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UNCLASSIFIED

AGENCY FOR
INTERNATIONAL
DEVELOPMENT

DEVELOPMENT ASSISTANCE PROGRAM

FY 1975

Section Three:

CHAD, CAMEROON, CENTRAL AFRICAN REPUBLIC, AND GABON.

BEST AVAILABLE

DEPARTMENT
OF
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UNCLASSIFIED

CENTRAL WEST AFRICA REGION
DEVELOPMENT ASSISTANCE PROGRAM

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CHAD
MACRO-ECONOMIC SECTOR ASSESSMENT

I. OVERALL PERFORMANCE OF ECONOMY

Chad is one of the poorest countries in Africa. With a population of 3.6 million, the per capita GDP was estimated at $78 in 1971. Chad lacks the resources, economic and social infrastructure, and is burdened by high transport costs owing to its land-locked position. Productivity in agriculture and livestock, Chad's two major resources, is very low. The northern nine-tenths of the country consists of Sahelian grassland and desert which supports 1.9 million Arabic inhabitants. The Logone and Chari River basins support the 1.8 million people in the South.

The real growth rate of GDP in the 1960's was nearly 3.5 percent until 1968, when it dropped to 1.3 percent. Later figures are not available. In 1970/71 agricultural production was severely affected by the drought: cotton exports declined severely and food had to be imported. Exports of livestock rose in 1971, and industrial production increased marginally. The recurrence of the drought in 1972/73 affected food crops more than cotton production which increased about 20 percent. Little, if any, growth in GDP is expected for the years 1970-74, owing predominately to the impact of the drought.

A. Sectors

In 1971, agriculture accounted for 47.2 percent of GDP (of which livestock was about 15.7%); industry for 12.4 percent; and services for 40.4 percent, including 16 percent for commerce and 13 percent for public administration.

Chad's agricultural-based economy is sensitive to both climate and external prices. Cotton is Chad's most important cash crop, accounting for 74 percent of exports between 1969 and 1971, and producing 30 percent of total output in the franc zone in 1971/72. Cotton production, however, is subject to large annual fluctuations owing to frequent adverse weather, including both drought and irregular rainfall. Until 1971/72, the producer price of cotton remained unchanged at CFAF 26 per kilo. The price was raised to CFAF 28 for white cotton, and lowered correspondingly for unclean cotton. This increase may not be sufficient to compensate for rising producer costs since the 1960's. The FED is becoming increasingly involved in raising cotton productivity. Marketing is handled by COTONTCHAD which replaced COTONFRAD in 1971. Eighty percent of COTONTCHAD's profits are placed in a Stabilization Fund.1/

After cotton, animal husbandry is the second major activity in Chad, accounting for 18 percent of recorded exports in 1971. Only an estimated 20 percent of exports is recorded. Higher prices (nearly double those in Chad) in Nigeria have given rise to the sale of young and pregnant

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1/ The value of the CFA franc has shifted in terms of the dollar from $1=CFA 223 in October, 1974 to $1=CFA 208 as this went to press in March, 1975.

cattle. The annual take-off rate between 1968 and 1971 averaged 9.7 percent, leaving a cattle population of 4.7 million in 1971. 1/ The Chadian export market has experienced serious losses to unrecorded exports. Local slaughter houses have been unable to obtain adequate supplies of high quality cattle. The government is attempting to rectify this situation by improving cattle infrastructure and the domestic marketing of beef.

In recent years, estimates of the area planted to millet and sorghum, the major food crops; have declined. Between 1966 and 1971, production averaged 680,000 MT annually; in 1971/72 only 239,000 MT was produced. Normal production is insufficient for domestic demand, and food aid has been necessary throughout the drought.

Production of wheat increased dramatically from less than 2,000 MT in 1962 to 8,000 MT in 1970, but declined to 6,000 MT in 1972. Wheat is grown in the polders around Lake Chad. The present level of production is sufficient to supply the mill in Fort Lamy.

Groundnut production supplies domestic needs, including an oil factory at Abeche. Even in good years, demand exceeds supply. Averaging 104,000 tons in the late 1960's, production declined to 48,000 tons in 1972 and 60,000 tons in 1973.

Arabic gum is the only forestry product in Chad, produced in the eastern and western regions. From 1,345 tons in 1968, production has fallen to around 600 tons since the drought.

Fish production in Lake Chad and the Chari and Logone Rivers has a large potential. Some 110,000 tons is believed to have been caught in 1972. A sizeable proportion of the catch is exported to neighboring countries in smoked or dried form.

Industry

Chad's industrial base is small (8 percent of GDP in 1971) consisting mostly of primary-processing industries. Growth has been hindered by low levels of investment, a narrow, low-income domestic market, and competition from imports. Beer brewing, cotton ginning, textiles, sugar, groundnut oil, and meat production are the principal industrial activities. Output peaked in 1969 at CFAF 127 million, and has declined by 20 percent since, owing to reduced agricultural production.

Mining is limited to the extraction of natron, a low-grade salt. Production declined from 7,150 tons in 1967 to 5,327 tons in 1969, and ceased in 1970 and 1971. Prospecting for oil has intensified since 1970, but no exploitation has begun.

1/ IMF, Chad-Recent Economic Developments, May 3, 1973, p. 5.

B. Balance of Payments

Chad has experienced a large deficit in its trade balance since 1967, the first year for which data are available. (See Table I.) Exports peaked in 1968 to CFAF 9,365 million, and declined to CFAF 7,787 million in 1971. Major exports are cotton (74 percent) and livestock (18 percent). Imports have averaged around CFAF 16,000 million since 1967, nearly double the value of exports over the five-year period. Over one-sixth of imports was food in 1971, nearly one-sixth was petroleum products, and the rest was divided between chemical products, shoes and textiles, metals, machinery, and transport equipment (see Table I).

The services balance has also been negative throughout this period raising the goods and services account deficit to an average of -29 million SDRs, of which only about one-third is attributable to the trade balance. (See Table II.) About three quarters of the services deficit originates in freight and insurance cost of merchandise. Investment income accounts for only 10 percent of the services deficit. Unrequited transfers, mostly from France as grants to the government and as pensions, have more than covered the goods and services deficit (Item B, Table II). Capital flows have also been positive since 1968. However, Chad's reserve holdings have declined from +2.5 million SDR in 1969 to -8.4 million SDR in 1971 (Table I), reflecting the general economic deterioration accompanying the drought.

C. Public Finance

The precarious financial position of the government is a major obstacle to an expansion of development activities, as Chad can finance domestically neither investment nor current expenditures for operating development projects. The very continuation of essential economic and investment services is threatened by lack of funds and unpaid bills.

Chad has not been able to balance its budget since independence. Though 1967, ordinary receipts and expenditures were almost in balance. The modest investment budgets were covered by the annual French budget subsidy, cash reserves, and the use of public funds in the Treasury. (See Table III.) After 1967, the deficit in the ordinary budget began to increase, mostly because of the impact of the rebellion in North Chad. Between 1967 and 1970, expenditures (mainly wages and material outlays) grew by an average of 11.7 percent. In particular, expenditures for military and security purposes rose from 18 percent of the total budget in 1968 to 31 percent for the 1970, 1971, and 1972 budgets. If military expenditures had remained at 18 percent, the 1971 budget would have had a surplus of CFAF 1.6 billion. 1/

1/ IBRD, Chad-Economic Report, 75a-CD, July 2, 1973, p. 38.

Tax revenues began to level off in 1971, owing to the apparent stagnation of import and export taxes, which account for 50 percent of revenues. Higher import taxes in 1970 led to a decline in volume as smuggling increased. High export taxes are also thought to account for the decline of livestock exports. Therefore, a Fiscal Commission was created in 1971 to propose revisions for the fiscal system. Although budget losses for 1972 were predicted because of the fiscal revision, it is hoped that the subsequent stimulation of commercial activity will offset the losses.

The financing of the budgetary deficit in 1971 came from a French subsidy (64 percent), from arrears in payment (34 percent), and from the Central Bank and other monetary sources. (See Table IV.) Estimates for financing the 1972 deficit reversed the proportions financed by arrears (60 percent) and the French subsidy (38 percent).

D. Human Resources

Chad's population in 1970 was estimated at 3.6 million people, based on projections from the 1964 census. The population growth rate was estimated at 1.7 percent from 1963 and 1968 and is expected to rise to 2.1 percent in the 1970's. Urban population in 1970 accounted for 11 percent of the total, and is growing at about 7.3 percent annually, of which 5 percent is in-migration.

Some 1.6 million people are considered part of the active labor force (15-60 years of age). Only some 26,300 wage and salary earners existed in the modern labor force in 1970 (2 percent of the labor force). Modern sector employment is evenly divided between the public and private sectors, with foreigners holding 15 percent of modern jobs. Another estimated 15,000 were self-employed merchants and artisans (1 percent of labor force).1/ About 90-95 percent of the active population is therefore engaged in agriculture, livestock, and fishing. Urban unemployment appears to have increased as a result of economic stagnation and an increased migration of labor from rural areas owing to the drought and to the security situation.

Education in Chad is limited largely to urban areas. Only 18 percent of primary school aged children were enrolled in 1969, while 3 percent of secondary school age children were enrolled.

II. GOVERNMENT CAPACITY

Chad's first Development Plan (1966-70) called for a total investment of CFAF 47 billion, and was revised downward to CFAF 26.2 billion in 1968 in light of lower levels of aid and foreign investments. Table V in the Appendix shows the financing of the Plan by sector. Agriculture received 29 percent of actual investments, infrastructure 26.4 percent, and social development 24 percent. Although actual outlays match revised

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1/ IBRD, Chad, pp 11-14.

projections, there were significantly different allocations of funds among projects in some sectors. The execution of the Plan suffered from slow and sometimes inadequate project preparation, delays in obtaining foreign aid, and the deterioration after 1968 of the security situation, resulting in the downward revision of the Plan. Furthermore, growth in the primary sector was low. Most of the increase in GDP occurred in the secondary and tertiary sectors of the urban centers. Thus, income distribution patterns worsened during the Plan period.

A draft ten-year Development Plan (1971-80) was published in June 1971. The Plan was produced with the assistance of a UNDP-FAC team under the Ministry of Plan (now abolished, since the President's office assumed planning functions in 1972). The planners stressed policy options at the expense of defining projects which will be largely financed by external resources. The basic objective of the Plan is to double monetary income (at 5.5 percent per annum) by 1) increasing foreign exchange earnings; 2) building an import substitution industry; 3) carrying out training programs to reduce dependence (and costs) of foreign experts; 4) reducing transport costs by encouraging competition among alternate routes; 5) exploring the nation's resource potential; and 6) generating public savings and stimulating private savings for homes and agricultural equipment. The Plan is broken down into priority public investments and "spontaneous" private investments (See Table VI). Only the first priority program seems attainable to some observers from the IBRD 1/. The Plan gives livestock only 10 percent of allocation because modern technology is expensive; the University of Chad receives high priority although no costs are detailed; and there is no allocation to fill gaps of knowledge among the rural population which could increase both productivity and health standards. Thus, the Plan is incomplete both as a policy guide and as a source of project identification.

Chad's capacity to develop is severely limited by its fiscal problems. The two main productive sectors, cotton and livestock, yield insufficient tax revenues to finance development. Over-taxing in livestock has served to lower revenue due to smuggling. Thus, a development strategy must concentrate first on increasing the productive base of the economy. To do this, Chad will have to reach its rural population. A second essential component of the strategy must be to manage public sector expenditures, especially as regards military expenditure.

Chad will not be able to apply significant domestic resources to development in the next five years. The combination of poor fiscal management, the insurgency in the North, and the drought have seriously depleted Chad's resources. Thus, most development will have to be financed by foreign resources. Foreign expertise will also be necessary to strengthen the weak existing institutional framework which is fundamental to successful development programs.

1/ IBRD, Chad, pp. 50-53.

Table I: CHAD -- COMPOSITION OF IMPORTS AND EXPORTS BY PRODUCT, 1967-71

(CFAF millions)

	1967	1968	1969	1970	1971
Exports					
Cotton	5,504	5,772	6,586	5,910	5,257
Live animals	547	229	168	248	397
Meat	769	744	684	1,450	1,502
Fish	95	108	84	28	32
Gum arabic	112	107	80	35	37
Hides and skins	90	101	115	108	91
Natron	63	38	56	16	12
Other	354	482	253	411	459
Total registered exports	7,534	7,581	8,026	8,206	7,787
Estimated unregistered exports/1	988	1,784	1,110	718	n.a.
Estimated total exports	8,522	9,365	9,136	8,924	7,787
Imports					
Sugar	1,629	1,177	948	1,234	1,243
Other food	2,182	1,709	1,792	2,150	2,077
Tobacco and tobacco products	334	349	252	292	130
Petroleum products	1,522	1,695	2,453	2,472	2,744
Cement	211	546	305	377	300
Chemical products (medicine, fertilizer soap and matches)	1,177	1,005	964	1,460	1,314
Textiles and shoes	2,275	1,833	1,556	1,751	1,637
Metals and metal products	708	966	946	1,334	1,125
Machinery	1,661	1,402	1,433	2,078	2,176
Transport equipment	1,202	1,063	1,267	1,712	2,099
Other	1,593	1,616	1,984	2,355	2,375
Total registered imports	14,494	13,361	13,900	17,216	17,220
Estimated unregistered imports/2	500	500	1,400	2,790	n.a.
Estimated total imports	14,994	13,861	15,300	20,006	17,220

/1 Mainly live animals.
/2 Mainly textiles, enamelled products, and similar consumer goods.

Source: Ministère de l'Economie, des Finances et des Transports: Bulletin de Statistique, Mars/Avril 1970, Mars/Avril 1971, Janvier 1972.

BCEAEC, Balance des Paiements, 1969 and 1970.

