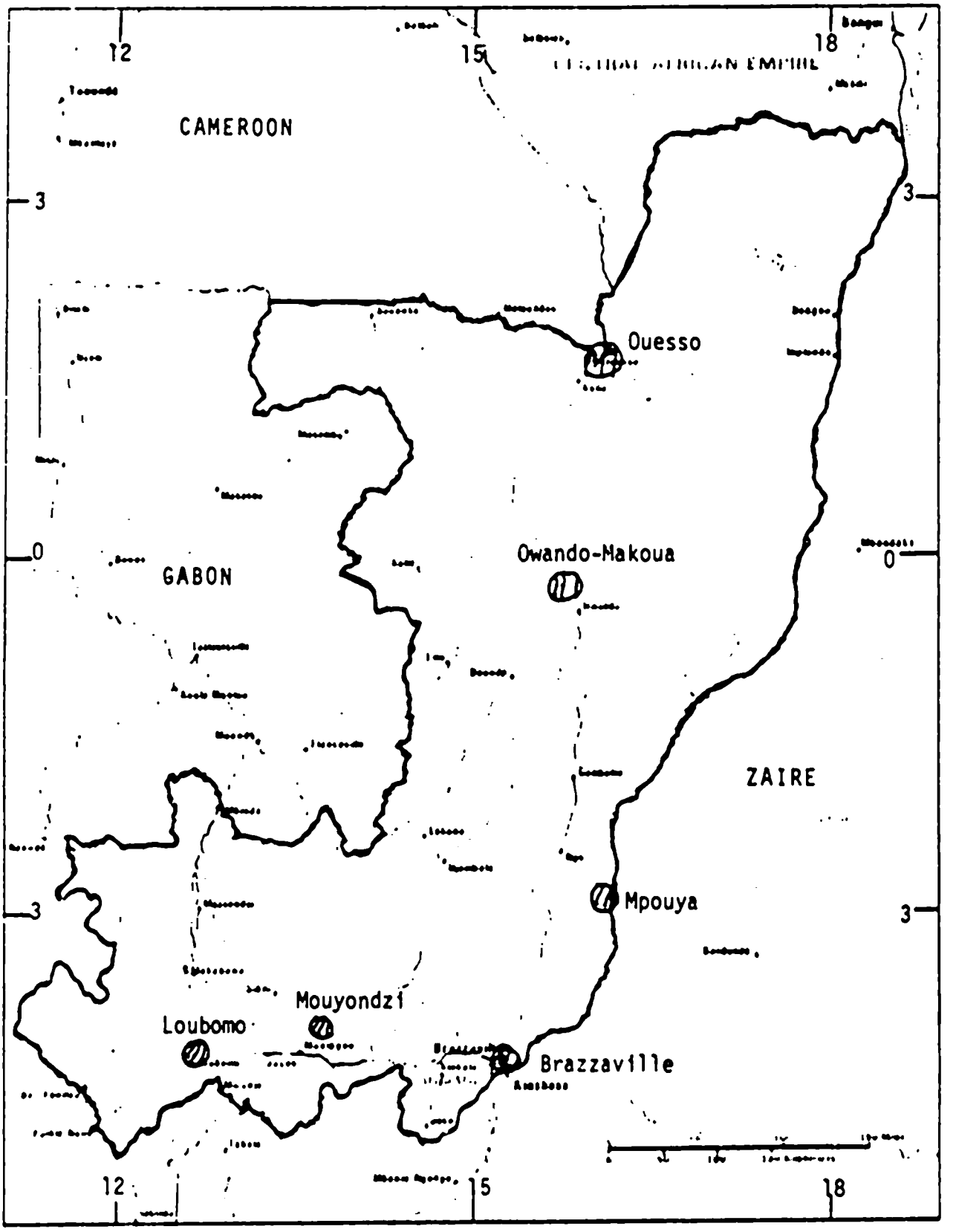
MEAN MONTHLY VALUES OF PRECIPITATION AND POTENTIAL EVAPOTRANSPIRATION (ETP)



Source: *Reference 2 and 4. Same as Figure II-4.

Figure II-10

DISTRIBUTION OF STATIONS WITHIN THE CONGO USED IN FIGURES II-8 AND II-9



Source: Jeune Afrique, 1977.

RIOU studied the actual evapotranspiration in Central Africa at several locations, taking into consideration the precipitation, water storage in the soils, and the ETP. This study indicated that between the lattitude of $4^{o}N$ and $2^{o}S$, the actual and potential evapotranspiration are quite similar. In another study, the same author concluded that the ETP might be considered as a fraction of the solar radiation (RIOU, 1970). Therefore, for the Congo (between $4^{o}N$ and $5^{o}S$), the two evapotranspirations might be considered equal, except in the southern part of the country (south of Gambona) where the ETP is somewhat greater than the ETA.

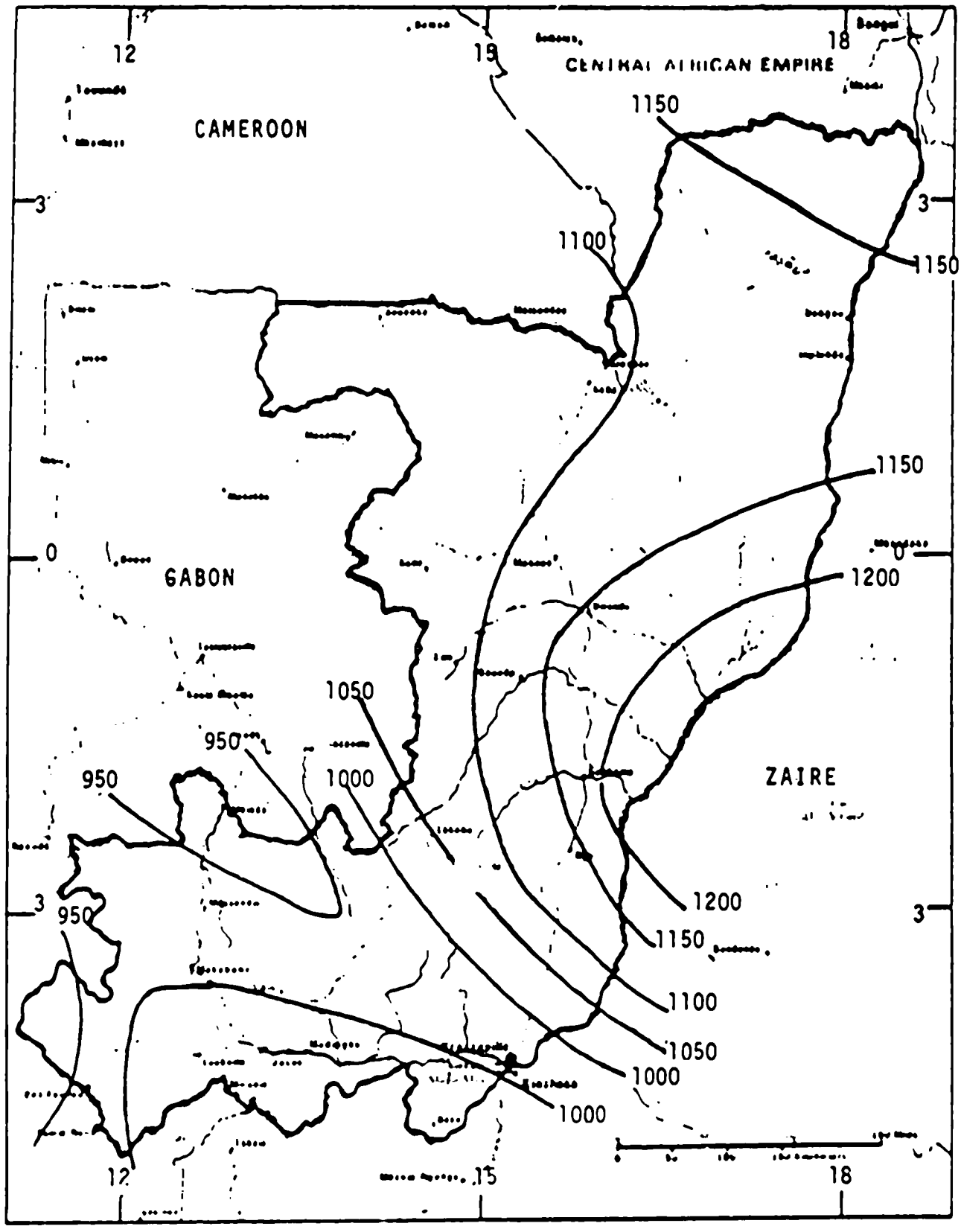
Data for the lines of equal annual evapotranspiration shown in Figure II-11 were obtained by the inflow-outflow method for which the precipitation over a given watersned and the resulting runoff were measured. It was assumed that over the long term, the soil-water storage remained constant (Molinier and Thebe, 1977).

An interesting observation is that for the northern part of the Congo, covered with equatorial forest, the maximum values of ETA are higher than those of ETP. The annual evapotranspiration varies within the country from about 1,200 millimeters to 900 millimeters in the Southern Congo. Although the annual precipitation values shown by the isohyets in Figure II-7 exceed those of total annual evapotranspiration, the water actually retained within the root zone and available for plant growth might not be sufficient during some months and at certain locations.

Potential evapotranspiration values, computed by the method of Turc, were plotted in Figures II-8 and II-9 to compare them with the mean monthly values of precipitations. The shaded area shown on these graphs represents the water deficits for plant growth. The water deficit during the months of June through September is most acute in the south, and decreases as one goes north, becoming almost negligible at Ouesso. It is necessary to

Figure II-11

MEAN ANNUAL ACTUAL EVAPOTRANSPIRATION IN MILLIMETERS (1951-1975)



Source: Jeune Afrique, 1977.

emphasize that the water deficit might be even more severe, since the comparison of evapotranspiration is made with the average total monthly precipitation and not with the effective precipitation. Effective precipitation is that portion of the total rainfall that is stored within the root zone and, therefore, is available to the plants. It varies with soil profile characteristics, terrain topography, vegetative cover, and other factors.

4. Temperature and Solar Radiation

Incoming solar radiation or insolation is one of the most important climatic elements affecting plant growth. Temperature, radiation and day length determine crop adaptability to a region and crop phenology, the relation between the crops' biological phenomena and climate. The upper limits of production can be estimated utilizing data concerning the mean radiation during the growing season, the mean day time temperatures and the mean seasonal temperatures for crops meeting the phenological requirements and climatic adaptability.

Water requirements of crops can be accurately estimated from climatic data. The most important weather elements influencing potential water use are ambient air temperature and solar radiation. Average daily solar radiation for the Congo ranges from about 380 to 440 cal cm^{-2} day^{-1} or 140 to 160 kcal cm^{2} $year^{-1}$. The average duration of sunshine ranges from 117 to 167 hours per month or 1400 to 2000 hours per year (Landsberg et al., 1963).

No reliable records for directly measured incident solar radiation were found. However, this can be calculated from theoretical values of extraterrestrial radiation and the percentage of possible sunshine. The percentage of possible sunshine, S, is determined from the ratio of actual duration of sunshine, K, in hours to the day length, dL.

Figures II-12 and II-13 were constructed from data of actual hours of sunshine and of temperature in degree Celsius (Molinief and Thebe, 1977) for the stations as shown in Figure II-10. The sunshine in the southern portion of the country (Figure II-12) is relatively low with mean temperatures around 25°C. The months of lower sunshine coincide with the occurrence of the long dry season with cloudy and overcast days.

Crops that might adapt better to these conditions are those requiring a radiation intensity of 1.0 to 1.5 calories/cm^{-2}/min. and a rate of photosynthesis of about 20 to 100 milligrams of $CO_2/dm^{-2}/hr^{-1}$. These include sorghum, corn, some vegetables, and for the warmer zones, sugar cane and cassava.

In the northern portion of the country (Figure II-13), the more hours of sunshine are registered. The temperatures are more uniform with averages around 25°C. The northern portion of the country would lend itself to more photosynthetically efficient crops.

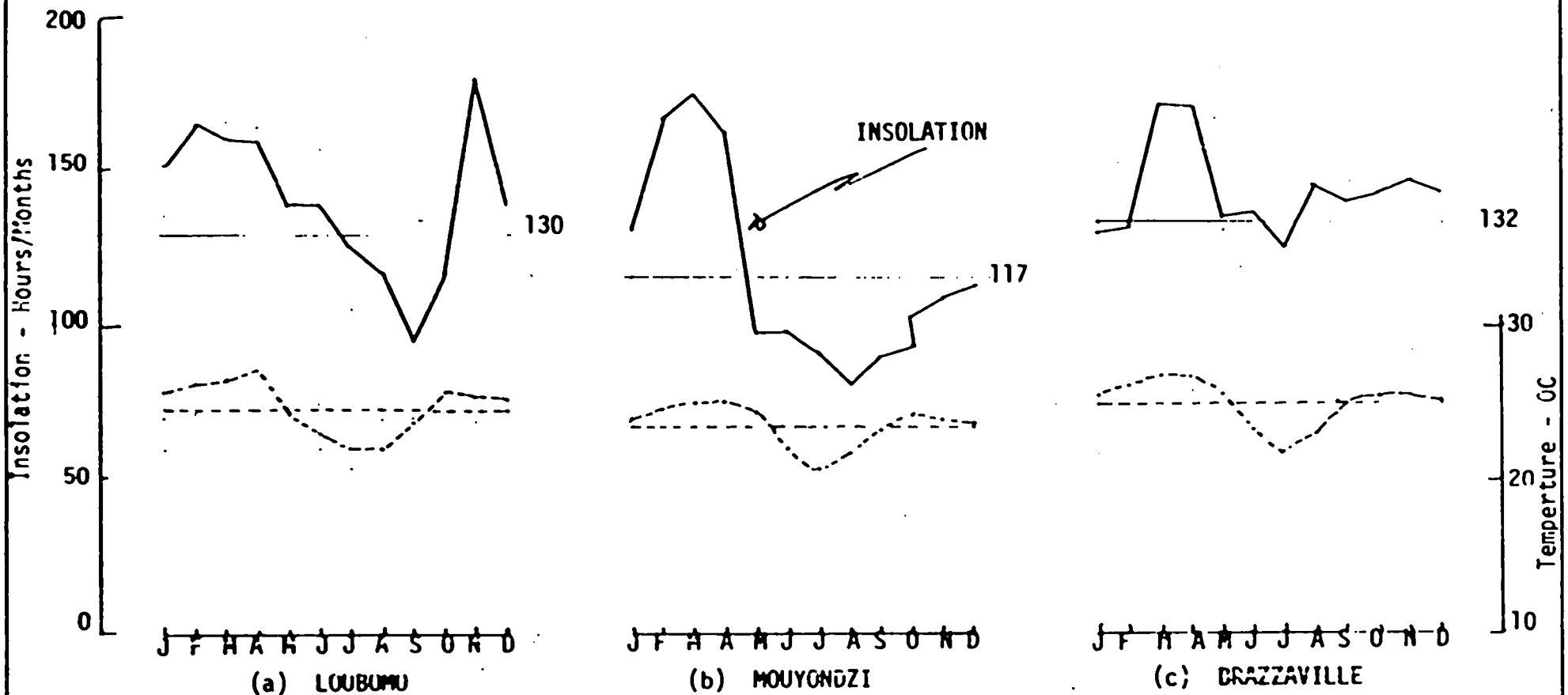
5. Management of Climatic Resources

To take advantage of the climatic resources, it is necessary to consider the biological requirements of the crops to be grown and their adaptability to the climate and physical environment. From this point of view, the major considerations of the crops' biological requirements are (1) crop life; (2) photosynthetic crop requirement; and (3) phenologic crop requirements.

With respect to crop life, crops should be grown in a zone with a growing season long enough to allow for the completion of the crop's life. Crops having life cycles which do not correspond to the length of the growing period will not produce good yields and will be more susceptible to insects and diseases.

Figure II-12

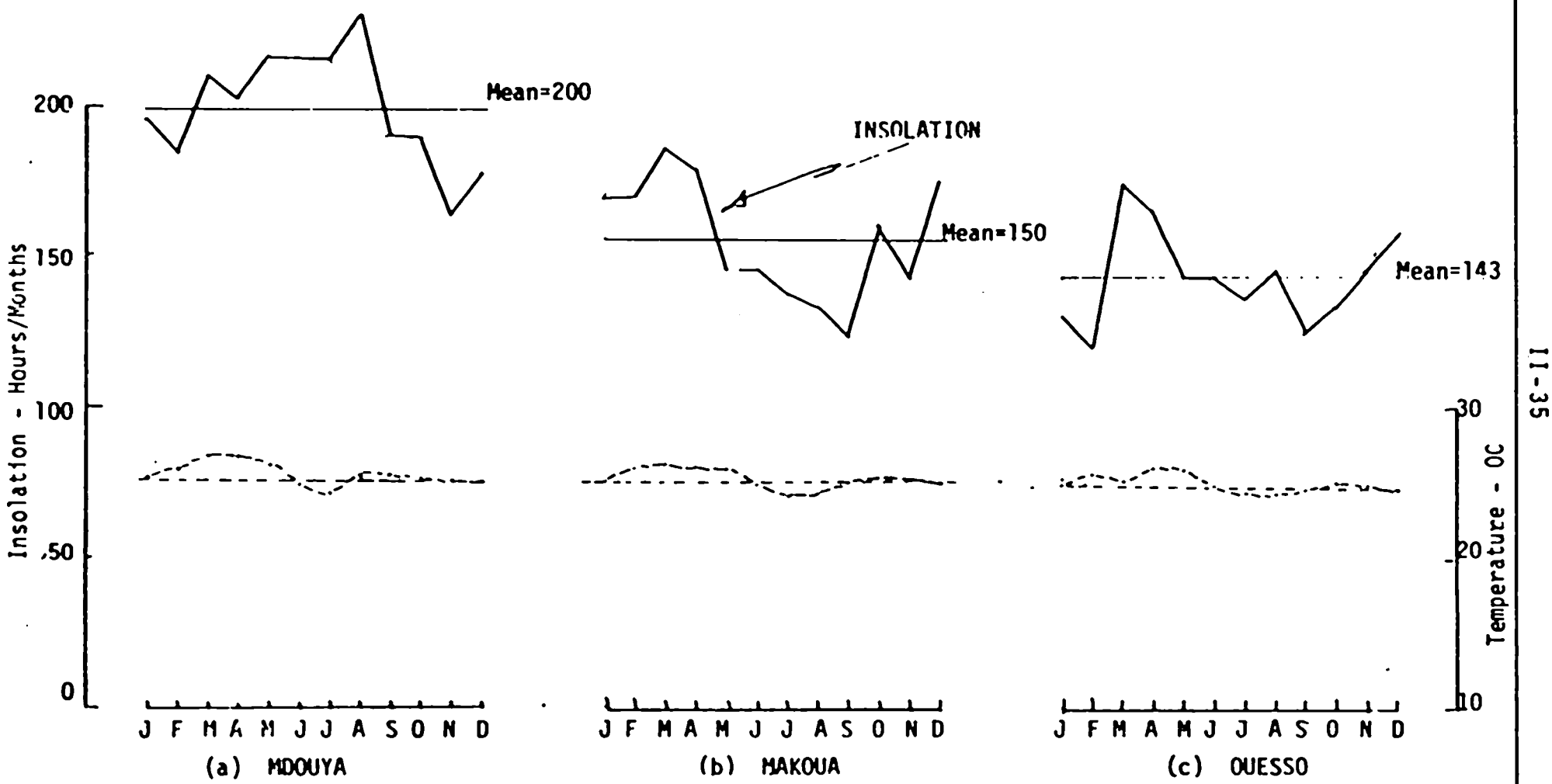
MEAN MONTHLY SUNSHINE AND TEMPERATURES (1951-1975)



Source: Same as Figure II-4.

Figure II-13

MEAN MONTHLY SUNSHINE AND TEMPERATURES (1951-1975)



Source: Same as Figure II-4.

The photosynthetic requirements of a crop are dictated by its physiological processes; physiological reverses will occur at optimum rates only within certain ranges of temperature and radiation. Therefore, it is possible to study the temperatures and solar radiation regimes of an area and to match the crops' photosynthetic requirements to assure high productivity.

Crop phenology refers to the developmental sequence of crop growth in relation to the growing season. The sequential growth pattern of crops, such as length of vegetative growth, flowering time, seed or fruit setting, leaf shedding, etc., is biologically determined. Timing of these phenological characteristics, however, is controlled mainly by length of day and temperature.

In order to determine the climatic adaptability of crops, it is necessary to know their specific climatic requirements (day length) for yield quality, in addition to those of photosynthesis.

The growing period in the tropics can be assumed to be a continuous length of time during the year when the precipitation is greater than half the rate of evapotranspiration ($P = 9.5$ ET). In addition, the growing period must have a humid stage in which the precipitation exceeds the evapotranspiration demands of the crop and replenishes the water deficit within the root zone. Locations without this humid period are not suitable for crop production under normal dry land farming.

The effective rainy season is the number of days between the beginning of the rains and their end. The first 10-day period during the year when precipitation is equal or greater than one-half the evapotranspiration marks the beginning. Likewise, the end of the rainy season is considered as the last 10-day period of the season during which the precipitation is less than one-half the evapotranspiration.

For most crops, the growing period extends beyond the rainy season and they mature on water reserves stored in the soil. This amount of water will depend, of course, on the soil's physical characteristics, water holding capacity, depth of the root zone, root pattern, and the soil water potential characteristics of the soil.

The growing period for the Congo might vary from seven to ten months (Figures II-8 and II-9) with yearly insolation from 1,400 hours at Mouyondzi (Figure II-12) to 2,400 hours in Mpouya (Figure II-13). This, of course, is a very rough estimate, but it gives an idea of the climatic resources available for crop production. A good management of these resources will require an in-depth study of the climatic characteristics, perhaps by regions, together with experimental research, to select the cultivars which will adapt phenologically to the existing climate. It is recognized that there is some need for supplemental irrigation during the dry seasons. At the farmers' level, the existence of some rudimentary irrigation has been observed, in the area around Loubomo. Additional information indicates that this might be the case in other parts of the country; Niari, Pool, and the Plateaux regions.

B. Water and Land Resources

The surface water resources of the Congo have been extensively studied by the Office de La Recherche Scientifique et Technique d'Outre-Mer (ORSTOM). Detailed hydrographic studies are available at this institution, and only a brief summary will be included here. Unfortunately, the data is not complete since most of the work stopped with the departure of the French at the time of Congolese independence. Nevertheless, efforts are being made to resume research at ORSTOM.

The number of ground water investigations and relevant data are minimal. The only report found is that of the ground water

investigation sponsored by the FAO and executed by l'Entreprise de Forage Marconi of Rome, Italy (FAO microfiche of Documentary Unit No1 25566-F1) between November of 1965 and April 1966.

1. Surface Water Resources

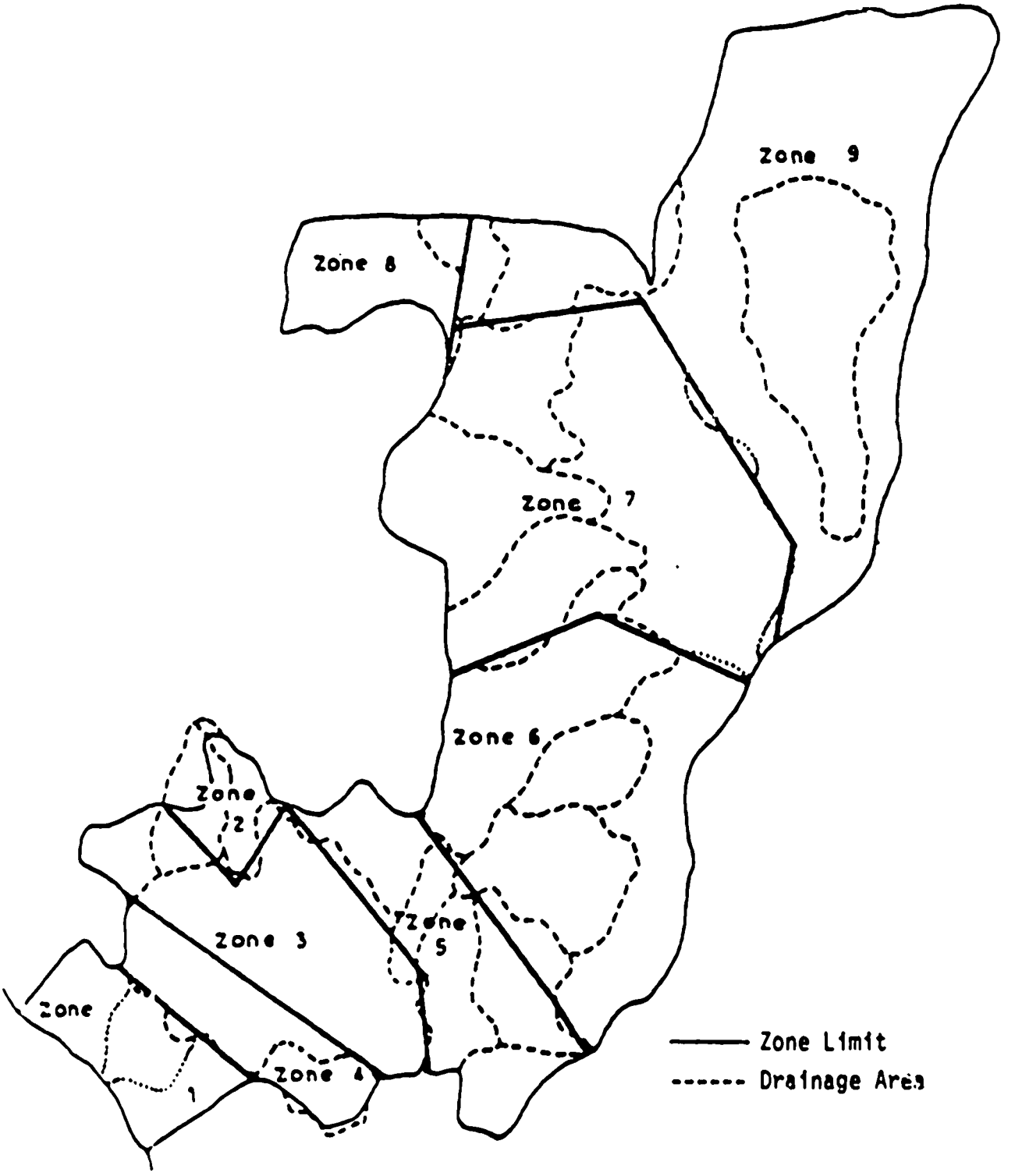
The People's Republic of the Congo has considerable surface water resources. To describe and evaluate them, the country has been divided into three zones according to their climatic and physical characteristics. Each of these zones is subdivided into subregions representing areas which are hydrologically homogeneous (Figure II-14). Zone A corresponds to the Niari river basin with the plateau, the Chaillu mountains, and a coastal plain. This zone includes the sub-zones 1 to 5. Zone B, or sub-zone 6, corresponds to the Bateke Plateaux, with undulating surfaces, eroded hills, and large expanses of sandy soils. This zone includes the Lefini, Nkeni, and Alima river basins. Zone C corresponds to the Cuvette, Sangha and Likouala regions (sub-zones 7, 8, and 9), containing the Ivindo, Djoua, Likoula, Sangha, and Likouala and Herbes basins.

Table II-5 is a resume of the hydrological characteristics of the nine sub-zones. Basic data include precipitation, river discharges, and runoff. The method utilized was that of inflow-outflow, with an assumption that changes in subsurface water storage over a long period were minimal and, therefore, negligible.

Total runoff for the country is 572 millimeters, which corresponds to an average flow of 6,300 cubic centimeters per second (cms), with a total yearly flow of 195.5 billion cubic meters. The region most able to contribute to the surface waters, besides the region of the Chaillu mountains in sub-zone 2, is the Bateke Plateaux. Rains in this zone are quite strong and a large portion of them is absorbed by the sands, thus contributing to the groundwaters.

Figure II-14

HYDROLOGICALLY HOMOGENEOUS SUB-ZONES AND DRAINAGE AREAS



Source: Jeune Afrique, 1977.

Table II-5

ANNUAL SURFACE WATER HYDROLOGICAL BALANCE
FOR THE NINE SUB-ZONES OF CONGO

ZONE No.	AREA Km^2	DISCHARGE M^3/S	SPECIFIC RUNOFF	PRECIP mm	RUNOFF mm	RUNOFF COEFFICIENT %
1	14,100	160	11.3	1,335	358	26.8
2	5,500	170	30.9	1,920	975	50.8
3	28,500	510	17.9	1,525	564	37.0
4	15,200	120	7.9	1,255	249	19.8
5	28,000	610	21.8	1,645	687	41.8
A	91,300	1,570	17.2	1,510	542	35.9
B	62,500	1,685	27.0	1,800	850	47.2
7	73,600	1,290	17.5	1,735	553	31.9
8	14,400	260	18.1	1,700	569	33.5
9	100,200	1,395	13.9	1,635	439	26.9
C	188,200	2,945	15.6	1,680	493	29.4
TOTAL	342,000	6,200	18.1	1,655	572	34.6

Source: Moliniere, M. and B. Thebe. Donnee Hydrologique en Republique Populaire Du Congo. ORSTOM, Brazzaville, April, 1977.

The Niari basin is an important system, since it covers one of the most productive areas of the Congo. Studies regarding the surface water resources of the Niari Valley were first started in 1928, and continued in 1947-48, sponsored by Electricite de France in collaboation with ORSTOM.

The first period of high waters in the Niari begins in October, becomes more acute in November, and ends in December. In March, the second peak period begins reaching the maximum in April or May.

The low waters in the Upper Niari also show two distinct periods. The first one is very irregular in duration and intensity from year to year. It can occur in the month of February, but it can extend from January to March. This is followed by a second period of low flows which is more serene and longer than the first one, lasting from the end of May to the beginning of October. During this period, the water level declines continuously until the end of September.

2. Geology and Ground Water Resources

a. Geology

Although topography and climate constitute primary factors governing the infiltration of water to deeper ground layers, geology is the paramount factor which determines the occurence, distribution, movement, and quality of groundwater. In addition, the geological nature of the terrain influences the relief forms which in turn have an important impact on the climate. Subsurface geology determines not only the location of groundwater reservoirs but also their ability to store and transmit water. Therefore, it is important to study further, check, and update the available geological information for possible future groundwater exploitation.

In the southwest, extreme north, and northwest portions of the country, the very ancient basement of rocks comes to the surface almost everywhere. Elsewhere, it is covered by thick blankets of sedimentary materials. The most extensive are those of the tertiary terrains of the Bateke region and the alluvial ones of the Congo basin ("Cuvette Congolaise").

The Precambrian basement complex originated from the consoliation of magma and has undergone a long tectonic evolution from remote geological times. This basement complex is more or less covered by sedimentary deposits and covers vast areas in many parts of Africa. Tectonic movements have provoked deposits of schists, limestone, and sandstone.

In the Congo, three main formations can be found:

(i) Extensive massifs of granite and gneiss, which constitute the metamorphic complex of the low Precambrian, such as those of Chaillu and western Sangha (basin of the upper Ivindo, west of Souanke).

(ii) Appalachian chains (belonging to the middle Precambrian) like the Mayombe range running generally southeast to northwest, or that between Ouesso, Kelle, and Souanke running southwest to northeast. Here schists and quarzites are found in tight, strongly tilted folds, and, therefore, have poor groundwater potential, but at the same time hey show weathering and fracturing which give them some water conducting properties. Rivers carve deep valleys and narrow gorges. Gold and cassiterite are found in some of their alluvial deposits.

(iii) A vast synclinorium between Chaillu and Mayombe, where sedimentary layers over 3,000 M. deep were laid down during the Upper Precambrian. This western Congo system consists of tillites, Bouenza sandstone, calcareous and

sandstone schists which have been deformed by folds and faults.