Table II

Chad: Balance of Payments Summary, 1968-72

(In millions of SDRs equivalent)

	1968	1969	1970	1971	1971 Six months	1972 Six months
A. Goods and services	-21.3	-28.0	-30.0	-29.3	-11.3	-16.0
Merchandise, f.o.b.	-2.9	-7.5	-12.7	-10.8	-3.0	-9.5
Services	-18.4	-20.5	-17.2	-18.5	-8.3	-6.5
Freight and insurance on merchandise	-12.9	-15.9	-13.8	-17.5	-8.6	-7.7
Other transportation	-3.9	-2.4	-1.7	-1.5	-0.5	-1.5
Travel	-1.8	-2.5	-2.7	-2.9	-1.0	-0.5
Investment income	-2.7	-2.5	-1.9	-3.0	-1.2	-0.2
Other government	6.5	7.2	7.0	12.5	6.0	6.6
Services obtained under aid programs	(-5.3)	(-6.8)	(-8.6)	(-8.1)	(-3.2)	(-3.8)
Other	(11.8)	(14.0)	(15.6)	(20.6)	(9.2)	(10.4)
Other private	-3.6	-4.4	-4.1	-6.1	-3.0	-3.2
B. Unrequited transfers	20.0	21.7	31.5	33.4	13.0	8.0
Private	4.1	1.3	3.6	2.9	0.5	-0.1
Workers' remittances	-2.6	-3.6	-2.7	-5.2	-2.8	-3.3
Other	6.7	4.9	6.3	8.1	3.3	3.2
of which:						
Pensions received from France	(...)	(5.4)	(5.8)	(8.1)	(3.1)	(...)
Government	15.9	20.4	27.9	30.5	12.5	8.1
Aid grants	...	...	20.2	20.5	9.4	7.1
Other	...	...	7.7	10.0	3.1	1.0
C. Capital (excluded reserves and related items)	-17.7	5.3	3.3	4.0	-0.3	-3.3
Nonmonetary sectors	-0.4	2.0	3.7	5.4	0.3	-6.7
Direct investment	...	0.5	0.5	0.3	--	-0.1
Other private long-term	-0.4	2.2	0.5	--	--	0.9
Other private short-term	-1.1	-0.1	0.2	5.5	1.0	-6.9
Central Government	1.1	-0.6	2.5	-0.4	-0.7	-0.6
Monetary sectors	-17.3	3.3	-0.4	-1.4	-0.6	3.4
Deposit money banks	-17.3	3.3	-0.4	-1.4	-0.6	3.4
Liabilities	(1.0)	(-0.3)	(-0.3)	(-1.5)	(-0.9)	(3.2)
Assets	(-18.3)	(3.6)	(-0.1)	(0.1)	(0.3)	(0.2)
Central Bank	--	--	--	--	--	--
D. Allocation of SDRs	--	--	1.7	1.4	1.4	1.4
E. Reserves and related items	0.9	2.6	-2.1	-8.4	-2.2	5.1
Liabilities	1.1	2.8	-1.1	-0.2	--	--
Use of Fund credit	--	--	2.5	--	--	--
Other	1.1	2.8	-3.6	-0.2	--	--
Assets	-0.2	-0.2	-1.0	-8.2	-2.2	5.1
SDRs	--	--	--	--	-0.1	-1.3
Reserve position in the Fund	-0.2	-0.2	1.2	-0.1	--	--
Foreign exchange	--	--	-2.2	-8.1	-2.1	6.4
F. Net errors and omissions	18.1	-1.6	-4.5	-1.1	-0.6	4.8

Sources: For 1968 and 1969, International Monetary Fund, Balance of Payments Year Book; for other years, data provided by the Chadian authorities.

Note: For 1970-72, original data given in CFA francs have been converted into SDRs at the official rate of SDR 1 = CFAF 277.710.

TABLES III and IV

TABLE III: CHAD BUDGET 1964-71 /1
(in billions of CFAF)

	1964	1965	1966	1967	1968	1969	1970	1971*	Growth rate 1964-70
Ordinary expenditures	6.6	7.8	9.8	10.2	11.4	12.8	14.2	14.7	13.6%
Total revenues	6.6	8.0	9.6	10.2	9.5	11.4	12.8	13.0	11.7%
Government Savings	0.0	0.2	-0.2	0.0	-1.9	-1.4	-1.4	-1.7	
Government Investment	0.8	0.7	0.6	0.7	0.6	1.1	0.8	0.9	
Overall Deficit	-0.8	-0.5	-1.0	-0.7	-2.5	-2.5	-2.2	-2.6	

* Preliminary.

/1 These figures are on a financial year basis and do not therefore correspond necessarily to the figures in Table 8, which are on a cash basis.

Source: Statistical Appendix, Tables 5.1, 5.2 and 5.4, Ministry of Finance.

TABLE IV: FINANCING THE BUDGETARY DEFICIT

(Calendar Year Cash Basis)
(in millions of CFAF)

	1968	1969	1970	1971	1972 Budget	1972 mission estimates
Expenditures	11,990	13,543	15,710	16,398	13,228	16,600
Revenues	10,343	10,931	13,594	13,020	13,228	12,600
Balance	-1,647	-2,612	-2,116	-3,378	-	-4,000
Financing						
French subsidy	530	300	1,600	2,150	-	1,500
Central Bank	222	258	263	27	-	400
Arrears	78	1,182	576	1,170	-	2,400
Domestic borrowings	250	6	-	-	-	-
Treasury cash balances	-59	14	-112	-107	-	-
Net changes other (Treasury liabilities including public institution deposits)	626	852	-211	138	-	-300

Source: Treasury.

Table V

CHAD — FINANCING OF ACTUAL INVESTMENTS BY SECTOR, 1966-70

(CFAF millions)

Source of Financing	Rural Development	Transport Communications	Health, Social Welfare	Urban Development	Industry, Handicraft Energy and Mining	Education	Tourism	Domestic Trade	Research, Studies	Total Amount	Total Percent
Public Resources	1,342	963	14	1,186	838	32	583	-	-	4,958	19.0
Budget and Public Agencies	1,342	963/1	14/3	535	838	32	583	-	-	4,307	16.5
Local Governments	-	-	-	651	-	-	-	-	-	651	2.5
External Resources	4,943	5,362	1,759	587	1,293	1,999	18	119	410	16,490	63.0
Loans	-	78	-	139	1,197	24	-	-	-	1,438	5.5
Grants	4,943	5,284/2	1,755	448	96	1,889	18	119	410	14,962	57.2
Private Gifts	-	-	4	-	-	86	-	-	-	90	0.3
Private Resources	1,314	-	-	600	2,799	-	-	-	-	4,713	18.0
Farmers	1,168	-	-	-	-	-	-	-	-	1,168	4.5
Enterprises	146	-	-	600	2,799	-	-	-	-	3,545	13.5
Total Investments	7,599	6,325	1,773	2,373	4,930	2,031	601	119	410	26,161	100.0
Percent Total	29.0	24.2	6.8	9.1	18.8	7.8	2.3	0.4	1.6	100.0	

1/ Including investments by ASECNA (CFAF 65 million) and FRANCE-CABLES (CFAF 11 million).
2/ Including CFAF 26 million investment in Radio
3/ Including budget allocations for "Service des Grandes Endémies."

Source: Data supplied by Chadian and FAC officials.

TABLE VI

PUBLIC INVESTMENT TARGETS OF SECOND PLAN 1971-80 BY PROGRAM AND SECTORS
(in percent)

	Priority I	Priority II	I + II
Production	57.8	27.2	41.2
Agriculture, Fisheries, Forestry	26.2	16.7	21.1
Industry, Mining	11.6	-	5.3
Livestock	10.0	5.6	7.6
Public Utilities	10.0	4.9	7.2
Economic Infrastructure	32.7	54.3	44.4
of which:			
Roads	(30.6)	(46.6)	(39.3)
Air Transport	(-)	(5.8)	(3.1)
Social Infrastructure	9.5	14.8	12.4
of which:			
Education	(5.1)	(12.8)	(9.3)
Health	(4.1)	(-)	(1.9)
Administration	-	3.7	2.0
TOTAL	100.0	100.0	100.0

Source: Statistical Appendix, Table 10.7.

The additional CFAF 100 billion of investments outside the Plan include the new airport at Fort Lamy, costing an estimated CFAF 14 billion, which is justified in the Plan as a fundamental link with the outside world. This investment also includes the roads to N'Gaoundere, Tripoli and Sudan. Their financing is left to undefined external sources as Chad will have no resources for them.

CHAD
AGRICULTURE (CROP PRODUCTION) SECTOR ASSESSMENT

I. INTRODUCTION

Chad is one of the poorest and least developed countries in Africa. Approximately 95 percent of its 3.6 million people are engaged in subsistence agriculture and semi-nomadic livestock herding. Although the potential exists for self-sufficiency in food crop production, Chad rarely produces a substantial surplus of food. Recurrent droughts, at least since 1968, result in local food shortages and in 1972-73 widespread famine necessitated large relief shipments of grains from the United States and other donors. Problems of food supply are complicated by low yields, soil fertility depletion, inadequate storage facilities, insect and pest infestation of crops in the field and in storage, and competition from cash crops notably cotton which is Chad's most important export crop. Improving and increasing cotton production is Chad's number one agricultural sector priority. Cotton is a major source of GDP, foreign exchange earnings, and government revenues. Cotton is also the major source of farm income for tens of thousands of farmers.

While cotton is the government's highest crop priority, food crop production is the farmer's top priority. Millet and sorghum are the staple foods usually grown in rotation with cotton throughout southern Chad. These cereals are also widely grown throughout the central Sahelian region as well. Yields are low, production is highly variable, and the market is fragmented and poorly organized. Local food shortages regularly occur particularly during the soudure, the two-to-three month period preceding the harvest. Prices are low at harvest time and during the soudure small merchants benefit from the scarcity of supplies by selling grain back to farmers or to urban consumers at exorbitant prices. Improvement in millet and sorghum production and marketing will require improved inputs and techniques, as well as improving on-farm and village storage capacity, raising producer prices, and surveillance and control of the marketing activities of the small-scale grain merchants. Of particular interest to the Chadian government is that with an assured food supply through improved production and marketing, farmers would be more willing to produce cotton as a cash crop.

In addition to cotton and millet/sorghum production, rice and wheat are produced on more limited areas in selected zones in Chad. Irrigated rice is produced along the Chari and Logone Rivers and rainfed rice is grown elsewhere in the south. The polders of Lake Chad in the central Sahelian region also represent a valuable agricultural resource. At present, the IBRD and USAID are reviewing the feasibility of alternative irrigation and drainage schemes to put into production a 3,000 hectare area. Experiment station results show extraordinarily high yields for

wheat and cotton without fertilizer. At the same time, costs of irrigation infrastructure and transport may make polder development a high cost operation.

II. AGRICULTURAL REGIONS AND CROP PRODUCTION SYSTEMS

Three distinct eco-climatic zones can be distinguished in Chad: The southern region, the Sahelian or central region, and northern or Saharan region.

Most of the northern region is true desert, an extension of the Sahara. Much of the area receives only traces of rain during the entire year. Scattered small oases (ouaddais) and occasional small wells provide water for a few date palms or a small plot of millet. The area provides a tenuous livelihood for less than two percent of Chad's population. Its potential for food crop production is virtually non-existent.

The Southern Region is a humid subtropical zone where nearly half of Chad's population is concentrated. Five prefectures and most of the Chari-Baguirmi and Guera prefectures are included in this region. Soils vary considerably but broad areas are covered by fertile alluvial and sandy soils. Rainfall averages from 800 to 1400 mm in the southern region.

Farming is practiced almost entirely by smallholders on farms that average 2.7 hectares. Approximately 600,000 hectares (1973) is planted to millet and sorghum and associated crops. Rice is grown on approximately 43,000 hectares. Corn, beans, manioc, taro, and fonio are secondary crops. More than 2.5 million hectares are estimated to be under cotton cultivation in all of Chad and only 40,000 hectares are cultivated under relatively modern systems. Average yields of cereals are low but comparable to those of other regions in Sahel-Sudanian Africa. Average yields are 400-500 kg/ha for millet, sorghum and maize and 1 ton/ha for paddy rice. Cotton averages 350 kg/ha under traditional cultivation and up to 600 kg/ha in zones of intensive modernized production.

Southern Chad constitutes the most promising region for agricultural development because of climate, soils, population, and government interest. Development assistance to reach the largest number of farmers in the southern region should seek to promote integrated approaches to food and cash crops, specifically millet and sorghum, and cotton. Almost all subsistence farmers in the southern region grow cotton as it is virtually the only important cash crop available to them. The interrelationships which exist between subsistence food production and cotton production cannot be ignored in deciding strategies and designing programs to assure adequate food to farm families and to increase their incomes.

Attempts to improve cereal production in the south should initially concentrate on multiplication, production, and distribution of improved

seeds; improvement of cultural practices such as land preparation, sowing date, timely weeding, correct density, and crop protection. A food crop production improvement program should be carried out within the framework of the intensive cotton productivity project which is financed by the Chadian government, FED, and FAC.

In addition to limitations imposed by the unavailability of improved seed and techniques, the marketing system for cereals is fragmented and disorganized. At harvest time, farmers receive prices as low as 5-10 CFA per kg in years of surplus production; in deficit years, the price may reach 30-40 CFA/kg. Under similar conditions, consumer prices may range from 20 to 80 CFA/kg in Ndjamena. The market for millet and sorghum is dominated by petty traders who provide credit to farmers to purchase necessities during the year and are repayed at harvest time from the farmers output valued at very low prices. Frequently, farmers must repurchase grain from these same merchants at greatly increased prices during the soudure. Inadequate transport and communications networks contribute to wide differences in cereal prices, particularly in chronically deficit or drought prone areas.

FDAR (The National Rural Action Fund) has established a Cereals Department with assistance from WFP and FAO that has the responsibility for a national program of cereal marketing and price stabilization including the establishment of a national reserve stock. Thus far, the Cereals Department has been able to influence grain supplies and prices only in selected urban markets, and has had more limited success in stabilizing and raising producer prices in a few areas where it has been able to buy grains. In general, storage facilities are insufficient and stocks controlled by FDAR are too small to have a stabilizing effect on cereals' prices or to provide incentives to farmers.

Present storage capacity includes 5000 tons in Ndjamena and 3700 tons elsewhere. Other donors including AID (through its R and R program), IBRD, FED, UNDP, and FAC are financing the construction of an additional 7000 tons. In 1974, purchase of domestically produced cereals is being carried out by FDA's Cereals Department to meet at least part of the estimated requirement for drought relief supplies. Cereals will be purchased in the South, normally a surplus producing area, for distribution in the central Sahelian region and in the North. Technical assistance in purchasing and distributing these cereals is being provided by WFP and FAO. Other donor assistance, including AID's, may be requested for this short run activity.

Cotton will remain the major cash crop in southern Chad. In 1971, it accounted for 14 percent of money GDP, 70 percent of export earnings, and about 7 percent of government revenues. The crop is produced throughout the region and has been introduced into the Sahelian region, as well, where eco-climatic conditions permit.

There are in actuality two cotton production systems in Chad. First, there is the traditional system practiced by the large majority of subsistence farmers whose main crops are millet and sorghum, but who produce cotton to earn enough income to purchase necessities and pay taxes. Second, there is the cotton production system involving fewer farmers who participate in a cotton "productivity program" and who receive training, farm management extension assistance, and improved inputs from the project authorities, COTONTCHAD, and ONDR (National Rural Development Office). COTONTCHAD has the responsibility for production, processing and marketing of cotton, while ONDR organizes and operates the extension and input delivery system in the southern region.

FED and FAC are the major contributors to the cotton productivity program which will emphasize an integrated approach to cotton production including food crop improvement, animal traction, farmer cattle feeding, processing of cotton seed oil for export, and cotton cake for livestock feed. Project plans call for reinforcing the extension capacity of ONDR, constructing storage facilities for fertilizer and insecticides, production and multiplication of improved seeds of sorghum and seed treatment. The food production aspects of the cotton productivity program should be carefully studied by AID. At the very least, sorghum research results carried out by the Major Cereals project in Northern Nigeria should be made available to ONDR through the Field Trials Officer in neighboring northern Cameroon, who manages field trials on the research station located in Deli.

Rice is another food crop that is grown extensively in areas that are flooded during the rainy season and elsewhere on rainfed lands. Paddy production is highly dependent on the flooding of the Logone which failed to flood many rice growing areas in 1972/73; and upland rice is dependent on highly variable rainfall in dryland cropping systems. Output reached a peak in 1971/72 at 60,000 tons, but 39,000 tons produced in 1970/71 is closer to the ten-year average. IBRD is financing an 11,000 hectare rice production project in the Satequi-Dressia plain of the Logone River Valley in southern Chad. The project will include all aspects of rice production, including seed research and multiplication, introduction of improved cultural practices and modern production inputs, and processing and marketing of output. A number of problems exist which must be addressed by the project to effectively bring under cultivation the entire project area: (1) the need for additional and trained rice extension specialists; (2) a shortage of available man-days per farm, requiring draft animals to accomplish the diffusion of improved inputs and techniques; and (3) the need for short-term credit for seed, fertilizer, land clearing, and paddy purchase.

The Central or Sahelian Region lies to the north of the Chari River, and extends across a belt approximately 300 miles wide from Lake Chad and Chari-Baguirmi prefecture eastward to the Sudanese border. Many farmers combine subsistence food production, mainly millet with the raising of

cattle, sheep, goats, or horses. The area planted to millet and sorghum in the Sahelian zone is approximately 500,000 hectares, with average yields of from 500-550 kg/ha. In recent, drought years, yields have been lower, ranging from 350-400 kg/ha. Estimated production for the Sahelian zone in 1973 was 200,000 tons. The latitude 14 degrees north constitutes the effective northern limit of dry-land cropping. North of that limit, date palms, millet, and vegetables may be grown in oases or ouaddais.

Wheat already produced in traditional farming systems could conceivably become a major food crop in this zone and a significant source of farm income. Some 9,000 tons of wheat are produced annually in the polders of Lake Chad and in the ouaddais of Kanem prefecture by subsistence farmers using traditional methods. Both polders and ouaddais are cultivated using either Chadouf irrigation (pole-and-bucket irrigation from shallow wells) or sub-irrigation from groundwater lying very close to the surface. After a few years of cultivation, the salt content of the soil gradually increases as water on the surface evaporates. As the salt content of the soil increases, a polder must be abandoned until the level of the lake rises enough to wash out the salt in the soil and permit cultivation once again. In order to put the polders under continuous cultivation, a solution must be found to this salinity problem by designing a suitable drainage system.

The area around Lake Chad which can be converted into polders covers approximately 150,000 hectares. Currently, IBRD and AID are reviewing a proposed project that would initially put 3,000 hectares in three polders into wheat, corn, and cotton cultivation. The cost per hectare of putting the polders into production is around $5,500 but results at the Matafou experiment station in the departments of Bol on these crops are very encouraging. Yields per hectare have been on the order of 4.5 tons for wheat, 4.5 tons for cotton, and 5.0 tons for corn without fertilizer. Trials have also been carried out on forage production and animal feeding. Results demonstrate that one hectare of forage (Pennisetum purpureum) can support twenty animals through continuous cutting under irrigation and with a supplementary ration of cotton seed. Vegetable production trials have also been carried out with good results. The high estimated per hectare cost of developing the polders is based on costs of building dikes, irrigation and drainage canals and pumping stations. It may be possible to devise an alternative scheme based on irrigation from ground water using small low-lift pumps and a network of shallow hand-dug wells. Such a system would substantially reduce the cost per hectare required to bring the polders under continuous cultivation. The feasibility of such an alternative should be investigated prior to AID participation in a polder development project. The essential technical problem to resolve in any event is the soil salinity problem which arises because of inadequate drainage.

The sparse population in the Lake Chad prefecture will require resettlement to undertake extensive polder cultivation. The population of the Lake Chad prefecture is approximately 160,000 people of whom at least 75,000 are potential polder farmers. Thus a polder development project covering 3,000 hectares and productively employing 2,000 farm families, could be fairly easily maintained. However, extensive immigration into the area and resettlement would be required for the ultimate development of all 150,000 hectares. Constraints imposed by market size and demand and transport will also have to be resolved in order to realize the potential of this important resource.

Management of the project could be assured by SODELAC (Societe pour le Developpment du Lac Tchad), an administratively and financially antonmous public authority of the Chadian Government. Its small senior staff of French agronomists and engineers would need to be supplemented by a full complement of middle and lower level extension agents in order to effectively assist farmers in adopting and using improved inputs and practices.

III. POLICY ISSUES IN FOOD CROP PRODUCTION

The major agricultural policy issue in Chad involves the conflict between the government's desire to maximize cotton production, in order to meet foreign exchange, and fiscal policy objectives, and the farmers' real need to meet subsistence requirements by emphasizing the production of staple cereals. Historically, the colonial administrators and the Government of Chad obliged traditional farmers to produce cotton to meet export demand and to have cash to pay taxes. Farmers on the other hand have persisted in according first priority to food crop production to minimize the risk of an inadequate food supply throughout the year, thereby guaranteeing their own subsistence. At the same time, production incentives and improved techniques have not been sufficient to generate increases in output. Moreover, a marketing system which could ensure reasonable price to farmers and consumers alike does not exist.

The key to resolving this conflict and associated policy issues of price incentives and marketing lies in viewing the agricultural sector as an integrated economy to which emphasis is given to the production and marketing of traditional crops, such as millet and sorghum, and modern crops, such as rice and wheat, as well as the cash crop, cotton. There appears to be some recognition of the need for an integrated approach to agricultural development on the part of the Chadian government. Both the slowing of the rate of growth in cotton production in recent years and the extreme food shortages created by drought have helped create this realization. Such an integrated approach is implicit in the new "productivity program" for cotton now being undertaken in the southern region, as well as in the polder development project at Bol on Lake Chad.

The cotton "productivity project" is a large regional activity in the south designed to improve production and marketing of food crops as well as cotton. This approach makes agronomic sense as cereals and cotton are rotation crops, and cereals will benefit from the residual effect of fertilizers appplied to cotton. The extent to which the "productivity project" is linked to the grain storage and stabilization activities of FDAR's Cereals Department is not well known at this point. But linkages should be developed and maintained in order to assure that with higher output farmers can receive both the assurance of stable higher prices and year round availability of cereals.

Price policy for cereals is a separate but related issue. Officially, the Chadian government maintains a floor price on millet and sorghum of 28 CFA per kilogram. In practice, this policy is not operational because of inadequate storage capacity and inability to undertake buying and selling of grain on a scale which would stabilize producer prices at a remunerative level or consumer prices at a reasonable level. In surplus years, prices to farmers may drop as low as 5 CFA/kg. Similarly, consumer prices range from 20 to 80 CFA/kg according to annual and seasonal availabilities. The approach to stabilizing at a reasonable level both producers' and consumers' prices will involve increasing on-farm and local (village) storage to raise producers' prices to a guaranteed and effective minimum, thereby reducing the trading margins and giving consumers the benefit of a lower price.

It should be relatively easy for FDAR to extend its operational capability into the area covered by the cotton productivity project. Outside the project area, the large majority of subsistence farmers who produce 85 percent of the cotton output will be more difficult to reach. An extensive program involving relatively modest improvements in inputs and practices for this larger group of farmers would be given high priority by the Chadian government.

IV. PROGRAM RECOMMENDATIONS

Specific program recommendations can be derived from the preceeding evaluation of Chad's food production sector. Specific project activity should be based on regional crop-specific production possibilities. More importantly, AID's Development Assistance Program should seek to promote Chad's nascent integrated agricultural development strategy. This does not imply that AID should directly assist cotton production efforts as that would be contrary to the Congressional mandate to transfer resources and provide technical assistance to improve food production and nutrition. However, AID should provide assistance to efforts to improve and increase production and marketing of staple cereals within the framework of other donor-financed agricultural production activities which include food crops. But nevertheless, these donor activities are principally designed to increase the output of cotton, the major source of foreign exchange, public revenues, and farm income.

The institutional constraints imposed by minimal capabilities in project management, agricultural research and extension, and training programs, together with the government's inability to devote substantial financial resources to development activities, make donor cooperation and coordination of agricultural projects essential. A basis for donor cooperation in project assistance has already been established between AID and major donors through the R and R program through activities such as the provision of veterinary supplies, the construction of storage facilities to handle grain supplies for drought relief, and the production of food in the polders of Lake Chad.

Specific program and project recommendations include:

1. Support of cereals production aspects of the cotton productivity project in the southern region. AID should review with the Chadian government and the principal donors involved (FED and FAC), the project elements in food production which include multiplication and distribution of improved sorghum varieties, seed treatment, correct planting density and weeding practices, and minimum fertilizer application. ONDR will be responsible for providing extension assistance to farmers in the productivity project area. ONDR also has the responsibility for assuring input delivery (seed, insecticides, fertilizers) for both food crops and cotton, and with the administration and collection of loans financed by the Chadian Development Bank. As is typical of agricultural services which operate in the framework of cash crop specific projects, ONDR has had very little experience in meeting input and extension needs of food crop producers. Consequently, creating or reinforcing a food crop extension capability among middle and lower level extension agents through training or retraining programs is urgently needed. The minimum effort required of AID at this point is to approach the Chadian government, FED, and FAC to review project details and jointly determine what assistance, if any, could be provided by AID within the framework of this intensive crop production activity. AID should also make available improved varieties of sorghum, and maize developed by the Major Cereals Project in northern Nigeria either through its own participation in the productivity project or through liaison provided by the Field Trials Officer stationed in Maroua, Cameroon.

2. The majority of farmers in the southern region, in addition to producing millet and sorghum for their own subsistence, also produce 85 percent of Chad's cotton output. Yet there is no organized program of input delivery or extension services carved out on their behalf. In pursuing its strategy of developing an integrated agricultural economy, the Chadian government should accord high priority to an extensive program to improve cereal production and on-farm and local storage. Selected improvements in inputs and practices (improved and treated seed, timely land preparation, sowing and weeding, etc.) derived from experience in the more intensive productivity project area could be disseminated to farmers. In addition to crop production and improvement measures, simple

measures for protection of field crops and stored grains should also be extended to farmers. Assistance to ONDR in providing extension services would be required to carry out the project. The relatively high returns to farmers, as well as foreign exchange earnings and tax receipts derived from the cotton produced by these traditional farmers, should be considered as partial justification for this extensive activity. The major justification is of course assuring adequate food supplies to large numbers of farmers most subject to the vagaries of weather and the disorganization of the cereals market.

3. AID should proceed with its reviews of the possibilities of wheat production in the polders of Lake Chad. A team has already been designated to assess the feasibility of alternative irrigation systems to bring an initial 3,000 hectares of polders under continuous cultivation of wheat, corn, vegetables, and cotton. Two alternative irrigation systems have been identified. One, a system based on a fairly sophisticated permanent canal and drainage network, would cost more than $5,000 per hectare brought under cultivation; the other, a rather simple design, based on low-lift pump irrigation for shallow wells, would cost around $1,000 per hectare. The feasibility of the former has been assessed by a French consulting firm, S.C.E.T., and by the IBRD. On the basis of that assessment, the Chadian government and the IBRD are requesting AID participation in financing a 3,000 hectare development project. Neither the economic or the technical feasibility of the second alternative have been assessed to date. The cost of the simpler irrigation proposal would be considerably less than the SCET-IBRD approach; the benefits with the low-lift pump alternative would be magnified. However, the major question to be resolved is a technical one (i.e., whether or not the low-lift pump method resolves the problem of soil salinity and ultimate polder abandonment if drainage is not properly assured). In addition, AID should seek to promote the food production possibilities of the polders by emphasizing wheat, corn, vegetables, and, possibly, forage production. Once the technical issue is resolved, AID should participate in the polder project. This assessment should be carried out as soon as possible and a decision made on AID participation in the development of the three polders at Bol.

4. A serious problem revealed by Chad's experience during the recent drought is the need for additional storage capacity particularly in drought-prone areas of the central Sahelian region, but to a limited extent in certain locations in the southern region. Storage is critical not only to meet food needs but also to provide the basic infrastructure for grain stabilization and marketing activity. As mentioned above, FDAR and its Cereals Department already maintain some 11,000 tons of storage capacity throughout the country.