The more recent formations have more or less completely covered the basement rock. West of the Mayombe range this basement is found at depths of over 3,500 meters. On the surface a series of Cirques (probably of Tertiary origin) appears, formed of sand, gravel, and yellow, purplish-blue, and especially red clays. It is deposited on cretaceous formations which contain important beds of salts (rock salt and potash), phosphatic deposits, and occasionally oil.

In the Bateke region is found the so-called series of the Bateke Plateaux covering secondary sandstones only visible at the bottom of certain valleys. It consists of white, pink, or mauve sandstones, which form the "Cliffs of Dover" on the banks of Stanley Pool, and sandy silts deposited by wind during periods of desert climate during the Miocene and Pilocene. These formations continue irregularly until Quesso and reappear to the north near the border with the Central African Republic, where they partially cover formation of sandstone and argilites.

The rest of the Congo basin (La Cuvette) is covered with recent deposits of alluvial clays or sand to depths which are not well known but reach at least several tens of meters.

b. Groundwater

As mentioned earlier, very little work has been done in investigating the groundwater resources. In 1965 the FAO contracted the Entreprise de Forage Marconi to carry out a well drilling program to study the groundwater resources in the Niari Valley. This project was finished in April 1966.

The project consisted of drilling seven piezometric wells and three testing wells. A total of 379.40 meters were drilled in the alluvial terrain and 208.5 meters in the rock underneath.

The area studied was the southern part of the Niari Valley between Mandingou and Loudima. It is a flat terrain under cultivation, limited by a series of hills to the left and the river to the right. The profile characteristics of the area are:

0-30 meters: Alluvial blanket made up of sandy-clay soils of variable depth;

Over 30 meters: Basement of the schist and limestone type which comes to surface at low points, particularly along the rivers.

Preliminary pumping tests gave results varying from very little to a discharge of 30 Lt/Sec. The water level was found in the piexometric wells at 35-48 meters. The presence of clay made the pumping more difficult, sealing the cracks and, therefore, reducing the hydraulic conductivity of the material. Precambrian dolomite made up the basement complex which offered great resistance to drilling. It was recommended that future exploration should be made by reverse rotation equipment or a combination of percussion with rotation with possibilities of various well diameters.

In the calcareous formations in the Niari Valley, water flows through cracks causing dissolutions which result in connecting subterranian cavities. On the surface, large depressions without natural drainage, sudden disapearances, and surfacing of rivers can be found. These phenomena associated with the calcareous materials are very important in the general utilization of the groundwater and deserve further study.

In 1956 and 1957 ORSTOM collected information on the groundwater hydrology of the Loudima, Loubetsi, and Vougou basins, and in particular on the intercommunication between these basins. In 1961, near the Agronomic Station in Loudima, a well of 63 meters depth was pumped for three days with a discharge of 10 to 16 m^3/hr at pumping levels between 44 and 48 meters. The flow obtained was attributed to the interconnecting cracks in the calcareous zone. In another test in the Telemina plateau, in 1961, large depressions in the upper level of the calcareous zone were observed, which could correspond to areas of intense cracking and would, therefore, be apt for well drilling.

The importance of future studies in the Niari region is evident, since it is in this area that greatest agricultural activity is concentrated. As the rains are not sufficient for certain crops, and the dry season lasts sometimes five months, supplemental irrigation would be necessary.

c. Land Resources

The soils of the Congo may be classified in general as ferralitic soils. These soils are formed by the leaching of silica and bases by mildly acidic or neutral solutions and characterized by a large content of iron oxide. Various types have resulted from differences in climate, the nature of the original rock, topography, exposure, natural vegetation, and human interventions, all of which influence the pedogenetic process.

The atlas distinguishes hydromorphic soils from ferralitic soils, the latter category being subdivided into impoverished soils and altered soils which are in turn divided into red and yellow soils.

Hydromorphic soils are found in large expanses of flooded forest in the Cuvette Congolaise, along swampy tributary valleys, in the depression at the foot of the Mayombe mountains south of the Niari, and in littoral lagoons. They are characterized by profiles completely charged with water, high peat content and black color, and a low pH which reduces fertility. Included in this group are ferralitic soils which are flooded more or less completely each year. They are acid, low in bases, and are also found in the Cuvette, the Niari Valley, and along the coast.

More important from the agricultural point of view are the ferralitic soils. The impoverished soils, belonging to the class of desaturated soils, are derived from sandstones, sandy clays or sands, particularly of quartz type. These soils are found in 50% of tne country, both in forests and savannas. They are chemically poor, lack coherence, and are not well suited to agriculture.

Altered ferralitic soils cover 30% of the country, with the red soils in the north and yellow soils in the south (for soil classification see Appendix II-4). The red soils owe their coloration to advanced ferralization resulting from abundant rainfall, constant high temperatures, and a high iron and magnesium content of the parental rocks. They are deep soils, low in bases, with a pH of four to five and a clay content of 40%. They are found overlying the granitic rocks of the Sembe-Kelle region and on the quartzite and basic rocks of the Sembe-Quesso series.

The yellow soils are characterized by three distinct horizons: an upper one of loose, fine-textured soil, a middle one of hardened soil, frequently with a stone lime; and a lower mottled one corresponding to altered parental rock. These soils include (according to their derivation):

- Argillic, thick, heavy soils of good physical structure derived from calcareous schists with a pH of six to seven.
- Soils formed on the series of Bouenza (marl limestone, argillites, sandstone);
- Soils of sandstone schist, very argillic and susceptible to deep ravinement; and
- Soils of Mayombe and Chaillu, derived from quartzitic schists and granites, which are argillic, thick and with a pH of five.

The soils of the Congo are old, highly weathered, and generally infertile. This infertility is attributable to a lack of essential minerals for plant nutrition. Recent work by the agronomic research station at Loudima shows that even virgin soils that can be found in that area are highly deficient in calcium, phosphorous, potasium, and magnesium (Dzaba et al., 1978). Available nitrogen levels are low throughout the country. Not only are essential minerals lacking, but these soils are of a type that cannot hold plant nutrients for long periods. Agriculturally this means that chemical or natural fertilizers are quickly leached out of the plant root zone, making plant response to such treatment poor, and fertility maintenance difficult. As a consequence, these soils are fragile and easily disrupted by modern agricultural techniques. Their deficiencies must be remedied, permanent vegetable ground cover must be maintained to protect them from severe erosion, and all modifications must be undertaken with great prudence. (See Appendix II-4 for further details in soil classification.)

C. Natural Vegetation

The natural vegetation of the Congo falls into two basic categories, the forest and the savanna. The forested area, which covers about two-thirds of the surface area of the country, can be divided into at least five different types, classified according to the soil and atmospheric water requirements of the dominant species. The savanna

regions are classified into seven types according to their vegetative cover. Smaller areas are covered swamps and steppes.

1. The Forest

A great classical rain forest is found in the upper Sangha region, the Mayombe Mountains and Chaillu massif. There is a variety of large ombrophilous (water loving) trees. A number of them have large buttresses at their base, such as the stately Klainedoxa gabonensis. Trees of the Leguminosae and Meliaceae families are most common. The former, like their smaller relatives, are pod-bearing, nitrogen-fixing trees, most of which have compound leaves that give them a graceful feathery appearance. In some local areas resinous conifers such as Terminalia superba or Gilbertiodendron dewevrei dominate. There is little underbrush in the forest except when land is cleared. In this case, when cultivated trees are abandoned secondary species such as the Umbrella tree (Musanga cecropioides) appear rapidly.

Within the sangha area, however, there are forests where thin stands of fully mature trees tower over a dense underbrush. The flooded forests that are found in the Cuvettee are also ombrophilous formations, less dense than those found on dry land. Medium sizes trees with gnarled buttresses grow out of a jumble of roots in a dark mire. Dense thickets of raphanus palms are found here and there.

In the Mesophile (moderate water need) forests found in the sandy Bateke soils, a mosaic of forest and savanna vegetation is the natural cover. These are, for the most part, gallery forests extending 20 or 30 kilometers along each bank of the Lefini, Nkeni, Alima, Mpama, and lower Congo rivers. The typical deciduous vegetation is neither dense nor continuous. Frequently degraded by man, these forests are hence often colonized by young

arborescent species and the oil palm, Elaeis guineensis. The coastal forests are found in small residual groups on the low plateaux of the Poine Noire region, in semi-marsh formations, and in mangroves (Rizophora racemosa) bordering the lagoons.

2. The Savannas

The Savannas are covered with a number of different types of grass species. On the sandy soil of the Bateke Plateaux one finds a sparse cover of Loudetia demeusii, along with scattered bushes, usually Hymenocardia acida. On soils that are more heavily leached, another grass species, Trachypogon thollonii, is more common.

The savanna of the Niari valley is tall with grass types reaching between two and five meters in their natural state. (Hyparrhenia, Andropogon, and Panicum). Scrub bushes include Annona arenaria, Bridelia ferruginea and espceially Himenocardia acida, which grows only on soils that were formed from calcareous schists.

A third type of savanna is confined to the plateau area near the Congo river cataracts. They are distinguished by a rather sparse cover of the grass Aristida deweldemanii, accompanied by Hymenocardia and Annona type bushes.

In the Likouala area, a sort of forest-savanna area is found, dominated by the Andropogon grasses. Trachypogon thollonii is absent.

3. Other Formations

Two types of steppes are distinguished, the so-called lousseke type of the Cuvette and Bateke Plateaux, and those of coastal region, sometimes known as pseudo steppes. Both are dominated by Loudetia simplex.

Semi-swampy areas are found in the southern Kouilou-Niari region and the coastal lagoons with papyrus (Cyperus papyrus). The floating prairies of the rivers of the Cuvette are associations of aquatic grasses and other waterborn plants that form into natural rafts. The marshes and marshy prairies of the Alima and Likouala rivers combine aquatic grasses and papyruses in a landscape of forests, savannas, and low steppes.

D. The Road Problem

1. The R.N.T.P.

The Regie Nationale des Transports et des Travaux Publics (R.N.T.P.) is the state organization in charge of the planning, control, and execution of the road network in the Peoples Republic of the Congo. The most pressing and important task is the upgrading and maintenance of all the roads in the country.

The organization at the national level of the R.N.T.P. is depicted in Appendix II-5. In addition, in each of the nine regions of the country there is a "Direction Regionale." The Dicrectorate of Road Maintenance (Direction de l'Entretien Routier) also has regional directorates, in each of the regions.

In theory, the R.N.T.P. is in charge of the main road network (4,519 km). The network of secondary roads is the responsibility of each Direction Regionale. In practice, the road maintenance has been minimal and they have suffered rapid deterioration. Secondary roads are not maintained mainly because of lack of equipment and financial means.

The available credit for the maintenance of the main roads is always insufficient. The equipment available is old and much of it is not operating.

The personnel available to the Directorate of Road Maintenance consist of 1,168 men of which ten are engineers (the Central director and nine regional directors). The region of Niari has the most (175 men) and Bouenza the least (65 men).

2. Road Classification

The road network in the Congo may be classified into three categories: administrative, economic and technical.

Administratively, the roads are classified as:

National (RN) roads	1,933 km
Prefectural (RP) roads	3,590 km
Roads of Local Interest (RIL)	2,723 km
Non-classified roads	2,572 km
TOTAL	10,818 km

Economically, the roads may be divided into:

- Main road networks of 4,519 km under the responsibility of the R.N.T.P.; and
- Secondary road networks of 3,727 km under the responsibility of each region with technical assistance of the R.N.T.P.

Technically, there are four categories:

Category A: permanent roads built with an underlayer of 15 cm and a double layer of asphalt of 6 to 7 cm.

Category B: well-graded roads with selected natural materials (laterite and gravel).

Category C: permanent roads poorly defined which might be closed during the rainy season.

Category D: non-permanent roads with poor access during the rains. These are the roads which are used to transport the agricultural produce of the small farmers.

According to this classification, the following is the theoretical inventory of the road network in the Congo:

Category A	535 km
Category B	868 km
Category C	1,623 km
Category D	1,493 km
TOTAL	4,519 km

In reality, because of the lack of maintenance, many of the C category roads should be classified as D. The category B roads do not exist any longer; they now belong to the C group.

3. The Farm-to-Market Roads

a. The 1978 Plan

Although all the roads are important and necessary to transport the agricultural products to the markets, the small roads--Class D--are the ones which are mainly utilized by the small farmers and the ones which are not receiving any maintenance. In 1978, the Ministry of Rural Economy prepared a plan of work and a budget for the maintenance of the roads used in the country to move agricultural products. The plan was given to the Ministry of Public Works, which was to be in charge of construction, upgrading, and maintenance work. Unfortunately, the budget did not permit the plan to be put into operation.

In the 1978 plan the following tasks were scheduled:

(i) Maintenance Work - which included mechnical and manual work. The mechnical work required the use of equipment such as land planes, loaders, bull dozers and trucks for road surfacing improving, compacting, etc. The manual work required men with simple hand tools such as machetes, shovels, axes, picks, etc., for clearing the land, and building small wood or concrete bridges or culverts. In addition to the labor, this work called for the acquisition of such materials as wood, cement, and wire (gabions).

(ii) Road Opening - This work consisted of constructing new roads, which require heavy machines and both skilled and unskilled labor. The unskilled labor was to be obtained locally from the nearby villages. Two years of work were estimated to complete the 1978 road plan. Table II-6 gives the numbers of kilometers per region and the estimated cost per region.

Table II-6

ROAD WORK NEEDED BY REGIONS AND THE ESTIMATED COST

Region	Road Length Km	Budget USA Dollars
Kouilou	290	580,000
Niari	712	1,424,000
Lekoumou	319	638,000
Bouenza	686	17,595,000
Pool	535	1,070,000
Plateaux	667	1,734,000
Cuvette	512	1,024,000
Sangha	332	1,049,000
Likouala	164	328,000

Source: Etude des Possibilites de Refection des Principales Voles d' Evacuation de la Production Agricole En Republique Populaire du Congo, Ministere de L'Economie Rurale, Ministere des Travaux Publiques et des Transports, Brazzaville, 1978.

This work was estimated to be the minimum needed to transport the agricultural produce of each region. The investment was expected to be met by an increase in the agricultural production. As has been indicated, this plan did not start for lack of funds.

b. The 1979 Plan

In 1979, the Regie Nationale des Transports et des Travaux Publiques prepared a proposal requesting financing for the upgrading and maintenance of the national road system. This proposal is now being considered by the African Development Bank.

It is indicated in this proposal that a total of 1,054 km would be involved. Of this total, 434 km correspond to main roads, 167 km to secondary roads, and 453 km to roads of agricultural interest.

The total time to complete the work would be 5 years. The cost of the equipment is outlined in Table II-7.

c. A Case Study

In order to have a better idea of the needs for road upgrading, maintenance and construction, the Plateaux region was selected by the R.N.T.P. and analyzed. This analysis presents an inventory of the available and needed equipment estimated to carry out the work. The following information was provided by M. Jean Maillot, Technical Advisor of road maintenance to the R.N.T.P. of the Cooperation Francaise.

About ten years ago, the roads in the Plateaux region were in good condition and could be used without major difficulties during the dry and wet seasons. The road network was then

TABLE II-7

EQUIPMENT NEEDS FOR THE 1979 PROPOSAL
PREPARED BY THE R.N.T.P.

	Cost Per Unit USA Dollars	Quantity Needed	Total Cost US Dollars
Land Plane, 125 HP	$ 84,265.00	3	$252,795.00
Truck	84,925.00	1	84,925.00
Dump Truck (6 M^3)	65,000.00	4	260,000.00
Roller	8,000.00	1	8,000.00
Tractor	27,500.00	1	24,500.00
Water Truck	53,000.00	1	53,000.00
Fuel Truck	67,000.00	1	67,000.00
Maintenance Truck	120,000.00	1	120.000.00
TOTAL Equipment Cost: Source: RNTP			$873,220.00

Replacement parts and engines: 30% of total = $261,966.00.

The total fuel consumption was estimated to be 442,500 liters per year at a total cost of $221,250.

The construction of road structures and cost of materials was estimated to be $192,500.00.

completely abandoned, resulting in deterioration to such an extent that now it requires total upgrading and reconstruction. This work includes construction of new road embankments in many places and laying of coarse material to form new road beds.

The material usually used for the above operation is hard laterite and "termitieres." These "termitieres" are accumulations of dirt and other material, utilized by termites, in the shape of huge mushrooms. They are abundant and constitute a good road construction materials. They are laid side by side on the road bed, are crushed and compacted, resulting in a smooth semi-hard road surface with high durability even in the wet season.

Most of the road structures, such as small bridges, are in very bad condition and need to be replaced by new ones. In total, about ten small concrete culverts need to be built in addition to bridges and other semi-permanent structures.

The roads which need to be improved are (see Figure II-15):

- Ngo-Djambala-Kejana . . . . . 180 km
- Roads in the Koukouya Plateaux . . . . . 130 km
- Djambala-Mbon-Akou-Ossele . . . . . 145 km
- Ossele-Abala . . . . . 27 km
- Ossele-Gamboma . . . . . 86 km

The equipment needed to do the road work in the Plateaux region is presented in Table II-8 and the cost to improve the road network, including the cost of the equipment, is shown in Table II-9.

It is estimated that 100 men would be needed for eight months of work per year. The average monthly salary is $105.00. Therefore, the annual labor costs would be $84,000.00 ($105.00 x 100 x 8). Cost of construction materials for the necessary road structures is $175,000.

The above equipment and estimates are based on the work necessary to improve the entire network from the present "D" category to the "B" or "C" category. This would take about five years of work.

The first year would be concentrated on redoing the road profile for the entire road system within the region at a rate of eight kilometers per day for the first passage. The road between Ngo Djambala-Lekana has already been done; therefore, the second passage on this section (180 km) would be at a much faster rate than 8 km/day. The total days for the road profile work in the first year is estimated to be 217 days.

Figure II-15

THE PLATEAUX REGION AND THE ROAD NETWORK TO BE IMPROVED

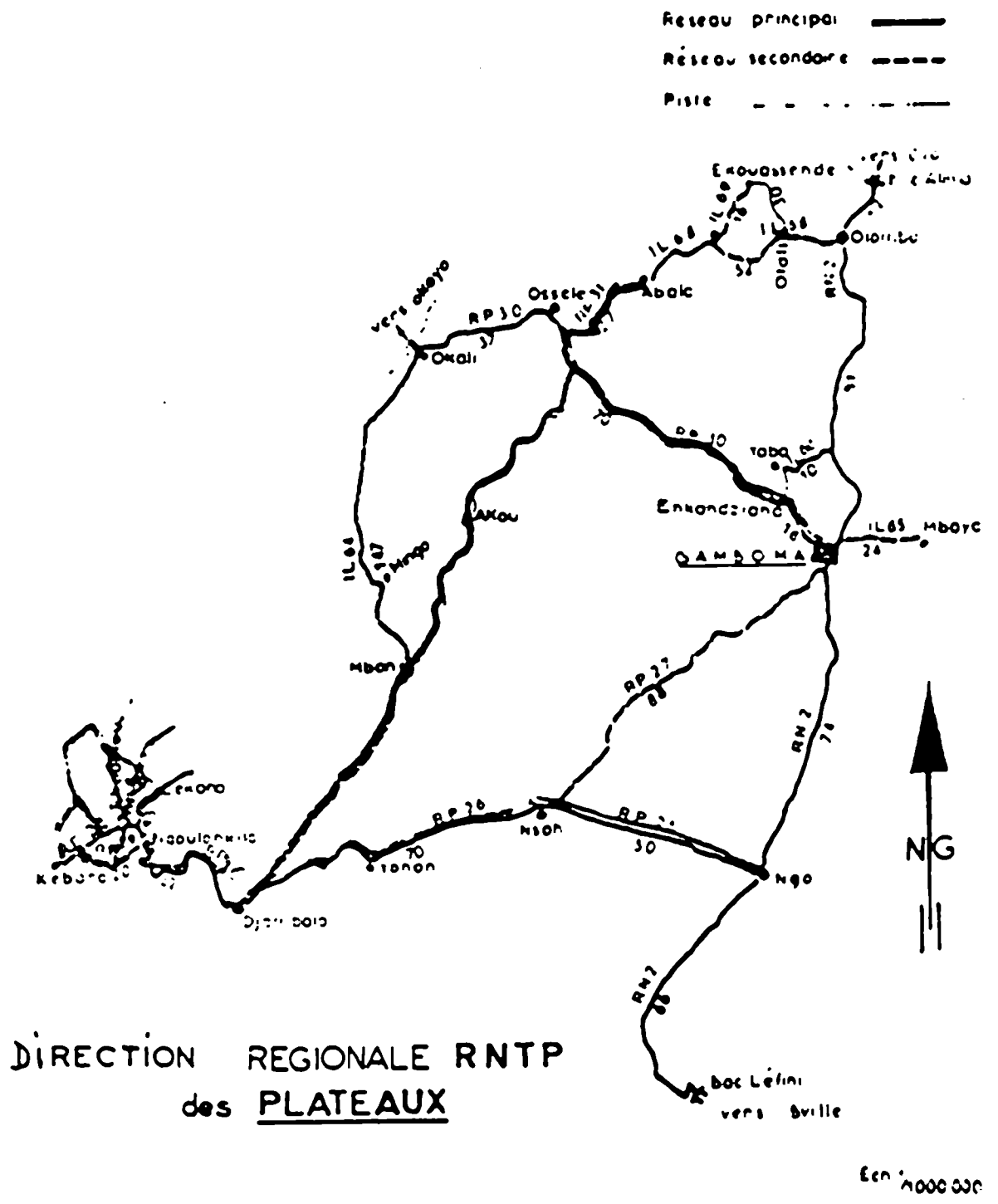


Table II-8

NECESSARY EQUIPMENT AND DEFICIT FOR THE ROAD WORK IN THE PLATEAUX REGION

EMBANKMENT WORK

Equipment Type	Need	Equipment Available	Deficit
Land Plane	3	2	1
Pickup Truck	1	0	1

BED CONSTRUCTION

Equipment Type	Need	Equipment Available	Deficit
Dumptruck	6	0	6
Wheel Loader	2	2	0
Bull-dozer	1	0	1
Water Truck	1	0	1
Tractor + Roller	1	1	0
Roller	1	0	1
Land Plane	1	0	1
Flat Bed Truck	1	0	1
Pick-Up	1	0	1

BRIDGE CONSTRUCTION

Equipment Type	Need	Equipment Available	Deficit
Dump Truck	1	0	1

Table II-9

EQUIPMENT NEEDED FOR THE ROAD WORK IN THE PLATEAUX REGION

Equipment Type	Number Needed	Unit Cost in USA Dollars
Dumptruck	7	57,900
Land Plane	2	85,500
Pickup Truck	2	23,500
Bull-dozer	1	175,000
Water Tank	1	70,000
Roller	1	77,000
Flat Truck	1	118,750

Source: RNTP

Starting the second year, this work will also be faster than 8 km/day and, therefore, four passages per year should be done. Laying coarse material (laterite and/or termite material) is much slower, or only about 350 meters per day. In five years, at 275 working days per year, a total of 481.25 km of resurfacing would be accomplished.

III. AGRICULTURAL PERFORMANCE

Very little information on agricultural production is available. The main source of information is the agricultural census 1972-73, carried out with the aid of FAO. Agricultural statistics in this report derive from the census together with estimates for recent years by other sources, such as FAO, World Bank, and African Development Bank; data on the marketed portion of the total output are given by the O.C.C., O.C.V., and the Ministry of Rural Economy. The mission also made its own adjustments and estimates in order to arrive at a more coherent data base.

A. The Three Sectors

The Government often classifies agricultural production as coming from the three subsectors: the small farmer sector, the co-operatives and pre-co-operatives sector, and the state sector.

1. The Small Farmer Sector

Table II-10 shows estimated production by the three sectors in 1977. The small farmers cultivate around 140,000 hectares and concentrate mainly on the food crops such as manioc (99% of total), rice (67%), ground nuts (68%), and the production of a few cash crops for monetary income such as coffee (100%), cocoa (100%), oil palm (100%), and tobacco (100%). Production is the subject of analysis later in this report.

2. The Co-operative and Pre-Co-operative Sector

The co-operatives and pre-co-operatives, altogether including over 300 units, are operated on the principle of the collective. The bigger ones are concentrated in the Pool region. These co-operatives have been the beneficiary of several assistance programs from the Ministry of Rural Economy in recent years. The

Table II-10

SHARE OF AGRICULTURAL PRODUCTION BY SECTORS, 1977
(In Percentage)

	STATE SECTOR	SMALL FARMERS SECTOR	COOPERATIVE SECTOR	TOTAL
Manioc	0.79	99.20	0.01	100
Rice	27.32	66.83	5.85	100
Corn	73.56	6.44	--	100
Groundnuts	1.50	68.02	30.48	100
Coffee	--	100	--	100
Cacao	--	100	--	100
Oil Palms	--	100	--	100
Tobacco	--	100	--	100
Potatoes	--	21.43	78.57	100
Vegetables	68.84	--	31.16	100

Source: Ministry of Rural Economy

overall production of the co-operatives and pre-co-operatives remains small compared to that of small farmers and state farms, with the exception of ground nuts (30%), vegetables (31%), and potatoes (79%).

3. The State Sector

The state sector produces 27% of rice, 74% of corn, 69% of vegetables, and plays a dominant role in the production of meat (100%, but 59% of pork) (For output goals of 1980, see Appendix II-8). The state sector includes some 25 state farms and rancnes which may be classified into five categories:

First, a number of small farms, ranging between 10-20 hectares, devoted to multi-agricultural activities such as cattle raising, agriculture and fish culture. These small farms are being transformed into co-operatives.

Second, a number of large farms, operating hundreds of hectares, especially the three farms under the management of the O.C.V. (the Mbe, the Mantsoumba, and the food station at Loudima).

Third, a large state plantation, the SOCOTO, which specializes in the production of rice and corn.

Fourth, a number of so called "Party Farms" (Champs du Parti) which produce manioc, corn, rice and ground nuts, such as the Makoua, the Odziba, and the Malela farms. These "Party Farms" are also being integrated into the O.C.V., and

Fifth, a number of agricultural processing outlets such as the rice processing plants at Mossendjo, Kintoumba and Ewo and two processing plants for corn in Brazzaville and Nkayi to supply animal feeds.

B. Agricultural Production

1. Structure

Currently, there are only 200,000 hectares of land or about 2% of the total area of the Congo under cultivation. There are a number of reasons for the small amount of cultivated land. First, much of the north is covered with marshlands of dense

forest, not unlike the cypress swamps of southern Florida in the United States, except that the tree species are different. Second, all of the northwest and much of the southwest are covered with dense tropical forests which are not easy to clear and cultivate. Third, the central and the southeastern savannas are too hilly to permit the cultivation of large tracts of land. Fourth, where the land is flat enough for large scale cultivation, as it is north of Brazzaville, the long dry season would not permit intensive cropping, nor are water resources adequate for irrigating the drylands. Fifth, land potentially suitable for plantation agriculture in Sangha and Cuvette regions are currently inaccessible for lack of rural infrastructure. Sixth, there are not enough peasants to cultivate the available arable land at the present level of farming technology.

It should be mentioned here that while the dense forest of the Congo would not permit bringing much of the country's potential arable land under cultivation, the forest is, however, a source of valuable hardwood. Before off-shore oil production became important, tropical hardwood had been the major source of Congo's export revenue. Although the forestry sector is important to the Congo, the sector does not fall within the purview of this study. Suffice it to say that currently the timber and other hardwood products of the foresting sector, on one hand, provide 10% of the country's export earnings. Agricultural products, on the other hand, account for only 5% of the total value of 1980 exports.

Until recently, official policy had not placed much emphasis on the contributions that Congolese small farmers could make towards the country's agricultural production. Consequently, they were left to fend for themselves with almost no agricultural extension service, nor other input and marketing assistance. The quest for increased agricultural production was to be accomplished through large-scale mechanized state farms, but so far the state farms

have not performed as expected. Consequently, since 1977 the Government has rediscovered Congolese peasants as valuable partners in its bid to increase agricultural production and national self-sufficiency in the production of basic foodstuffs.

The current strategy seeks to group farmers into co-operative production units, but so far the Government has adopted a cautious approach to carrying out the co-operative program. Presumably this is because previous attempts to organize peasants into similar groupings were unsuccessful. Since improved marketing will be essential to the success of the new agricultural program for peasants, two marketing organizations are OCV (Office des Cultures Vivrieres), which is responsible for the marketing of food crops, OCC (Office du Cacao et du Cafe), which handles cocoa, coffee and export crops other than tobacco and palm oil; these two products are handled respectively by OCT (Office Congolais du Tabac) and RNPC (Regie Nationale des Palmeraies du Congo).

The Government has also been aware of some of the problems facing small farmers in the national effort to increase agricultural production. One of the problems has been establishing a level of producer prices that would elicit increased peasant production of such key cash crops as cocoa, coffee, and tobacco. Late in 1978, a stabilization fund, Caisse de Stabilisation des Prix des Produits Agricoles et Foresteriers, was formed to consolidate the operational surplus accounts of the Government marketing organizations, the OCC, OCT, and OCB (Office Congolais du Bois), so that the funds could be used to stabilize producer prices in the event that world prices for cocoa, coffee, tobacco and timber should decline sharply. A price commission appointed by the Government made an investigation into producer prices to see how they could be administered to induce increased agricultural production. It is anticipated that the setting of future producer prices would take into account the recommendations of

the price commission. There appears to be a genuine search for answers on the part of the Government to help improve performance in the agricultural sector. Indeed, this current survey of the sector is an aspect of the search for the right answers to help improve the performance of the agricultural sector in the Congo.

2. Production of Food Crops

The production of food crops has been essentially a small farmer endeavor until recently when state farms were instituted. While the state farms grow some of the basic foodstuffs, 99% of manioc and 67% of rice are still supplied by small farmers (See Table II-10). The rural areas are self-sufficient in their supply of the basic food crops, and peasants market whatever surplus they may have after meeting their own subsistence needs. Figures are, therefore, not available for total food crop production in the country. The Office of Agricultural Statistics of the Ministry of Rural Economy, however, maintains estimates of the volume of the basic food crops sold in the urban centers.

The basic food crops grown in the Congo include manioc (cassava), plaintains, bananas, yams, sweet potatoes, rice, beans, fruits and vegetables. Manioc, the basic foodstuff of much of the Congo, is grown in all the regions. Cultivation of cassava dominates the local food crop activity in all regions except the extreme northwest, where plantain is the favorite food crop. Bananas grow in all the regions to some extent, but do better in the forests than in the dry savannas. Yams (water yam and cocoyam) are also widely grown, but not the taro of the Pacific islands. Some rice is grown around Mossendjo in Niari, Kindamba in Pool, Ewo and Boundji in the Cuvette region. Sweet potatoes are also widely grown. Fruits, including papaya, sour sop, mangoes, citrus fruits and avocados are also widely grown in the wet valley of the savanna and in the forest areas. All types of vegetables, including cabbages, spinach, carrots, radishes,

onions, tomatoes, okra and peppers are also grown in the wet valleys and by rivers near urban areas.

Total areas under cultivation are also difficult to come by, although the FAO made some estimates during a survey conducted between 1975 and 1977 (Table II-11). It gave 63,600 hectares (ha) as area under cassava cultivation, 20,800 ha under yams and cocoyams, 16,800 ha under plantains and bananas, 21,200 ha under maize, 2,200 ha under rice, 10,200 ha under groundnuts, and 4,600 ha under vegetables. All other crops occupy 60,600 ha, giving the total area of the country under cultivation at the time of the survey to be 200,000 ha. Yields are also relatively low. From the FAO survey under reference, only 7.9 - 9.4 metric tons of cassava could be harvested on a hectare; for yams, the yield was 4.8 metric tons per hectare; for rice, 1.4 - 1.8 metric tons per ha, and for groundnuts, 1.5 - 2.0 metric tons per ha.