A beginning has been made on a small grain stabilization program under FDAR's direction and it has had limited success in stabilizing prices to producers in buying areas and to consumers in some urban areas. The limiting factors to the success of this operation are lack of trained and experienced managers, and insufficient storage facilities. Technical

assistance and training in management is being provided by WFP and FAO; however, the need for storage continues. AID, upon consultation with FDAR and other interested donors, should determine the amount of storage required and make plans to construct it. Planning of this activity should be closely coordinated with FAO and WFP as they have assumed the responsibility of assisting in the management of the grain marketing activity. In the short-run, AID could assist under R and R in the effort to procure from domestic production approximately 10,000 tons of grain to meet the needs of drought-prone regions.

CHAD
LIVESTOCK SECTOR ASSESSMENT

I. INTRODUCTION

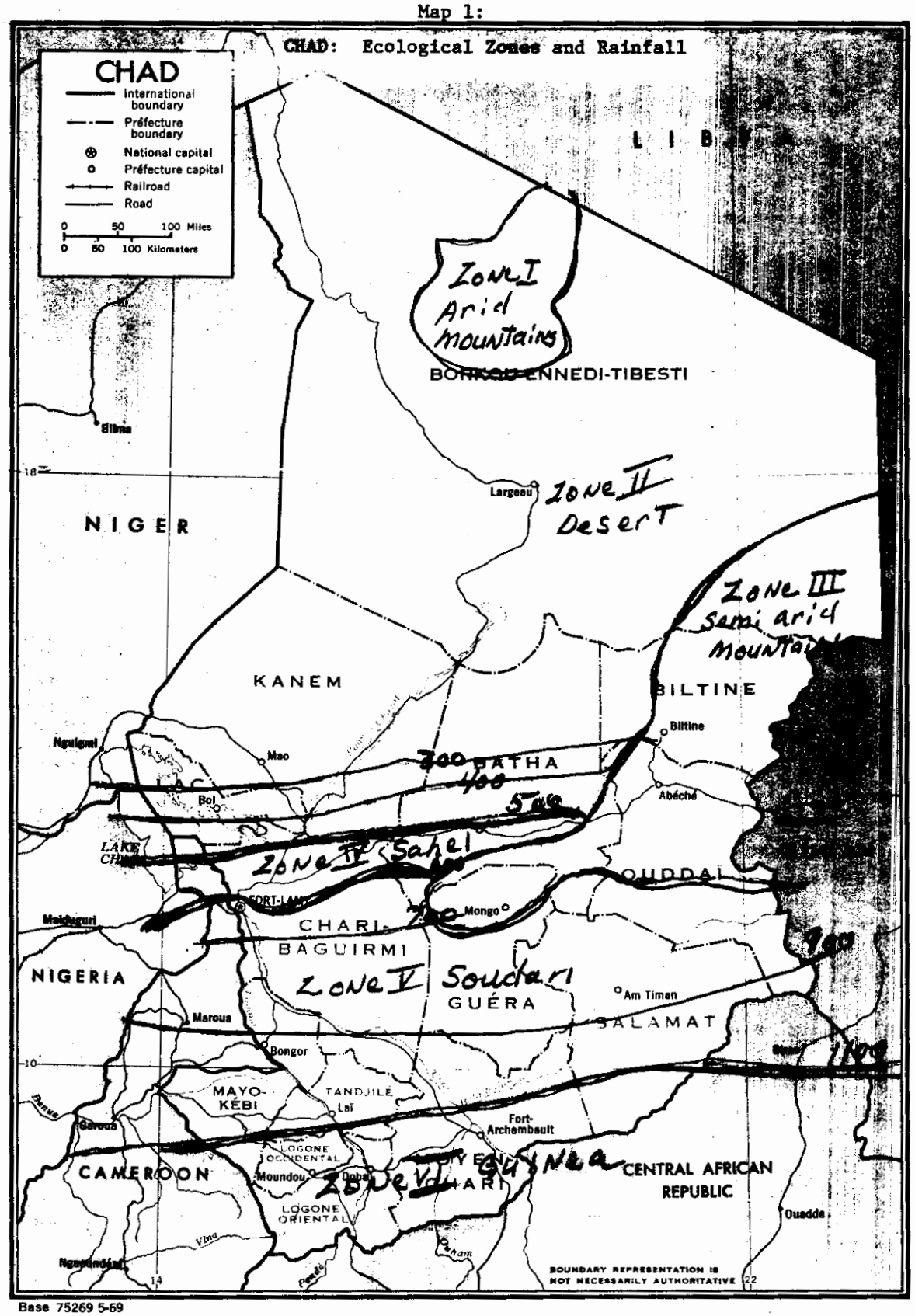
Chad is a landlocked country with an area of 1,284,000 square kilometers and a human population estimated to be more than 3.6 million person or roughly 3 persons per square kilometer. Population is concentrated in the southwest central and southwest portions of the country. Ecological zones are shown in Map 1 and the normal northern and southern limit of cattle grazing in Map 2. Chad extends from about 8° north latitude to the Tropic of Cancer. Nearly 40 percent of the land area is within the Sahara desert.

Geographic isolation and low per capita income are the two principal barriers to development. The nearest railhead is at Maiduguri, Nigeria some 200 kilometers from N'djamena. The railhead on the Trans-Cameroon railway is some 800 kilometers from N'djamena but will soon be linked with the cotton growing areas of Chad by all-season road. South Central Chad (Sara) receives some supplies by road from the river port at Bangui, CAR, on the Oubangui River and extreme Western Chad has some commerce with Western Sudan via the rail terminus at Nyala some 320 kilometers from the boundary. There is a small amount of trans-Sahara trade via truck and camel caravan.

While external and interior transportation remains a bottleneck to livestock development, it tends to make meat production an attractive alternative to most other agricultural products. Cattle can be marketed on hoof to external markets and there is an important and growing market for carcass meat exported by air freight (See Map). Because of the long-run increase in demand for red meat particularly in urban centers throughout tropical Africa and the Middle East, meat prices are expected to increase in relation to other agricultural commodities. Some livestock projects which could not formerly be justified on economic grounds are expected to become more economically attractive in the future.

Animal husbandry is the principal occupation and source of subsistence income for over half of Chad's rural population. It provides directly for 16 percent of GDP. Recorded and estimated unrecorded exports of live animals, meat and hides and skins may have amounted to 28 percent of the value of exports in 1970. More recent estimates are not available but the relative importance of animal industry is believed to have declined since 1970. Cotton is the most important export of Chad accounting for 78-80 percent of export earnings in most years, and is the principal source of cash income for the farmers in the more heavily populated southwest portion of the country.

Map 1:



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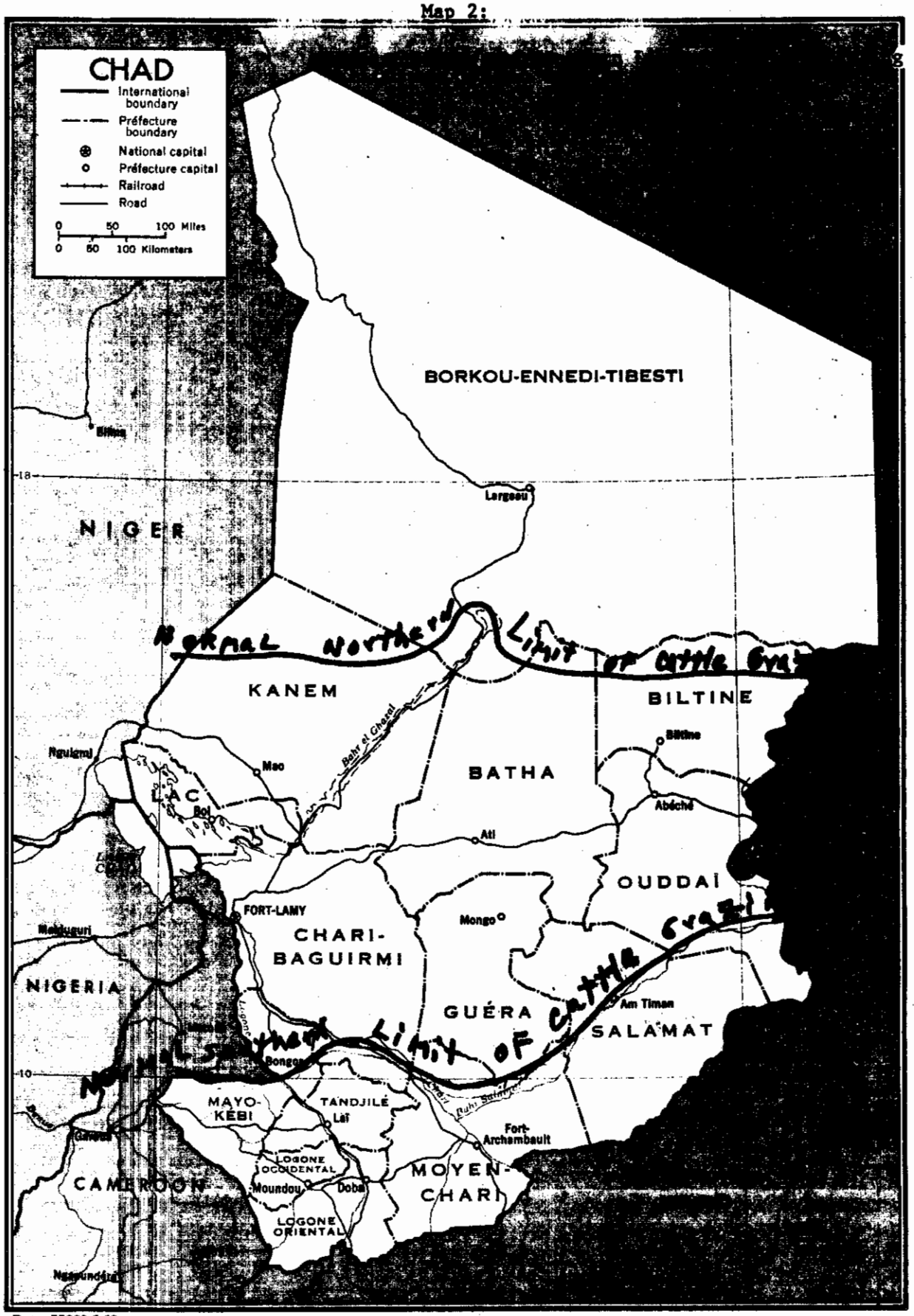
Map 2:



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Ox traction has been encouraged by the CFDT (now Cotonchao) in the cotton growing areas and has contributed to cotton production and exports. National per capita income is believed to be about $78.00, one of the lowest in Africa.

Racial and religious differences have contributed to Chad's prolonged political instability and have had a direct effect upon livestock production. The government is dominated by southern tribal groups who tend to be Christian or animist. Livestock owning groups who are Moslem-Arab or Fulani pastoralists have been largely excluded from government services. The nomadic pastoralist element has been fleeing Chad since the early 1960s and the relationship between livestock producers and government is tenuous at best.

II. LIVESTOCK PRODUCTION REGIONS

The natural conditions found in Chad are conducive to the maintenance of a substantial livestock population. The types and breeds of Chad's cattle, sheep, and goats are descrived in Annex I, and current estimates of livestock numbers are shown as part of Table 2, p. I-37.

Management practices vary considerably between different ecological zones and tribal groupings and are similar to those found in most other sub-Saharan countries.

In normal times a very large proportion of the national herd is concentrated in the Northern Sudan and Sahel Zones (Map 1). During the drought years, large numbers of herds reportedly moved south and west into the southwestern portion of the Sudan Zone. The drought undoubtedly reduced at least temporarily the tsetse fly habitat and numbers over wide areas allowing some herds to penetrate as far as Sara and the CAR. Some of the nomadic herds are at least temporarily settling in the south but a great majority can be expected to return north with the return to more normal rainfall patterns.

The most common production pattern is a north-south migration of some 200-300 kilometers by nomadic pastoral herds from wet season grazing areas in the Sahel to dry season grazing in the Savanna Zone, particularly to areas which are seasonally flooded. There is also an east-west migration of some 100 kilometers or less from the Massenya-Dourbali area to dry season grazing in seasonally flooded areas between the Logone and Chari Rivers and the Yaeres area of North Cameroon. A second production pattern is by semi-sedentary producers who graze sandy soils not subject to flooding in the central area in the rainy season and may migrate short distances for dry season grazing.

In recent drought years, some Chadian herds are said to have penetrated as far as the Central African Republic but for the most part the Guinea Zone is little used becaused of tsetse and other biting flies.

The use of smudge fires during the day to protect cattle against biting flies in the rainy season and the practice of producing clarifies butter from surplus milk becomes more commonplace as one progresses eastward and southward across the Sudanian production zone.

A limited number of trypano-tolerant cattle now numbering about 5,000-8,000 head were introduced into the cotton producing areas to facilitate the development of ox-traction. An estimated 15,000 zebu cattle are brought into the cotton zone annually for draft purposes.

Fattening of work oxen by settled farmers is a pattern which is growing slowly in the cotton zone.

Animal husbandry practices are generally very good considering the limitations of feed and the overall harsh environment. Herdsmen make maximum use of available water and feed. More castration of inferior animals could be done but this varies widely between herds. The practice of burning rangeland is very harmful to the best species of grass, and this practice should be discontinued. Herdsmen know how to reduce harm done by biting insects - including tsetse. For six weeks to two months during the rainy season they use smoke as a repellant during the day and graze cattle only at night. Given the conditions under which they operate, they are doing a remarkably good job.

A. CURRENT HERD STRUCTURE

It has long been assumed in many quarters that livestock producers in the Sahelian and Savanna Zones of Chad keep many old unproductive animals for reasons of prestige and security. In 1968 Carter and McLeroy reported that this tradition was beginning to change and some younger animals were beginning to be sold. 1/The dry years which have occurred since that time, coupled with favorable livestock prices, have accelerated the trend which has resulted in a significantly changed herd structure.

This conclusion is supported by: 1) observation of cattle herds in the field, 2) observation of animals being offered for sale in established markets, and 3) carcass weights of animals being slaughtered in the Farcha Abattoir.

In April 1974, about 20 herds were examined in depth at three locations by members of a project evaluation team.[2] These herds which were studied were located near Logone-Gana, east of the Logone River and west of Morgroum and Guelengdeng for a 30 kilometer strip paralleling the Logone River, and grazing areas in the vicinity of Dourbali and Massenya, and about 20 kilometer west of Massenya along the Bahr

1/Carter, M.G., and G.B. McLeroy, Range Management and Livestock Industry Chad Basin (USDA/USAID, August 1968).
2/Abercrombie, F.D. and R.A. Ottley, "Project Design Study Team Chad, Africa - April 1974, "AFR/DS, May 1974

Ergig River. Herds examined included both Shua Arab and Fulani as well as sedentary cattle. Male animals 4 years and older (excluding breeding bulls) constituted only about 4 percent of the herds. Male animals in the 2-3 year old age group were also much fewer than one would expect in a properly balanced herd. Fulani appeared to be more oversold in this category than the Arabs. Cattle in the area were in good condition and all in a state of general health that should ensure good reproduction. Since herds in all three areas contained many females under 4 years of age, it can be assumed that the shortage of males in this age group came about as a result of sales rather than dying from starvation or disease, although excess milking of cows may have contributed to male calf motality. The same team visited two fairly large markets (Massakari and Dourbali) on days when cattle were being sold. About 60 percent of the cattle offered for sale in both places were three years old or younger. An accurate classification by age of 43 groups of cattle in the sale yard at Dourbali revealed the following information:

1.	One year old or younger (male and female)	4%
2.	Two years old (male and female)	30%
3.	Three years old (male and female)	26%
4.	Four years old (male and female)	5%
5.	Males over 4 years old (incl. aged bulls)	5%
6.	Old cows	30%

The comparison at this sale of animals, 2-3 years old (56 percent) to males 4 years and older (less than 10 percent), suggest a dangerous trend of selling animals 2-3 years before they attain optimum market weight. When old bulls and four-year old heifers are discounted, the percentage of males in the prime market age group was only about 4 percent.

Management of the Farcha Abattoir indicates that carcass weights are down primarily due to the younger age of animals being slaughtered. This conclusion is borne out by the 4th trimester 1973 report. The younger age of slaughter may also, in part, be responsible for reduced total tonnage of meat going through the abattoir which has fallen 16,500 tons in 1971 to 8,865 tons in 1973. Dressed weight per animal dropped from an average of 158 kg. to 153 kg. during the past year. Countries which are importing Chadian dressed beef require a larger carcass, making the implication of small animals much more important for future beef exports.

B. THE EFFECT OF HERD STRUCTURE ON BEEF SUPPLY

Livestock producers are now selling many animals about two years younger than they should be sold for maximum market value. This is probably the result of poor range conditions and good cattle prices but also economic pressure to sell cattle to meet cash needs. Adding to the need to sell younger animals was the higher price the livestock producers have to pay for millet (and other essential commodities) during the drought.

The national herd has dropped from 4.5 million to under 3.0 million and the sale of younger and lighter weight animals accelerated the decline since more animals must be sold to obtain the same amount of money. It is possible that the national herd may continue to decline until a system of growing and fattening ranches can be implemented to grow the animals to a larger size.

It would take several years of reduced sales to get the herds back into proper balance. Since this is very unlikely we can only assume sale of younger animals will continue and meat will become in shorter supply. With out positive action by government and donors to improve the climate for cattle production, meat production will continue to decline in importance as a Chadian export product.

III. LIVESTOCK TRENDS AND MARKETING

Chad's livestock industry attained a numerical peak in 1967-1968 and has since been in a state of disruption and decline. The land area, human population, cattle estimates and ethnological groupings for the main cattle production zone at the end of 1973 are shown in Table 1 (p. I-36). Probable changes in the total livestock industry between 1968 and 1973 are shown in Table 2.

Estrangement between government and cattlemen reached a climax in the mid-1960s although M'Bororo herders had been leaving Chad for Sudan, Nigeria and the Central Republic prior to the breach. The exodus was no doubt related to better veterinary services, less tax pressure and more stable political conditions in other countries. In more recent times, continued government harassment of semi-sedentary owners and the drought (which was being felt in Chad as early as 1968-1969) has resulted in a reduction in the national cattle herd. Chadian sources now admit a decline in cattle population from about 4.5 to 2.7 million or some 40 percent. Perhaps no more than one half of the decline (i.e., 20 percent of herd reduction) can be directly attributed to drought, suggesting that drought-related losses have not been excessive and may have been exaggerated.

It is noteworthy that dried meat production declined 75 percent from 800 MT in 1968 to 200 MT in 1973. Since it is a common practice to convert old and/or emaciated animals to dried beef, an increase in dried meat production would have been expected as drought conditions intensified. However, this does not appear to have been the case during the worst drought period 1972-1973. This suggests that the cattle population in that drought year did not exceed the available grazing resource. The government has recently instituted some reforms including the elimination of cattle taxes which may encourage some herdsmen to return to Chad. It is also noteworthy that goats and sheep which are not subject to taxation and are better able to subsist under drought-induced grazing conditions are believed to have increased in numbers (Table 2).

Distance from central markets poses a special problem throughout the central production zone. The offtake from the northwest, central-west and Lake area find markets in N'Djamena, North Cameroon and Nigeria; whereas, those from the prefectures of Biltine and Ouddai tend to be marketed in Sudan or Central African Republic, and surpluses from the southern areas go to the Central African Republic. As official statistics are lacking, a rationalization of total marketed offtake in 1973-1974 is as follows: An 8.5 percent offtake from the 2.7 million national herd gives 230,000 head available for marketing annually. About 120,000 would be slaughtered locally and 110,000 head exported on hoof.

Of exports on hoof some 25,000 would go to Sudan; 40,000 to Central African Republic; 20,000 to Cameroon; and 25,000 head to Nigeria via Cameroon. It must be stressed that these are estimates but they do reflect recorded arrivals in other countries visited by the DAP team. In 1974, carcass meat was being exported by air freight to markets in Ghana, Zaire, Congo, Libya and Lebanon. The ability of the abattoirs in N'Djamena to supply carcasses of export weight and quality is declining as animals are marketed at younger ages.

IV. GOVERNMENT ACTIVITIES AND POLICY OBJECTIVES

Livestock Service is a division of the Ministry of Agriculture and Livestock. The structure of the Ministry and that of the Livestock Service is shown in Figure 1.

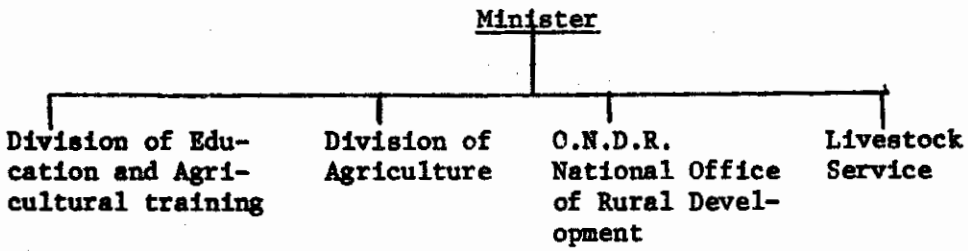
A major obstacle to the establishment of an effective, comprehensive system of livestock production and range conservation in Chad is the present weakness of the Chadian Livestock Service. One major problem has been finance. The share of the Livestock Service in the general government budget fell steadily from 2.29 percent to 1.93 percent in 1972. This level of budgetary support enables the Livestock Service to do little more than pay the salaries of its regular staff. Funds for travel, vehicle and building maintenance and the purchase of vaccines have been severely reduced. The massive influx of short- term drought assistance will enable the Livestock Service to improve and expand its activities while these funds last, but no long-term plan exists to provide the Livestock Service with a more satisfactory level of operating funds.

Due in part to the above, the size of the Livestock Service staff decreased slightly from 1961 to 1971. Also a larger percentage of that staff is now concentrated in urban areas (the N'Djamena slaughter house, the CMPS Farcha laboratory) and field staff is extremely limited (one officer per 50,000 head of cattle in Kanem and around Lake Chad, and one officer per 40,000 head of cattle in Batha and Guera in 1971). Field officers work almost exclusively in matters of animal health and due to their training (and Livestock Service policy orientation) provide hardly any extension services in the critical fields of range management and animal husbandry.

A general picture of donor activity which supports all major development related projects undertaken in Chad is given in Figure 2.

CHAD

Figure 1: Structure of Ministry of Agriculture and Livestock



Structure of Livestock Service

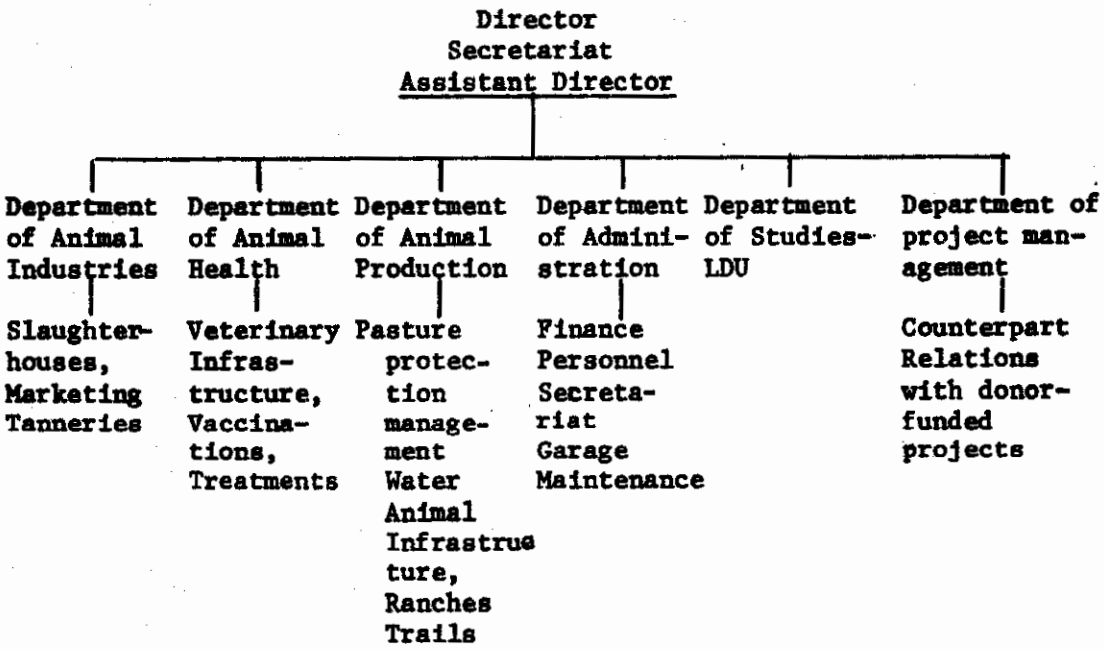


Figure 2: Chad Livestock Projects Funded by Donors

1.	Livestock in the Cotton Zone	FED
2.	Well construction in Kanem and along Ouaddai-Biltine cattle trails	FED
3.	Emergency Drought Assistance: animal feed production and transport, well digging and maintenance (Chari-Baguirmi)	FED
4.	Animal Health - general	FAC
5.	Livestock Development Project - cattle trail 13° parallel, restructuring of well maintenance service, feedlot research at Bol and along the Chari River	FAC
6.	Tsetse eradication north of N'Djamena	FAC
7.	Miscellaneous assistance - Farcha laboratory forage research, improvement N'Djamena abattoir technical assistant in cotton zone, study of augmentation of freezing capacity	FAC
8.	Diverse Assistance: Technical assistance for animal traction and mixed farming at pilot farms of Fianga and Karoual; mobile clinics	French Government
9.	Assale-Serbewel Pilot Livestock Project	AID,FAC,UNDP
10.	Emergency Drought Assistance: vaccine purchase, vehicle repair, construction of veterinary parks, kerosene freezers	AID
11.	Wells: repair of 102 wells, construction of 38 wells in Batha; mobile well maintenance teams: restructuring water service, LDU, study of small ruminant production	IBRD
12.	Assistance to LDU, creation of poultry centers at Sahr and Moundou, training, recuperation of by-products from N'Djamena abattoir	UNDP/FAO
13.	Water for cattle trails in the west	Libya
14.	Training in veterinary medicine	Canada
15.	Cattle transit center - Guelendeng	Swiss aid
16.	Milk production - N'Djamena	Canada
17.	"Stations d'Embouche"	Libya, Iraq,Italy
18.	Chad-Libyan Society for the Exploitation of beef	Libya

Additional Projects Proposed for Donor Funding

		Submitted to
1.	Veterinary infrastructure: new veterinary posts and vaccination parks, vaccines, vehicles, new cattle market at N'Djamena, tsetse eradication	FED
2.	Internal Parasite Control	-
3.	Reconstitution of Kouri cattle breed	FAO
4.	Creation of a livestock fund	-
5.	Production of animal feed (polder area)	AID
6.	Animal production: cattle census, agrostological studies, fire-breaks, creation of "stations d'embouche" at Sahr and N'Djamena	RED, FAC

7. Support to the Livestock Service: office construction, garage, radio system, training — FED, AID
8. Recruitment of additional personnel, maintenance of medicines, improvement of veterinary posts — -

In the past the government's strategy for development has been to provide a minimum level of disease control and marketing infrastructure. Strategy against overgrazing was to open up new areas of the Sahel to grazing through the provision of permanent water. FED has provided assistance to construct 318 wells in Batha, Ouaddai, and Chari-Baguirmi. An IDA credit for the construction of 38 wells and the renovation of 102 wells in Batha is about to be implemented. FED has recently agreed to construct almost 100 wells in Ouaddai and Biltine while FAC will finance the new wells along the cattle track from Abeche to N'Djamena. The justification for construction of additional wells had been premised upon the hypothesis that water rather than grass has been the limiting factor in the Sahel and that grazing land in the Sahel was not fully utilized. New permanent watering facilities would make pasture usable throughout the dry season where it could otherwise be utilized for only a short time immediately after the rains and would also allow more distant temporary grazing to occur. In some cases, water was to be drawn by traditional methods (bull-power) as a break against overgrazing. It has been assumed that no system of water or grazing control would be adopted voluntarily by the pastoralists nor could be imposed by the government, even if desirable to protect the range from overgrazing.