The output of locally produced foodstuffs has for some time now been unable to meet the total demand. The marketed portion of production of major food crops is shown in Table II-12. During 1973-78, all output of these crops was stationnary. The shortage is reflected by the increases in the prices of locally produced food. A noticeable development is the change in the diet of the urban population from the locally produced food to imported items. For instance, there is an appreciable shift to wheat bread away from the manioc foufou in the urban centers. The shift is being helped by a Government intervention which has kept the prices of imported food low relative to that of locally produced food in an effort to hold down urban living costs. The situation raises a policy issue for the Government to resolve, i.e., whether it would prefer to subsidize increased food production by assisting peasants with higher prices, agricultural extensions, marketing and credit services, or to continue subsidizing imported food. While the former line of action would be more difficult and would probably cost more initially than the

Table II-11

FOOD CROPS: ESTIMATED AREA UNDER CULTIVATION, PRODUCTION AND YIELDS

CROPS	Average 1975-1977			
	Area (Hectares)	Share (Percent)	Production (Metric tons)	Yields (Metric tons
CEREALS				
Maize	21,200	10.6	4-5	0.2-0.3
Rice	2,200	1.1	3-4	1.4-1.8
Subtotal...	23,400	11.7	- -	- -
TUBERS				
Yams	16,200	8.1	100	4.8
Cocoyams	4,600	2.3		
Cassava	63,600	31.8	500-600	7.9-9.4
Other Tubers	3,400	1.7	- -	- -
Subtotal...	87,800	43.9	- -	- -
SEEDS				
Ground Nuts	10,200	5.1	15-20	1.5-2.0
Gourd Seeds	4,800	2.4	- -	- -
Other Oil Seeds	400	0.2	- -	- -
Subtotal...	15,400	7.7	- -	- -
FRUITS AND VEGETABLES				
Plantain Bananas	16,800	8.4	30-40	1.8-2.4
Vegetables	4,600	2.3	- -	- -
Other Food Crops	19,400	9.7	25-30	1.3-1.5
Subtotal...	40,800	20.4	- -	- -
OTHER CROPS	32,600	16.3	- -	- -
GRAND TOTAL	200,000	100	- -	- -

Source: FAO, Centre d'Investinement, Mission d'Identification Agricole Generale, Rapport 47/49 PRC 4; and Mission Estimates.

Table II-12

MARKETED PRODUCTION OF FOOD CROPS
1973-1978
(in thousands of metric tons)

Crops	1973/74	1974/75	1975/76	1976/77	1977/78
Cassava	547.2	553.2	559.3	565.5	571.7
Bananas	33.5	33.8	34.8	34.2	34.6
Peanuts	16.3	16.5	16.7	16.9	17.1
Yams	11.1	11.2	11.4	11.5	11.6

Source: Office of Agricultural Statistics, Ministry of Rural Economy.

latter line of action, the former offers an attractive long-term benefit of strengtening the country's capacity to feed itself.

3. The Food Balance

Given the fact that agricultural production has not increased to keep pace with the growing population in recent years and given the rapid rate of urbanization, the supply and demand situation of food in the Congo has been out of balance.

There appear to be no major problems in meeting rural consumption, since rural populations live at a subsistence level. However, with population in the urban areas increasing currently at the rate of 7.8% a year, the food production from the rural area has not been adequate to meet urban consumption. The urban demand for food in recent years has been met, to a large extent, by importation of foodstuff especially wheat flour (for bread), cooking oil, meat, and rice. For example, between 1967 and 1976 the importation of wheat increased from 1.9 million tons to 11.7

million tons, or a sixfold increase. At the current rate of consumption, local rice production meets only between 30 and 40% of the total urban consumption. Annual meat imports is also a large item, accounting for about 90% of total consumption. In 1979, Brazzaville alone consumed 5,500 tons of beef, a per capita consumption of 13.5 kilograms, of which 5,200 tons or 95% were imported. In order to assure a regular flow of imported foodstuff, the Government created two important offices: the Office National de Commercialisation (OFNACOM) which imports rice, salt, salted fish, sugar and the ONIVEG which imports meats.

According to an FAO study, by 1983 the total meat consumption in the urban area will reach nearly 30,000 tons per annum, of which only a little over 2,000 tons could be produced domestically, leaving nearly 28,000 tons of meat in deficit. The Government has tried to solve the food deficit problem in the cities by creating state farms and state ranches; however, these ventures have not been successful, as will be discussed later in this report.

4. Production of Cash Crops

Historically, the production of sugar cane, palm fruits and tobacco, the former major cash crops of the Congo, was the preserve of plantation owners, mostly Europeans. With the fading away of their presence in the Congo, the output of these farm products, particularly those of raw sugar and palm oil, declined precipitously. For example, the export of raw sugar was recorded by the Customs Service in 1967 to be as much as 90,689 metric tons. The figure declined to 17,836 metric tons in 1976. The annual production figure is now between 14,000 and 15,000 metric tons. However, the Government repeatedly has been seeking assistance to rehabilitate the country's sugar processing facilities, so as to improve the production of raw sugar, a one-time major source of export revenue for the Congo.

The production of palm oil has also declined from over 3,000 metric tons in 1971 to 1,700 metric tons in 1979. The decline is partly attributable to the aging of the palm trees. The Government has also had negotiations with the African Development Bank and the World Bank for a way to rehabilitate the oil palm plantations near Ouesso in the Sangha region. The proposed $13.3 million rehabilitation project is expected to increase current palm oil production from below 3,000 metric tons a year to 6,000 metric tons, with an additional palm kernel output of 1,600 metric tons a year. The project calls for rehabilitating some 1,600 ha of old plantations, and the development of some 2,000 ha of new plantings, and the rehabilitation of the oil pressing facilities at Ouesso-Makolo. Palm fruits harvested by small farmers supposedly would be accepted for processing at the rehabilitated oil pressing facilities.

The production of cocoa and coffee has always been a small farmer endeavor in the Congo. The output of cocoa, one of the two important cash crops, has been on the increase, apparently aided by recent improvements in producer prices paid to growers. However, the major producing regions, Sangha (cocoa), Cuvette and Likouala (coffee) face serious transportation problems since the regions have limited road systems of any kind. Coffee and some cocoa are also grown in Bouenza and Lekoumou regions. The production of cocoa and coffee offers a unique opportunity in the Congo for the creation of rural prosperity in the areas producing the two crops, as was the case in Ghana and the Ivory Coast.

The quantity of cocoa marketed in the Congo fluctuated between 2,000 and 3,000 metric tons a year during the period 1971 through 1979 (Table II-13). Sangha is the leading cocoa producing region, with some production in Bouenza and Lekoumou regions. A program to rehabilitate some 7,000 ha of cocoa farms, and to plant additional 5,000 ha of cocoa trees with financial assistance from the African Development Bank has been in preparation since 1978. While the world price for cocoa

Table II-13

MARKETED PRODUCTION OF MAJOR CASH CROPS
1971-1980
(Quantity in thousands of metric tons, value in million CFAF)

	1971		1972		1973		1974		1975		1976		1977		1978		1979		1980*	
CROPS	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V	Q	V
Cocoa	2.0	-	2.2	-	2.1	175.5	2.4	201.0	2.9	233.3	2.3	228.6	3.0	303.7	2.3	197.0	2.8	567.9	2.9	-
Coffee	1.1	-	1.3	-	1.0	46.0	1.4	68.0	1.3	91.9	1.4	101.0	2.1	491.6	5.2	160.2	4.8	155.2	1.7	-
Palm Oil	3.4	-	3.1	-	3.0	17.7	1.9	22.2	2.2	20.4	2.9	15.0	2.4	8.7	2.6	19.1	1.7	14.6	-	-
Corn	-	-	-	-	-	-	-	-	-	-	0.2	6.6	0.6	23.0	0.8	32.3	0.5	10.6	3.9	-
Rice	-	-	-	-	3.4	72.5	2.2	55.4	1.6	40.3	2.0	59.5	1.1	22.5	0.7	27.2	1.3	63.2	1.7	-
Potatoes	-	-	-	-	-	-	-	-	.05	0.3	.09	.4	.04	0.3	0.1	10.7	0.2	17.8	0.2	-
Beans	-	-	-	-	0.3	2.0	0.3	1.8	.03	2.2	-	-	.03	2.7	.07	6.5	.05	5.8	0.2	-
Tobacco	-	-	-	-	-	-	-	-	1.0	86.7	1.0	96.4	0.6	59.6	0.6	67.2	0.6	75.9	0.4	-
Peanut	-	-	-	-	-	-	16.3	-	16.7	-	16.	-	16.9	-	17.1	-	-	-	-	-

KEY:
Q - Quantity
V - Value
* - Projections

Sources: UCC, OCV, and OCI. "Bulletin de l'Afrique Noire," No. 1057, 23 July, 1980.

has softened during the 1980's, the 1970's witnessed sustained increases in the price of cocoa. Analysts believe the current weak price position is due to temporary oversupply, coupled with a relatively slow "bean grinding rate," brought about by recession in the two major cocoa consuming countries of the United States and Great Britian. The situation is regarded as temporary, rather than as reflecting a trend in the movement of the world cocoa price.

The bean quality of the cocoa produced in the Congo is reasonably high -- over 96% of the marketed output meets the superior classification. However, it was noticed that the tree varieties being grown in the Congo are varieties grown in Ghana some 60 or 70 years ago. These tree varieties were known to be susceptible to attack by capsids, which devastated much of Ghana's older cocoa trees during the 1940s. Some of the cocoa trees are now under capsid attack in the Congo.

The Cocoa Research Institute of Ghana, which has been doing research work on cocoa since the 1920s, developed new varieties of cocoa trees which are not only disease resistant, but also have larger pods and beans, and mature between five and seven years. The Ministry of Rural Economy might arrange to obtain the seedlings of the new cocoa tree varieties from Ghana, test them for their suitability in the Congolese environment, and subsequently make the most suitable strains available to small farmers to grow.

The coffee growing regions in the Congo are Cuvette, Likouala, Bouenza, Lekoumou and Niari. Local coffee production fluctuated between 1,100 metric tons and 1,400 metric tons during the period 1971 through 1976. The output subsequently dropped to only 700 metric tons in 1977 through 1979. The official estimate for 1980 was 1,700 metric tons. However, the export volume of coffee rose sharply during 1977, 1978 and 1979 to 2,100 metric tons, 5,200

metric tons and 4.8 metric tons (for the first nine months) respectively. The increases were due to the fact that the Congo agreed to market for Angola that country's coffee output of 1,400 metric tons in 1977, 4,500 metric tons in 1978 and 4,100 metric tons in 1979. Small quantities of coffee produced in Zaire also found their way into the Congo during the three years under reviews.

Most of the coffee grown in the Congo is of the Robusta variety. However, the team observed a small experimental plot of Arabica coffee at an Agricultural Station near Loubomo. At the same station seedlings of improved Robusta coffee obtained from the Ivory Coast were also observed. Several thousand seedlings were being propagated for distribution to farmers. The project is commendable. However, it would have been better if the strains of the imported varieties had first been tested to select the ones best suited to the Congolese environment. While Arabica beans sell for more in the international coffee market, the demand for Robusta coffee is increasing faster than that for Arabica due to the popularization of instant coffee, which is usually ground from Robusta beans.

As part of the cash crop rehabilitation program, the Government has been preparing to regenerate 3,750 ha of coffee plantations and to undertake new plantings on 3,000 ha with foreign financial assistance. Producer prices paid by OCC to peasants, though still very low, have been on the increase from CFAF 70 per kilogram during 1975/1976 season to CFAF 150 per kilogram during 1978/1979 crop season, an increase of 114.3% over the three crop seasons (Tables II-16 and II-17).

Maize and peanuts are considered cash crops in the Congo. The marketing of maize is handled by OCV. Output figures can be inferred from the quantities sold to the country's nascent animal feed industry. The peanut is also handled by OCV, and the output is sold to oil presses. The production figure for corn has been

stable, increasing by only 800 metric tons between 1974 and 1978, from 16,300 metric tons to 17,100 metric tons. The state farms also produce maize. But the bulk of the output is produced by peasants. For instance, the Government's planned target output of maize for 1980 was placed at 15,07 metric tons, and peasants 11,100 metric tons, i.e., 73.6% of the total output. The target output figure for peanuts was set at 3,800 metric tons. Peasants were expected to produce all of the output.

It would appear that maize could be grown in the wet valleys of the South during the long dry season, so as to supply the urban areas with sweet fresh maize. A few stalks of maize in vegetable gardens near Loubomo were doing reasonably well, even though it was late in July, towards the end of the dry season.

C. Livestock

Attempts to raise beef cattle in the Congo have not proved very successful for both technical and economic reasons. One aspect of the technical problems has been solved by the introduction of the tsetse resistant N'dama breed of cattle, but it is still not easy to obtain adequate numbers of breeding stock from neighboring countries. The recruitment of technical personnel to adequately run some seven ranches and an experimental dairy farm operated by the Government is still a major problem. The capital costs of the projects were very nigh, as have been the operating costs relative to revenues. The unprofitable operations are partly attributed to Government policy which pegged meat prices at uneconomic levels with a view to holding down urban living costs.

The cattle population of the Congo is estimated at 45,000 head, and the Government ranches raise the bulk of the total. The various Government owned ranches of the Congo were developed with financing from the World Bank and the European Economic Development Fund. The latter organization continues to provide technical assistance for

running the ranches. The production of beef is still limited in quantity, accounting for only between 20% and 25% of the local requirement. Imports make up for the short fall.

Small farmer involvement in cattle raising appears minimal, but seems to have some potential. We observed some N'dama cattle tethered under a bamboo grove near Kinkala in Pool region. Keeping the animals in fenced enclosures at night would provide the owners some manioc to enrich the soil of their gardens and farms. The sedentary pastoralists in West Africa use similar enclosures constructed with bamboo and palm branches to herd their livestock at night. In the morning they sprinkle ashes on the droppings and collect them as manure to enrich the soil of their gardens.

Some sheep and goats were seen in almost all the villages visited in the Congo. There appears to be no special program to improve the small farmers' production of sheep and goats. There is, however, an on-going project to encourage the raising of swine. The project is sponsored by ODE (Office de Developpement de l'Elevage), a Government Agency formed in 1978 to oversee the country's livestock development program, and to serve as the buying and marketing organization for livestock and meat products.

Tne pig raising project, which is also being promoted in conjunction with fish culture as a source of food through the manure for the fish, works in this way: co-operatives buy piglets from a Government breeding farm, raise the piglets to maturity and sell them back to ODE. ODE in turn, will have the animals slaughtered and distribute the meat to retailers. The operation of one co-operative participating in the project was observed. The little thatched hut under which the pigs were kept, had a cement floor and was kept very clean. There were 53 very clean and plump six-month old marketable hogs under the little hut. Tne possibilities that the project holds for involving peasants in the livestock development program seem impressive. This is also a situation in which farm credit could be

extended to small farmers with very little risk. ODE sells the piglets to peasants and buys back the finished hogs. OCV supplies the feed. The credit agency, possibly the Commercial Bank of the Congo (BCC), could pay the two suppliers directly for their products.

By mutual agreement, BCC could serve ODE with copies of bills outstanding against each debtor participating in the project. ODE would pay individual peasants for their finished hogs, less the amount each peasant is owing BCC. The arrangements should be explained in advance to all peasants participating in the project. Tnis is, indeed, an ideal situation in which a small farm credit program could readily succeed.

The project should be expanded and made open to all small farmers who could provide the huts for keeping the swine. The project should also be extended, first to poultry and later to sheep and goats. The credit element should be incorporated as quickly as possible.

There are two relatively large municipal abattoirs at Loubomo and Nkayi. While the output of beef and pork from the abattoirs represented almost all the local output of the two meat products, the sheep and goats slaughtered represented only a miniscule amount of mutton consumed in the country, since most of the sheep and goats are raised and slaughtered for consumption in the subsistence sector of the economy. The levels of operation at the two abbattoirs are indicated in Table II-14.

TABLE II-14
Animals Slaughtered at the
Abattoirs in Loubomo and Nkayi in 1979
numbers (Heads)

Animal	Loubomo	Nkayi	Total
Beef cattle	612	574	1,186
Sheep	19	68	87
Goats	25	68	93
Swine	355	410	765

Source: Bulletin Mensuel de Statistique, Centre National de la Statistique et des Etudes Economiques.

Cnicken, ducks and limited numbers of guinea fowls (Numida meleagris) are raised in the Congo. The country meets its requirements of poultry products from local production. The relatively high prices charged for poultry products indicate the production can be increased beyond existing levels. Since much of the output of poultry and poultry products are by small farmers who also sell the bulk of the output as live chickens and eggs, there is no reliable estimate of the poultry population, nor of the total annual production of poultry products. During the course of a tour in the countryside, chickens were seen in every village, ducks in many of the villages, and two guinea fowls in a village called Mifouma in Kinkala district. There could have been more of them, since guinea fowls are more resistant to the common diseases that plague chickens. Guinea fowls are easy to raise: no coop is necessary to keep them, as they prefer to roost in trees at night. They are also prolific: a guinea hen may brood as many as 40 chicks and raise almost all of them to maturity with only a few losses.

Some rabbits are raised in the Congo, but there is no data on the population, nor on annual production. A co-operative visited near Pointe-Noire had a facility to hold scores of rabbits raised by its members for sale. There is no national rabbit production project, a currently popular project in a number of African countries.

D. Fishing

One national resource which the Congo has in abundant supply is water in the form of rivers and the sea. The potential for salt-water and freshwater fishery development is almost unlimited. This potential has yet to be tapped. A basic constraint on the development of the fisheries potential of the country can be attributed to lack of keen Government interest and coherent policy on how to go about the development. In addition to the policy vacuum are such other constraints as limited landing facilities to handle modern vessels at Pointe-Noire and to accommodate small

vessels and canoes at the various inland ports. Furthermore, there is a complete lack of incentive for and assistance to small fishermen to improve their catch. Yet large quantities of fish are consumed each year in the Congo, with some of the fish imported.

Currently one public and three private enterprises carry out coastal and deep sea fishing from Pointe-Noire on a commercial scale. The largest of the four operators is SICAPE (Societe Italienne-Congolaise d'Armement et de Peche), a joint venture in which the Congolese Government holds the majority interest. The charter for SICAPE called for the establishment of a fish canning factory, construction of a deep freeze plant in Pointe-Noire and a network of small cold stores in the interior, the manufacture of fish meal in addition to coastal and deep sea fishing. SICAPE was established in 1974, but to-date all of its catch is sold to foreign buyers. It has yet to commence on any of its other intended activities besides fishing. SICAPE and the other three commercial fishing firms, one of which is owned by a Congolese national and the other two by expatriates, account for much of Congo's saltwater fish harvests. Nationals from other countries on the western coast of Africa operate within the territorial waters of the Congo. The catch of the traditional Congolese fishermen operating from Pointe Noire and along the coast are very small. Estimates of the catch are usually sold in heaps to dealers without the benefit of any weighing. The annual volumes of the catch by the commercial fishermen operating from Pointe-Noire between 1970 and 1979 are shown in Table II-15.

TABLE II-15
The Volume of Fish Landed at Pointe-Noire
by Commercial Fishermen, 1970-1979
(in metric tons)

1970	1971	1972	1973	1974	1975	1975	1976	1978	1979
9,445	7,119	13,850	12,310	11,691	14,318	12,623	10,357	14,117	13,450

Source: Bulletin de l'Afrique Noire, No. 1057 du 23 juillet 1980.

Freshwater fishing is carried out by small-scale fishermen operating in the various rivers of the country, particularly in the Congo river near Brazzaville and the upper reaches of the Congo and Ubangi rivers. Estimates for freshwater catches of fish range from 13,500 metric tons in 1971 to 15,000 tons in 1978. These estimates are not reliable, since the traditional fishermen, who account for all the freshwater catch, neither weigh their catch, nor is there any system to record their landings. Judging by experience with the operation of traditional fishermen in other African countries, the estimates are only a fraction of the actual catch by the fishermen, since much of the catch is usually consumed in the villages along the river, with only a small surplus smoked for marketing. Fish is a very perishable commodity and deteriorates rapidly in tropical villages without refrigeration to preserve it; consequently, there is a high rate of spoilage in traditional fishing. There used to be a fish drying facility at Mossaka in Cuvette region. The closure of this facility has seriously affected the supply of dried and smoked fish in Brazzaville.

There was a thriving acquaculture endeavor in the Congo during the 1950s, when an estimated 4,000 metric tons of pond-raised fish, mostly tilapia, were harvested. The harvest is now estimated at only five metric tons a year. The Government has been trying to organize peasants into co-operatives to raise pond fish. Two of the ponds were visited. A great deal of technical assistance in the design of the ponds and in the care of the fish would be needed to turn the ponds into productive, if not profitable endeavors. (For value of annual fish products and of other agro-industrial products, see Appendix II-9).

IV. AGRICULTURAL MARKETING

A. Markets

1. Domestic Market for Farm Produce

Traditionally, the majority of the population of the Congo cultivated the land to provide for their own subsistance needs, and only marketed a small surplus. This pattern has been changing rather rapidly with the continuing wave of migration from the rural areas to the major urban centers of Brazzaville, Pointe-Noire, Loubomo, Nkayi and other secondary urban areas. The Congo is one of the few urbanized countries in Africa. About 57% of the total population now live in the primary and secondary urban areas of the country as compared to about 15% in 1950. The rapid urbanization has led to the growth in the cash market for locally produced foodstuffs.

The magnitude of the market, in terms of the urban population, and the proportions of their income expended on food items, is estimated at CFAF 41.1 billion ($182 million, 1979 exchange rate). The supply of locally produced food has been unable to meet rising urban demand. The short-fall is now being covered by increasing quantities of imported food and meat products now valued at CFAF 8.0 billion a year. Inadequate local food production to meet the rising demand for food has resulted in a rapid rate of increase in the consumer price for food items. Between 1973 and 1977 the consumer price index for food items rose by an annual rate of 12.4% (Appendix II-6 and II-7). Since 1978, the Government has imposed a freeze on prices while introducing subsidies on certain items such as meat and wheat flour.

The local food processing industry constitutes another segment of the domestic market for agricultural produce. The local food processing facilities include the sugar refinery, palm oil and

peanut oil presses, a soap and a cigarette factory, and fish drying and processing facilities. In 1973 the total output of these agro-industrial plants was valued at CFAF 78.4 billion. In 1977, however, the value of their output declined to CFAF 29.4 billion. The estimated total value of their output improved somewhat in 1978 to CFAF 34.7, but was still 45% below the 1973 value. Other newer agro-industrial processing facilities include rice mills, manioc flour mills and animal feed blending plants. The output data for the new agro-industrial plants are not available.

2. The Export Market for Agricultural Produce

Cocoa, coffee and palm products (palm oil and palm kernel) constitute the agricultural export commodites of the Congo. While there is unlimited international market for these commodities, their current output and export earnings are limited. In 1979, the total value of the three commodities amounted to CFAF 737.7 million.

The entire output of Congo's commercial deep sea fishing is now exported; the SICAPE now runs three ocean-going fishing boats. However, no figures are available on the financial outcome of the venture. Three other privately owned ocean fishery companies operate from fish processing and refrigeration facilities located in Pointe-Noire. The output of traditional fishing operations are not exported.

B. Marketing Systems

Constraints to marketing are analyzed elsewhere in this report (see Part II, Section II; and Part III, Section III-G; and Part IV). At present, there are two agricultural marketing systems in the Congo. A large public marketing system operated by five organizations and a small private system, consisting of small-scale Congolese food crop dealers and a few European farmers who export their limited output of

special fruits such as mangoes. The public marketing organizations have the statutory authority to buy and sell agricultural produce within their crop or group of crops division. They act both as monopolies and monopsonies.

The public marketing organizations include the following:

1. OCV (Office de Cultures Vivieres) which was established in 1978 to be responsible for the marketing of all food crops, as well as to run the state farms concerned with food production. To date, however, OCV handles only a few commodities, like maize, peanut and rice, which have relatively short and well-established marketing chains. The oil presses, which now operate under capacity can take all the peanut OCV can supply them. The nascent animal feed blending industry can also take all the limited supply of locally produced maize that OCV can make available to them. The market for rice is concentrated in the urban areas with well-established wholesale and retail outlets. OCV has yet to handle manioc and plantain, the staple food items of Congolese nationals, but OCV now intends to move on to the marketing of manioc. The operation might face some technical problems, particularly when OCV would have to work with the limited numbers of vehicles it now operates. Manioc is very difficult to preserve after it has been uprooted, and must be moved very quickly to the point of sale.

2. OCC (Office de Cacao et du Cafe), another parastatal marketing organization, has the responsibility for buying and marketing the peasants output of cocoa and coffee. OCC has been doing a very profitable marketing operation for the Government. Between the 1973/74 and 1978/79 crop seasons, OCC cleared on the average an operating margin of 52.9% of total revenues on its coffee operation and 39.7% on its cocoa operation. The corresponding percentages paid to farmers as producer prices were 21.1% for coffee and 30.4% for cocoa. Because of poor

roads and inadequate transportation equipment, collection and transportation costs are very high. For coffee, the costs of moving the output to point of sale were as high as 20.4% of the sale price. The corresponding costs for moving cocoa during the same period were 26.2%.

Tables II-16 and II-17 show the composition of prices and marketing costs for coffee and cocoa.

3. RNPC (Regie Nationale des Palmeraies du Congo) and OCT (Office Congolais du Tabac) are the other two state marketing organizations. RNPC handles the marketing of palm products and OCT that of tobacco. The fifth state marketing organization is OCB (Offie Longolais du Bois) which handles the marketing of timber and wood products.

The average Congolese urban dweller has to spend the bulk (51%) of his income on food items. Efficient marketing could significantly lower the cost of food to the urban population, in this case the majority (57%) of the total population. The manufacturing industries in the country, including sugar refining, oil pressing and soap manufacturing, cigarette manufacturing, animal feed blending, etc., depend on locally produced raw materials. Inefficiency in the marketing system for agricultural products which feed the industries will adversely affect the performance of the industries. Worse still, should the marketing system for the raw materials break down, the whole economy will be directly affected, since the relatively large service sector of the economy cannot thrive for long without the agricultural and industrial base to support it. In a country, such as Congo, where the state dominates agricultural marketing activity, closer attention needs to be paid to marketing than in countries where the self-correcting forces of the market work to set fairly competitive prices without any state intervention.

Table II-16

COMPOSITION OF COFFEE PRICES AND MARKETING COSTS

1973-1979

(Prices in CFAF per Kilogram)

	1973-74		1974-75		1975-76		1976-77		1977-78		1978-79*		Average %
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	1973-74 -- 1978-79
Producer Price	60	18.8	70	30.8	70	11.0	90	10.1	120	20.3	150	27.3	21.1
Collection	18	5.6	21	9.3	25	6.8	28	3.2	31	5.3	36	6.6	6.1
Transportation	49	15.3	46	20.3	47	12.7	58	6.5	77	13.0	99	18.0	14.3
Export Tax	22	6.9	22	9.7	22	5.9	22	2.5	25	4.2	25	4.5	5.6
Margin	171	53.4	68	29.9	205	55.6	691	77.7	338	57.2	246	43.6	52.9
Average Export Price	320	100.0	227	100.0	369	100.0	889	100.0	591	100.0	550	100.0	100.0

* 1978-79 Estimated from prevailing world prices

Source: From published figures by OCC and predecessor organization

Table II-17

COMPOSITION OF COCOA PRICES AND MARKETING COSTS

1973-1979

(Prices in CFAF per Kilogram)

	1973-74		1974-75		1975-76		1976-77		1977-78		1978-79*		Average %
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	1973-74 -- 1978-79
Producer Price	100	33.8	100	30.3	100	38.5	130	26.9	180	23.7	200	29.2	30.4
Collection	27	9.0	31	9.4	41	15.8	45	9.3	54	7.1	54	7.9	9.7
Transportation	49	16.6	54	16.4	62	23.8	72	14.9	97	12.8	97	14.2	16.5
Export Tax	15	5.1	15	4.5	14	5.4	14	2.9	16	2.1	16	2.3	3.7
Margin	105	35.5	130	39.4	43	16.5	223	46.0	413	54.3	318	46.4	39.7
Average Export Price	296	100.0	330	100.0	260	100.0	484	100.0	760	100.0	685	100.0	100.0

* 1978-79 Estimated from prevailing world prices

Source: From published figures by OCC and predecessor organization.

PART III

THE TARGETED POPULATION: THE SMALL FARMERS

PART III

THE TARGETED POPULATION: THE SMALL FARMERS

I. BACKGROUND

A. The Rural Dwellers

In 1980, the small farmer population is estimated at 647,000 persons as compared to 756,000 persons when the agricultural census was taken in 1973, a decrease of 14%. Analysis in this section is based on the 1973 census because of availability of data.

The small farmers live in and near villages of less than 300 inhabitants each. They comprise the private sector of agriculture, operating about 143,485 small holdings of 1.37 hectares average (Table III-1). The holdings in the Niari region are larger than the national average while those in the Lekoumou and Pool regions are slightly smaller. Each active person in the rural area cultivated an average of 0.53 hectare. On a family basis, the cultivated area per family member actively engaged in farming is about 0.68 hectares for farms operated only by one person, and 0.53 hectares or less for farms operated by four or more family members (Table III-5). Each small holding comprises on the average 5.6 persons of which only 2.58 persons, or less than half, are active in agriculture (Table III-1).

The farmer's population is characterized by the predominance of women in farming. As Table III-2 shows, of the 369,332 active members of the 1973 farm population, 235,815 or 63.8% were women and 133,517 or 36.2% were men. Males between the age bracket of 12-24 years old comprise only 2.2% of the total active population, while girls in the same age bracket comprise 11.7%. The majority of both men and women, 69.3%, are between the age of 25 and 54.

Table III-1

DISTRIBUTION OF RURAL POPULATION, NUMBER OF HOLDINGS AND AREAS UNDER CULTIVATION

ITEM	NIARI	LEKOUMOU	POOL	CONGO
No. of holdings (households)	23,256	10,452	34,698	143,485
Population engaged in agriculture (persons)	129,966	58,845	183,502	798,032
Persons per household	5.6	5.6	5.2	5.6
No. active in farming per household	2.50	2.76	2.36	2.58
Area cultivated (ha)	33,299	13,819	44,254	196,774
Area cultivated per household (ha)	1.43	1.32	1.27	1.37
Area cultivated per active person (ha)	0.57	0.48	.0.54	0.53

Source: FAO, Centre d'Investinement, Rapport 47/49, PRC-4.

Table III-2

DISTRIBUTION OF ACTIVE FARM FAMILY MEMBERS

BY AGE, SEX AND REGION

AGE	NIARI		LEKOUMOU		POOL		CONGO	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
				MEN				
12-14 yrs.	78	0.1	-	-	69	0.1	168	0.1
15-24 yrs.	1,175	2.0	688	2.4	878	1.1	7,864	2.1
25-34 yrs.	4,036	6.9	1,560	5.4	3,660	4.5	21,856	5.9
35-44 yrs.	4,445	7.7	2,579	9.0	5,562	6.8	31,370	8.5
45-54 yrs.	6,426	11.1	2,294	8.0	9,831	12.0	39,270	10.6
55-64 yrs.	4,420	7.6	1,692	5.9	6,756	8.2	25,825	7.0
65 and over yrs.	1,071	1.8	997	3.5	1,914	2.3	7,161	1.8
Total	21,651	37.3	9,810	34.1	28,670	35.0	133,517	36.2
				WOMEN				
12-14 yrs.	441	0.8	-	-	701	0.9	3,099	0.8
15-24 yrs.	5,866	10.1	3,156	11.0	9,310	11.4	40,361	10.9
25-34 yrs.	10,754	18.5	4,415	15.3	9,450	11.5	55,361	15.1
35-44 yrs.	8,642	14.9	3,976	13.8	16,069	19.6	60,746	16.5
45-54 yrs.	5,823	10.0	4,374	15.2	12,588	15.4	46,951	12.7
55-64 yrs.	4,221	7.3	2,280	7.9	4,724	5.8	24,025	6.5
65 and over yrs.	695	1.2	783	2.7	486	0.6	4,970	1.4
Total	36,442	62.7	18,984	65.9	53,328	65.0	235,815	63.8
GRAND TOTAL	58,093	100.0	28,794	100.0	81,998	100.0	369,332	100.0

Source: Recensement Agricole 1972-73; FAO, Centre d'Investinement, Rapport 47/49, PRC-4.

B. General Characteristics

As noted above in Part I, the rural population densities are low, though there is a general tendency to agglomeration in larger villages, the population is declining. There is, of course, considerable regional variation in population densities (70% of the population living in the southern 30% of the country), in subsistence patterns as determined by ecological conditions and cultural preferences, and in the social institutions associated with the different ethnic groups.

Because of this diversity, the dearth of adequate literature (especially concerning the peoples of the north), and the lack of opportunity for the team to even visit, let alone study, most of the country, no attempt will be made to give a comprehensive picture of the small farmers throughout the Congo. Certain of the most salient features of the two largest ethnic groups (the Bakongo and the Bateke) will be analyzed in order to highlight factors relevant to any attempts to increase agricultural productivity at this level and to give some indication of the complexity of the issues involved. The discussion in each case will focus on four interrelated topics: lineage structure, authority relationships between generations, the sexual division of labor, and rules governing the access to and ownership of land. This will be followed by a general discussion of the rural exodus and a summary view of the rural condition.

1. The Bakango

As a rule lineages (unilineal descent groups) are matrilineal among the Bateke and Bakongo of the south and patrilineal among the Mboshi and Sangah peoples of the north. Among the Bakongo the lineages, which are ranked according to the seniority of their founding ancestors, have traditionally been grouped into named, exogamous clans. Sexual intercourse between clan members was regarded as incestuous and was formerly punishable by burning

alive. Each clan had its own food tabu, land was property of the clan, and all clan villages before the arrival of the Europeans were supposed to support each other in times of war. Clan members include, moreover, not only the living, but the ancestors as well. During the colonial period, nowever, it would seem that the clans lost much of their earlier importance, leaving control of village life largely in the hands of their constituent lineages. The head of a lineage is the oldest male member, and his authority rests not only on his seniority, but as Van Wing says in speaking of the clan chiefs, "His sacred character comes from his being the representative of the clan and like an incarnation of the ancestors (p. 125)." Even recent accounts describe village affairs as being controlled by the head of the dominant lineage and the lineage elders. This control of the old over the young (up to about 30 years of age) expresses itself not only in terms of groups, but in individual relations. Everyone is said to be under the authority of his or her maternal uncle in all matters. This is particularly important with respect to free access to lineage-owned land and in case of marriage. The control of marriage is especially important as a means of maintaining or consolidating lineage property (bilateral cross-cousin marriage reportedly is favored) and few men apparently dare to marry without their uncle's blessing.

Traditionally marriage was conceived to be more an alliance between two matrilineages than one between two individuals. It was the lineage heads who made the arrangements and agreed upon the goods to be exchanged, in principle of equal value. Nowadays the spouses themselves are directly involved and the future husband is supposed to take the initiative in proposing marriage. Still, nowever, the matrilineages of both spouses and those of their fathers must agree and provide the money and goods to be exchanged (Gabou: 8f.). One cannot easily marry, therefore, without one's family's approval and support, and the fear of retribution by one's maternal uncle in the form of sorcery in case one goes against his wishes is apparently very strong. A

desire to escape the domination of uncles and elders in general is commonly cited as a basic reason for the exodus of youth to the cities, but even there the fear persists. It was said that a common reaction to illness in the city, for example, was to visit and take presents to one's uncle in the village to induce him to withdraw the spell causing it.

Actually important changes seem to have taken place in recent times in the picture just presented. Given the long process of urbanization that has taken place since the thirties and the disruption of life in the rural areas that it has caused, this is not surprising. How widespread the changes are (especially in rural areas) could not be determined. The principal change would seem to be that nowadays it tends to be the father who has control over and responsibility for his children. In case of divorce children up to school age would stay with the mother, but older ones would go with the father. The extent to which matrilineal ties dominate and the matrilineage remains a corporate body would seem to depend on circumstances. Some such families remain close and maintain a fund administered by a senior elder for the benefit of its members, but this would no longer seem to be the rule. One informant, an urbanite, who said he had been approached about succeeding to such a position, could not face the prospect of taking responsibility for such a large group. It would mean the end of the kind of life he had grown accustomed to in France and Brazzaville.

The sexual division of labor is strong and is characterized by the dominance of men. The primary agriculturalists are women. Men will clear new land, but except for certain cash crops as maize or tobacco, tend to leave all the agricultural labor, including the transportation of the crops from the fields (which might be as much as 5-10 km. away from the village) to the women. Indeed it was reported that one attempt to introduce mechanization on a small scale failed because the man refused to use the "motocuiteurs" for plowing. Traditionally, a husband clears one

field for each of his wives plus one for himself. His wives will all work with him on his own field and will plant, harvest and exploit it for his entire benefit. The other fields serve primarily to support the respective households of the wives. Any surplus is sold by the wives and the proceeds kept by them until the fields are finished. The money is then supposed to be divided equally between each wife and the husband, except that each wife is supposed to pay a small amount for the hoe she has received from him. It is said, however, that wives frequently cheat their husbands by withholding part of the money to be divided. In case of a good crop the husband should present each wife with a piece of cloth. The economic advantages to a man of having several wives is obvious, and polygamy is still quite common in rural areas.

Wives also plant their own fields of peanuts, gourds, and maize, both to feed their households and for sale for their own benefit. They may also earn money by making and selling small baskets, raising chickens and goats, and by fishing. Some of this money a wife gives to her own family and some to her married children, while the rest is devoted to the accumulation of clothes to be used for her burial. Although the general rule is that there is a strict separation between the property of husband and wife, there is variation from region to region.

In Bouenza, for example, it seems that the husband's control over his wife's property is much greater than in the Pool, where a much stricter separation is the rule. There it is reportedly common that in case of divorce (which is also more common than in the Bouenza region) husband and wife will have minute records of all gifts and expenses that could be charged to the other during the course of the marriage.

An important factor affecting the relations between spouses is the fact that marital residence is normally virilocal. That is

to say, the wife goes to live with her husband. She will, therefore, presumably have free access only to her husband's land (or rather that of his lineage), though she may be able to use other land on payment of rent. He, on the other hand, will normally have moved from his father's village to his maternal uncle's, where he will have access to the land of his own lineage.

Traditionally there has been no private property in land. It is owned by the lineage or clan and is inalienable. Actually it is the ancestors who are thought to own it. As a member of a lineage one has the right to use that land, so no one is in effect landless. However, the land is not equally divided between all lineages and is not of equal kind or quality. In a single village more than one lineage will usually be represented, one of which will be dominant over the others. The land held by these lineages, however, will not constitute so many integral blocks, but will tend to be scattered, not only around the village, but elsewhere as well. This situation may be the result of different historical processes: lineage segmentation resulting either from a search for new land or because of quarrels, or from the forced relocation of villages by the colonial Government in the 1930's. As has also been noted above, the general trend toward larger rural communities is continuing.

The control of access to and the administration of these lands rests with the lineage chiefs. Because of the dispersed nature of the holdings, however, a chief may delegate some of this control to a nephew, younger brother, or younger natural cousin, who collects rents for him. As might be expected, this delegation also leads to conflicts which tend to provoke the use of sorcery. Access to land is further controlled (at least in part) among the Bakongo by a system of rotation (kitemo), according to which one chief opens his land one year to the members of other lineages against payment of rent and the following year another does the same. The process repeats itself yearly within a region which corresponds in part to the area within which matrimonial exchanges

take place (it seems that 50% of the women marry within a radius of 8-10 km. An indication that the control of access to land by the matrilineages is no longer absolute, however, is given by a pre-co-operative in the region of Kinkala, the land for which was inherited by one of the men from his father.

The term kitemo used above for the rotation of access to land would also seem to refer to a variety of systems of organizing labor (Desjeux, pp. 31f.). Ntsala sani is an association of producers on the basis of affinity, sex, filiation, or marital alliance. The group works on the fields of each member in turn. The luyalu is a village association which functions every 8 or 15 days on the day set aside for labor for the state. It can be used either for communal works or for work on individual fields. The village chief regulates the work of this group whose efforts every one has the right to enjoy every one or two years against a payment of 1500 CFA which goes into the village treasury.

The dibundu or zola is also a village group which works for the church. One member is responsible for distributing its labors among the members of the village at a cost of 1000-1500 CFA which goes to the church or cult treasury and to pay for food for the participants.

It also happens that young men will hire themselves out, either individually or as a group at 500 CFA per day for specific tasks. It should be noted that none of the above forms of co-operative labor involves joint production on common land. The Government's early experience in co-operative program which stressed joint production did not, therefore, rest on any traditional practices. Recent Government emphasis on co-operatives as an instrument of marketing and distribution of agricultural inputs seems to be closer to the traditional line.

2. The Bateke

Among the people of Enkou in the Plateaux region just west of Djambala, lineage structure is also matrilineal. Here, too, it is the maternal uncle and the elders in general who are in charge, and here, too, there is sharp conflict between the old and the young, leading both to the splitting up of villages and an exodus of the youth to the city. "This splitting of settlements is the mark of the new tensions born partly from the realization by the young of the inferiority of their situation, and partly from a consequent rigidification by their elders of the customary practices which permitted them till now to base their authority. The existence of a very high matrimonial compensation (bride price) and a high incidence of polygamy are allowed by the fear of the fetish which can cause disease or kill, which paralyses the young and strongly impregnates the social atmosphere." (Guillot, p. 48).

On the other hand, in contrast to the traditional situation among the Bakongo, and parallel perhaps to modern trends among them, considerable weight is accorded to the authority of fathers. ". . .Koukouya society accords a large place to the patriarchal family home of which the husband and father is the chief. The family home is no longer entirely the simple association of clan families that it is in Ladi (Lari) law. The father exercises considerable authority over his children, which is translated by the fact that in the country the sons live in the village of their father, in principle, whatever their age and even after the death of their father, and especially by the quasi-exclusive right of the father to give his daugther in marriage (Gabou: 27)." Another difference with Bakongo custom is that material exchanges at marriage are not conceived to be equal, but almost all gifts are expected to come from the side of the groom.

As among the Bakongo, however, the sexual division of labor is quite marked. In the traditional system men planted rafia palms, fruit trees, and harvested and cured tobacco, but they never used hoes. Now they are getting involved in new crops -- imported varieties of beans and tobacco (Maryland or Java), potatoes, and coffee -- which they cultivate essentially on forest soils. All of the produce is sold. Very few men it seems, are willing to risk the gibes of friends and women if they are seen using hoes, so their work is mostly limited to forest clearing, planting, and narvesting. Tnese are seasonal activities only the first of wnich requires much effort. There is little organization involved, father and son usually working together. On the fourth day of each week a wife is supposed to work on her husband's field.

Whereas men have their fields in the forests, womens fields are typically in the savanna. They are responsible for the staple food (manioc), peanuts, gourds, and some others. An investigation of the work weeks of men and women in this region clearly shows tne preponderant role of women agriculture. The women work 38 hours in the fields, 8 in such tasks as soaking manioc, making palm oil, collecting firewood, and shelling peanuts and gourd seeds. Fourteen hours are devoted to household tasks, making a total of 60 hours. The men, on the other hand typically work a total of 39 hours.

In Enkou, although descent is reckoned matrilinearily, marital residence as we have seen above, is patrilocal, so that the wife comes to live with her husband in his father's village. Lineage land rights are here particularly associated with forests, which bear tne names of the lineages, and which are grouped around the villages owned by noble lineages. Several of these villages would be grouped together under an appropriate chief. Forests were transmitted only in the uterine line, but each man had rights to use not only lands belonging to his mother's lineage,

but also to those of his father's matrilineage as well. This inevitably gave rise to disputes which might make it necessary for men to move to the village of their matrilineage. For one group of lineages descended from the noble lineage of Mubie, however, descent and the inheritance of land rights is patrilineal.

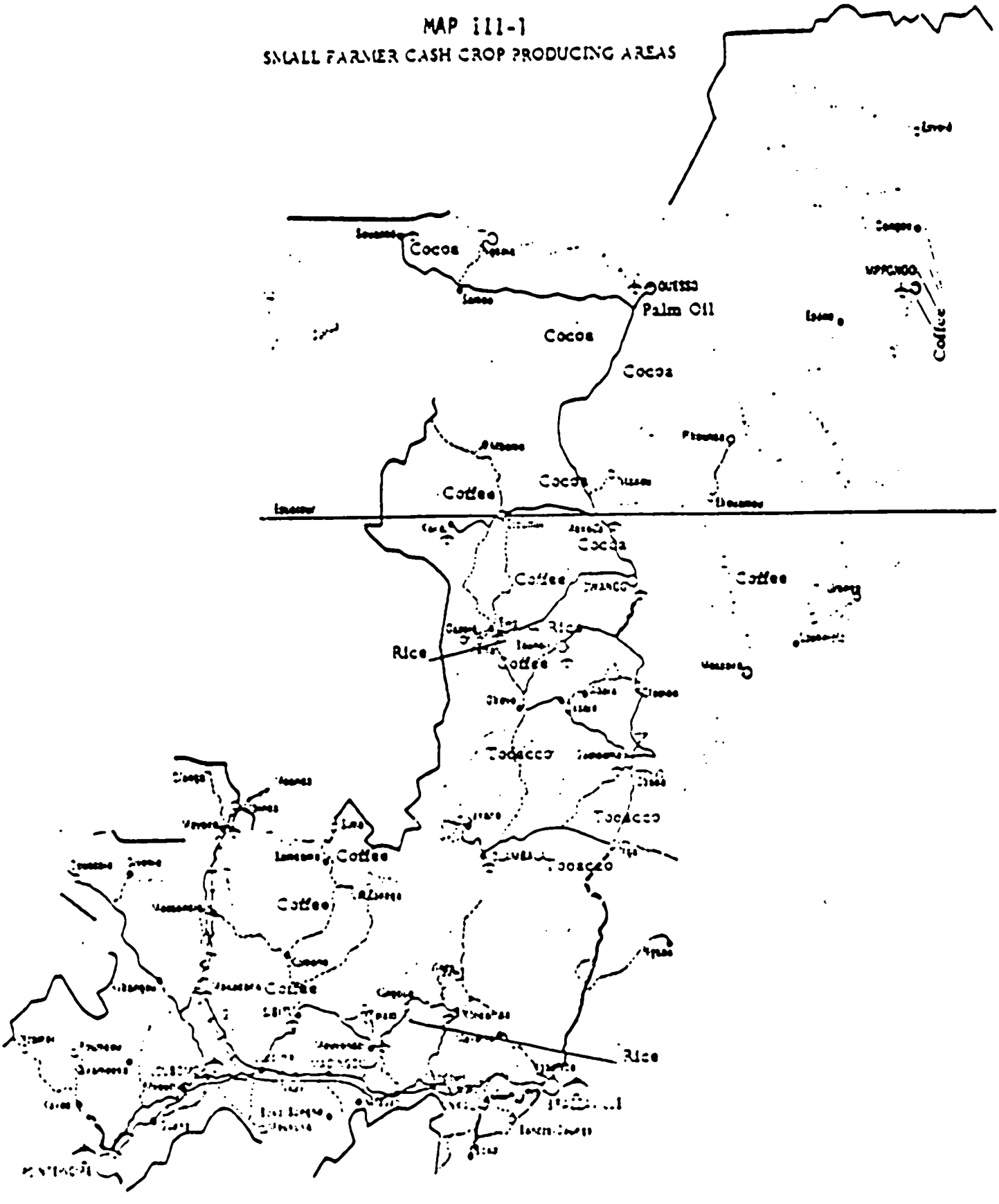
The general rule for all land is that it belongs to the person who brougnt it under cultivation and his descendants. In the case of savanna lands, it is the women who do it, and the land belongs to them and should in theory be inherited by their daughters. However, with patrilineal residence daughters are not apt to be around to work it and it goes to those who are at hand. Because women are seldom living near land to which they have rights, there is much swapping back and forth without any obligatory compensation.

C. Farmers' Income and Welfare

1. Income

The farmers grow food crops, especially manioc, bananas, ground nuts and yams, mainly for self-consumption and selling some surplus to the urban dwellers for extra income. In addition to food crops their monetary income derives mainly from the production of cash crops. Cocoa is the main cash crop for the farmers in the Sangha and Likouala regions. Coffee is a source of monetary income for the farmers in the Cuvette, the Plateau and the Lekoumou regions, while tobacco is the main source of income for the Plateaux and the Pool regions (Map III-1). In recent years rice has become an increasingly important source of income for the farmers in the Plateaux, Pool, Bouenza, Lekoumou and Niari regions.

MAP III-1
SMALL FARMER CASH CROP PRODUCING AREAS



Source: Atlas of the Congo, Jeune Afrique Edition.

As shown in Table III-3, agricultural income is very low compared to national per capita income. In 1979, an average farmer earned an estimate of $190 a year, which amounted to only 26% of the national average. Though in absolute terms farmer's per capita income more than tripled in the seventies, due mainly to the sharp decline in rural population, the 1979 ratio of rural to national income remained roughly at the 1970 level.

In producing cash crops for monetary income, small farmers have been heavily taxed in the sense that they are being paid for their products prices which are far below what Government agencies receive from exporting agricultural products. For example, cocoa farmers are being paid a "producer price" equivalent to only between 24% to 34% of the cocoa export price. An important portion of the difference went into the profits of the marketing boards. To the coffee growers, the treatment was even worse; coffee producer prices have been amounting to only between 10% to 27% of the export price (see Part III, tables II-16, II-17).

Regarding the supply of surplus food crops to urban area, the contribution of the small farmers has been falling in recent years, partly because of the rapid rate of migration from the rural area (i.e., rapid rate of urbanization), partly because of difficult marketing conditions, unattractive producer prices, interruption in agricultural research and partly because of the declining fertility of soil. These aspects are discussed elsewhere in this report.

2. Education

The educational level of the Congolese population is unusually high for Africa. In general, school education has been obligatory from the ages of 6-16 since 1965. In 1968, 68% of the children were in school, but by 1972 it was 100%. Inevitably this was achieved to a certain extent at the expense of quality and

Table III-3

ESTIMATION OF PER CAPITA AGRICULTURAL INCOME 1970-79

(IN CFAF)

	1970	1974	1976	1977	1978	1979
Agricultural Production (millions)[1/]	12.1	15.0	19.4	22.9	25.6	29.0
Rural Population (thousand persons)	797	756	737	719	698	674
Per Capita Agricultural Income (thousands)	15	20	26	32	37	43
Per Capita GNP (thousands)	61	101	120	123	129	165
Per Capita Agricultural Income as Percent of Per Capita GNP	25	20	22	26	29	26
PER CAPITA AGRICULTURAL INCOME (In current U.S. dollars)[2/]	54	83	109	130	164	190

1/ Including forestry

2/ For exchange rates used in conversion, see exchange rates at beginning of report.

Sources: Tables I-4; Appendix I-2.

problems of school support, particularly in rural areas are serious. In 1974-75 there were 310,000 pupils in primary school, 70,000 in six lycees, 12,000 in 79 high schools, 1,700 in the only technical lycee, and 3,600 in 7 technical colleges and 17 centers for elementary professional training. The single agricultural lycee in 1974 was at Brazzaville and had only 156 students. There were nine normal or specialized schools offering training for a total of 1,900 students in teaching, paramedical, and public health work, laboratory techniques, administration, and sports (all at Brazzaville) as well as two normal schools at Loubomo and Mouyondzi, a forestry center at Mossendjo and a paramedical school at Pointe Noire.

There is a single university at Brazzaville (Marien Ngouabi) which in 1974 received 2,292 students in the three faculties of law, literature, and sciences.

Needless to say, the educational and literacy levels are considerably higher in and near the major cities than in the rest of the countryside. This is not only because of staffing and supply problems in the village school, but also because all educational facilities above the primary level are available only in the cities, almost exclusively in Brazzaville and Pointe Noire, and because of the massive exodus of youth to the cities.

3. Health

It is not possible to give an accurate or complete picture of the health of the Congolese farmer. Certainly, by western standards, the number of physicians and medical facilities is inadequate and of very unequal distribution. Respiratory diseases, malaria, tuberculosis, and afflictions due to intestinal parasites have been the primary causes of death. Trypanosomiasis, yellow fever, small pox, leprosy, and yaws have also been, at least until recent years, prevalent as well. Life expectancy at birth in 1968 was about 37 years (Ministere de la Cooperation, 1975: 41).

Undoubtedly, the unsanitary conditions and polluted water supplies that are particularly common in rural areas are a factor in the incidence of disease. So also, it would seem, is malnutrition. A rather cursory study of food and nutrition made by W.H.O. in 1976 reports that 17% of the children between 0 and 4 years of age were admitted to a hospital for malnutrition (associated in 70% of the cases with diarrhea, respiratory complaints or measles); and that malnutrition was present in all cases of death by diarrhea and measles (53% of deaths from 0-4 years). It noted that an earlier study (1965) showed tnat average growth in weight and stature were well below that of well nourished Congolese children and international norms. The decline appeared around four months. Current studies showed normal growth till six months. Low birth weights (2,55 kg.) in rural zones and primipares in Brazzaville were also an indication of nutritional deficiencies in pregnant women.

The principal diseases it associated with malnutrition were malaria, measles, and diarrhea. Also linked to it was sickle cell anemia, said to be common among malnourished children.

The normal diet varies from region to region, but tends to emphasize starchy foods (manioc in particular) and to be somewhat short on animal protein. Game used to be an important source of tne latter, but it has now largely hunted out in the more heavily settled regions. Table III-4 shows the Congolese Diet for 1964-66 according to a W.H.O. study.

D. Explaining the Rural Exodus

As was mentioned earlier, a major aspect of the rural scene is the relative absence of youth, particularly young men. One rarely sees them in the villages and tne membership figures of tne few pre-co-operatives visited confirm the impression. In the market garden pre-co-operative at Pointe Noire out of a total of 530

Table III-4

THE CONGOLESE DIET, 1964-66

FOODS	CALORIES	PROTEINS(GR.)	LIPIDS(GR.)
Cereals	219	6.1	0.9
Starches	1,450	9.4	5.6
Sugar	43	0.1	-
Legumes	140	6.5	10.8
Vegetables	18	1.2	0.2
Fruits	39	0.5	0.3
Various vegetal sources	3	-	0.3
Meat	46	3.9	3.4
Eggs	12	0.2	0.2
Milk	14	0.6	0.5
Fish	69	11.3	2.1
Oils and fats	117	-	13.2
Total	2,160	39.8	37.5
Of animal origin	134	16.0	6.6
Beverages	61	0.4	

Source: The World Health Organization (WHO).

members, 6 were young people. In a smaller pre-co-operative outside of Loubomo there was one young man out of 50 members.

This rural exodus, as was pointed out elsewhere, is a historical phenomenon, but it has nevertheless proceeded at a more rapid pace since independence and has created a major social problem, not only for the cities, which can no longer absorb the influx, but for the villages as well which are thus deprived of essential manpower needed for any significant increase in their agricultural productivity.

The current reasons for this exodus would appear to be many and difficult to rank in the order of their importance. In addition to the economic reasons discussed earlier in this report, there is also a host of social factors. Certainly the domination of youth by the elders in the traditional lineage system is an important factor and are universally cited. The youth seem to resent the lack of opportunity to earn directly for themselves and the lack of freedom to make their own life choices. What they are also trying to escape, however, is the manifold ties and responsiblities associated with the lineage system in general, which they seem to see primarily as an impediment to their welfare and urban lifestyle instead of providing the kind of support which it used to provide in a stable and uniform rural social environment.

The traditional sexual division of labor may also be seen as a factor facilitating a male exodus. Since women have been the primary agriculturalists responsible for the staple foods, men have not been so necessary as food producers and are, therefore, more easily expendable as labor. What the lineage elders counted on when the exodus first started in the 1920's, of course, was that the youth would contribute to the wealth of the lineages through their salaries. After almost 60 years of urbanization, however, the two spheres have become radically different and it is no longer possible for the elders to control the resources of the young in the cities. That the links still exist between town and country, however, is

evident in the continuing strength of attachments to ethnic groups. An indication of the ambiguity of the situation is afforded by the remark of a Brazzavillian who had spent three years in France when discussing the payment of marriage sums. No man, he said, would try to marry on his own even if he could afford it, because this would be an indication of how much money he had, which would leave him open not only to demands to share with relatives, but to sorcery as well.

Finally, the extension of complusory education to all children between the ages of 6 and 16 has certainly had the effect not only of providing information about the outside world and creating new desires, but it has also given the children the schooling to make them employable in the city.

One may summarize the current socio-economic situation of the small farmer subsector as follows. The traditional social system has been one based on a lineage organization in the hands of the elders, controlling access to the land in a subsistence economy based on shifting cultivation in a forest environment.

The lasting effects of colonization, which have been accelerated since independence, have been to fix the population, at least in the relatively densely populated south, in ever larger rural settlements, reducing the traditional fallow periods and hence fertility of the soil in the process, and to draw off the younger, primarily male, population to the towns and cities, thus reducing the rural labor supply and eventually disrupting the traditional patterns of social control.

At the same time, little or nothing has been done to make it possible for the rural sector to keep pace with or adapt to the modernization of the urban sector. Techniques for the permanent maintenance of soil fertility under tropical conditions, which is a sine qua non for increased production, have not been developed, the

road network and transportation facilities necessary to enable the peasants to participate favorably in the economic growth of the country have declined, storage facilities have not been provided, and little or nothing has been done in the way of housing, water supply, sanitation, health services, electrification, etc. which could make life in the country more tolerable, let alone attractive, for the younger generations.

II. SMALL FARMERS PRODUCTION

Agricultural production was already discussed in Part II. In this section, emphasis is given to the description of the present farming system.

Traditional agriculture in the Congo takes place in both forested and savanna areas. Fields surrounded by forests are held by the local population to be superior to fields cleared from the savanna. Farmers believe this to be especially true for manioc, the center of traditional agriculture. Fields may be either tightly grouped or widely scattered in isolated locations depending on numerous factors, including topography, water, soil fertility, fallow cycle, and land tenure. Farm size is generally estimated to be about 1.37 hectares per economically active family (Tables III-1 and III-5).

As shown in Table III-5 about 0.53 hectares per person is cultivated. Farm size does not vary proportionally with the increase in the number of family members. Families with five members farming were found to work 2.5 hectares while those with seven worked only 0.44 hectares more. By breaking the figures down by region, it was shown that in the three principle agricultural areas farm size is about the same.

In the forest area farmers will often clear steep slopes, adding considerably to erosion problems. In the savanna only relatively flat areas are cultivated. During the dry season peasants take advantage of the cooler temperatures and dryness to complete the difficult task of clearing land. Trees and bushes are cut down with machetes. The underbrush is then burned off. Slash and burn techniques are used in both the savanna and forest regions.

At the end of the rainy season agriculture shifts to low areas near streams. These areas are usually flooded during the rainy season and are only usable in dry months.

Table III-5

SIZE OF FARMS ACCORDING TO NUMBER OF FAMILY MEMBERS

(IN HECTARES)

No. of Active Family Members	NIARI		LEKOUMOU		POOL		CONGO	
	Area/ family	Area/ person	Area/ family	Area/ person	Area/ family	Area/ person	Area/ family	Area/ person
One	0.78	0.78	0.71	0.71	0.80	0.80	0.68	0.68
Two	1.20	0.60	0.94	0.47	1.09	0.55	1.09	0.54
Three	1.74	0.58	1.50	0.50	1.54	0.51	1.60	0.53
Four	2.01	0.50	1.90	0.48	2.07	0.52	2.03	0.51
Five	2.50	0.50	2.22	0.44	2.46	0.49	2.55	0.51
Six	2.49	0.41	3.07	0.51	3.27	0.55	2.88	0.48
Seven	3.33	0.47	2.85	0.41	2.33	0.33	2.99	0.43
Eight	-	-	-	-	-	-	3.93	0.49
Nine	-	-	2.29	0.25	-	-	3.75	0.42
Ten and more	-	-	4.11	0.41	-	-	3.95	0.40
Average	1.43	0.57	1.32		1.28	0.53	1.37	0.53

Source: Recensement Agricole, 1972-73; FAO, Centre d'Investinement, Rapport 47/49, PRC-4.

A. Food Crops System

1. Manioc

Typically manioc is grown in a multiple cropping system. Interplanted with the manioc are a number of different types of plants, such as several different types of gourds, calabashes, yams, maize, peanuts, and other legumes such as sweet potatoes. In the southern part of the country a type of eggplant with edible leaves is popular, as is a relative of the buckwheat call nsosso. A local type of sorrel is also widely grown (mbadi). Fields devoted exclusively to manioc are not uncommon. The reason for this seemingly unproductive practice is not known. We observed manioc fields in monoculture that could have easily been used for multiple cropping (convenient water supply, relatively good soil, etc.).

Planting takes place from September to November depending upon the start of the rainy season. The Plateaux areas would be started earlier, the Niari valley, later.

A recent survey of manioc types in the Congo by the French ORSTOM organization found that 10% to 15% of the manioc in traditional fields was of the sweet type that can be eaten without further processing. Among the better types, considerable genetic variation was found, both from one area to another and within the same field. The survey, which has yet to be published, included only bitter types in the classification program. Looking at three main agricultural areas in the country they found that three genetically distinct types were grown in traditional farms in the Plateaux area (NGANFOUO, ODZION, MUMDELE MPAKOU), two predominated in the Pool area (M'PEMBA, MALOEDA) and two in the Niari valley (MOUYOUNDZI, INVOUTOULOU). These unimproved land races differ morphologically from improved types developed by the major international agricultural centers in Nigeria and South

America. Although there is considerable variation, Congolese land races of manioc are generally tall and spindly in appearance. There is little branching of the plants. The canopy is less dense even though the leaf lobes are wider than those of improved types. The tubers are generally small.

Manioc is planted in mounds. Very often these mound plantings are begun with a crop of peanuts. After harvesting this first crop the mounds are enlarged and then planted with manioc cuttings. These larger mounds tend to be uniform in shape. Peanuts and some of the other plants mentioned previously are then planted about the base of the manioc.

Two or three weedings are done before a ground cover has been formed by the secondary crops. There is little other weeding activity until the dry season. The manioc plants take anywhere from eight to eighteen months to mature, after which the tubers are harvested individually. Since the plants may be left in the ground for up to three years no storage is necessary. As is well known, tubers can be stored in this manner for long periods. After the three-year period fields are usually abandoned.

2. Maize

Maize is planted between the manioc mounds. One or two crops are usually obtained, depending on the availability of water. A first crop is planted in November and harvested in January or February; a second crop is planted in March for harvesting in June. Improved varieties of maize are not used by the traditional farmers, presumably because there are none available for distribution. Land races are notably tall (almost two meters) with very small ears. Traditionally, maize is eaten fresh.

One may assume that maize yields are severely depressed by this practice. As discussed elsewhere in this report, maize does not

compete well for either light or nitrogen when interplanted with manioc.

During the dry season maize is often included in market gardens that are grown in low lying areas near streams.

3. Groundnuts

Groundnuts (or peanuts) are the most important oil seed crop grown in the country. As in the case with maize, most of the groundnuts grown in the Congo are land races. An incomplete collection by the research station in Loudima has identified 30 different genetic types being grown. In the sixties an improved type, originally developed in the Congo during the colonial period, known as Rouge du Congo, was reintroduced. The extent of its use by the small farmer is not known.

Groundnuts account for about 7% of the cultivated area. At first glance they would seem to be an ideal cash crop for the Congo. As mentioned in the section on manioc cultivation they already play an important role in the small farm cropping system. They seem espcially suited to the growing conditions of the Congo. They appreciate light sandy soils, fix most of their own nitrogen, and complete growth within the limits of the rainy season. They store well, especially if left in the shell. From an agricultural point of view increasing their production would not be particularly difficult.