Apparently no effort has been made in the past to encourage the utilization of Chad's Sudanian Zone for livestock production. Government influence in the Sudanian prefectures of Guera, Salamat, and Chari-Baguirmi has been limited by rebel activity from time-to-time. In addition large parts of these prefectures are generally infested with morsitans or savanna tsetse in Guera and Salamat and tachinoides riverine tsetse in Chari-Baguirmi. Chad's southern prefectures, south of the Chari River, have traditionally been set aside in development plans for the production of cotton and other cash crops. Livestock policy has, however, encouraged the introduction of animal traction in this area and reportedly the new "cotton plan" will provide incentive for developing basic food crops (sorghum,millet) and mixed farming (for beef production as well as traction) in the area along with cotton.

Although several studies have recommended, usually in passing, development of a stratified system of livestock production in Chad, utilizing the Sahel for breeding purposes and the Sudanian Zone for growing out and fattening immatures on ranches or finishing animals on feedlots, no overall government livestock policy of this nature has been formulated. In fact, in part due to the immediate pressures of the drought, the government, even with the assistance of a 3-man donor-funded Livestock Development Planning Unit, has been unable to formulate a comprehansive long-term livestock development plan for Chad.

Donors in the past have been extremely hesitant to finance the installation and initial operation of the major elements (feedlots, growing/fattening

ranches, grazing reserves, improved stock routes) of a rational, controlled, stratified system of livestock production in Chad. One attempt to establish a growing/fattening ranch at Ouaddi Ryne, 550 km. from the N'Djamena abattoir, failed, officials claim, because weight put on at the ranch was lost during the long trek to the abattoir. Problems besetting such schemes include: a) finding enough land which is unoccupied or from which local tribes can be displaced without social unrest; b) the high cost of capital improvements; c) the difficulty of preventing farm cattle theft and tribal encroachment; d) the availability and cost of immature cattle for fattening. (Adequate payment must be made to the breeder to prevent his losing the profits anticipated on value added by keeping the animal himself until full grown.) Nevertheless, a private American group apparently is prepared to invest $2.5 million in a combined irrigated fattening cash crop operation 15 km. from N'Djamena. The proximity of the location to N'Djamena minimizes problems (a) and (c) above.

Although the establishment of tribal ranches and grazing reserves had been recommended in several major studies, with the exception of a pilot project in the Assale district (funded jointly by UNDP, FAC, and AID), no such scheme has been attempted in Chad to date. The government's present inability (and political unwillingness) to control the increased movement of migratory herds into this "grazing reserve" area illustrates the difficulties of a government-imposed grazing reserve. Inadequate government extension services, general lack of communication with traditional herdsmen, and lack of knowledge of traditional (often ill-defined) patterns of land ownership and rights of use are primary obstacles to encouraging grazing reserves of tribal ranches which would be managed and policed by traditional tribal decision-making structures.

Partially because of their land-intensive nature which eliminates the need to exclude traditional herdsmen from their land despite the increased costs of inputs (irrigated forage, agricultural by-products), feedlot operations have recently begun to receive the support of the GOC and several donors. Experimental feedlots, which "finish" cattle for 3-6 months prior to slaughter for export, are soon to be established near N'Djamena with UNDP/LCBC support based upon the results of experimental irrigated forage projects at Bol and Koundoul. Libya, Iraq, and Italy have, each according to the GOC, recently agreed to finance other such operations, called "stations d'embouches" in the near future although details have not yet been worked out between the governments and the GOC.

V. DEVELOPMENT ASSISTANCE PROGRAM - CHAD

USAID livestock development-related activities have been limited to support for the LCBC's Assale-Serbewel pilot livestock development project of which the Assale sector is located in Chad. The livestock technician supplied by AID is resident in the Cameroon-Serbewel sector.

Following the visit of a project design team in April, 1974 a somewhat broader assistance to the livestock sector has been proposed for medium-term financing. These activities include: 1/

1/ PROP - Range Management Technical Assistance in Chad, June, 1974

1. Provision of a range management advisor for a 4-year period to work within the Livestock Development Unit to assist in the preparation of project dossiers for donors and development of a long-term range development strategy:

2. Provision of a professor of range management who will design and teach basic courses in range management at the Institute Zootechnique et Veterinaire (veterinary assistants) and the Ecole Nationale des Infirmiers Veterinaires (veterinary nurse);

3. Provision of short-term consultants required for project design; and

4. Training of up to 25 Chadians in various aspects of the livestock industry.

These are activities which are designed to establish a base for the rational development of the industry and provide the trained cadre necessary for the provision of government services and management of projects. It is envisioned that more extensive programs based on in-depth studies conducted over the life of this project will be proposed at a later date.

Appendix I

TYPES AND BREEDS OF CHAD LIVESTOCK

CATTLE

Cattle in Chad may be classed in three major breed-types. These are Kouri or Buduma, Wadra or Arab Zebu, and M'Bororo Fulani. In addition there are numerous crosses between the major groups and a limited number of trypano-tolerant species.

Kouri or Buduma cattle largely inhabit the shores and islands of Lake Chad and the surrounding Sahel-Sudan Zone. They are primarily kept by the Kouri and Buduma tribes in herds of 30 to 40 animals, and utilized mainly for milk and meat production. Although some may be used for pack they are seldom used for draft purposes, and are basically sedentary animals. The Kouri is a tall animal, distinguished by its enormous bulbous horns and the absence of a hump. The head is long with a straight profile and wide forehead, to which the prominence of the orbital arches lend a degree of concavity. The neck is short and flat, the body long, the most common coloration is white but gray shading over the shoulders and extremities are sometimes seen. Due to ever-increasing crosses with Zebu animals, Kouri cattle often show small cervico-thoractic humps. Kouri females breed for the first time at about 3 years of age, and thereafter calve every 16 to 18 months. The usual breeding season is July to October, and the average lactation yield is 600 to 1700 liters in addition to raising a calf.

Wadara, Shua, or short-horn Arab Zebu cattle are the main type found from Lake Chad to Abeche on the eastern border. These are nomadic to semi-nomadic, multi-purpose animals. Besides being the main milk suppliers in towns and villages, they are used for draft, riding and pack. Color is dark red or brown, while pied with black or red on white is quite common. A good slaughter beast will weigh up to 370 kilograms at 5 years of age. Since the Arabs have largely become semi-migratory to sedentary over time, breeding has become less structured and their cattle have decreased in both uniformity and quality as greater attention was given to subsistente farming and less to cattle breeding.

M'Bororo Fulani, Rahaji or Fellata cattle, next to Kouri, are the and most distinctive animals in Chad. They are long-lyre-horned Zebus, intractible and with a nervous disposition, but well-suited to their roving, nomadic owners. Chari-Baguirmi prefect is the chief habitat of the M'Bororo in Chad, although they are extremely wide ranging in their migrations which cover hundreds of kilometers. Hardiness and showiness are the most important characteristics looked for by the nomadic herdsmen in selecting breeding stock. The herd, numbering 100 or more animals, are reared entirely on natural grazing. Animals of Chadian origin of this breed can

well stand the long trek to market and may be seen in Bangui, Lagos and Khartoum markets. M'Bororo slaughter animals reach 400 to 500 kilograms at 5 to 8 years of age. However, the number of such specimens is fast disappearing due to sale at younger ages.

Trypano-tolerant cattle in limited numbers (5,000-8,000 head) are kept in connection with cotton production and subsistence farming in the southern prefectures. They were initially introduced under a government program and today are still insignificant in terms of the national herd.

SHEEP

Three distinct ecological types of sheep are found in Chad, each of which is known by various tribal names, with considerable crossing among them. In all cases they are haired animals, maintained on subsistence basis or as scavengers associated with farming. Sheep numbers are increasing as cattle numbers decline for there is no head tax on sheep.

Arab and Fulani breed-types predominate, and are usually herded with cattle. They may or may not be milked, depending on the immediate needs of the producers. These are basically Sahelo-Sudan ecotypes. Both individual body and herds size increases under nomadic management, decreasing in turn as owners become more sedentary. Nomadic flocks may number 100 - 200 head, whereas settled flocks of 10 - 25 are common. Lambing percents vary between 70 - 90 and lamb mortality is strongly influenced by milking of the ewes. While offtake from the larger nomadic flocks often reach central markets, that from more sedentary animals is usually consumed locally. Mutton is the favored red meat of the country, especially among Moslems.

Zaghawa or Upland Desert ecotype sheep are chiefly concentrated in Ennedi of the northern prefect of Burkou-Ennedi-Tibesti, where they are kept by the Zaghawa Tribe. These are truly desert animals, usually herded in association with cattle and/or camels. The watering interval varies between 1-4 days depending on the circumstances and associated species. The reproductive rate is low (lamb drop of about 75 percent), but the ewes are good milkers. The hair coat is long (5 to 8 inches), coarse and glossy black, and used in weaving mats, and other paraphernalia. Zaghawa sheep yield low grade mutton, not unlike goat meat. Most supplus market animals go to Sudan, where they are conspicious at the Omdurma central abattoir in Khartoum during certain seasons.

Trypano-tolerant or dwarf-like rain forest sheep are found as village scavengers south of about 11° latitude. While they do provide a measure of meat for home consumption, they are of minor importance as regards the national sheep flock.

Sheepskins are widely used locally as water containers and also exported in large numbers, chiefly for liners and glove leather.

GOATS

Like sheep there is no tax on goats in Chad and their numbers are estimated to have increased by a total of 25 percent over the past five years, presently outnumbering any other species by a considerable margin. In spite of their numerical importance, little is know about them, and their great diversity makes for difficulty in classification. In general terms it can be said that there are three basic ecological types of goats: desert, Sudan and rainforest or trypano- tolerant.

Prototype desert animals are extremely long-legged and run with nomadic cattle and camels. These may be futher subdivided into Zaghawa, Fulani and Arab tribal breeds. Milking is common in all cases.

Essentially the entire Sudan and Northern Guinea Zone of Chad is inhabited by a middle belt type of goat that is difficult to classify, being intermediate between the desert and rainforest types. Many are run with cattle, but even more common are the vast flocks associated with agriculture. Some few are milked but they are largely suppliers of red meat for local consumption. Their skins are widely used for dry and liquid storage. Multiple births are as high as 20 percent, and kids are dropped year-round. Trypano-tolerant or dwarf-like rainforest goats are maintained as scavengers in farming areas of the southern prefects. They are not milked, but do provide meat for local feasts and celebrations.

CAMELS

Camels are raised in the Sahel and desert areas above 14° north latitude, although they may graze further south during the dry season. They provide milk to their owners and are the main mode of transport in their habitat. Animals surplus to local needs may reach markets in Sudan or cross the Sahara to Libya or Algeria for slaughter purposes. While they are important in the lives of producers, they contribute little to government revenue. The annual offtake from the 360,000 national herd would not exceed 15,000 head annually.

TABLE I

CHAD'S MAIN CATTLE PRODUCTION ZONE - 1973

Prefect	Region	Land Area In KM2	Estimated Human Population	Humans Per KM 2	Estimated Cattle Population	Cattle Per KM2	No. of Cattle Per Person	Ethno-Religious Groups
Batha	Central	88,000	350,000	3.98	722,500	8.21	2.06	Arabs - Muslim
Guera	Central	58,950	200,000	3.39	142,500	2.42	0.71	Arabs - Muslim
Biltine	East	48,850	220,000	4.50	143,000	2.93	0.65	Arabs - Muslim
Ouddai	East	76,240	310,000	4.07	228,000	2.88	0.74	Arabs - Muslim
Kanem	North	108,657	200,000	1.84	340,000	3.13	1.70	Kanembou-Muslim
LAC	West	22,320	140,000	6.27	282,500	12.66	2.02	Kanembou-Kotoko-Muslim
Chari-Baguirmi	Central West	82,910	530,000	6.39	630,000	7.60	1.19	Fulani - Muslim
Borkou/Ennedi/Tibesti	North	600,250	85,000	0.14	15,000	0.02	0.18	Toubou - Muslim
TOTAL		1.086,177	2,035,000	1.87	2,503,500	2.30	1.23	

N.B.: 1. Source - Direction de l'Elevage et des Industries Animales, GOC - November 1974.
2. The heavily populated southern areas are chiefly Animish-Christian, largely Sara, and wield political power.
3. The 2,503,500 head of cattle in the main production zone is judged to be under-estimated by some 200,000.

TABLE 2

RATIONALIZATION OF LIVESTOCK INDUSTRY:
CHANGE BETWEEN 1968 AND 1976

	1968		1973		CHANGE	
Species	No. of Head	%	No. of Head	%	Number	%
Cattle	4,500,000	47.2	2,700,000	31.7	-1,800,000	-40
Sheep	1,400,000	14.7	1,500,000	17.6	+ 100,000	+ 7
Goats	2,800,000	29.4	3,500,000	41.1	+ 700,000	+25
Camels	355,000	3.7	360,000	4.2	+ 5,000	+ 1
Horses	155,000	1.6	150,000	1.8	- 5,000	- 3
Donkeys	310,000	3.2	305,000	3.6	- 5,000	- 2
Swine	6,000	0.1	7,000	0.1	+ 1,000	+17

Appendix II; AN OVERVIEW OF THE COMMERCIAL CATTLE TRADE IN NIGERIA

The 1973 Demographic Census in Nigeria (see Table 3) - although provisional and subject to further check - when coupled with revenue generated by petroleum exports, exemplifies the enormous present and future demand for meat in the country.

Nigeria's recorded cattle trade from 1967 through the first quarter of 1974 is depicted by Table 4. Thus over the years about 1/3 of recorded slaughter has been supplied by the Sahelian countries, chiefly Niger and Chad (see Tables 4 and 5). It is axiomatic that combined imports and offtake from the national herd will not be able to supply the demand for beef generated by population increase, continued urbanization and rising consumer incomes in Nigeria.

Table 6 presents recorded livestock slaughter in the six northern states for 1973. While cattle slaughter is largely controlled or recorded, that for sheep and goats is chiefly done in the home, primarily in connection with religious feasts and celebrations. It is probable that the smaller ruminants provide up to half of the red meat consumed annually in the six northern states. This situation is reversed in the south where beef is the favored and primary red meat consumed.