Unfortunately, they are not a high value crop. A considerable amount of their value is in processed oil, with little of the money going to the primary producer. As it appears to be the case with other crops, current CCV strategy is aimed at increasing groundnut oil production by centralized collection and marketing, but little attention seems to be paid to production inputs that would help the small farmer. There is also little information as

to how much of the edible oil produced from the peanut crop gets back to the rural areas.

The most apparent way to develop this crop would be to increase the number of oil extraction facilities in the country. These could be small scale operations that would assure local farmers a portion of cooking oil in return for their product. An added benefit is that groundnut oil is relatively stable and will store easily. Closer processing facilities would help to reduce post harvest losses. When small scale extraction were set up with American assistance in Rwanda, production was found to be stimulated. Such small scale plants cost only about $50,000 and are technically simple.

4. Bananas

Although both plaintains and sweet bananas are commonly grown in the Congo there are wide differences in their importance from one area to anotner. About 43% of the small farms in the Congo grow plantains, 89% of the farms in the Sangha province and 76% of the farms in Likouala grow plantains. According to the "Recensement Agricole" (1972/73) plantains are more important than manioc in the tropical rainforest areas of the north, although manioc is still an important food.

Not much information is available about bananas cultivation in the Congo other than production figures and the number of farms that grow them. From our own observation it would appear that most of the sweet bananas cultivated are of the Gros Michel variety, perhaps Musa Sapientum. We saw them being grown at three very different locations in coastal mountains, and valley areas. Tne types of ordinary plantains grown are not known and no collections of types exist. The Congo's only agricultural research station in Loudima does not study bananas.

Given the state of transportation in the country at this time, commercial banana production with its requirement for refrigeration and rapid shipment would not seem feasible at this point.

5. Other Tuber Crops

Yams, sweet potatoes, and white potatoes are widely grown in the Congo. Little study has been done on what types are grown, however. As mentioned in the discussion of manioc, sweet potatoes are used as a rapid ground cover. In areas fairly close to the urban regions such as Pool and Plateaux, white potatoes are grown as a cash crop. In most regions tubers, other than manioc, play a minor role in the peasant farming system. We have been told by an expert of the UNDP that storage problems in the Congo's hot numid climate is a major constraint in the development of tnese crops.

6. Rice

Although rice is not part of the traditional diet of the Congolese, there are indications that it is becoming increasingly popular. Up until the mid-sixties, rice was considered a commercial crop that had potential for export, but was not eaten by tne local population. Indeed the Area Handbook for the Congo wnich was published in 1970 states tnat locally produced rice was hard to sell. The situation would seem to have changed considerably in the last ten years. In 1972 the "Recensement Agricole" done by the Congolese Government estimated tnat rice production covered about 1% of the cultivated land (2000 hectares) and production was assumed to be about 3000-4000 tons. Using 1978 figures, the FAO estimated acreage to represent 1.1% of the land area cultivated. More important than this slight increase in area cultivated, has been the Government's effort to make rice a cash crop produced at tne viliage level through the use of OCV. As shown in Table III-10 (See Part III, Sect. IV-B) the OCV

distributed rice seed grain in the five principal agricultural regions in the country. Those figures also show that the demand for OCV rice seed was greater than the amount distributed. Eighty-eight tons were distributed to the Pool region alone. This would indicate an increase in hectarage since the normal seeding rate is 80 kilos per hectare using small farmer technique. It must be note also that OCV distribution of seed grain represents a small portion of the crop that is grown.

With these figures in mind, one may make several assumptions:

- Rice production has probably increased since the 1971-72 estimates were made, both in number of hectares planted and total production.
- The rice crop is being consumed locally, since none was exported.
- There has been a change in diet within the Congolese population.

This leaves, of course, an unanswered question: how much has production increased? According to the Ministry of Rural Economy, rice marketed in 1976/77 was less than half of what it was in 1973/74; the ministry estimated a further decline for the 1978 harvest. Another source, Marche Tropicaux, estimated that about 3,000 tons were produced in 1969-71 and 4,000 tons in 1978.

There is little information to indicate the types of inputs available to the rice farmer other than seeds.

Although no study exists outlining in detail the methods that small farmers use in rice production, certain general aspects of the operation are known. Rice in the Congo is not transplanted. Although there is an effort to plant it close to streams and in fairly marshy areas, the classical rice paddy cultivations (such as) are found in Southeast Asia do not exist here. Small farmers plant rice in December and January when there is a slack period

from the traditional manioc culture. According to the FAO, rices of medium time are favored by small farmers because they can be planted during this period. Recommended varieties for the major rice producing areas in the south of the country are Moroberek, which requires 140 days to mature, and Ignape Catato, which needs 125 days under local conditions. No one at OCV or at the Ministry of Rural Economy could tell us the percentage of farmers using these improved types, nor how much of the rice seed grain distributed by OCV was of these improved types, if any. The rice is then harvested in March and April, again during a relatively slack period in the traditional culture.

In addition to this mostly valley cultivation of rice, there is also rice that is grown in forested areas. Forest rice cultivation differs from the valley cultivations in that longer maturing types are used and planting of the crop must be done at the onset of the rainy season. Maturity of these land races takes almost 200 days. According to French research agronomists, this type of rice cultivation has not been touched by Government commercialization efforts.

7. Citrus Fruits

Citrus production has never been important in the Congo. As in other tropical countries, citrus fruits produced in areas that are completely lacking cold weather are blotchy in color and thus difficult to market without color enhancement treatments such as dyes, now prohibited in many countries. Currently oranges, limes, and grapefruits are produced, mostly in the Niari, Pool and Bouenza areas. Fruits are usually produced on trees scattered in and around the villages; there are few organized groves.

Citrus production was introduced into the Pool region by the French colonial admistration in the early thirties. Almost

immediately trees started to show signs of the viral disease called quick decline (tristeza in French). The disease was not wide-spread until the introduction of a number of different citrus plants into the Brazzaville Botanical Garden in 1938. This collection from Algeria, South Africa, and the Belgian Congo is credited with the swift introduction of strong races of the pathogen that made the disease common. Its viral origins were not known until 1952, but a recent study (Gaetari, 1979) shows that the disease was responsible for the failure of grafting programs in the forties and generally mediocre yields of even improved types that were introduced. The disease, which discolors the mid vein of the leaves, weakens fruit bearing stems and interferes with flower set, is now found throughout the country. In the the team's short visit we noticed a number of trees that had these symptoms. Preliminary indications are that the virus is vectored by insect Toxoptera auranti or Toxoptera citricidu kril (Gaentari, 79).

In sum citrus production offers little promise of development in the near future, even for the stimulation of the local market. A large number of trees will have to be destroyed and some effective measure against the insect vector will have to be taken.

8. Vegetables

Small vegetable gardens grown near streams in the dry season are a common feature of small farm activity. In areas near the city these are grown for market. Such common vegetables as cabbage, lettuce, tomatoes, etc. are found. In Loubomo we were told that vegetables seed for such leaf crops such as lettuce was difficult to obtain, and at times was purchased from black market sources from Zaire. At that location, American-produced seed obtained in this manner was being used in one garden the team visited.

B. Soil Fertility Maintenance

Fertility maintenance in the traditional system in the Congo is generally dependent on fallowing. Commercial fertilizer is generally not available and the lack of a tradition of animal husbandry makes manur scarce.

It might be added that manioc does not respond well to nitrogen fertilization. As with many tuberous crops, excessive nitrogen fertilization can stimulate excess vegetative growth and discourage carbohydrate storage in the tuber. An unpublished study by the Loudima station has confirmed that this is the case on Congolese soils with local types, but considerably more testing is necessary on this question before any conclusions can be drawn.

While fallowing is not a very effective means of maintaining fertility, we have been told that the fertility problems have been made worse by a general shortening of the fallow periods. Again this is attributed to the relocation of peasants into fixed villages during and since the colonial period. Fallow periods have decreased from six to ten years to only three to five years, according to French BDPA officials who have worked in the principal agricultural areas for a number of years. Other researchers have noted a decline in the fallowing period since the mid-sixties (Sautter, 1966). In the traditional system forest fields were left fallow for longer periods, while savanna fields were put back into production sooner. The results of this shortened fallow period have generally thought to be a decrease in yield. This fertility loss is attributable to a decline in surface organic matter and a deterioriation of structure in these highly friable soils. Poor structure also reduces water perameability and retention.

In the traditional farming system, seed storage does not seem to be given much attention. Manioc can be simply left in the ground the year round, as mentioned earlier. Cuttings are prepared from the

living plants for the next season. Corn is stored in the husk, a practice that would protect it from insect damage to a certain extent. There is no indication that Congolese farmers follow an "eat the worst save the best" system. Groundnuts are stored unshelled, again as protection against insects. In general, seed storage of these and other crops is haphazard, with no special containers or practices designed to maintain viability.

III. SMALL FARMERS ORGANIZATIONS: THE CO-OPERATIVES

Over the last decade, the Government has launched a determined effort to induce the farmers into joining co-operatives for the purpose of supplying inputs, marketing and production. Though the program has not been very successful because of the lack of entnusiasm in joining the co-operatives, especially the production co-operatives on the part of the farmers, it seems certain that the Government will continue to accord priority to the grouping of farmers as an instrument of rural development in the years ahead. This section describes in some detail the existing structure of co-operatives as well as their strengths and weaknesses.

A. Types of Co-operatives

Three types of co-operatives (and pre-co-operatives) now exist in the Congo. The first of these is the marketing co-operatives. The marketing co-operatives appear to be well established. Some of them have been in operation for many years and appear to have the necessary experience in running their business. A marketing co-operative visited near Pointe Noire appeared well managed. It has an office, a storage space, and a decent facility to hold and sell rabbits raised by its members.

The second type of co-operative is the production co-operatives directly organized by the Ministry of Rural Economy. Currently, the production co-operatives are being organized around agricultural

operations. Two of these operations were visited, one each in Loubomo and Kinkala districts. The Loubomo co-operative members were said to have been on the payroll of the Ministry. The members of the Young Men's Vegetable Production Co-operative in Kinkala district were also said to have been paid as trainees. These directly organized production groups do not fit the co-operative model. By definition, a co-operative is an endeavor voluntarily organized by members who share risks and benefits proportional to their participation.

The third group of co-operatives in the Congo is the pre-co-operative. The pre-co-operatives are essentially farmer groups whose members have applied to become co-operative members in accordance with the statute establishing the co-operative movement along lines the Government intends to organize peasants. The application fee to enter a co-operative is CFAF 100. The entrance fee is CFAF 1000.

The Government appears to be very cautious in transforming the pre-co-operatives into the agricultural co-operatives. There was an indication of some resistance on the part of the farmers to move on to the next stage of the co-operative program.

B. Membership of the Co-operatives

According to officials in the Ministry of Rural Economy, the total membership of co-operatives nationwide stands at 14,000 in mid-1980. There are some 600 co-operative groups of all three types described earlier. Figures were not available separately for the marketing, production and pre-co-operatives. Officials also indicated that the average age of the membership stood at 40 years in mid-1980.

The participation of women seems to be dominant. Their dominance reflects the current composition of the rural population and the traditional sexual division of labor. A co-operative we visited in

Niari region has 50 members of which as many as 40 were women. The membership of women in the co-operatives of Pool and Plateau regions, starting from a modest beginning in 1971 is now dominant (Table III-6 below).

Table III-6

PARTICIPATION OF WOMEN IN THE CO-OPERATIVES OF POOL AND PLATEAU REGIONS, 1971-1980

Year	No. of Co-ops	Membership	Men	Women	Percent of Women
1971	9	211	130	81	38.4
1972	40	1,233	938	294	23.8
1973	49	1,442	1,058	381	26.4
1976	72	2,054	1,370	681	33.2
1977	110	2,699	1,710	989	36.3
1978	137	2,922	1,747	1,175	40.2
1979	151	3,260	1,797	1,463	44.9
1980	159	3,514	1,633	1,981	56.4

Source: FAO/UNDP Project Staff in the Congo.

A progressive aspect of the co-operative movement in the Congo is the equal right for men and women to participate in the movement. Like men, women can join a co-operative in their own right with or without their spouses.

C. Organization and Level of Development

The co-operatives are directly under the Co-operatives Services Department, which operates under the Agriculture and Livestock Division of the Ministry of Rural Economy (Appendix III-1). The cooperatives are organized into five zones with varying numbers of groups under each zone. Zone I has 13 groups, Zone II has six, Zone III has four,

Zone IV has five, and Zone V has 12 groups. The groups can be equated with districts in traditional co-operative organizations. Individual co-operatives then come under the groups. The number of individual co-operatives differs widely under each group as the groups themselves differ under the Zones, (See Appendix III-1).

As organized, all types of co-operatives -- vegetable growers, maize growers, rice growers, tobacco growers, cocoa growers, and coffee growers co-operatives -- will all deal with one district (group) as many groups as there are will deal with one zone and up to the ministry level. While the arrangement will permit a good degree of administrative control at the Ministry level, it lacks a framework or unity of purpose in dealing with the production and marketing problems of specific agricultural produce, such as maize, rice, vegetables, cocoa, coffee, tobacco, etc.

As regards the level of development, the marketing co-operatives seem to do fairly well on their own. Like the others, they, too, need technical and material assistance to perform better than they do now. The production and other co-operatives, at their current level of development, depend entirely on Government initiative to do anything. For example, the members of an aquaculture co-operative we visited at Tao-Tao, near Loubomo, have been waiting for Government technical assistance to redesign their fish ponds so they could be effectively operated. The co-operative started work on the fish ponds -- four of them -- some four years earlier; yet they looked as if they have just been started. It would appear that the Government does not now have the human and material resources to carry out effectively the production co-operative program.

D. Government Interest and Support

The Government's interest in the development of co-operatives is very high. There seems to be an open attitude in the Ministry of Rural Economy on any approaches by which the Government's effort to

organize the peasants into co-operatives could be realized. The ultimate objective appears to be increased food production and eventual rural prosperity, so that the young generation of Congolese would choose to remain in the rural areas instead of moving into the cities in search of wage-earning employment which many of them might not find.

The inadequate material support now accorded the co-operatives appears to stem from limited resources rather than from a lack of interest on the part of the Government. The Government would, however, have to grappie with the issue of limiting the scope of the current program and channeling its limited resources into development of the marketing co-operatives, which would be much cheaper to develop than the production co-operatives. Thus far, the marketing co-operatives have been doing well without any assistance from the Government. Tney could have done better, if they had been provided with some degree of assistance. Alternatively, the Government may wait for adequate resources for later development of the co-operatives along the line of total regroupment of peasants into co-operative production units. Two other related issues will be waiting in the wings for consideration if this approach is adopted. Tne two issues are arresting the nation's declining agricultural production, and stemming the tide of youth outmigration from the rural areas. Conceivably, the decision on the co-operatives could wait, but the two other related issues might not wait too long for a resolution. However, it would appear that limiting the scope of the co-operative development to the marketing level of organization, the use of them as intermediary institutions to tackle the more urgent issues of increased agricultural production, and the development of the rural areas would produce more immediate results.

E. Potential Roles for Co-operatives

A very helpful partnership can be foreseen between the Government of the Congo and the co-operative movement in enhancing the national

effort to improve agricultural production, and to develop the rural areas of the country. In this regard, it seems appropriate to consider here the potential roles which the co-operatives could play in the Congolese economy.

1. As Institutional Intermediaries

The co-operatives could serve as very useful institutional intermediaries between the Government and farmers. This role will be particularly important in the Congo where the rural population is scattered in small villages. The types of co-operatives considered by the team will be relatively larger than the existing co-operatives. They will be organized around a crop, for example, as Cocoa Producers' Marketing Co-operative of Sangha, or around a group of crops, as Fruit and Vegetable Growers' Marketing Co-operative of Kouilou. The national union for cocoa producers will comprise the co-operatives from Sangha, Likoula, Cuvette, and Kouilou.

The Government, through the Coffee and Cocoa Office (OCC), could consult with representatives of the national co-operative unions to discuss output goals, quality standards and production problems. For effective Government pricing, OCC would do well to consult with the co-operatives during the price-setting process, and before final recommendations are made to the Government in fixing the seasonal prices for farm produce. The Government and OCC would find the arrangement mutually satisfying: the farmers would more readily accept the prices, and the Government would induce increased farm production through the pricing mechanism. The Government would also find it an expeditious way of consulting with farmers' elected representatives on national agricultural issues. The establisnment of lines of communication and consultation between the Ministry of Rural Economy and the co-operatives, as farmers' representatives, will lead to a greater farmer confidence in the Government.

2. As Channels of Agricultural Extension Service

One need which is glaringly apparent is the requirement for agricultural extension services. At the same time the logistic problems that extension services would entail in the Congo, where farmers are widely scattered in very small villages are serious. Potentially, the co-operatives would serve as viable institutions through which extension services could reach farmers at reasonable costs.

Instead of a direct Government effort in organizing farmers to avail themselves of new and improved techniques at agricultural demonstration stations, the co-operatives could easily organize themselves for that purpose. Currently, the Ministry of Rural Economy imports improved coffee seeds from the Ivory Coast, germinates the seeds at a nursery near Loubomo, and gives the seedlings to coffee growers to raise. In this instance, the presence of a well-organized coffee growers' co-operative could facilitate the Ministry's task of distributing the seedlings to farmers who could raise them. Distribution of the seedlings through the co-operatives might also be fairer than dealing with large numbers of individual farmers over a wide area. As it is now, only the farmers living near Loubomo are likely to get the available supply. Farmers near Nyanga and Divenie, where more coffee is grown than near Loubomo, might not have free supplies of the improved coffee seedlings for some time.

3. As Intermediaries for Handling Individual Members' Credit Needs

Because of the small size of the average farm in the Congo, coupled with the joint clan ownership of land, and the fact that the co-operatives do not own the land on which they work, land as collateral for loans would be very difficult to establish. Moreover, the peasants' credit needs are for hand tools, improved seeds, sacks to bag their produce, and transportation costs to

move their produce to collection centers. These goods and services are not available in the villages, cash loans would, therefore, be of no help to the peasants in acquiring them. However, the co-operatives, as larger entities, representing the peasants, could raise the necessary funds to acquire the required farm inputs and services, and pass them on to the individual members. The peasants would discharge their indebtedness when they delivered their produce for sale through the co-operatives. The co-operatives would, in turn, repay the creditor(s).

The enhanced repayment capacity of the co-operatives would make them better credit risks than the individual farmers with very limited cash loan repayment capacity. The arrangement would ensure the repayment of the loan taken in behalf of the farmers by the co-operatives. It would also obviate the high cost of administering small loans as would be the case when dealing with individual small farmers. Again, the arrangement would prevent misapplication of loan funds, since the farmers' credit needs would be given to them in kind and in light of their needs. Furthermore, because the transactions would be in the form of goods and services, the opportunity for the misappropriation of co-operatives funds would be limited.

4. As Intermediaries for Marketing Assistance to Farmers

The co-operatives can serve as intermediaries through which marketing services may be channeled to farmers. Lack of suitable storge facilities constitutes one of the serious constraints on the marketing of agricultural produce in the Congo. The need is greatest at the village level, where much of the food loss occurs. However, it would be impractical to construct storage facilities in every village. It would be easier to provide the needed storage for a cluster of villages through a marketing co-operative for the area. The actual construction could be undertaken by members of the co-operatives with technical assistance and materials provided by the Government.

For those farmers who grow cash crops, the co-operatives could also serve as their sources of sacks to bag their produce. There is a general indication that farmers do not always get good weight for their produce. Selling through their co-operatives should obviate this problem. It is unlikely that the co-operatives would cheat their members when weighing in their produce. It is equally unlikely that the buyer, in this case the Government (OCV and OCC), would cheat the co-operatives in matters of weight.

The co-operatives, if organized along the lines we recommend, would be large enough to acquire a vehicle or vehicles for collecting the members' farm produce from the villages. This would ameliorate one of the difficulties in marketing farm produce. Currently, cash crops have to move from villages to collection centers on head, or in baskets which are hung on the backs of women with head straps. A co-operative vegetable garden in the Kinkala district which was visited by the team possessed a thriving vegetable garden with beautifully formed heads of cabbage ready for harvesting. However, there was no plan to market the output. The young co-operative members had no idea whether and when a vehicle could be arranged to convey their produce to Brazzaville, where a good price could be obtained for their high quality produce. The garden is located some 15 kilometers from the main road leading to Brazzaville.

F. Co-operatives as Production Units

While a useful role may be foreseen for the co-operative in the marketing of agricultural produce, it seems unlikely that they will succeed as production units. The farmers' co-operatives, as now planned and being implemented in a limited way, expect their members to work for a certain number of days in a week on the communal farm and the rest of the working days of the week on the members' private plots; a Congolese farmer is also required to provide one day a week of his time for the state and also one day's work to the Church.

This leaves a co-operative member one to two days a week for work on his private plot. The production co-operative will further fragment the peasants' time, and divide their attention to more than one plot producing the same crop or crops. The arrangement does not seem conducive to increased farmer productivity.

Ownership feeling is strong among small farmers everywhere in the world, and Congolese small farmers cannot be expected to have less ownership feeling for their individual farms, no matter how small their fields may be. Lack of ownership feeling does not elicit from small farmers their best effort. Should the lack of ownership feeling pervade the co-operative movement, the result is likely to be lower farmer productivity than the existing levels. The productivity of the state farms, which have the benefit of modern technology and a bundle of services that are not available to the small farmers is not any higher than that of small farmers producing the same crops. One of the factors said to have been responsible for the less than satisfactory performance of the state farm system in the Congo is this lack of ownership feeling. A prudent course to increasing farmer productivity will be to spare the small farmers some of the problems of the state farm system.

It is true that the Congolese small farmer have a tradition for joint clan or extended family farm work; nevertheless, the joint effort is provided to each member only on the basis of reciprocity when extended family members work on each other's farm (See Part III, Section I.B above). The harvests from each farm belong to the individual owner, and not shared equally among members of the clan. Even when the clan jointly operates a farm, the output is put into a joint clan account for the discharge of joint clan obligations. The traditional co-operative experience of Congolese peasants is not parallel to the type of co-operatives envisaged for them by the Government. It is possible that the small farmers could count on the help of their extended family members during the critical farm work periods of planting and harvesting; however, it is not likely

that farmers would be willing to work together to produce and to equally share the fruits of their work under the production co-operative arrangement.

Organizing small farmers into workable productive co-operatives will require the allocation of human and material resources in the form of a sizable staff of agriculturists and technicans, vehicles, tools, seed, etc. The same amount of resources and level of effort will go a long way in providing the peasants with extension services, which they seem to need most. The few farmers whom the team met on its tour indicated that they urgently needed improved seeds and tools, and expected some help from the Government in meeting these needs. The team also noticed that some American seeds were planted in the vegetable gardens around Loubomo; apparently, the seeds were obtained through indirect channels from Zaire. The seeds were from a reputable American seed company, but they had not been tested in the Congolese environment, and might not do as well as they were expected to, despite the exorbitant prices the farmers paid for them. This is just another indication of the small farmers' need for extension services which have yet to reach them.

It seems clear that Congolese peasants are capable of organizing their crop production activities, and can achieve increased output at the existing level of their farming methods, if they are provided with extension services in the form of improved seeds, better hand tools, good improved techniques of gr ing existing, and new crops. They are also capable of producing modest surpluses beyond their subsistance needs for sale, if they are provided with rural access roads and marketing services, so that their farm produce are not left to rot in the villages; moreover, significant improvements in the productivity of Congolese peasants could be obtained if the existing monoculture could be changed to a suitable form of mixed farming. However, such a move should be followed by a careful study and successful pilot projects that can be replicated elsewhere in the country. No quick solution will do. Organizing peasants into

collective production units, and requesting the state farms to provide them with agricultural extension services is definitely not a viable solution. Finally, the experience in co-operative movement elsewhere in the world does not offer a successful production co-operative model to be recommended for the Congo to follow.

However, the United States has a long experience with agricultural marketing co-operatives and considerable expertise in the organization and administration of farmers' (marketing) co-operatives. Farmers' co-operatives have a long history of success in the marketing of their member's farm produce, and providing for the credit needs of their members in the United States. The long history of successful farmers' co-operatives in the United States, and the lessons gained over the years in their organization and operation could be shared with the people of the Congo.

G. Constraints on the Co-operative Movement

Because of the important role attached to co-operatives by the Government in the current strategy of agricultural development, both constraints and prospects for their development are discussed here rather than in Part IV (Constraints) and Part V (Projects) of this report.

1. Too Small for Viability

The farmers' co-operatives, as they are now organized in the Congo, are too small as viable marketing units. Nationally, the average ownership per co-operative is 23 members. The figure for Pool and Plateau regions is 22 members, which is close to the national average. The two regions have seen the most rapid co-operative development as a result of an ongoing FAO/UNDP program. Judging from the size of the average Congolese farm, the total acreage that a typical co-operative can effectively cultivate will be less than 100 acres. The co-operative farms

actually observed during the team's visit were much smaller than this conceptual maximum figure.

The output of such a relatively small farm cannot sustain a large volume of business which is essential to co-operative development. One of the concepts underlying the development of co-operatives is that the farmers, pooling their output together, can sell in volume at lower marketing costs and, at the same time, obtain their farm inputs in volume at lower unit prices than the individual farmers acting alone. Unless relatively large resources are pooled together under the umbrella of a co-operative, the advantages to be derived by individual members will be only marginal. Until members perceive the advantages they derive from tneir co-operative membership to be better than marginal, they are not going to give it much support for very long.

The Ministry of Rural Economy is trying to create some visible advantage for co-operative membership through a pricing system which offe·s a 15% premium for co-operatively produced agricultural commodities. But the system is being foiled at the village level, where non-co-operatively produced commodities are being passed off as co-operative produce by members for their relatives. The two classes of producers thereby get the premium prices. Because of the closely knit Congolese extended family system and traditional obligations one owes family members, it will be very difficult for the Ministry to police this differential pricing system to achieve the advantage it is intended to confer on co-operative members.

A well established vegetable growers' marketing co-operative observed near Pointe Noire had a total business volume of $59,131 in 1979. The total expenses for the year amounted to $59,187. The account for the year was positively balanced by retained earnings in the sum of $4,815. This co-operative appears to be well administered. The description of the volume of its operations is mentioned here to show the smallness in the size of a

rather very large Congolese co-operative with as many as 530 members. From the year's account, the net return to an average member was $8.99. The return did not appear large enough to hold the members' interest completely to the co-operative. The director admitted that some members had been selling portions of their produce through private channels.

2. Advancing Age of Members

According to officials of the Ministry of Rural Economy, the national average age of co-operative members now stands at 40 years. It will probably be increasing at a rapid rate hereafter, as the migration of young men from the rural areas continues. The president of a vegetable growers' marketing co-operative visited by the team near Loubomo indicated that the average age of his co-operators was below 40 years, but this was so because of the predominance of women in the particular co-operative. Of the total membership of 50 farmers, as much as 40 (80%) were women. The mitigating factors for the Congolese co-operatives are women traditionally doing much of the farm work -- planting, weeding and harvesting. Women can also join the co-operatives in their own right with or without their spouses.

The Government has been aware of the advancing age of the co-operative membership, and has instituted a program of non-formal education to point out the advantages of the co-operatives to potential young members. It appears the differential pricing systems have been an anchor to the selling of the co-operatives to potential young members. But, as mentioned earlier, the differential pricing system to create an advantage for co-operative membership is being sabotaged at the village level.

3. Relatively High Membership Fees

The Government's efforts to encourage young men to join the co-operatives is not being helped by the current relatively high application and entrance fees of CFAF 21.100 ($5.50). Only a limited number of young men and women in rural Congo can afford this level of fees to enter a co-operative. While the application and entrance fees are relatively high for young applicants, the amount of revenue the Government can collect from the fees will be negligible. If the fees constitute a barrier to youth membership of the co-operatives, the Government may consider reducing or waiving the fees altogether.

4. Lack of Inputs

The co-operatives' problem of lacking Government support and of access to inputs such as credit, hand tools, fertilizer, and seeds is similar to problems faced by the small farmers as a whole. These problems are analyzed later in this report (See Section IV below).

H. Prospects for the Co-operatives

The potential roles which may be envisaged for the co-operatives could be realized by first removing the constraints enumerated above. The Government of the Congo has the capacity to resolve movement compatible with the limited resources it has available to do so. However, in dealing with some of the constraints, the Government can benefit from external technical and material assistance. The level of assistance the United States may consider will depend upon the lines along which the Government decides to pursue the co-operative movement. As mentioned earlier, U.S. expertise is in organizing farmers' co-operatives as marketing organizations rather than in organizing farmers into collective production units.

1. Strengthening the Organizational Structure

Strengthening the organizational structure of the co-operatives should deserve a high level of priority. As indicated earlier, the current organizational structure lacks the framework within which to deal with individual crop, or groups of crop production and marketing problems through the co-operatives. The co-operative units are also very small to stand on their own after an initial assistance. Maintaining the co-operatives in their existing small units will surely make them good candidates for continued Government support. Whether the Government could support, or would like to welcome another group of subsidy recipients in addition to the parastatal organizations is an issue only the Government of the Congo could resolve.

The organization of the co-operatives may follow the existing political administrative regions, where the Ministry of Rural Economy now has effective administrative machinery. For instance, the Ministry's regional office located at Loubomo in the Niari region which the team visited seemed to be capable of handling the affairs of the type of co-operatives being discussed. A technical assistance project for re-organizing the co-operatives could have its field office staff also stationed at the regional offices of the Ministry and work through the existing Co-operative Services Units there. Because of the smallness of the average Congolese peasant's farm ouput, the administrative activities of the co-operatives could be stationed at the regional centers and preferably housed initially in the same premises as the Ministry of Rural Economy. Collection centers could be located at the district level. Each local co-operative would have its own village level storage facility to which individuals will deliver their farm produce to be graded and weighed for storage. The district level will pick up the produce from the storage facilities of each village, or cluster of villages. The OCV, or OCC would pick up the produce at the collection centers, which could be the existing centers from which they now operate.

Some re-organization around groups of agricultural produce will be in order. For example, all cocoa and coffee growers could have one marketing co-operative. The membership will be organized at the local levels, with each locality electing a district representative, and each district committee will in turn nominate an agreed number of representatives to the regional committee, which will exercise policy control over the activities of the officials at the regional administrative office. Since cocoa and coffee are produced in the six regions of Sangha, Cuvette, Likouala, Kouilou, Buenza, and Lekoumou, only six operating units will be created for the two agricultural products. OCC will work closely with the six groups in handling the output of the co-operatives. The regional office of the Co-operative Services Department of the Ministry of Rural Economy will assist the administrative functions of the co-operatives, which may share the same premises with the regional staff of the Ministry.

For logistic and administrative reasons, one grain producer's marketing co-operative could be created to handle the marketing of maize, groundnuts, rice, and beans. Because these agricultural products are grown in all the nine regions, the grain farmers co-operative will have offices in all regions.

In reference to the organizational framework, three national co-operative unions would be sufficient to cover the whole country. For compatibility with the existing organization of the Ministry of Rural Economy, co-operative marketing unions could be created for:

- Cocoa and Coffee Producers;
- Grain Producers;
- Food Crop, Fruit and Vegetable Growers;
- Palm Fruit and Kernel Producers;
- Tobacco Growers;

2. Providing the Material Support for Effective Operation

The paucity of material resources with which the co-operative members have to work with has been discussed elsewhere. The urgent need is for the simple hand tools, including cutlasses (machetes); hoes, axes, pickaxes, and spades. A supply of these basic farming tools to Congolese peasants would have an appreciable effect on their performance in a very short time, probably within one crop season.

Possibly, the United States may consider making a supply of these tools available to peasants in a pilot project area. For an accurate assessment of the effect of the project, perhaps a quick farm production survey could be made of a selected project area. The survey will establish a baseline data against which to measure performance of the peasants in the project area after a year. The arrangement will also permit the assessment of the project's cost effectiveness.

Another class of resources urgently needed by the grain producers includes village level storage facilities. Much of the post-harvest food losses in the Congo are said to occur in the villages where a few cob-borers (leptidoptera larvae) could devastate a basket of corn kept in the "kitchen storage" in a matter of a few weeks. The co-operatives could be aided by materials and technical assistance to construct simple storage facilities in the villages as an aspect of their marketing services to members. For example, a simple grain silo, popularly referred to as Ghana No. 6, which was developed in Ghana during the 1960's with West German development assistance funding could be adapted to the Congo. Essentially, it made termite-proof the traditional earthen silo for storing grains -- corn, peanuts, beans, sorghum, millet, and rice -- by mixing the clay for building it with cement. When completed, it is usually covered with a specially designed aluminum roofing which was also

produced locally. The FAO might be in a position to make the design and specifications available for use in the Congo, since the FAO participated in a program to popularize the usage of this particular type of silo, and published articles recommending its use in other developing countries.

Perhaps, the United States may consider a pilot project in this area of assistance as well. The U.S. can provide the cement and roofing materials, and employ the services of the Peace Corps in providing the necessary technical assistance in constructing the silos. The actual construction could be carried out by Congolese peasants in a self-help project. The grain marketing co-operatives could give a good account of themselves in such a self-help project.

The U.S. Peace Corps could also provide technical assistance in the development of aquaculture in the Congo. Currently, the U.S. Peace Corps have been engaged in a very successful aquaculture development project in Seirra Leone, West Africa. The Corps members could share their experience elsewhere with the peasants of the Congo.

3. Credit Facilities for the Co-operatives

The co-operative program in the Congo has no credit component. Credit is a common problem for farmers' organizations in other developing countries. However, in most of these cases, the causes for failure could be traced to Governments' reluctance to allow the farmers' groups to operate on their own and accept responsibilities for their own commitments. The Government of the Congo, on the contrary, has shown interest and necessary support for any workable credit program that could be developed for the co-operatives.

The type of credit program which could be implemented in the Congo would have certain basic characteristics. The credit

system will be a low budget, short-term program, unburdened by top heavy administrative personnel, and will require no new organization for its operation. All the institutional participants are in place in the Government and parastatal organizations of the country.

In a nutshell, the suggested credit system would work in this way. As an example, the Cuvette regional co-operative for cocoa and coffee producers consults with its districts and local members to assess their needs for tools, pesticides, sacks and transportation. The regional office then collates the requests into both a bill of materials and a financial account of their costs. The final account, in the form of a loan request, is to be backed by a proforma invoice from the suppliers of the materials and services. The loan application is then sent to the regional branch of the Commercial Bank of the Congo (BCC), with copies to the regional and national offices of the Ministry of Rural Economy and OCC. OCC advises the Ministry and BCC on the crop and price outlook for the coming year and ability of the particular co-operative to repay the amount requested. On the advice of OCC, the Ministry guarantees the loan at the going interest rate. On approval of the loan, the Bank pays the appropriate amount directly to the suppliers of the goods and services as and when they are delivered to the co-operative for onward transmission down to the individual local co-operatives and their members. The co-operative members are jointly responsible for the total amount charged to its members, while each member is personally responsible for the amount of goods and services it requested and received. The repayment is then made when the members sell their produce through the co-operative.

The system should start with only short-term (one year to 18 months) credit until the co-operatives become strengthened to make medium-term commitments. Conceivably, a successful

co-operative may decide to get its own vehicle or vehicles for collecting its members produce, instead of contracting for the transport service. In such cases, medium-term credit could be considered. If the banking system can supply the necessary capital, there will be no need for the Government to do so beyond its loan guarantee. However, external assistance, if available, could be turned over to the BCC as a special revolving loan fund to support the co-operatives. Some technical assistance may be required to make a detail project design, install the system, and train Congolese to run it.

Using BCC as the operating organization for the credit program will facilitate putting the system into operation as quickly as possible. BCC has the necessary technical expertise and logistic facilities in all the regions to run a loan program. Employing an already established financial institution like BCC to run the program will obviate the cost of creating a new institution with the necessary complement of staff positions at the top. If BCC were to run the project, only a special unit could be created to deal with the program. This may not even be necessary, due to the limited number of applications that will reach BCC to be processed. A schedule office at each of the regional branches of the bank may be all the staff the program will need to begin operation.

The participation of the National Development Bank (B.N.D.C.) is not recommended at this stage. First, development banks are more attuned to handle long-term loans. The initial credit needs of the co-operatives will constitute only short-term loans. Perhaps, when they become well-established, the strong ones among them may consider medium-term to long-term loans which they could repay over a period of years.

4. Reviewing of Co-operatives Membership Fees and Differential Pricing System

It would appear that the relatively high application and entrance fees constitute a barrier to full-participation in the co-operatives by the youth and less affluent peasants. Since the fees are essentially revenue measures which are not likely to yield much to the Treasury, and do not form part of the working capital which members contribute for running the co-operatives, the Government may consider their review. The differential pricing, which was instituted to create a monetary advantage for co-operative membership, also seems to have been effectively compromised at the village level. Its usefulness is in doubt, therefore constituting a possible Governmental review.

IV. SMALL FARMERS PARTICIPATION IN THE ECONOMY AND SOCIETY

Given the fact that the development of the traditional agricultural sector has been neglected by the Government for so long, it is evident that the small farmers have received few benefits from economic development and have had little access to Government support.

A. Access to Investment and Credit

Table III-7 shows estimates of the financial flow into agriculture. In terms of public investment, agriculture accounted for only 7% of the total investment in 1970; it was increased to 11% in 1974, then declined again to 7% in 1976 and to 2% in 1977. Of these meager resources, very little was devoted to food crops and cash crop development. In the past few years, Government investment in agriculture was planned at between 13% and 14% of the total annual public investment: however, fragmentary evidence suggests that the actual investments were far below the planned level.

In terms of banking credit, agriculture has received only a negligible amount, accounting to between 2% to 6% of total banking credit. Moreover, most of this credit was allocated for forestry as well as to state farms and co-operatives. The small farmers have been kept outside bank loans.

The credit problems which the farmers face as individuals is similar to problems which the farmer co-operatives encounter as already discussed.

B. Access to Other Inputs

There is little to indicate that production inputs are being provided to the small farmer on a regular basis, or in significant amounts. Government inputs have been uneven in their distribution

Table III-7

FINANCIAL INFLOW TO AGRICULTURE, 1960-1980

	1960	1970	1974	1976	1977	1978	1979	1980
Government Investment in Agriculture (in million CFAF)	--	667	781	595	142	9,000	9,000	9,000
As Percent of Public Investment Budget	--	7	11	7	2	14	14	13
Agricultural Banking Credit	--	188	498	942	692	787	1,293	--
As Percent of Total Development Credit	--	2	3	5	3	4	6	--

Source: Table II-2; for simplicity, footnotes on "Financial Inflow to Agriculture" in Table II-2 are eliminated in this table.

and directed more towards the creation of administrative structures in the rural sector. A basic, in field, hands-on approach to agricultural problems seems lacking. Looking at four components of production, tools, fertilizer, seed and extension services, we see that the Congolese Government's role is small or non-existent.

1. Hand Tools

Small hand tools are notably lacking in the Congolese countryside. As shown in Table III-8 the distribution of hand tools is inadequate. Peasants labor with rakes and hoes in varying states of disrepair. There is no nationwide program to provide tools to the small farmer. In the Pool and Koukouya Plateau, a very limited program that allows agricultural credit to co-operative groups to purchase hand tools and seed, is run with UNDP assistance. Although tools are sold through the regional cooperatives union, they are distributed to individual farmers. Table III-9 shows loans to co-operatives for the purchases of tools and seeds during 1974-78. Unfortunately, these figures do not show the actual number of farmers that are reached by this program; according to UNDP officials, the number is small.

Table III-8

AVERAGE NUMBER OF SMALL TOOLS PER FARM FAMILY
IN NIARI AND POOL REGIONS, 1972-73

Item	Niari	Pool	Congo
Cutlass (Machete)	1.7	2.2	2.9
Hoe	3.0	3.4	2.4
Axe	1.6	1.2	1.5
Shovel and Spade	0.6	0.6	0.6
Pickaxe	0.3	0.1	0.2

Source: Recencement Agricole, 1972-73.

Table III-9

LOANS FOR TOOL AND SEED PURCHASES IN THE POOL AREA
(in CFAF)

Union of Co-operatives Region	1974	1975	1976	1977	1978
Lekana	223,240	593,460	47,100	53,885	0
Mbandza-Ndounga	0	15,415	0	197,235	426,319
Madzia	108,705	22,165	0	0	0
Kindamba	0	279,510	95,785	405,725	683,092
Kinkala	259,190	403,835	24,505	302,105	0
Mindouli	0	204,655	177,595	676,685	0
Kibuende	255,105	103,450	85,710	0	0
Louingui	56,065	735,960	2,245	60,315	244,231
Kissenguele	75,840	185,385	0	67,580	0

Source: Institute for Rural Development, Mairie N'Gouabi University, 1976

2. Fertilizer

Most fertilizer must be purchased from private sources by both co-operatives and individual farmers. Apparently it is not always available. The market garden co-operative in Pointe Noire that was visited by the team had no nitrogen fertilizer, although potassium and phosphorous were stocked in the common warehouse. The market garden in Loubomo nad no fertilizer at all; the Centre d'Appui Tecnnique in Loubomo had purchased fertilizer from private French sources. Tne regional MRE director complained that it was not easy to obtain. Eventually the OCV plans to begin distribution of fertilizers for the crops that it oversees, but this nas not yet happened. The FAO reports that the fertilizer package tnat OCV plans to deliver to the local farmer would be 150

kg/ha of urea, 250 kg/ha of 15-15-15 and two tons/ha of lime. The cost of this package is estimated by the FAO to be FCFA 30,000 per hectare. This extremely high cost makes the program seem a questionable investment at this stage of rural development in the Congo.

This is especially true in that no attempts at soil conservation are now being planned. As mentioned in the section on soils, most fertilizer applied to Congolese soils in their present condition would be quickly leached out with few residual benefits from one year to the next. According to officials at the Ministry of Rural Economy, the largest supplier of fertilizer in the country, SAPROCHEM, has gone bankrupt in the last year. This private French firm supplied fertilizer primarily to what was SIA-Congo (discussed elsewhere in the report) and expatriate farms. Recent agreements with Roman to purchase urea are directed towards OCV, the state farm operations, and the "Champs du Partie" program.

Currently, the most readily available soil amendment for the small farmer is lime from a factory built with Chinese assistance in Mandingou, in the Niari Valley, a major agricultural center of the country. The factory went into operation about three years ago. Originally its 10,000 ton production was to be distributed by the OCV, with some portion earmarked for the Champs du Parti program. Due to transportation problems and a lack of vehicles, neither OCV nor the Party organization have been able to take delivery of the lime. Since production began, lime has been sold to individual farmers at a price of CFAF 16 a kilo, or CFAF 16,000 per ton. Lime ($CaCO_3$) should be of use to most farmers where soil pH is low and calcium deficient, common conditions in the Congo. Some types of manioc will respond to calcium treatments. Liming trials in neighboring Zaire, on what appears to be a similar soil type, were not effective with maize production, nowever (PNM, 1978). It might be added that an annual production

of 10,000 tons is not very much. A recommendation of two to four tons per hectare would not be unusual on these types of soils. The state farm at Mantsoumba found three tons/hectare best for manioc production (Rapport d'Execution, 1974).

3. Seeds

The principal Government input into the small farm system is seed. Distribution of seed for rice, maize, and peanuts is done by the OCV. As shown in Table III-10, OCV distribution of and for these three crops is uneven and deficient in most areas. (See last column on "deficits or surplus".)

In our discussions with OCV officials it was not made clear exactly how estimates for seed needs were obtained for each region. Although no figures are available, it was apparent that OCV seed distribution does not reach a large number of farmers and that on farm seed production and storage remain important for the three OCV crops. We were told by OCV officials that there is a seed increase farm about four kilometers from the agronomy station in Loudima were some seed is reproduced. Other seed is simply saved from the previous year's crop which is purchased by OCV. No testing is done for adaptability and performance, so this seed would have to be considered land races, and not improved stock.

Transportation remains an obstacle to efficient seed distribution. This is confounded by the fact that many roads are not passable during the rainy season when the seed is needed. Storage problems also persist. The team visited an OCV seed storage warehouse in Loubomo and found a number of problems. Seed was being stored in a tin roofed building that MRE officials told us was extremely hot in warm season, contributing to a decline in seed viability. Sacks were placed directly on the floor with no protection from insects or moisture.

TABLE III-10

OCV SEED DISTRIBUTION 1978-79 SEASON
(tons)

REGION	Estimations			Quantities Furnished			Deficits or Surpluses		
	P	M	R	P	M	R	P	M	R
KOUILOU	-	7.5	-	-	9	-	-	1.5	-
NIARI	-	9.5	31	-	9.5	30	-	-1.5	-11
LEKOUMOU	-	4	28	-	4.5	27	-	0.5	-1
BOUENZA	700	19	22	6.822	4.5	30	693.172	15.2	6.100
POOL	-	25	19	5.178	23.243	188.222	-	1.757	-0.773
PLATEAUX	-	62	-	-	41.080	-	-	-20.720	-
CUVETTE	-	38	56	-	34.334	56.068	-	-3.666	-
TOTAL	-	164	156	12.000	126.257	161.295	-	-	-

P = Peanuts
M = Maize
R = Rice

Source: OCV

4. Extension Services

Because of various constraints discussed later in this report (See Part IV, Section II-E), there has been little extension service available to the small farmers. The only effective service which reaches the rural area is the "Radio Rurale" project, directed by the Ministry of Rural Economy.

The project is an integrated media, extension, and publication on rural development scheme. The station has weekly broadcasts to two key areas of the country, La Cuvette and Lekoumou. In these pilot areas radio clubs have been organized with an "animateur" who is in charge of keeping the Government-issued radio working. The "animateur" also writes a montnly report which comments on the quality of the reception and suggestions and questions that come from the group discussions that follow the broadcasts. Broadcasts cover a wide range of subjects that might be of interest to the

rural population such as agriculture, animal husbandry, hunting, fish culture, fishing, marketing, etc. The material is presented in a lively manner mixed in with local music and folk tales. Backing up the information on the radio programs are extension agents who answer directly to the Radio Rurale administration. There are 12 of these agents in the Lekoumou area and 15 in La Cuvette. They service 78 and 105 radio clubs respectively. The average membership is 25 per club. The activities of the extension agents are commented on in the monthly report by the villagers themselves. Such things are noted as how many times the agent has visited, and whether the material covered was related to the broadcast. We have been told by the Radio Rurale administration that this acts as a check on field personnel.

Radio rural publications serve two purposes. First, they serve as a back up to technical information given in the broadcasts, and secondly, they are used to train extension agents. As an example, of the first case, Appendix III-2 shows an illustration of a simplified counting system that helps illiterate farmers relate weights and measures of certain products with the amount of currency that they should receive. Hopefully this will encourage marketing of agricultural products by the small farmer. Appendix III-3 shows an example of Radio Rurale as a manual demonstrating the types of food that can be used for the growing of the fish Tilapia in local ponds.

In spite of its small size Radio Rurale seems to run well. At the present time it is limited in the amount of information that it can spread by a lack of locally done research that might be used for individual crops. Given the Congo's low population density it would seem like an excellent approach to extension services and should be expanded.

In addition to the Radio Rurale project there are limited extension services available to the farmers in the Pool and

Plateaux areas. They come under a special rurale development program that the Congolese Government sponsors in cooperation with UNDP. Table III-11 shows the administrative employees funded by the GOC in the two regions. One sees that both the number of people involved and that the actual number of hours spent on the project are low. Table III-12 shows support personnel that -- in theory -- work in the field. In several visits to the Pool area and discusssions with both local farmers and the MRE employees it would appear that there are few if any field visits and as in most of the country, most time is spent doing administrative duties with little contact with farmers.

Table III-11

ADMINISTRATIVE EMPLOYEES FUNDED BY THE

GOVERNMENT IN THE POOL AND PLATEAU RURAL DEVELOPMENT PROGRAM

PROJECT PERSONNEL	NUMBER	TOTAL		1970/73		1974		1975		1976		1977		1978	
		M/H	CFAF	M/F	CFAF	M/H	CFAF	M/H	CFAF	M/H	CFAF	M/H	CFAF	M/H	CFAF
National Director	1	108	10,350	48	4,600	12	1,150	12	1,150	12	1,150	12	1,150	12	1,150
Assistant Director	1	108	10,350	48	4,600	12	1,150	12	1,150	12	1,150	12	1,150	12	1,150
Extension Field Agents	1	108	10,350	48	4,600	12	1,150	12	1,150	12	1,150	12	1,150	12	1,150
Extension Training Agents	1	108	10,350	48	4,600	12	1,150	12	1,150	12	1,150	12	1,150	12	1,150
Shop Foreman	3	324	31,050	144	13,800	36	3,450	36	3,450	36	3,450	36	3,450	36	3,450
Women's Welfare	3	324	31,050	144	13,800	36	3,450	36	3,450	36	3,450	36	3,450	36	3,450
Rural Community Development	2	216	20,700	96	9,200	24	2,300	24	2,300	24	2,300	24	2,300	24	2,300
Assistants to Rural Groups	2	216	20,700	96	9,200	24	2,300	24	2,300	24	2,300	24	2,300	24	2,300
Fish Culture Agents	2	216	10,700	96	9,200	24	2,300	24	2,300	24	2,300	24	2,300	24	2,300
Livestock Agents	2	216	10,700	96	9,200	24	2,300	24	2,300	24	2,300	24	2,300	24	2,300

Key:
M/H=Manhours
CFAF=CFA Francs

Source: Institute for Rurale Development, 1979.

Table III-12

SUPPORT PERSONNEL FOR THE POOL AND KOUKOUYA PLATEAU

RURAL DEVELOPMENT PROGRAM

(AMOUNT IN CFAF)

SUPPORT PERSONNEL	NUMBER	TOTAL		TOTAL 1970-1973		1974		1975		1976		1977		1978	
		M/H	AMT.	M/H	AMT.	M/H	AMT.	M/H	AMT.	M/H	AMT.	M/H	AMT.	M/H	AMT.
Assistant extension agents	20	2160	86,400	960	38,400	240	9,600	240	9,600	240	9,600	240	9,600	240	9,600
Ag. production agents	6	640	25,920	288	11,520	72	2,880	72	2,880	72	2,880	72	2,880	72	2,880
Fish culture monitors	10	1080	43,200	480	19,200	120	4,800	120	4,000	120	4,800	120	4,800	120	4,800
Fruit tree production monitors	3	324	12,960	144	5,760	36	1,440	36	1,440	36	1,440	36	1,440	36	1,440
Assistant monitors	3	324	12,960	144	5,760	36	1,440	36	1,440	36	1,440	36	1,440	36	1,440
Animal husbandry assistants	6	648	25,920	288	11,520	72	2,880	72	2,880	72	2,880	72	2,880	72	2,880
Veternary Nurses	6	648	25,920	288	11,520	72	2,880	72	2,880	72	2,880	72	2,880	72	2,880
Assistant Ag. Education monitor	6	648	25,920	288	11,520	72	2,880	72	2,880	72	2,880	72	2,880	72	2,880

Key:
M/H=Manhours

Source: Institute for Rurale Development, 1979.

V. INTERNATIONAL ASSISTANCE TO SMALL FARMERS

For over the past decade most of the international aid to agriculture has been directed toward the state sector including state ranches and state farms as well as state agro-industries (See Appendix IV-1 for a summary of international aid in recent years). Very little, if any at all, has been channeled to assisting small farmers' production and marketing. However, since the Government adopted a new policy orientation toward agriculture three years ago, international financial assistance has just begun to reach the farmers. According to FAO's estimates, current international assistance to small farmers are being focused mainly on food crops and cash crops production.

A. Aid to Food Crops Production

A major part of the international assistance in this area has been focused on three main areas: (1) to reinforce the O.C.V.'s administrative and institutional development; (2) to support major O.C.V.'s rural development programs; and (3) to improve the rural road conditions. To reinforce the O.C.V. which was created officially in 1979 to undertake the responsibility of rural development, several international institutions are now interested in helping O.C.V. to operate efficiently. A project is being proposed to the World Bank for assistance to the O.C.V. in the following areas:

- Institutional development: to improve the administrative and accounting system of O.C.V. the project includes the establishment of six centers in the Niari, Pool, and Lekoumou areas as extensions of the Loudima Research Station.
- Agricultural census: to be conducted in the Niari, Pool, and Lekoumou regions;
- Marketing and price research: to determine the channel of food crops, marketing, and price - cost structures;
- Project preparation for food crop development in the Niari, Lekoumou, and Pool regions; and

- Technical assistance.

To support the OCV rural development programs, the African Development Bank (BAD) is considering assisting the O.C.V. to develop the Bouenza region. The project covers 18,000 small holdings and affecting 28,000 hectares of agricultural land producing three food crops: rice, corn, and ground nuts. There are three components of this project: extension services, increased distribution of seeds, and facility to decrease post-harvest loss. The objective of the project is to help the small farmers in this region to increase the production by 300 tons of rice, 2,700 tons of corn, and 800 tons of ground nuts.

To improve the rural road condition the Government launched in 1978 a "Pistes Agricoles" program aimed at rehabilitating 2,400 kilometers of rural roads, comprising a portion of roads which provide a link between remote villages and the points of marketing near the rivers, the railroads, and roads.

In order to finance the program, the Government has approached several sources including the European Development Fund and World Bank, but commitment by any given source has not been achieved as of this date.

B. Aid to Cash Crops Development

1. Development of Coffee and Cacao

The African Development Bank is considering the financing of CFAF 1.4 billion foreign exchange costs of a CFAF 4.7 billion five-year coffee and cacao development project. The project which will affect 33,000 small farmers calls for the improvement of 7,000 hectares of cacao and 3,750 hectares of coffee. It also envisions the increase in cultivation of 5,000 hectares of cacao and 3,000 hectares of coffee.

2. Oil Palm Development

A French company, the C.E.C.I. has prepared a project for the R.N.P.C. which envisions CFAF 3 billion for 11 years development to improve oil plantation in the Cuvette and Sangha regions; it also includes a program (or programs) to develop new plantations at Ouesso, Etoumbi, Kaunda. The O.C.C. has approached the European Development Fund as well as the African Development Bank for financing of this project. The African Development Bank has already commissioned FAO to study an oil palm development project in Quesso in the Sangha region. The plan calls for rehabilitation of 1,500 hectares of palms, planting another 1,650 hectares, and the modernization of the existing oil palm processing factory.

A Belgium company, the SOCFINCO, has done a study on the Sangha Oil Palm Development Project. The program proposed a plantation of 10,000 hectares of oil palm and a processing plant costing about CFAF 13 billion, to last over a period of 11 years. The end output would be 30,000 tons of palm oil. This project requires the transfer of manpower since the Sangha Region has only 40,000 inhabitants at this time.

C. Animal Husbandry Development

1. Eggs Production

Cuba is now assisting in developing egg production. A development program at the cost of CFAF 350 million called for increasing production on the five existing farms and establishing a new one at Ouesso. The annual output is expected to reach 10 million eggs per annum. A French company has also proposed establishment of a complex of poultry development at Pointe Noire. That plan would cost CFAF 3.9 billion of which 80% would be financed by French supplier credit and 20% by the Government. The proposed

production includes chicken farms to produce 1.7 million chickens, per year, a feed factory and a chicken processing plant.

2. Hogs Development

Bulgaria is considering participating in financing two integrated complexes for the Louboumo and Owando regions for raising 3,800 and 2,300 pigs a year respectively, and producing 350 tons and 240 tons of pork. The complex also includes a chicken component producing 300,000 eggs per year.

D. Other Assistance

1. Agricultural Credit

A FAO team has studied briefly the question of agricultural credit in rural development in August 1979. There is some indication that West Germany has shown some interest in approaching the question of agricultural credit.

2. Fishing and Aquaculture

FAO has completed a number of studies in fishing activities in the Congo as well as in the coast of Equatorial Africa. As a result of these preliminary studies, UNDP has attempted to mobilize bilateral assistance from Hungaria, Yugoslavia, and Canada to finance certain fishing projects. In 1978, FAO also studied the traditional fishing activities at Pointe Noire; the Government is hopeful that the European Development Fund will be interested in financing the Pointe Noire fishing project. During the summer of 1980, a team from the IFAD (International Fund for Agricultural Development) spent some time in Brazzaville to assess the possibility of financing fishing projects in the Cuvette region.

3. Sugar Processing

A number of studies on the sugar sector have been undertaken by the African Development Bank, FAC, FAD, and CCCE, but only a Candian company, REDPATH, has proposed a concrete plan to resume operation of the sugar mill, the SIACONGO; so far there has not been any financing outlet. The Government is now approaching several aid donors to assist sugar processing development.

4. Rural Electrification

A Swiss firm has completed a study of rural electrification and irrigation for the plateau region. The total cost is estimated to reach $35 million. China is giving a $95 million credit (a ten-year loan) for dam construction and rural electrification. In a July 1980 state visit by the Congolese President to Peking, agreement has been made between the two Governments for China to extend the main North-South route through the plateau region, that is the Itsoula - Djambala - Lekana portion.

PART IV

CONSTRAINTS TO SMALL FARMER'S AGRICULTURAL DEVELOPMENT

PART IV

CONSTRAINTS TO SMALL FARMERS AGRICULTURAL DEVELOPMENT

The development of agriculture in the Congo, especially of the small farmer sector, is severely hampered by a host of constraints which are evident throughout this report (especially Part III, Sections II and IV; and Part III, Section III and Section IV). This section only summarizes the main constraints with emphasis on those which are susceptible to intervention (marketing, Government policies, etc.) and merely touches on those over which there is little control (ecological factors, size of population, resource endowment, etc.).

I. THE SMALL FARM SECTOR

A. Environmental and Cultural Conditions

1. The Land

a. The primary constraint to increased agricultural development is the soil itself. Soils in the Congo are inherently fragile and infertile and unimproved soil will not support permanent intensive agriculture.

b. A second factor which limits production to a single crop in the absence of irrigation, is the long dry season in the southwestern part of the country. The fact, furthermore, that the dry season is characterized by low insolation would make irrigation of dubious value.

c. A third factor is the problem of pests and diseases. According to FAO, climatic conditions in the Congo are very conducive to the spreading of a large number of pests and diseases which constitute a major constraint to intensification of farming. FAO reported (FAO, Mission d'Identification):

"Eight to 12 months of warm weather, high rainfall and high relative humidity provide an excellent environment for proliferation of a large number of pests, weeds and diseases. As the season advances the rising incidence of insect pests and diseases is considered as important a constraint to second season crop production or adoption of continuous agriculture, as any other factor. The build up of weeds is the other main reason for abandonment of cleared land.

The mission inspected a standing second season maize crop on a state farm and found that practically every stand of maize nad been attacked by either a stem or cob-borer. An apparently healthy cob selected from a recently harvested pile of cobs was selected and kept for observation by the mission. After two weeks 3.8% of the grains on the cob were already damaged by four young Lepidopterous Larvae. Inspection of a "kitchen" type storage in a village also showed a relatively high degree of damage compared to damage observed under similar conditions in other parts of West Africa."

2. The Tiller

The Congolese peasants have long ago adapted their subsistence patterns and social organization to their environmental conditions. They practiced shifting cultivation with a low population density and impermanent settlements. This adaptation has been profoundly modified, however, during the French colonial period and since, by the regrouping and consolidation of the peasants into fewer and larger permanent settlements, by a large increase in population, and by the siphoning off of young men to the cities to provide labor for industry.

The lineage structure, which was left essentially intact, at least among the Bakongo, developed rotational schemes to regulate access to a now fixed and increasingly inadequate amount of land requiring shorter periods of fallow, while assuring itself of new monetary sources of income derived from the wages of its youth, and reinforcing the traditional domination of elders over the young. This has, however, only accelerated the departure of the young wishing to escape as far as possible from this control.

The traditional sexual division of labor was developed in a forest environment, with men clearing the forest, hunting, and fighting, while women were responsible for food crops and the household. With permanent settlements, the forest largely gone in the more heavily populated regions, and game hunted out, there is relatively little left for the men to do.

In face of a depressed agriculture and of opportunities in the urban areas, men left the villages to come to towns, constituting a mass exodus, leaving behind mainly women of old ages.

The result of this evolution is that the peasants are in a very difficult position, both in terms of ecological and manpower conditions, to increase their production of food to a significant degree. A net increase could result from measures to reduce the present heavy losses between field and market, but increases in production can only come in the long run when these two conditions have been changed. The experience of the United Nations supported rural development projects in the Pool and Plateaux over more than ten years where production has not increased would seem to bear this out.

What is needed, then, is to develop an adaptation to the environment that will permit permanent cultivation of the land with sustained yields and provide sufficient diversification of the sources of income to establish the rural economy not only on a sound basis but to provide the opportunity for a more balanced sexual division of labor and above all, to slow down migration from the rural areas.

B. Marketing Constraints

1. Lack of Storage Facilities

A lack of storage facilities of all types places a severe constraint on the marketing of agricultural produce in the Congo.

The results have been heavy food losses, high food prices, and discouragement of farmers to increase their food production. FAO local staff indicated that the post-harvest food losses might be as high as 60% of the total food output. Officials of the Ministry of Rural Economy thought the FAO figure was probably correct. No detailed research has been done on the subject in the Congo. An exhaustive study on post-harvest food losses in the developing countries, sponsored by the U.S. National Academy of Sciences did not cover the Congo. The educated guess of persons familiar with the situation in the country is that about half the food produced is lost through poor storage practices and lack of transportation to move food from the villages to points of sale.

An intervention project for grain producers has been discussed along with the approaches to meet some of the pressing needs of the farmers' co-operatives. For producers of such perishable commodities as fish, elaborate, even though low budget intervention projects will be in order. For example, it was observed at Pointe Noire that the fishermen had to work all night so that they could land their catch very early in the morning, when buyers could obtain their supply early enough to take it to destinations inland before the fish deteriorated. Some crates of fish were seen left on the beach waiting for a vehicle to move them inland for sale. It was about noon, but the crates of fish might have been waiting since dawn, when the fishermen had landed their catch. By late afternoon, the fish would certainly have spoiled. Such a loss could have been prevented by the construction of a small coldstore near the beach, where the fishermen could hold their catch for a fee until the vehicles could come for them. While there are coldstores in Pointe Noire to serve the needs of commercial fishermen, there is none to serve traditional Congolese fishermen (the fish drying station at Mossaka in the Cuvette region had been closed down for some time).

2. Lack of Access to Credit

The farmers have almost no access to credit. The credit problem is also the missing link in the current effort to develop a co-operative movement in the Congo, a movement which is viewed as a determining factor in the success or failure of agricultural policy. One of the potent factors that gave birth to farmers' co-operatives in Europe was the search for a way to meet farmers' credit needs with a view to freeing them from the financial clutches of merchants who were also the moneylenders to farmers. For example, in France the farmers' co-operatives were placed on their current firm footing with the establishment of the National Agricultural Credit Bank (Caise National de Credit Agricole-CNCA). The activities of the CNCA are similar to programs administered by the USDA Farmers Home Administration, and include credit for rural housing, modernization in agriculture, consolidation of noldings and natural disaster relief programs for farmers.

A credit organization, which will be suited to the Congolese situation, will give the needed fillip to the growth of the co-operative movement in the country. It is doubtful that the co-operative movement will succeed without a credit component (See also Part III, Section III-H.3).

C. Input Constraints

In the course of the mission's limited tour of the Congolese countryside in Kouilou, Niari and Pool regions, it was noticed that only a limited number of the traditional hand tools were available to the co-operative members seen in the field. Even the limited number of hand tools available were badly worn down with use, and were in need of replacements. At a Government agricultural station near Loubomo in Niari region, the team noticed that only one shovel among an assortment of cutlasses (machetes), hoes, axes, and pickaxes was any good to use.