The effect of the drought in Nigeria was pronounced only in 1973, but will no doubt have much longer-ranger manifestations. That is, the Nigerian national herd largely pushed into recently cleared and/or lightly infested tsetse fly country but in turn were replaced in the more northerly climes by herds from the Sahel. This influx of extra cattle greatly accentuated overgrazing in the Sudan and northern Guinea zones, resulting in long-term detrimental effects to the grass cover and land resource base. At the same time this circumstances provides a ready source of slaughter cattle for the Nigerian market. A large measure of the immigrant herds were apparently liquidated by their owners to pay for food and other necessities of life. While a large measure of these residual herds returned to the Sahel during the good rains of 1974, many remained behind in Nigeria. Certainly the effective national herd in Nigeria increased numerically as a result of the drought. Also, verbal reports to the contrary, there is no concrete evidence to indicate that the 30 percent increase in recorded slaughter for 1973 resulted from panic sales.

TABLE 3
Nigerian Demographic Data
in Relation to Land Area
and Recorded Cattle Slaughter - 1973

State	1973 Census (1,000,000's)	Area in Square Miles	Density per Sq. Mile	Recorded Cattle Slaughter	No. of Persons per head of Slaughtered Cattle
North East	15.38	105,025	146.44		
Kano	10.90	16,630	655.44		
North West	8.50	65,143	130.48		
Benue Plateau	5.17	39,204	131.87		
North Central	6.79	27,108	250.48		
Kwara	4.64	28,672	161.83		
North Sub-Total	51.38	281,782	182.34	862,006	59.6
West	8.92	29,100	306.53		
East Central	8.06	11,548	697.96		
South East	3.46	10,951	315.95		
Midwest	3.24	14,922	217.13		
Lagos	2.47	1,381	1,788.56		
Rivers	2.23	6,985	319.26		
South Sub-Total	28.38	74,887	378.97	633,586	44.8
Grand Total	79.76	356,669	223.62	1,495,594	53.3

Note: Recorded cattle slaughter estimated at some 90% of total cattle slaughter.

TABLE 4
RECORDED CATTLE TRADE IN NIGERIA BY YEARS
(number of head)

	Item	1967	1968	1969	1970	1971	1972	1973	1974 (1st Qtr)
Recorded Trade Cattle (North)	Total	652,554	838,075	900,898	875,017	827,806	847,308	735,681	239,488
	Local	422,525	580,070	626,057	598,869	545,372	561,262	450,569	165,931
	Imported	230,030	258,000	274,841	276,148	282,434	286,046	285,112	73,557
	(%)	(35.2)	(30.8)	(30.5)	(31.6)	(34.1)	(33.8)	(38.8)	(30.7)
Recorded Slaughter (North)		583,292	642,137	629,025	550,995	469,910	443,232	862,008	247,988
Recorded Export to the South for Slaughter	Total	297,554	341,499	291,562	317,666	508,846	470,997	633,586	193,401
	On Hoof	192,231	219,459	167,631	171,897	344,883	268,442	376,784	114,224
	Rail	96,800	74,519	78,883	96,308	84,314	97,122	101,949	29,527
	Lorry	8,523	47,521	45,048	49,461	79,649	105,433	154,853	49,550
	(%)	(2.9)	(13.9)	(15.4)	(15.6)	(15.6)	(22.4)	(24.4)	(25.7)
Recorded Slaughter North plus Export to South for Slaughter		880,846	983,636	920,587	868,661	987,756	914,229	1,495,594	441,389

Source: Nigerian Livestock and Meat Authority from data supplied by State Ministry of Agriculture and Natural Resources

TABLE 5

Controlled Cattle Imports to Nigeria by Indicated Years
(No. of Head)

Country of Export	Year 1966	1967	1968	1969	1970	1971	1972	1973
Niger	199,101	185,016	221,519	245,790	248,137	257,035	258,746	253,288
Chad/Cameroon	66,138	43,744	35,315	28,423	22,671	23,449	25,000	30,000
Dahomey	702	1,270	1,171	628	5,240	1,950	2,300	1,824
TOTAL	265,941	230,030	258,005	274,841	276,148	282,434	286,046	285,112

Notes:

1. Basic data from Nigerian Livestock and Meat Authority - Kaduna
2. Chad/Cameroon data for 1972/1973 represents author's best effort to rationalize situation.
3. Some data missing in all years and not all imports are recorded.
4. First quarter imports for 1974 declined 21% from same period in 1973.

TABLE 6

Quarterly Recorded Livestock Slaughtered
in
Northern Nigeria - 1973

(No. of Head and % by Species)

Species	1973 First Qtr.	Second Qtr.	Third Qtr.	Fourth Qtr.	Total	%
Cattle	199,416	170,020	216,375	276,197	862,008	31.7
Sheep	87,361	80,236	95,990	143,618	407,195	15.0
Goats	308,754	315,535	368,741	411,544	1,404,594	51.8
Pigs	4,775	5,105	6,345	7,109	23,334	0.9
Camels	2,003	5,578	4,379	3,556	15,516	0.6
TOTAL	602,309	576,484	691,830	842,024	2,712,647	100.0
Percent	22.2	21.3	25.5	31.0	100.0	

Notes: 1) Most sheep and high % of goats slaughtered on unrecorded basis for home consumption and/or in connection with feasts and celebrations. 2) Neither indicated quarterly slaughterings nor limited available price data indicate panic sales.

THE LAKE CHAD BASIN

I. Physical Characteristics and Water Resources

The Chad Basin is a huge inland basin collecting water from a roughly circular area over a thousand miles across, and involving seven nations: Chad, Nigeria, Cameroon, Central African Republic, Niger, Libya, and Republic of Sudan. The Basin holds one of the world's largest reservoirs of ground water. The lowest part of the Basin is the Bodele depression about 150m above sea level and this basin is connected by a quite straight channel, the Bahr el Ghazal, to Lake Chad at 282m above sea level.

The main supply of water comes from the Chari and Logone Rivers which drain the wetter south-eastern part of the Basin. In a normal sequence of years the Basin is in approximate hydrological balance, some 46 billion m^3 of water is added each year: 40 billion from the Chari and Logone; rainfall on the Lake contributes 3-4 billion m^3 and Niger's rivers account for most of the rest. Over 41 billion m^3 are lost by evaporation from the Lake's surface each year and the rest is lost through seepage through margin sand dunes.

The Lake is shallow with an 3.5m average depth and maximum depths not exceeding 8m in high level years. There is thus a delicate balance in the whole system. If major abstractions of water are made artificially or if a series of dry years greatly reduces the flow, major changes in lake level are likely.

The Lake, which is shared between Nigeria, Cameroon, Chad, and Niger, thus fluctuates considerably. During a 'normal'year lake levels are 0.9m higher in December and January than in June and July. The difference between 100-year wet and dry years is about 4.2 meters, the difference in area from 10,000 km^2 to 25,000 km^2. In the recent drought in 1973 there was a very low flow from the Chari River which resulted in the Lake splitting into two separate bodies of water.

An unusual feature of Lake Chad, when compared with other lakes of semi-arid areas, is that the water is not saline. The salt content in the south is 60-170 ppm and in the north 200-250 ppm. This is of course excellent for irrigation. The reason for the continued freshness of the lake appears to be that the sub-surface flow (about 10% of total input) removes most of the salt brought in each year.

The Lake Chad Basin thus constitutes a very large water resource in the heart of Africa, about double the water supply of the Colorado River in the U.S.A. Part of this resource is potentially available in stream flow form to Nigeria, Cameroon, Chad and C.A.R.; part is available as underground resources to the areas around the Lake; and part is stored in the Lake itself.

In contemplating more intensive utilization of these water resources it is important to maintain the ecological balance of the system. For example, the UNESCO/UNDP Report (Study of Water Resources in the Lake Chad Basin 1966-1970, Paris 1971) advises that only a limited amount of water can be drawn for irrigation in the Lake Chad Basin without depleting reserves. It is important to remember that a primary source of protein in the Chad Basin is fish. About 100,000 tons of fish a year are estimated to be harvested from the Lake, enough for the protein needs of three million people. Any 'modern' agriculture which interferes with fish production is therefore ill advised.

Another potential problem is a natural one. The Benue head-waters make a large indent in the shape of the Lake Chad Basin, and at high flows the Lagone River spills over a low divide into the Benue Basin. The Benue appears to have progressively diverted the flow of Logone Basin water and more permanent diversion of the main stream could result from a major flow event which initiated a new channel across the divide. Some protection measures may be necessary and would be a significant step in preserving the hydrological ecological balance of Lake Chad.

In the wetter climatic phases of the Pleistocene period the Lake Chad Basin has been occupied by enormous lakes, one almost as large as the Caspian Sea. The Chari River built up a large delta, over 40,000 sq. km in area, in association with a lake with shores at 380-400 m above sea level. Another more recent lake covered the area below 320m above sea level.

The hydrology of the Logone and Chari Rivers is affected by the landscape associated with these old lakes. A considerable part of their water floods overbank in the old delta area several hundred kilometers south of Lake Chad and floods on both the Logone and Chari Rivers cause considerable damage to crops and interrupt communications.

Even more so than in most other drainage basins, there is a need to look at the Basin as a whole and organize its development within the framework of a comprehensive view of the resources available.

II. National and Organization Context of Chad Basin Development

Four countries, Nigeria, Niger, Cameroon and Chad, share the waters of Lake Chad and are involved in the development of the lands surrounding the Lake. To assist in coordination of the development of the Basin the Lake Chad Basin Commission has been formed. Among other activities the Commission, in cooperation with FAO and UNDP, has established one agricultural development center in each of the countries.

Within Chad SODELAC is a para-statal body set up by the Government of Chad to develop the Lake. SODELAC is in financial difficulties, but is managing an experimental farm at Matafo and some small-scale polder development.

Both organizations and the governments are faced with a number of fundamental problems in their attempts to develop the water resources of the Chad Basin. These water resources and the land of the Basin may in the long run constitute a major resource for regional and wider food production. But before such goals can even be properly assessed much planning and developmental work needs to be carried out.

One basic problem is distance: if goods are produced for export a high transport cost is to be added; if fuel and other items are to be imported again a major extra cost is involved. Routes from Chad's major economic centers, for example, are between 1,500-3,000 km long; all except road transport by desert roads, involve transshipment.

Transportation, markets and changes in population size and distribution are all important parameters in any water resource development.

Another important problem is the allocation of development opportunities between the four countries concerned. The intimate sharing of the Lake's waters, four ways, makes this important.

A final problem is the role which isolation plays in the management and operation of development projects. Indigenous technical personnel are relatively few and there tends to be considerable discontinuity in the availability of expatriate technical advisors. A major training component is important in any development project; it is particularly so in the Chad Basin where problems of maintenance and replacement of equipment and personnel loom even larger than elsewhere in Africa.

III. Development Opportunities

The most important development opportunities appear to lie in agriculture, though potential for hydro-electric power does exist on the Logone and Chari Rivers. Although ground water studies of the Basin have been carried out by UNESCO/UNDP and a great deal of hydrological, geological and biological data has been collected by French, British, and U.S. organizations, the process of tying these into a long range plan of operation has only just begun. Every support should be given to the Lake Chad Basin Commission in the next stage of its activities.

A comprehensive planning study of alternative uses of all the water resources of the Lake Chad Basin, including irrigation in different regions, power, navigation, fisheries and water for people and animals is essential because of the close interrelation between river flow, lake levels and ground water.

The costs and benefits of concentrating use of water in the southern regions, i.e. the Chari and Logone delta and valley areas, rather than around the lake shore need special consideration.

The possibility of longer run changes in the supply of water to Lake Chad because of climatic change is an important consideration.

Given the world food situation it is clear that in the long-term the resources of this area can be more than locally important. The basis for their utilization is:

i) a better understanding of the systems involved
ii) an acceleration in training programs
iii) the beginning of upgrading of transport systems in coming years.

Development Around Lake Chad

Many of the bottom lands, locally called polders, around the Lake are farmed for cereals and other crops. Some polders are irrigated, in others water is available to crops from a shallow water table. Polders quite rapidly lose their fertility due to salt enrichment of the soil and a kind of shifting cultivation is carried out. Yields are very high for a few years (two tons wheat per hectare) and as they drop off, the farmer moves to another area. Since 1951, the number of barrages holding back water from the polders has steadily increased and by 1966 about 15,000 ha. were in polders.

SODELAC was created to increase the flow of wheat to the Ndjamena flour mill. Many other crops are grown; millet, corn, and onions are the most important.

Alternative schemes have been proposed for further polder development. A SODELAC proposal attempted to set up a scheme of permanent agriculture in the polders and experimental plots suggested a wide range of possible crops including citrus. The building of dykes and concrete canals, together with essential provisions for drainage, raised the cost to $5,000 per ha. for a 3,000 ha. project. Dr. R. Revelle has proposed a much more simple project involving small low-lift pumps and shallow hand-dug wells which would cost in total about $1,000 per hectare and this proposal is now under more detailed study by Meta Systems, Inc.

Observers with considerable experience in the area suggest that: i) Chad is generally self-sufficient in agricultural products, although local shortages occur because of internal transportation difficulties; ii) polder development on a large scale faces many environmental, cultural, political, legal and economic difficulties; iii) that agricultural development is best promoted nearer Ndjamena because of high internal transport costs as the polders are 400 km away; and, iv) cost problems of marketing are a major constraint.

The study which Meta Systems, Inc. is engaged in should provide a useful insight into what is and is not feasible. At first sight, it appears that while experiments with productive agriculture in the Lake Chad region should go ahead, much effort needs to be given to solving basic communication problems before new patterns of agriculture can be very effective.

The long-range perspective is important in the Lake Chad area, and attention to overall potential and the beginnings of training and experiment in small-scale, even micro-scale, projects should be the focus of AID in the next few years.

SUMMARY

The Chad Basin is an important source of water resources for Chad, Niger, Nigeria, and Cameroon. Fish production is a major current benefit, and in addition, 15,000 ha. of land are cultivated in lake-side polders. Much attention has been focused on the lake polders as a possible project area with the aim of greatly increasing wheat production.

These studies should continue, but it is important that:

i) USAID encourage a better analysis of the medium- and long-range options available for water resource use in the Basin;

ii) small-scale experimentation/projects in several areas away from the lake shore be considered;

iii) with a view to long-range utilization of water resources, consideration be given to a study of a variety of ways of dealing with the fundamental isolation and communication problem.