Apparently, the depletion of the number of hand tools as a stock of capital per farm family had been going on for some time. The nearly nonavailability of seeds and fertilizers as a constraint upon production is described in Part III, Section IV.B of this report. Finally, the farmers are not provided with basic technical information as to appropriate means to restore and maintain soil fertility and the present extension service is inadequate to convey the information even if it were available.

II. BEYOND THE FARMS

Beyond the farm structure itself, the rural dwellers face the problem of lack of external economies such as basic infrastructure, means of transportation, Government support, and disincentive pricing policies.

A. Poor Trunk and Rural Roads

As it was described earlier in this report (under Part III, Section III.D), the Congo has only a very limited rural infrastructure in the form of trunk roads and rural access roads. Lack of access roads places constraints, not only on the marketing of agricultural produce, but also on the incentive to produce more. Peasants suffer heavy losses when vehicles fail to reach them in the villages and collect their farm produce. The loss discourages peasants from producing more food than what they need for their own subsistence.

The solution to the problem lies in the improvement of existing trunk roads and the construction of rural access roads, But the construction of roads can be very costly and time consuming. Maintenance costs also increase with the extension of road systems. A suggested approach would be for the Government to prepare a national infrastructural development program, and seek the necessary assistance from bilateral and multilateral agencies to help finance the program in stages. Meanwhile, self-help rural access road construction projects could be instituted to open up some of the hinterlands near urban markets. Peasants in promising food districts could be mobilized and aided with tools, equipment, trucks and technical assistance to construct roads which will connect their villages to the nearest trunk road.

B. Inadequate Supply of Transport Equipment

The lack of transport vehicles and decent all-weather roads greatly inhibits, along with the lack of storage facilities, the ability of

the farmers to sell their excess produce. Harvests from frequently remote fields have to be transported to the villages on the heads or backs of women, and once there, they have to wait sometimes for weeks for the irregular visits of Government trucks to pick up the produce.

The country also lacks the right types of vehicles to transport high value items. For instance, the price of saltwater fish is high enough in Brazzaville to make fish a high value item to be carried in refrigerated vehicles and railway cars from Pointe Noire to Brazzaville. None of these now exists in the Congo. Furthermore, the number of trucks available for transporting agricultural produce from the rural to urban areas, and to the port for export are not enough to handle the present level of farm production. This is reflected in the significant difference in the rural and city prices of the same food item only 50 kilometers apart.

Acquisition of additional vehicles of the right types may not be the only solution. A long-term solution will include the establishment of repair facilities in the primary and secondary urban centers for maintenance. An aspect of the approach will include the training of technicans and mechanics, who will carry out the repair function. The approach may also involve some formal and nonformal driver education to instill into the minds of those people who operate the vehicles the need for vehicular care and regular maintenance.

C. Absence of Marketing Research

There is limited information on the Congolese market for agricultural produce, and there is no marketing research of any kind in process. Fortunately, during the team's tour of the Congo, the FAO was putting togetner the staff for an agricultural survey project which would seek to establish a baseline data on agricultural production in the three regions of Pool, Lekoumou, and Niari. The outcome of the effort should shed some light on basic indicators of agricultural production in the three regions. Hopefully, the approach could be replicated in the other regions of the country.

Marketing is essential to any agricultural development program, and effective marketing requires up-to-date information on the supply and demand situation in the market for the various farm produce, as well as some indications with regard to demand-price relationships in the market. In the Congo, where Government-administered prices avail at all levels, the state marketing organizations should have reliable and up-to-date information on the activities of the participants at each level of the marketing chain -- from producer to transporter to wholesaler to processor/convertor to retailer and finally to consumer.

Information on specific aberrations of the marketing system should also be of interest to a marketing organization, so that they could be eliminated to promote efficiency. Currently, it will be very helpful to know which of the post-harvest food losses are attributable to attacks by pests and fungi, which are due to poor storage practices and which are due to lack of transport to convey the produce from village to market.

The way to get all the pertinent information is by marketing research. The type of research needed by the Congo should be comprehensive for the major crops and seek both quantitative and qualitative information on the agricultural commodities of interest. The research process should focus more on the gathering of market intelligence than on the collection of statistical data. For example, techniques should be developed to forecast the probable output of crops prior to their harvest, so as to permit planning in advance of the logistic needs to market the output effectively.

Intervention in this area will involve a combination of technical assistance, institutional building and training of Congolese to run the marketing research project thereafter. Detailed research design and project preparations will have to be carried out to pin-point the areas of research needs, how to go about initiating the project, in which institution or ministry to locate it, and which organizations are to receive its findings.

D. Lack of Concrete Government Support

The Government's manifested interest in developing agriculture was not difficult to detect when discussing the subject with officials of the Ministry of Rural Economy. However, the interest is not matched by any signs of substantial support to the farmers. For example, some farmers' co-operatives have to obtain their own seeds through indirect channels from Zaire. The members of a co-operative vegetable farm in Kinkala district had no idea at the time of the team's visit whether OCV, or the Ministry of Rural Economy would help them convey their produce (some 15 kilometers away from the main road) to Brazzaville. The farmers appeared to be eager to receive new hand tools for their operation. According to the officials of the Ministry of Rural Economy, some 1,000 power saws have been imported for forest clearing by the co-operatives; none of these saws was spotted during our tour of selected locations in the three agricultural regions of Niari, Pool, and Kouilou.

E. Policy Constraints

First, there is a very inadequate planning and programming capacity at both the Ministry of Rural Economy and at the Ministry of Planning. For example, no long-term or medium-term rural development strategy or projection has been formulated; no coherent study of linkages between different projects has been undertaken.

In principle, projects, programs, and strategies are developed in the Ministry of Planning in a planning body composed of one representative of all Ministries. These plans and their related budgets, once developed, are presented to the Executive Council where, if they are approved, they become policy. Thus, policies as they are contained in plans for projects and programs can and usually are formulated by working level technicans who develop programs and projects for approval at higher levels.

Examples of poor policies currently affecting the agricultural sector in Congo are low fixed prices for agricultural products, support of inefficient Government marketing institutions and inefficient state farms and ranches.

F. Constraints to Extension Services

The very limited extension services to farmers discussed in Part III, Section IV may be explained in terms of a number of constraints. These may be grouped into two categories.

First, there are natural constraints. Among these are a scattered rural population of low density, small land holdings, a poor transportation system and soil and climate differences within the country.

Secondly, there are administrative constraints attributable to past and present Government policies in the rural sector. In this area one finds lack of extension agents in the field, competing and possibly conflicting bureaucratic responsibilities for extension services, little basic agronomic research, and insufficient production inputs from Government agencies.

In this section of the report we will attempt to look at these constraints in some detail.

1. Natural Obstacles

Low population density is a natural barrier to providing extension services. In certain areas such as Likouala, with a population density of only 0.43 persons per km^2 and large areas not accessible by road, extension services would have to take forms other than the traditional visiting agent. Even in relatively more populated areas such as Bouenza (9.43 persons per km^2) or Niari (3.71 persons) villages are also scattered. According to

the regional director of the Ministry of Rural Economy for Niari, unless peasants could be grouped in some way, extension visits would not be practical. He also noted that because of the distances involved, it was not unusual for only one member of a co-operative or a village to attend agricultural demonstrations or Ministry meetings.

Under these circumstances radio can play an important part in the extension service; the Ministry of Rural Economy is currently producing agriculturally oriented radio programs, the "Radio Rurale", to propagate agricultural technology.

As noted elsewhere in this report, the area cultivated by a household or individual farmer tends to be small, making extension visits even less rewarding in remote areas.

Differences in climate and soil can be viewed as a constraint to extension services in that field testing of improved varieties would have to be done over a wide number of locations before recommendations could be made with confidence. With most of the population and agricultural activity in the southern part of the country, this factor becomes especially important. As noted in the section on climate, rainfall in this area can vary considerably in amount and distribution, creating a totally different soil/water environment from one location to the next or from one year to another.

2. Administrative Constraints

In spite of the seriousness of these natural constraints to extension services, administrative problems have posed even greater obstacles. At this time there appears to be few extension agents actually in the field. According to officials of the Ministry of Rural Economy and of the OCV, there is disagreement within the Government as to who is actually to

perform the basic extension work. Officials at OCV felt that training local farmers as an extension agent would be the most effective means of spreading information. OCV would supervise the training and activities of these farmer/agents. On the other hand, the head of the Agronomy service of the Ministry of Rural Economy felt that graduates from the various agricultural schools would be the most suitable agents, and logically would answer to his department. Both OCV and the Agronomy service indicated that some persons within the Government believe that such basic contact with the villages should be a role reserved for the country's unique political party. It is felt by this group that party militants could act as extension agents.

This disagreement seems to be just part of the inherent conflict between OCV and other agencies within the Ministry of Rural Economy assigned similar, if not identical responsibilities.

At the moment, extension agents are being included in the Government's funding of the general rural development program at least in the Pool, Plateaux and Koukouya areas; however, these persons are currently engaged mainly in administrative duties, and their visits to the villages are for inspection and control. For example, in Loubomo there was an announcement posted that informed local farmers that two field agents would be inspecting farm animals to assure that they were properly licensed and that taxes on them had been paid.

The Institute for Rural Development of Mairen N'gouabi University in Brazzaville found in a study of the Government rural development project in the Pool and Plateaux areas that these agents had failed to make sufficient contact on the village level. The report cited a lack of extension services as a primary reason why targeted groups were not being reached.

During the team's tour of co-operatives in Pointe Noire and Loubomo it was found that even at these locations, carefully

selected by the Congolese Government, there was no evidence of any extension activity, Government inputs, or support. In Loubomo the president of the market garden co-operative stated flatly that in spite of numerous promises, the co-operative had received no Government help whatsoever.

The lack of field personnel might be a reflection of the low numbers of students in the Congo who are choosing agriculturally related fields of study. This includes not only the Institute for Rural Development at the Marien N'gouabi University in Brazzaville, but mid-level and elementary type education in that field. It is these mid-level types that would seem to be the most likely persons to do field work. Appendix IV-2 shows the various and mid-level agricultural institutions in the country and the low enrollment in such institutions nationwide. The Institute for Rural Development, which trains agronomists, agricultural economists, agricultural engineers, etc., has an enrollment of only 70 for the whole country.

PART V
DEVELOPMENT ASSISTANCE STRATEGY

PART V

DEVELOPMENT ASSISTANCE STRATEGY

I. RATIONALE

In the long run, agriculture, not oil, remains the foundation of the Congolese economy. For when the known oil reserves are depleted by the end of this decade, it will be agricultural production which will be the main source of employment and income for the majority of the population.

Given the structural problems of the Congolese economy and the current state of the depressed agriculture, what can the United States do to assist the Congolese Government in restoring the viability of the small farmer sector?

The problems are multitudinal and the constraints are numerous. With a limited amount of funds (say between $2 million to $3 million for the next two years) which Congress may appropriate for the Congo, the U.S. can only play a relatively minor role in assisting the country. Nevertheless, given the fact that agriculture has been abandoned for nearly two decades and its revitalization must now start anew, a modest input of U.S. aid at the initial state of "reconstruction," could bring about significant and visible impact on long-term development prospects.

In focusing its aid on the small farmers subsector, U.S. aid will be viewed as unique on the grounds that until now, most of the international aid has been directed towards the modern sector; within agriculture, aid has been channeled to state farms and to other Government agricultural enterprises.

The small farmers development assistance strategy is also consistent with priorities established by the Congolese Government for the next few years and probably for the forthcoming Five-Year Development Plan (1982-86).

In the past, the Government has attempted to solve the agricultural problem by taking over agriculture itself and pushing it along the socialist path. This attempt has failed and the Government is now ready to circumvent ideological strictures standing in the way of agricultural development: "I don't care what you do as long as agricultural development increases," declared the Minister of Rural Economy in a recent policy speech to a group of foreign donors.

The basic shift in economic orientation is clearly underway, it is a shift which offers the U.S. a rare opportunity to support long awaited changes for the benefit of the Congelese people.

II. CRITERIA

Given the constraints on agricultural development and the limited U.S. assistance, it is imperative that some criteria be proposed in order to establish priority and to maximize the impact of aid.

1. Feasibility

Ideally, U.S. aid should be tailored to reach all the farmers, especially those in the northern part of the country (in the Sangha and Likouala regions) who have been completely ignored by the central Government in the past. However, aid intervention could not reach the northernmost farmers without basic infrastructure to even permit contact with them such as access roads and Government outlets to co-operate in implementing the aid. What seems feasible is to allocate the aid according to population distribution. Roughly speaking, two-thirds of the population lives in the southern part of the country (the Kouilou, Niari, Lekoumou, Bouenza and Pool regions) and one-third, in the central and northern regions (the Plateaux, Cuvette, Sangha, and Likouala regions). On this basis, two-thirds of aid could be allocated to the southern part (say to support the Sibiti co-operative development and other marketing projects in the Lekoumou and Niari regions) and one-third for improving economic conditions in the north (say to improve marketing outlets in the Sangha region and develop fish pond activities in the Cuvette area).

2. Cost - Benefit

Another criteria for U.S. aid strategy would be the cost-benefit test. Because of the lack of basic facilities in the country and the dispersion of population, infrastructure projects to aid production such as irrigation and rural roads are very costly. Furthermore, building and upgrading rural roads, though this

appears desirable and even prerequisite for rural development, may not bring real and lasting benefits to the farmers at this stage because the roads, once repaired, will be quickly used by log transport trucks, the owners of which (mainly foreigners) do not contribute to the maintenance of roads while using them. The cost-benefit test, therefore, points to the direction of improving marketing as a more efficient way to assist agriculture for the time being.

3. Speed of Implementation

Given the urgency to restore agriculture in order to slow down the rural exodus, projects which can be quickly implemented would bring more benefits to the country. Furthermore, there is a timing factor: the Congolese Government is reappraising its agricultural policies. Some tangible and quick results from the U.S. sponsored projects would demonstrate to the Government that there is an alternative to increase agricultural production other than through state farms.

4. Other Donors' Projects

In order to bring about impacts, U.S. aid strategy must take into account development assistance to agriculture from other donors as described in Part III Section V. For example, the African Development Bank is considering assistance to develop the Bouenza region; the International Fund for Agricultural Development (IFAD) is considering assisting the Cuvette region. In this context, the Government's manifested interest in having American aid projects to develop the Niari and Lekoumou regions seems logical.

5. Experiences of Past Projects

Finally, the experience of other donors in the Congo is also of value to the U.S. The European Development Fund (FED), for

example, has not been very successful with its "motoculteur" (mechanization) projects to aid the Congolese farmers. On the other hand, a French pilot project in the late 1960's to stimulate agricultural production through price incentive and improved input delivery and marketing systems was a success.

III. NATURE OF AID

With the constraints discussed earlier and the criteria established above, an optimal program of modest U.S. aid to the Congo would seem to include the following elements.

1. Given the country's heavy burden of existing foreign debts, U.S. aid will have to be in the form of grants and concessional loans under PL480, Title I. Furthermore, most of the projects proposed for consideration below will be much easier to implement with grants and counterpart funds from PL480 rather than with project loans.

2. The aid would be channeled mainly to small farmers directly or indirectly through co-operatives and pre-co-operatives, and not to state farms and ranches.

3. The primary objectives of aid would be to support the production and marketing of food crops, cash crops and farmers' other activities such as fishing and livestock raising, leaving out, at the moment, forestry, cattle raising, and agro-industrial production.

4. The U.S. sponsored projects would be experimental and/or investigative in nature to provide valuable experience and information needed for the formulation of future assistance programs.

5. For the medium term, the primary objective of aid would be to improve marketing and to prepare the foundation for future development. Over a longer period of time (say between three to five years), it would be to increase the peasants productivity, diversification of agriculture and improvement of rural infrastructure.

IV. PROPOSED PROJECTS

1. Medium Term (One to Three Years)

Project 1: Strengthening the Organizational Structure of the Co-operatives

Purpose: A pilot project, say at Sibiti in the Lekoumou region to revamp the co-operative movement into viable organizations which will act as intermediary institutions in channeling agricultural extension, marketing, and credit services to their members (see "Prospects for the Cooperatives, "Part III, Section III.H).

Activities: The United States may consider providing financial and technical assistance in reorganizing the co-operatives and training of Congolese to administer the movement.

Project 2: Supply of Simple Agricultural Implements to Farmers

Purpose: To replenish the dwindling supply of simple farm implements used by Congolese peasants (for details, see Part III, Section III-H.2).

Activities: The United States may consider acquiring a number of cutlasses (machetes), hoes, spades, axes, and pickaxes to distribute to farmers in a pilot project area. Selection of the approximate project area should be made in consultation with the Government of the Congo. There has been a continuing depletion of the number of farm implements as a stock of capital with which peasants have to work their fields. The reversal of this decline will provide a needed assistance to farmer productivity at the current level of farming expertise by Congolese peasants.

Project 3: Creation of a Revolving Account to Meet the Short-Term Credit Needs of Peasants

Purpose: Provide the initial funding of a revolving account to cater to the credit needs of peasants through the co-operatives (see Part III, Section III-H.3).

Activities: The United States may consider providing a modest initial fund of say about $200,000 to $300,000 for the establishment of a revolving account which will cater to the credit needs of peasants. The fund can be administered either by the Ministry of Rural Economy, the Congolese Development Bank, or preferably by commercial banks (the UCB) to meet the short-term credit needs of peasants through the co-operatives.

Project 4: Adaptive Research and Extension Services

Purpose: To provide farmers with access to extension services and with diversifying the sources of income of the peasants and ensuring their permanent availability through improvement and protection of the soil. The diversification of activities and resources could also provide an opportunity for rewarding agricultural work for males outside of the traditional sexual division of labor, thus redressing the present imbalance and possibly reducing, if not stemming, the exodus of youth to the cities. An important component of the project would be an extension service package to farmers. Under the criteria established above, this project is considered by the team as one of the best projects for the Congolese farmers.

Activities: The project should be set up to last for a number of years in a relatively densely settled region having reasonable means of communication with the outside world (say at Sibiti in the Lekoumou region). The project should collaborate with the national research station in Loudima and as experience is gained it should be shared not only locally, but through Radio Rurale

and other extension services with other rural populations in similar areas. At a later stage satellite projects should be set up in different regions of the country having different ecological conditions.

The operations of the project should be highly visible and involve direct collaboration with the surrounding population. Research should be directed not just to specific crops, pest control, or other techniques, but toward developing an integrated approach to land management involving soil improvement and fertility maintenance, food crops, the planting of trees of appropriate types to improve soil, prevent erosion, and to provide fire and construction wood and wind protection. Fish ponds should be dug and animals raised to provide food for the fish as well as manure for the fields and meat for human consumption and sale.

Project 5: Improvement in the Collection of Food and Cash Crops

Purpose: To strengthen the ability of Government's marketing institutions (the OCV and OCC) to effectively collect farm produce from small farmers in the villages.

Activities: The United States may consider providing a limited number of trucks to OCV and OCC to augment their existing fleet of vehicles used for collecting farm produce of small farmers. The assistance can be in the form of a long-term development loan.

Project 6: Establishment of Freshwater Fisheries Research Unit

Purpose: To conduct applied research and communicate the result to traditional fishermen with a view to helping them increase their fish harvesting.

Activities: The United States may consider providing an initial grant to create the Freshwater Fisheries Research Unit at the

Marient N'gouabi University, recruit an educator with the necessary expertise to help set up the unit within an academic year, and provide any material assistance necessary to set up the unit.

Project 7: Assistance for Fish Storage and Preservation

Purpose: To help preserve fish harvested by traditional fishermen and to increase the availability of fresh fish in rural areas away from the sea and rivers.

Activities: The United States may consider providing material and technical assistance for the construction of cold storage and fish drying and smoking facilities at Mossaka, Pointe Noire, and other key centers for the use of traditional fishermen and fishmongers.

Project 8: Training in Marketing Research

Purpose: To strengthen the mechanism for price setting by the Ministry of Rural Economy based on reliable market information gathered through market research.

Activities: The United States may consider providing technical assistance and training for Congolese to run a market research unit to be located in the Ministry of Rural Economy.

Project 9: Development of Village Level Storage Facilities

Purpose: To provide technical assistance to villagers to build their own storage facilities. (See also Part III, Section III-H.7)

Activities: The United States may consider providing material and technical assistance through the Peace Corps to help villagers build their own sample storage facilities.

Project 10: Expanding the Service Production Project and Extending it to Cover Poultry, Sheep and Goats

Purpose: To improve the production of market hogs, poultry, sheep, and goats by peasants.

Activities: The Government of the Congo is likely to expand the current swine production project and extend it to cover poultry, sheep, and goats. The United States may introduce a credit component into the project and introduce a national rabbit project as an extension of the effort to help peasants raise small livestock.

Project 11: Upgrading the Existing Fish Ponds and Building New Ones

Purpose: To help reactivate a one-time thriving peasant enterprise.

Activities: The United States may consider providing technical assistance through the Peace Corps to help the peasants rehabilitate their existing fish ponds and to develop new ones (possibly at the Pool region).

2. Medium Term (three to five years)

a. Crop Diversification with Emphasis on New Cash Crops

Project 1: Introduction of New Cash Crops

Purpose: (1) Provide new income generating activity for peasants and (2) compensate for the nearly half-year of their idleness due to the long-dry season.

Activities: The newly activated agricultural research stations can select varieties of tree crops that do well during the dry

season and on relatively poor soils. Conduct laboratory and field tests to select the most promising varieties, carry out seed multiplication, propagation and distribution of the seedlings to peasants to grow. Provide extension series during the growing period and marketing services after the harvest. Two tree crops, castor seed and cashew nut, can form the first group of long-term crop diversification program. Another valuable crop worth exploring is the Macadamia nut (Macadamia integrifolia). Originally, an Australian evergreen tree, which grows well in the Central African countries of Malawi and Zambia; these two countries have climates similar to those of Southern Congo. Kernel is also a very valuable confectionary nut with its largest market in Europe and the United States. The only world commercial producers of this valuable cash crop are Australia, Hawaii, and Malawi.

Project 2: Introduce Sorghum and Millet

Purpose: Diversify the raw material base for the country's nascent animal feed industry.

Activities: Obtain sorghum and millet varieties for trial and selection of varieties most suitable for the Congo. The seeds of the appropriate varieties should be multiplied for distribution to farmers. An extension service package should accompany the introduction of the two cash crops.

b. Improvement in Varieties of Existing Cash Crops

Project 3 Improvements In the Varieties of Cocoa and Coffee Trees

Purpose: Improve farmer productivity of cocoa and coffee production by introducing high yield varieties which are also disease resistant.

Activities: Import improved cocoa seeds of varieties which are tolerant to capsid attack from Ghana for field trials and subsequent distribution of seedlings to farmers to grow. (Varieties of cocoa trees now grown in the Congo are types known to be suspectible to capsid attack. Some trees are now under attack, although the situation is somewhat under control). Expand the current coffee program by importing coffee seeds from the Ivory Coast. The imported varieties should, however, be subjected to rigorous field tests before the seedlings are released to farmers. Extension services should accompany the new seedlings to demonstrate to farmers how to grow and care for the new seedlings.

c. Rural Infrastructure

Project 4: Drawing Up a National Rural Infrastructure Program

Purpose: To detemine the magnitude, cost, and time it should take to develop a rural infrastructure program and the ways and means to finance the program.

Activities: The Government of the Congo may consider setting up a planning commission of technical personnel to draw up a comprehensive program on how to go about developing the rural infrastructure of the country. The United States may consider providing technical advisers to help draw up the plan. Circulate the completed plan to multilateral and bilateral economic assistance agencies for help in carrying out the program in stages. (The development of rural infrastructure is a very costly, and time consuming affair. It requires careful planning to establish the right priorities of which project comes first and which second, and so on. Unplanned approaches could easily result in serious financial problems.)

d. Testing Program

Project 5: Liming Test

Purpose: To determine if lime applications represent a useful and profitable input at this stage of development of the Congolese small farms.

Activities: Currently lime is one of the few soil amendments that is available to the small farmer, since it is produced by a factory in Mandingou and sold locally. At 16 CFA per kilo it is not inexpensive. Trials at the state farm at Mantsoumba showed that manioc yields could be significantly increased with applications of three tons per hectare. This represents 48,000 CFA at the retail price, far beyond the reach of most peasants. A pilot project would be selected to find out whether smaller amounts applied by hand at the time of planting could improve productivity for the small farmer.

Project 6: Improved Rotations

Purpose: To determine whether the current multiple cropping system, although seemingly an efficient use of the growing season, could stand considerable improvement, especially in the area of fertility maintenance, which is given little attention in the traditional cropping system.

Activities: This inexpensive and often successful method of fertility maintenance might work well in the Congolese environment. Again this would have to be done on a basis of on farm testing with farmer acceptability as a major input.

Special attention could be paid to levels of potassium, the major mineral requirement for manioc. In addition, attention will also be given to crops which suffer from juxtaposition

with other more agressive plants. Maize would seem to be a good case in point.

With the OCV attempting to get farmers to grow maize as a commercial grain, its current place in the multiple cropping system must be reconsidered. In the traditional system maize is planted in between mounds of manioc. Research done by the excellent maize program in Zaire has shown that maize plants compete poorly with manioc for both light and presumably nitrogen.

Project 7: Seeds Selection

Purpose: To provide information on how farmers select seed for the next growing season from the current crop and to make peasants aware of how selection of seed grains is important in preventing the spread of pathogens and genetic drift.

Activities: A study of the selection of rice, maize, and legume seeds and storage from one season to the next at the village level. It seems important to get farmers to maximize the seed stock they currently have and would at the same time prepare the way for the introduction of newer types, which in turn need careful selection if seed is to be saved by the farmer himself from one season to the next. The emphasis of any introduction program should be on achieving the highest maintainable yield as opposed to the highest possible yield. In other words, yield stability and predictable performance would seem more suited to the Congolese environment.

CONCLUSION

The long-term goals of an agricultural development program should include not only increased production to feed an ever growing urban population, but also the creation of conditions that will make rural life attractive enough to young Congolese to at least slow down the present rural migration and make rural society a productive and healthy alternative to urban living.

The agricultural sector is in need of assistance in all areas. It is important, however, that assistance be provided in the proper sequence with sound planning lest it be ineffective or even counter productive. For example, money spent in organizing the farmers for increased production without providing them access to viable markets would not increase farmers' income; providing chemical inputs without prior research on soil and plants and without extension services would not assure increase in production; urging the farmers to plant crops in a manner appropriate to mechanized cultivation, as is now being done, when mechanized agriculture is a remote prospect if ever a realistic one at all, can only have an adverse effect on present farming patterns.

It is crucial, therefore, that a major effort be directed from the start towards careful selection of projects to be implemented. In the short run, projects to improve the marketing conditions at the farm and beyond the farm seem to be tne most appropriate. In addition, it is reasonable to consider expanding production through a variety of means: increase in land cultivated through light mechanization, application of lime, fertilizers, and other inputs. At the same time, research should be undertaken to develop the best possible utilization of the differing rural environments in the Congo, involving a wide variety of food crops, fruits, fish, poultry, animals, and trees in an integrated approach. This would not only enrich and diversify the resources of the small farners, but offer ways out of the bonds of the traditional sexual division of labor.

Such efforts should be accompanied by measures to improve the general quality of life in the country, such as improved water supplies, health care, housing, rural electrification, improved communications and roads.

The Congolese Government is preparing a five-year plan to be launched in 1982. Undoubtedly, the plan provides a logical framework for international effort to help revitalize the agricultural sector. Within this framework, appropriate and timely assistance from the United States, however modest, could contribute greatly to the Congolese economy in general and could improve the living conditions of the rural poor as mandated by the Congress.

APPENDICES

APPENDIX I

PART I APPENDICES

Appendix I-1

SUMMARY OF TWO MAJOR DEVELOPMENT PLANS
(Billions of CFAF and percentages)[1]

	First-Five Year Plan 1964-1968			Three-Year Plan 1975-1977		
	Planned Outlays	Percentage Allocation Planned	Actuals	Planned Outlays	Percentage Allocations Planned	Actuals
Agriculture forestry fishing	4.9	9	5	11.6	15	3
Industry mining	25.1	46	51	12.6	17	28
Economic infrastructure	8.5	16	18	19.9	26	24
Social infrastructure	10.3	19	13			
Services	5.5	10	13	31.9	42	43
Other	-	-	-			
Total	54.3	100	100	76.0	100	100
Financing						
Domestic	-	-	18	-	-	31
Foreign	-	-	82	-	-	69

[1] The Three-Year Plan was postponed at the end of the second year.

Source: Surveys of African Economies, Vol. 1 (IMF, 1968); IBRD; and Ministry of Planning.

Appendix I-2

ESTIMATION OF PER CAPITA INCOME, 1970-1979

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
GNP at market prices (in billions of CFAF)	72.7	80.3	89.3	95.3	131.8	153.1	163.7	171.4	184.5	241.0
Population (in thousand persons)[1]	1,191	1,218	1,246	1,275	1,304	1,334	1,365	1,396	1,428	1,461
Per Capita GNP (in thousand of CFAF)	61	66	72	75	101	115	120	123	129	165
	(In Current U.S. Dollars)[3]									
GNP at market prices (millions)	262	291	354	414	549	715	685	697	816	927
Per capita GNP	220	239	284	325	421	536	502	500	575	634

1/ Population growth rate is estimated at 2.3 percent per annum.

2/ Including only agriculture, forestry, mining, and manufacturing, (e.g., excluding services sector).

3/ Exchange rates for conversion are: 1970, 277; 1971, 276; 1972, 252; 1973, 230; 1974, 240; 1975, 214; 1976, 239; 1977, 246; 1978, 226; and 1979, 226.

Sources: Tables I-1 - I-4

Appendix I-3

EXTERNAL PUBLIC DEBT, 1970-78

(In billions of CFAF)

	1970-72	1973-74	1975-77	1978
Outstanding disbursed debt	39.2	49.0	95.4	152.0
Outstanding incl. undisbursed debt	63.5	91.6	152.9	196.6
Service payments as a percentage of scheduled debt service				
- Central Government	57.8	58.4	76.4	67.5
- Other public sector	99.2	100.0	96.2	62.8
Outstanding incl. undisbursed debt as a percentage of GNP	88.8	86.3	103.8	110.5

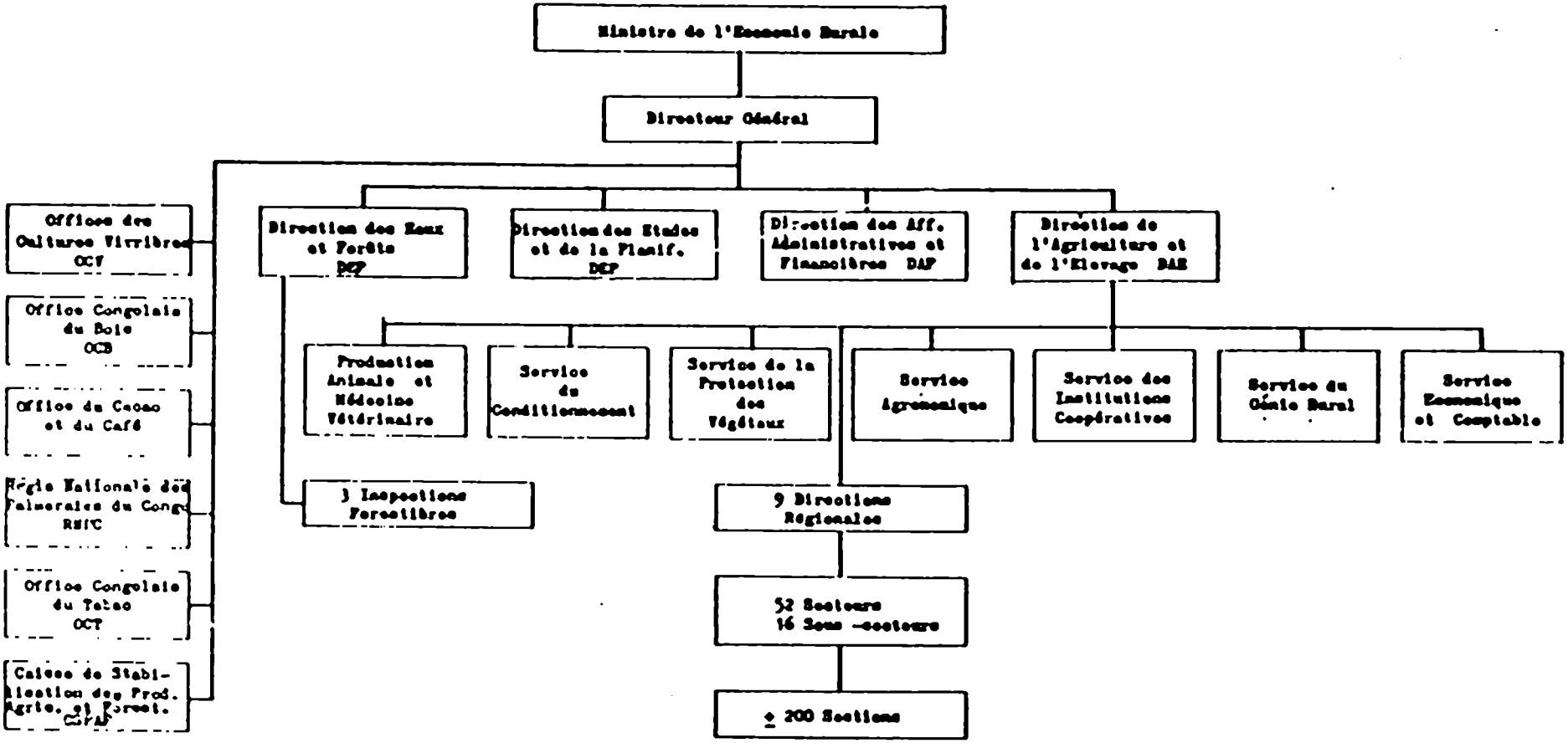
Source: IBRD.

APPENDIX II

PART II APPENDICES

Appendix II-1

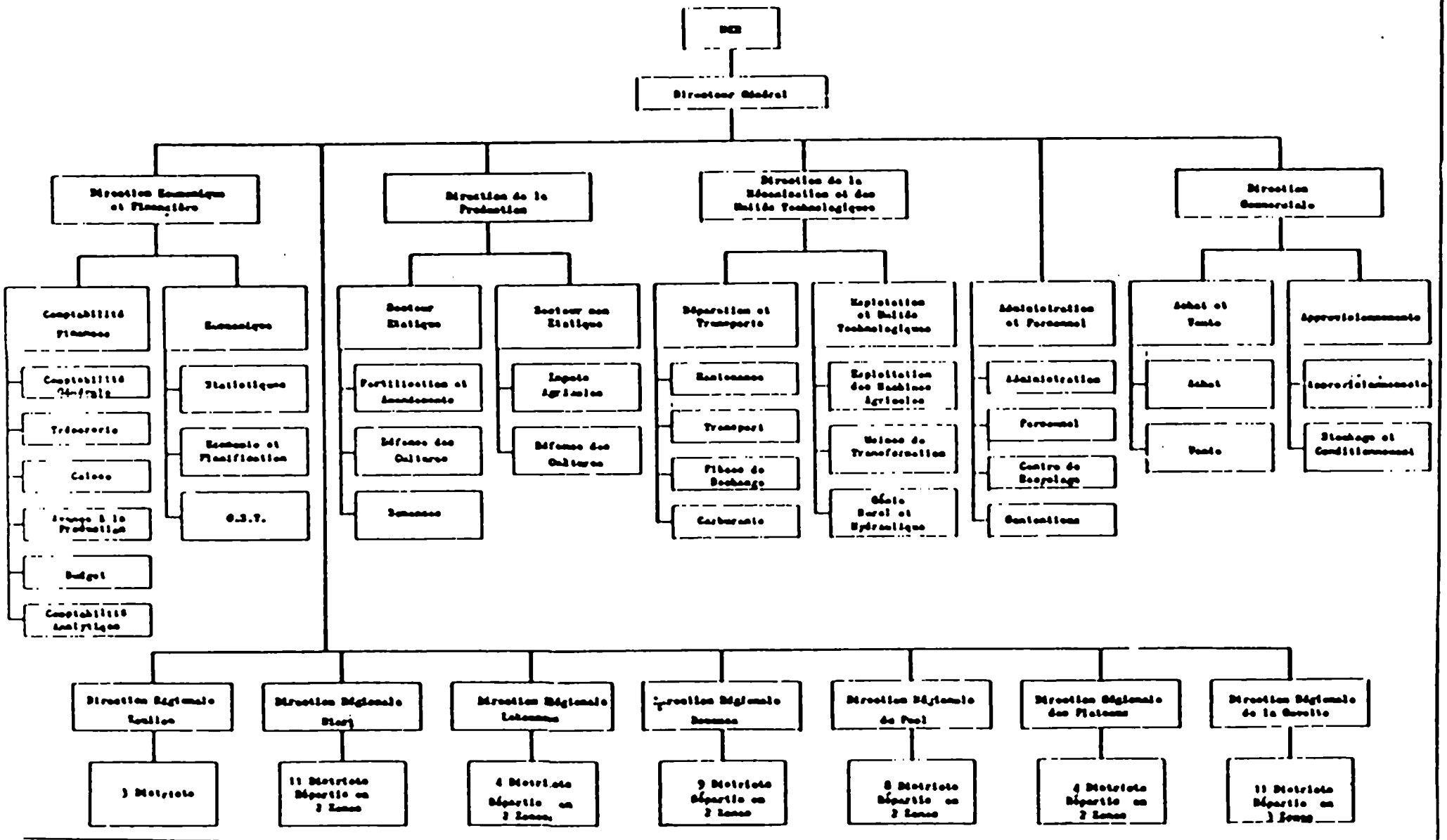
ORGANIZATION CHART OF THE MINISTRY OF RURAL ECONOMIES



Source: Ministère du Ministère de l'Econimie Rurale

Appendix II-2

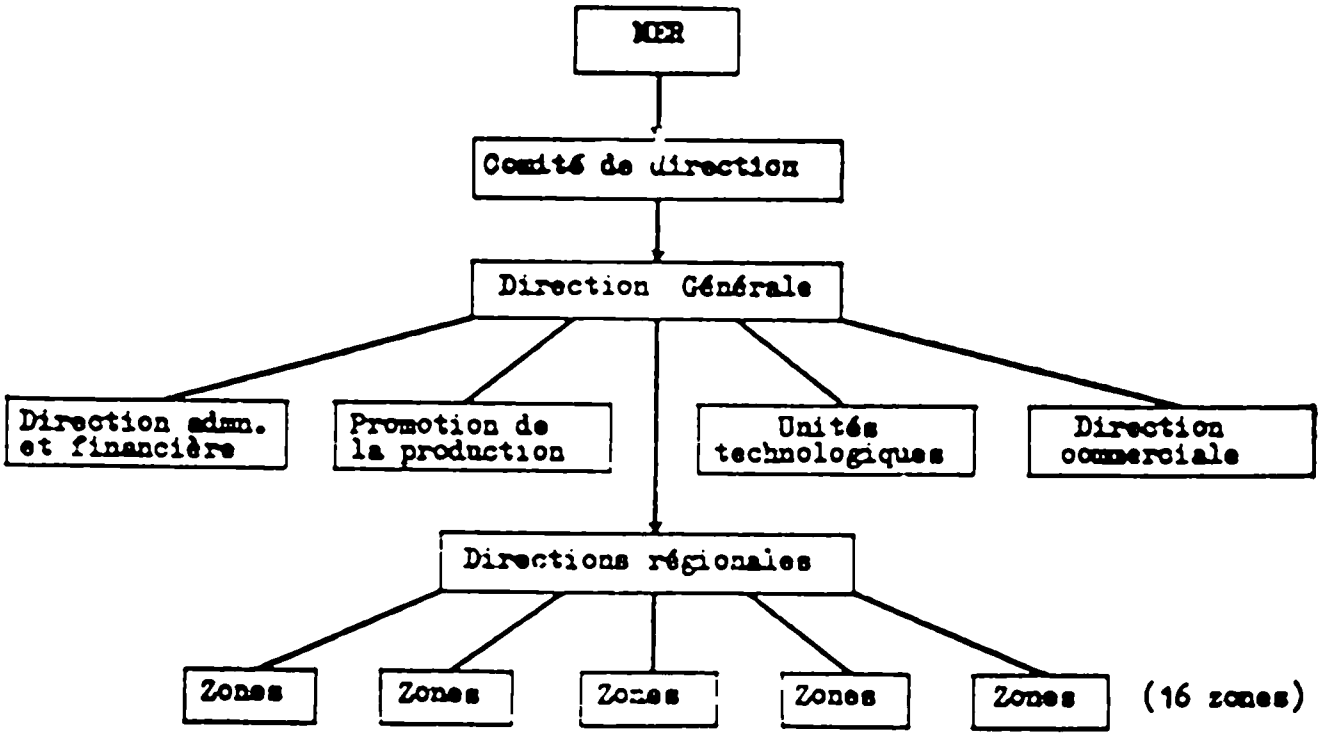
ORGANIZATION CHART OF OCV



Source: OCV

Appendix II-3

ORGANIZATION CHART OF OCC



Source: OCC

Appendix II-4

SOIL CLASSIFICATION

A great deal of data on soils have been collected from different sources during recent years resulting in the development of a variety of classification systems. All of the material found in the Congo is based on the French Classification. Appendix II-4 is included to provide a comparison of the three systems:

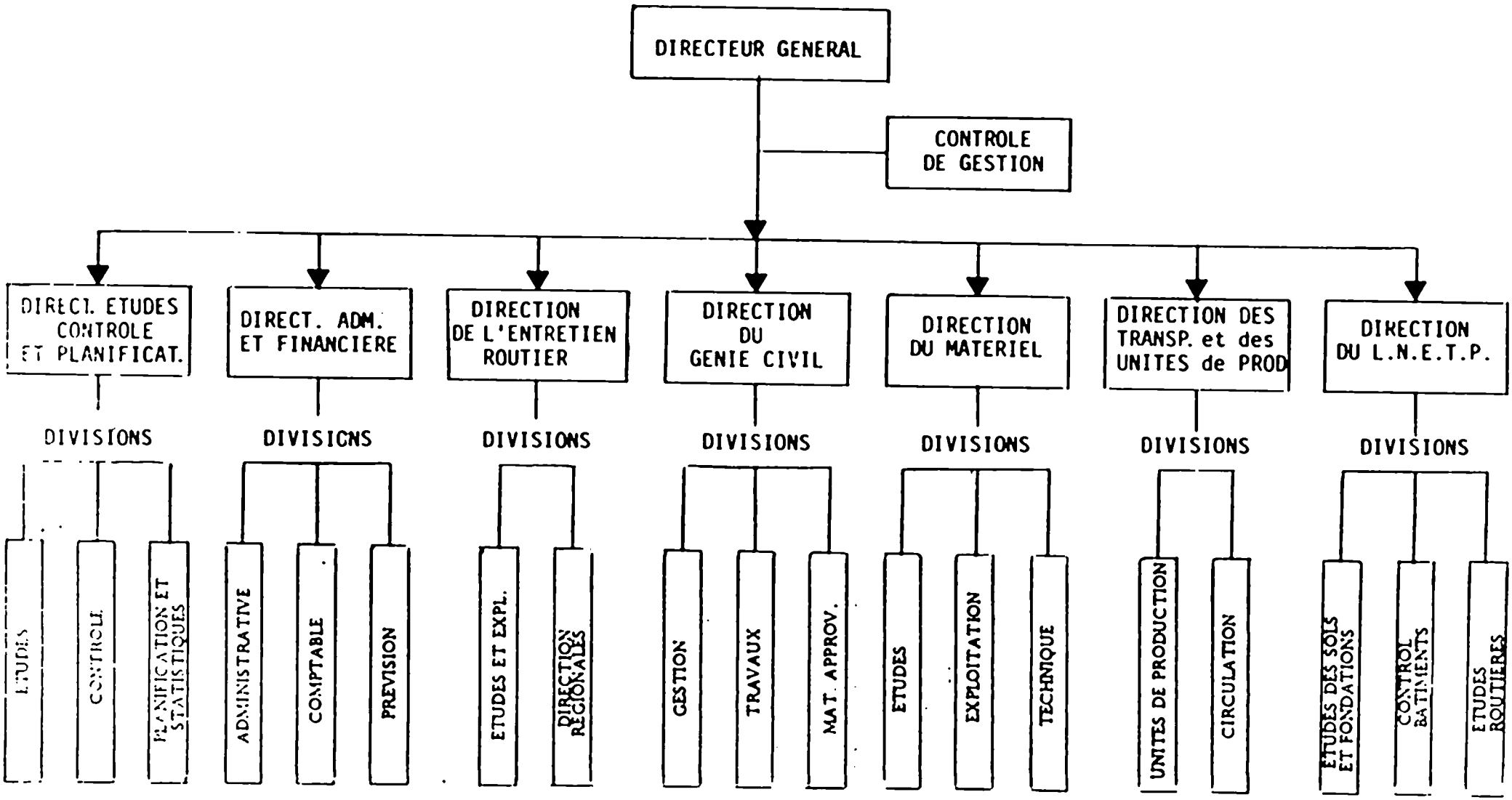
Approximate Correlation of the Food and Agriculture Organization of the United Nations, New Soil Taxonomy of the United States, and French Soil Classification Systems

FAO[a]	New U.S. Soil Taxonomy	French Classification
FLUVISOLS	Fluvents	Sols minéraux bruts et sols peu évolués d'apport alluvial et colluvial
REGOSOLS	Psamments Orthents	Sols minéraux bruts et sols peu évolués d'apport éolien
ARENOSOLS Ferralic A	Oxic Quartzipsamments	Sols ferrallitiques moyennement ou fortement désaturés (à texture sableuse)
GLEYSOLS Eutric G Dystric G. Humic G Plinthic G.	Tropaquepts Humaquepts Plinthaquepts	Sols hydromorphes peu humifères à gley Sols humiques à gley Sols hydromorphes à accumulation de fer en carapace ou cuirasse
ANDOSOLS	Andepts	Andosols
PLANOSOLS Eutric P Dystric P	Paleudalfs Paleustalfs	Sols ferrugineux tropicaux lessivés (pro parte)
CAMBISOLS Dystric C.	Dystropepts	Sols ferrallitiques fortement et moyennement désaturés, rajeunis (pro parte)
Eutric C.	Eutropepts	Sols ferrugineux tropicaux (non lessivés). Sols ferrallitiques faiblement désaturés, rajeunis
Humic C.	Humitropepts	Sols ferrallitiques fortement et moyennement desaturés, humifères, rajeunis
LUVISOLS	Tropudalfs Paleudalfs Paleustalfs	Sols Ferrugineux tropicaux lessivés
ACRISOLS		Sols ferrallitiques fortement désaturés
Rhodic A.	Rhodudults	Sols ferrallitiques désaturés lessivés
FERRALSOLS	Oxisols	Sols ferrallitiques
LITHOSOLS	Lithic subgroups	Lithosols et Sols lithiques

Source: National Academy of Sciences

Appendix II-5

ORGANIZATION CHART OF THE R.N.T.P.



Appendix II-6

PRICES OF BASIC FOODSTUFFS IN BRAZZAVILLE

IN SELECTED YEARS 1967 - 1979

(In CFAF per Unit)

ITEM	UNIT	1967	1970	1973	1977	1978[1]/	1979[2]/
Cassava (Manioc) flour	Kg	36	46	55	133	126	125
Maize	"	49	100	125	179	205	167
Yams	"	36	23	38	63	74	85
Bananas	"	43	26	48	93	116	110
Palm Oil	Liter	105	101	137	254	250	253
Peanut Oil	"	211	262	274	691	487	527
Beef (boneless)	Kg	400	300	500	768	786	818
Live Chicken	Unit	567	500	767	978	1,040	1,052
Fresh Water Fish - Fresh	Kg	252	160	417	423	428	500
Fresh Water Fish - Smoked	"	326	536	861	1,700	1,451	1,379
Salted Fish	"	198	235	329	1,100	1,207	1,183

1/November, 1978.

2/July, 1979.

Source: Centre National de la Statistique et des Etudes Economique.

Appendix II-7

CONSUMER PRICE INDEX FOR BRAZZAVILLE

1973 - 1977

1964 = 100.0

CONSUMER PRICES		ANNUAL AVERAGES				
Item	Weight	1973	1974	1975	1976	1977
Foodstuffs	0.51	148.0	157.0	183.9	199.0	238.0
Clothing	0.06	155.0	150.0	172.6	189.0	203.0
Electricity, fuel and water	0.06	110.0	110.0	110.0	110.0	151.0
Household Services	0.07	132.0	132.0	196.4	196.5	197.0
Other	0.30	147.0	148.0	183.5	225.1	252.9
General Index		144.6	149.3	179.5	201.0	223.0
Percentage change from previous year			3.3	20.2	12.0	11.0
Percentage change of foodstuffs over previous year			6.1	17.1	8.2	19.6

Source: Centre National de la Statistisque et des Etudes Economiques; IBRD.

Appendix II-8

OUTPUT GOALS SET BY THE GOVERNMENT FOR THE PRODUCTION OF MAJOR FOOD AND CASH CROPS BY STATE FARMS AND PEASANTS, 1980

(In Metric Tons)

ITEM	STATE FARMS	PEASANTS	TOTAL	PERCENTAGE OF PEASANTS OUTPUT
Rice	3,778	4,000	7,778	51.4
Maize	4,073	11,100	15,073	73.6
Cocoa	-	2,900	2,900	100.0
Coffee	-	1,200	1,200	100.0
Peanut	-	3,800	3,800	100.0

Source: Programme Complémentaire, 1980, PRC.

Appendix II-9

VALUE OF AGRO-INDUSTRIAL PRODUCTS
(In Million CFAF)

Item	1973	1974	1975	1976	1977	1978*	1979
Refined sugar	35,507	28,067	19,610	23,088	9,925	13,500	
Palm Oil	2,681	2,700	2,200	2,200	2,565	2,600	1,700
Peanut Oil	1,249	617	600	660	365	400	
Soap	4,475	4,108	4,462	5,051	5,568	4,800	
Cigarettes	676	516	504	636	641	800	
Fish Products	33,800	37,700	15,500	12,600	10,296	12,600	

*Estimates

Sources: Ministerie de L'Agricole, Service des Statistique Agricoles

Appendix II-10

FINANCIAL OPERATIONS OF STATE ENTERPRISE IN AGRICULTURE
(In thousand of CFAF)

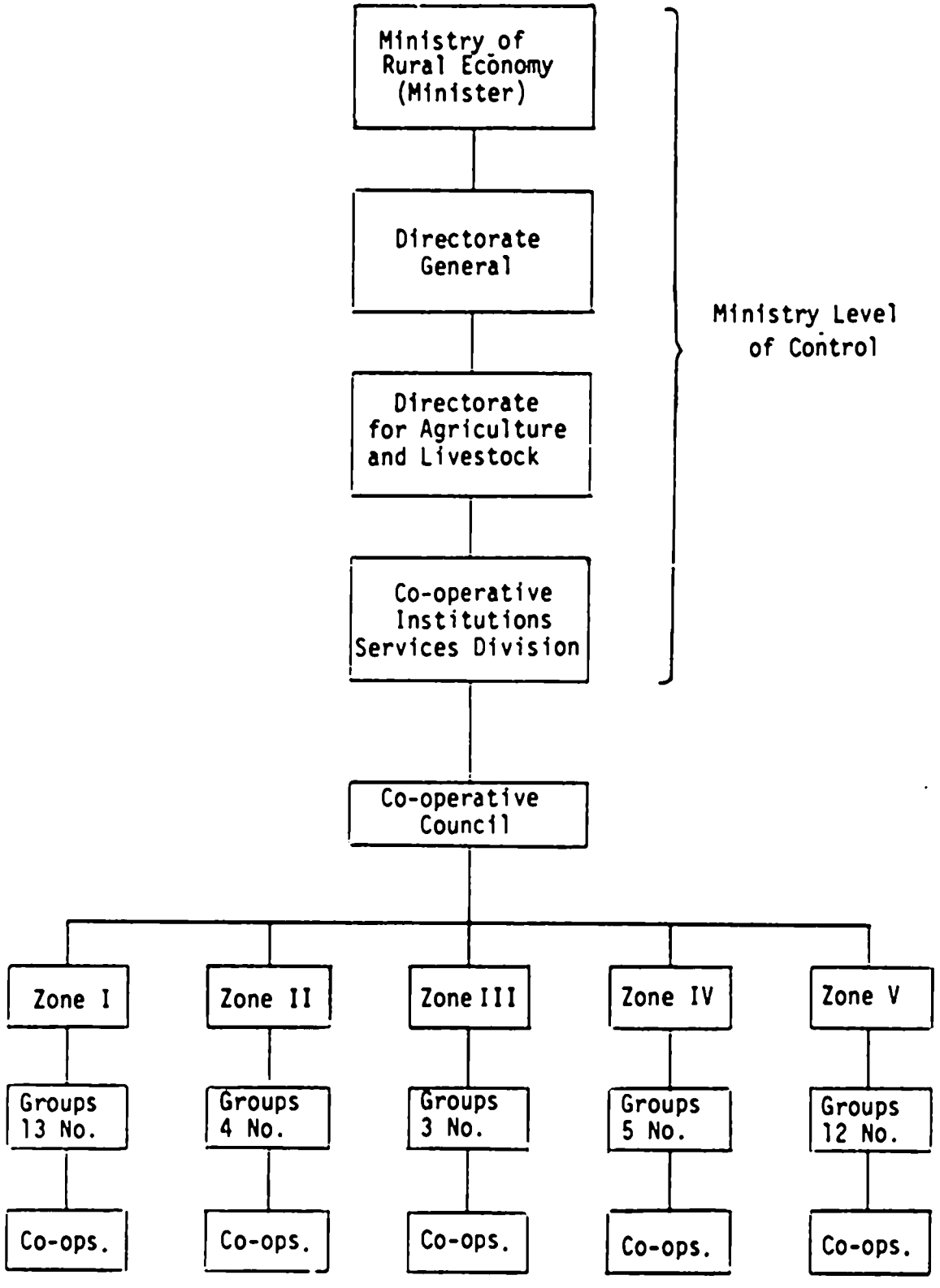
I. AGRICULTURE AND LIVESTOCK	Total Receipts	Total Expenses	Total Expenses / Total Receipts (Percentage)	Net Margin Before Taxes
UAB	86,519	104,576	120.8	- 18,057
Ferme Gamaba	25,122	41,582	165.5	- 16,460
Ferme Kombe	50,961	151,265	296.8	- 100,304
Ferme avicole Mafouta	12,839	26,954	209.9	- 14,115
Ferme Manioc MBe	None	42,372	-	- 42,732
Ferme avicole Loubomo	27,336	33,191	121.4	- 5,855
Ferme parcine Loubomo	10,055	23,080	229.6	- 13,033
OC Tabacs avicole	283,000	285,707	100.7	- 1,907
Ferme avicole Loandjili	3,805	16,676	438.3	- 12,871
Ferme Manioc Mafouta	13,945	108,094	775.1	- 94,149
SOCOTON	369,827	365,987	99.0	+ 3,840
St. Fruitiere Loudima	10,433	47,163	452.1	- 36,370
Ferme manioc Makoua	29,390	35,700	121.5	- 6,310
SONEL	42,486	76,325	179.6	- 33,839
St. de M Passa	600	34,350	5,725.0	- 33,750
RNCP	173,998	616,234	354.2	- 442,236
Ferme d'Odziba	469	43,479	924.9	- 42,910
Ranch Dikesse	3,112	267,699	8,602.1	- 264,587
Societe Champs du Parti	7,566	-	-	-
TOTAL	1,152,263	2,320,342	201.4	-1,168,079
II. FORESTRY				
SNEB	258,640	474,872	183.6	- 216,232
UEB Betou	89,200	199,261	223.4	- 110,061
SONATRAB	236,883	292,666	123.5	- 55,783
SOCOME	35,416	58,178	164.9	- 22,762
OCB	2,850,554	2,618,213	91.8	+ 232,341
OCF	-	205,300	-	-
TOTAL	3,470,693	3,848,490	110.9	- 172,497

APPENDIX III

PART III APPENDICES

Appendix III-I

ORGANIZATIONAL STRUCTURE OF THE CO-OPERATIVES



Source: From discussions with Ministery of Rural Economy and Co-operative officials.

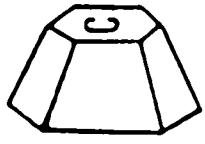
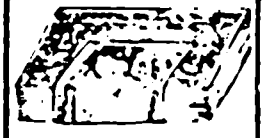
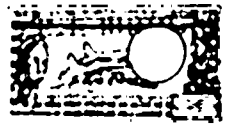
Appendix III-2

ILLUSTRATION OF EXTENSION SERVICES: FARMERS' ACCOUNTING

Example of a simplified counting system used in the Radio Rurale pre-literacy agricultural marketing program. The numerals on the left are about the same as Roman numerals with "O" equal to five. In the upper left hand corner is the unit of measure, in this case a kilo. A mark is made under each unit of currency shown across the top that the farmer is supposed to receive for his product.

MINISTÈRE DE L'ECONOMIE RURALE
Project Radio - Rurale

FONDATION FRIEDRICH NAUMANN

	M'BOUTOU / M'BOUMA..... 			
I				
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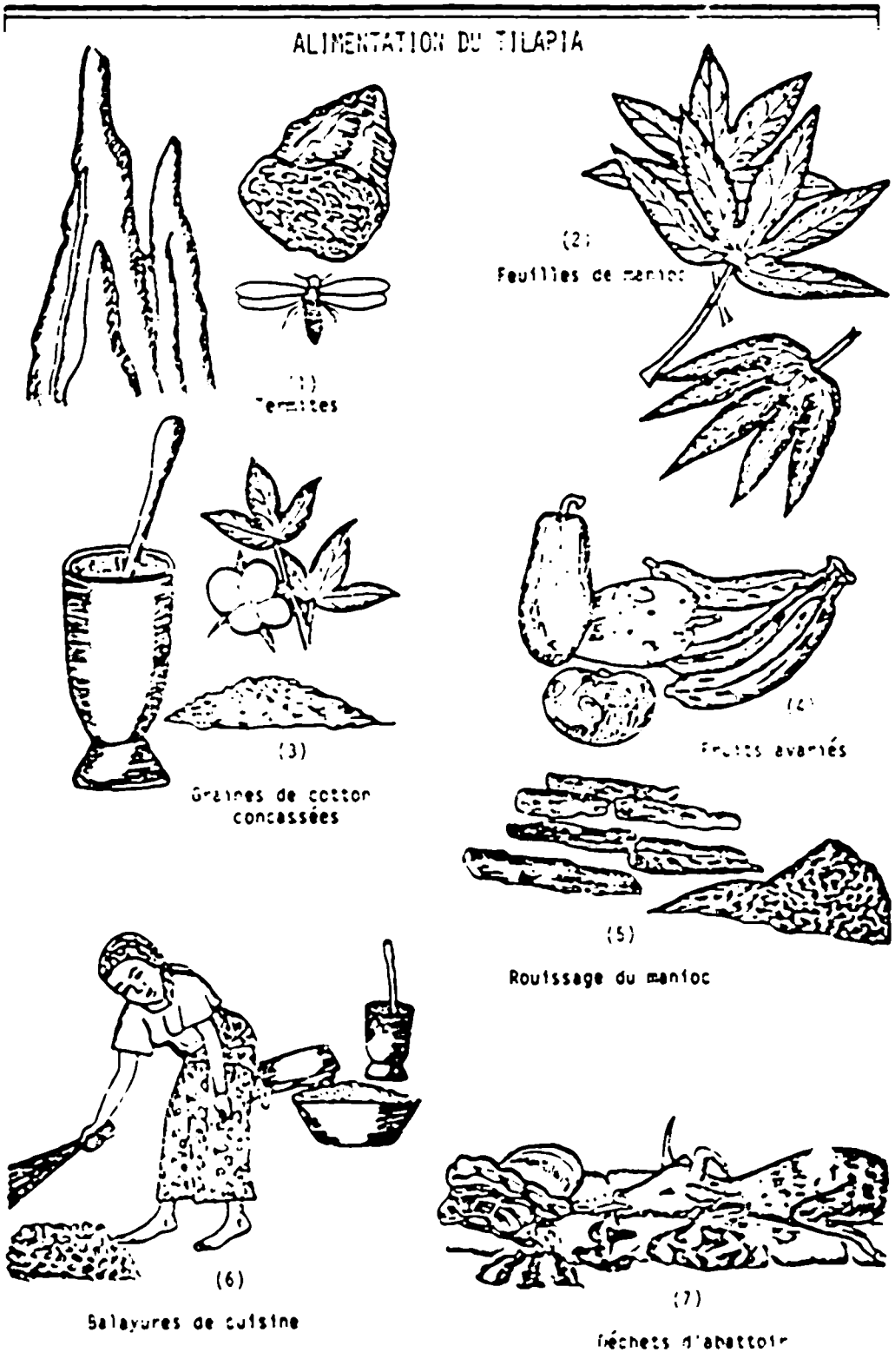
OIII				
OIIII				

Appendix III-3

ILLUSTRATION OF EXTENSION SERVICES: FEEDING FISH

This has been taken from a Radio Rurale publication for extension agents. It shows what types of foods can be used to feed the fish Tilapia in local ponds.



APPENDIX IV

PART IV APPENDICES

Appendix IV-1

PUBLIC FOREIGN AID GRANTS, 1973-1977
(Millions of CFAF)

	1973	1974	1975	1976	1977
Merchandise	398	781	2,401	1,265	861
ASECNA	53	29	48	29	38
France	212	-	906	924	240
EEC	-	-	709	283	550
United Nations/WHO	133	752	738	29	33
Technical Assistance	2,044	2,661	4,158	5,817	3,341
ASECNA	133	463	154	17	20
France	1,513	1,851	2,354	2,601	2,821
People's Republic of China	-	-	-	1,400	-
Other Socialist Countries	-	-	-	1,255	-
United Nations/WHO	398	347	1,641	490	455
Other Grants	1,195	2,080	583	2,272	1,141
ASECNA	133	29	13	24	88
France	319	549	323	545	597
Socialist Countries	106	345	-	785	-
United Nations/WHO	106	145	-	38	20
EEC	531	1,012	247	880	436
Total	3,637	5,522	7,142	9,354	5,343
Of which (percent of total)					
ASECNA	9	9	3	1	1
France	56	43	50	44	68
Socialist Countries	2	7	1	37	7
United Nations/WHO	18	23	33	6	10
EEC	15	18	13	12	14

Source: Central Bank, IMF, and IBRD

Appendix IV-2

ELEMENTARY AND MID LEVEL AGRICULTURAL EDUCATION IN THE PEOPLES REPUBLIC OF THE CONGO

Establishment	Region	Duration of Studies	Number of Students	Number of Faculty
Lycee agricole Amilcar Cabral Brazzaville	Pool	3 years	317	57
Ecole Forestiere Mossendjo	Niari	3 years	60	6
College Agricole Ceta Sibiti	Lekoumou	2 years	142	11
CMA Louboumo	Niari	2 years	100	12
CMA N'Goyo	Kouilou		57	9
CMA Mouyonzi	Bouenza		60	--
CMA Kinkala	Pool		80	7
CFA Boko	Pool	2 years	30	6

CMA = Centre de Metier Agricole
CFA = Centre de Formation Agricole

Source: FAO

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