CAMEROON
MACRO-ECONOMIC ASSESSMENT

I. Overall Performance of Economy

For a decade after independence Cameroon made remarkable economic progress, based on sustained expansion in agriculture, manufacturing, commerce and construction. During the Second Five Year Plan (1966/67-1970/71), the gross domestic product rose at an annual rate of 11% at current prices, or 7.7% in real terms. The annual increase in real per capita income during the Second Plan were 5.7%, exceeding the 3.5% target increase required to reach the goal of doubling per capital income between 1960 and 1980.

The economy's momentum began to slacken during the final year of the Plan owing to a shortfall of agricultural exports caused by a deterioration in cocoa prices and adverse weather conditions. In 1971/72 and 1972/73, the real GDP growth rate per capita was only 2.4% and 4%, respectively, compared to a 2.1% population growth rate. Growth in manufacturing and commerce also lagged. With the notable exception of tranportation and government services, economic activity experienced a general slowdown until the end of 1973, when a spurt in exports, stepped-up government expenditures and easing demand pressures began to revive the economy. Because the economy is so responsive to external prices, the effect of higher export prices, coupled with growing import bills caused by oil prices and world-wide inflation, is difficult to predict.

The resumption of the spectacular growth rates witnessed in the 1960's is also hampered by the fact that Cameroon was relatively undeveloped before independence. The remarkable expansion of export crop production during the 1960's may have reached a ceiling imposed by the necessity for food crop production. Similarly in the manufacturing sector, the best possibilities for import substitution have been largely exhausted during the 1960's. However, Cameroon has a large potential market both internally and within the context of UDEAC. With wise development policies and the encouragement of foreign investment, the economic momentum of the 1960's may yet be revived.

A. Sectors of GDP

Agriculture is by far the most important economic activity in Cameroon, accounting for 37% of GDP, and leading the export sector with 76% of export earnings in 1973.1/ Together with forestry, animal husbandry and fishing, it provides the source of livelihood for about 75% of the population. Furthermore, agricultural commodities form the basis of the country's principal processing and manufacturing industries. The real growth rate of agricultural production was 9.7% in 1972, compared to 7.5% in 1971.

1/ See Table I, Appendix, for a breakdown of GDP by traditional and modern sectors. The value of the CFA franc has shifted in terms of the dollar from $1 = CFA 223 in October, 1974 to $1 = CFA 208 as this went to press in March, 1975.

Cocoa and cocoa products, coffee and lumber are the predominant export crops, accounting for 29%, 26%, and 13%, respectively, of exports in 1973. Cotton (3% of exports), rubber, bananas, palm kernels, palm oil and groundnuts comprised the remaining 8% of total exports derived from agriculture. Cocoa production has been declining since 1971/72 owing to adverse weather and aging trees. Cotton production has declined since 1969/70, mostly because of reduced acreage, the remainder being devoted to food crop production. Coffee, bananas, groundnut and rubber production shows slight upward trends.1/

Food crop production expanded through 1972 for all crops except millet and sorghum, which declined by 25% between 1968 and 1972.2/ Most food crops are consumed locally. Although there is no overall food shortage in the country, there have been deficiencies of supply in remote areas suffering from poor climatic conditions compounded with dense populations, inadequate storage facilities and bottlenecks in transportation and distribution. Urban centers have also experienced shortages stemming from inadequate production of rice, wheat, and other items for which there is a growing urban demand.

Millet and sorghum are the most important cereals and are grown mainly in the northern part of the country for purposes of subsistence consumption. Production has consistently decreased from 480,000 MT in 1968 to 356,600 MT in 1972. Maize is the second most important cereal, showing a consistent increase in production to 298,300 MT in 1972, surpassing the Plan target. The major tuberous starches are macabo, taro, manioc, yam, and sweet potatoes.

Rice production attained 15,300 MT in 1972, far from the estimated 28,000 MT consumption predicted for 1975. In light of sharp increases in consumption, the government is devoting considerable effort to the expansion of rice production, principally at the SEMRY project in Yagoua. The project is expected to bring 4,300 hectares under cultivation, as well as the addition of a rice processing mill, and is financed by IDA, FAC, and CCE. Feasibility studies in other areas are under way.

Sugar cane production has nearly tripled since 1966 to 125,000 MT in 1972. Industrial processing reached its capacity output of 15,230 MT in 1973, compared to a consumption rate of 22,000 MT. Present plans to expand refining capacity to 22,000 tons by 1976 will nonetheless fall short of the 40-50,000 ton level of domestic consumption.

Although Cameroon has good potential for livestock development, production at present levels faces problems of tsetse infestation and traditional grazing methods. The northern grasslands and the Adamaoua Plateau are the

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1/ IMF, Cameroon: Recent Economic Development, SM/74/187, July 31, 1974, p. 9 and 50.

2/ IMF, p. 6 ff.

major livestock producing areas with an estimated 2 million head of cattle. Other forms of livestock include 3 million sheep and goats, 400,000 pigs, and 7 million poultry. Although practically self-sufficient in meat, Cameroon imports some 200 tons of high quality meat annually. The government is making considerable effort to raise quality through investments in sanitary facilities and cattle-breeding projects.

The fishing catch for 1972 is estimated at 82,000 tons, of which 60,000 is undertaken by traditional methods. Substantial amounts of fish are imported (CFAF 649 million in 1972) to supplement the domestic supply. The government envisages an investment of CFAF 1 billion in the Third Plan to expand industrial fishing, to develop fish breeding in rural areas, and to modernize small craft fishing.

The industrial sector in Cameroon is relatively well developed, accounting for 22% of GDP in 1973, and showing a 16.3% increase in current prices (9% in real terms), compared to 7.1% in 1972. Manufacturing enterprices comprised 14% of GDP and are concentrated around Douala. Manufacturing consists mainly of foreign-owned agricultural processing and consumer goods industries (food, beverages, tobacco, textiles, shoes, chemicals, plastics, and electrical goods) producing for local markets and for export to UDEAC countries and Chad. The only heavy industry is a French-owned aluminum smelter plant at Edea which imports alumina from Guinea. Aluminum and aluminum products processed by two subsidiary companies into building materials and household utensils accounted for 8% of total exports between 1971-73.

Under the Second Plan, 90% of investment was private. Value added by manufacturing increased 12% per annum in current prices during the five-year Plan period, slowed to 7% in 1971-72, reflecting a general decline in GDP, and seemed to have accelerated in 1972-73. (See Appendix, Table II).

Mining is of limited importance and is restricted to small quantities of casserite, gold, and non-metallic minerals. The exploitation of significant deposits of bauxite in the Adamaoua area and in West Cameroon near Dschang is under consideration. Oil prospecting is being conducted along the coast between Victoria and Douala.

The service sector accounted for 41% of GDP in 1973, of which commerce was 31%, transportation and communication 5.7%, and the public sector 4.3%.

The government-sector accounts for 4.7% of GDP. The official estimate for 1970 was that there were about 208,000 (46% of total employment) gainfully occupied persons in public administration and related activities. Recorded wage employment, however, was only 51,340 (30% of total) in the public sector.1/

1/ Area Handbook for the United Republic of Cameroon, U.S. Government Printing Office 1974, p. 193.

B. National Product

1. Trade

Cameroon's trade balance has generally been in deficit since the mid-1960's, with exceptions in 1968, 1969, and 1973. Recent deficits stemmed from a decline in agricultural production caused by unfavorable weather, combined with a deterioration in cocoa prices. Following the economic slump of 1970/71, the government resorted to increased public investments to stimulate the economy, widening the external resource gap to $67 million or 5% of GDP in 1971/72. In 1973, the sharp recovery of cocoa and other export prices improved the value of exports by 40%, resulting in a $13.8 million trade surplus.1/

Receipts from cocoa fluctuated in correspondence to world price movements. Cocoa production expanded by only 1% to 2% since 1965, while receipts for cocoa exports increased 28% annually between 1965 and 1969, fell by 16% in 1970 and 1971, and recovered by 45% in 1973.2/

Coffee earnings were determined by volume rather than price in the late 1960's when the volume of exports rose by 10% per annum. Subsequent developments reflect contrary movements in volume and prices, as receipts rose by 15% in 1970 despite a 9% drop in volume, and remained constant in 1971 although the volume declined by 23%. Receipts increased slightly in 1972 despite a 30% gain in volume, while in 1973 both volume and a price recovery boosted earnings by 31%.

Log exports have increased dramatically from an average $10.5 million in the late 1960's to $36.0 million in 1973. Both prices and volume contributed to this increase.

Aluminum exports have remained stable at about $20 million in recent years, although the share of processed products has increased. Cotton exports have declined since a peak in 1970, reflecting a sharp drop in production. The combined receipts of rubber, bananas, palm kernels, and groundnuts have also declined to 5.5% of exports compared to 14% in 1965. Cattle exports also declined by over 50% between 1972 and 1963 to less than $4 million.

Imports rose at an annual rate of 4% in the early 1970's compared to an average of 10.5% between 1965 and 1970. Manufactured consumer goods for industry and households accounted for 39% of imports in 1973. Capital equipment accounted for another 28%, while semi-finished goods and foodstuffs comprised 13% and 10% respectively.3/

1/ IMF, p. 2 and p. 50.

2/ IMF, p. 51.

3/ IMF, p. 52 and 106.

The slower growth rate of imports affected mostly manufactured goods, which grew at less than ten percent between 1971 and 1973. Food imports expanded by six percent, as did semifinished goods, fuel, and raw materials, while imports of capital equipment expanded by five percent.

The direction of trade leans heavily towards the European Economic Community which received 68.6 percent of exports, and provided 65.3 percent of imports in 1973 (of which France accounted for 28.5 percent of exports and 47.4 percent of imports). The United States follows with 7.5 percent of exports and 9 percent of imports. About 16 percent of trade is with African countries, of which trade within UDEAC accounts for 11.1 percent. 1/

Although the trade balance is occasionally positive, the current account balance has been consistently negative owing to services and private transfers. The services deficit widened from $14.6 million in 1971 to $17.2 million in 1972, and an estimated $20.0 million in 1973. Private transfers have also increased by approximately $2 million per annum since 1971. Thus Cameroon's holding of official foreign reserves has decreased from $80.8 million in 1970 to $42.4 million in 1973.2/

2. Consumption of GDP

The proportions of GDP which are consumed and invested appear in Table III (Appendix). Overall consumption in 1973 was 90.1 percent of GDP, while gross investments were 13.4 percent. The resource gap of 3.5 percent of GDP was filled by foreign aid and by a decline in reserve holdings.

Government investment has focused on the transportation system and the industrial sector (mostly energy), with lesser investments in rural development, technical education, and social services. Ninety percent of investments in the private sector is foreign, and private investment fell far short of planned levels during the Second Plan.

External assistance amounted to $167 million between 1965 and 1969, of which grants by FAC accounted for 40 percent and by FED for 25 percent. Loans comprised 24 percent of total aid, mainly from the Caisse Centrale, USAID, and the Kreditanstalt fur Wiederaufbau. World Bank disbursements have risen since 1970, amounting to over $36 million between 1971 and 1973. The principal FAC, FED, and CCCE operations since 1970 include road and railway construction, telecommunication, the SEMRY rice project, water supply, energy and equipment for universities. 3/ Canadian aid amounts to $7 million per annum. The UNDP Indicative Planning Figure amounts to $7.5 million for the five-year period beginning 1972.

1/ IMF, p. 107./

2/ IMF, p. vii.

3/ EEC, Rapport des Conseillers Commerciaux en Poste au Cameroon, 30 June 1974, pp. 23-24.

3. Government Expenditures

After several years of steady improvement, Cameroon's overall fiscal performance showed a significant deterioration in the early 1970's. Until 1971 current budgetary surpluses caused by increased revenues and stable operating expenditures permitted large amounts of resources to be made available for the financing of capital outlays, and to the Treasury. Beginning in 1971 a marked expansion in government operations and declining revenues reflecting the sluggishness of the economy weakened fiscal performance considerably. Despite a small current budgetary surplus, rising debt services changes and capital outlays created a deficit of $2.5 million. Predictions for 1973 indicated a further weakening of the situation.

Table IV and Table V in the Appendix show the sources of government revenue. During the seven-year period 1967-1973, revenue expanded by an annual compound rate of 9.6 percent, rising more rapidly than GDP.

Recurrent expenditures are broken down by Ministry in Table VI. After the Ministry of Armed Forces, (13.1 percent in 1974/75), the Ministry of National Education (12.4 percent) receives the largest allocation, followed by the Ministry of Public Health (6.5 percent).

C. Human Resources

The estimated population for Cameroon in 1974 is 6.3 million. The population growth rate is 2.1 percent per annum, and the government has established a goal of 10 million people. Seventy-five percent of the population is rural, but with an annual urban growth rate of 7 percent, rural population is expected to decline to 62 percent by 1985. In 1974, Douala held 5.4 percent of the total population, while Yaounde claimed 3.6 percent.

The age structure of the population is bottom-heavy, with 51.4 percent of total population under the age of 20, and 43.6 percent between the age of 20 and 59.

Recorded wage employment in 1970 was only 169,670 persons or 7.06 percent of working age population. Of these, 51,340 were in the public sector; 41,360 in the rural sector; 34,250 in industry; and 42,720 in private services, commerce and transportation. The official estimate for employment in 1970 claimed 455,000 gainfully employed, or 19 percent of working age population, of which 208,000 were in the public sector. 1/ The cause of this apparent statistical conflict is not clear, although it may be caused by the inclusion of traditional sector employment, which is considerable since 54 percent of GDP in 1973 was derived from the traditional sector (see Table I, Appendix). Unemployment mostly in urban areas, is estimated at 200,000, or about 8 percent of working age population. Underemployment in rural areas is unknown.

1/ Area Handbook for the United Republic of Cameroon, U.S. Government Printing Office, Washington, D.C., 1974, pp. 193-4.

II. Government Priorities

The basic economic goal of the Cameroon government since independence has been to double per capita real income by 1980. In pursuing this goal the government is committed to equity among regions, sectors and individuals. Of prime priority in the third Five-Year Plan (1971-1976) is rural development which directly affected 75 percent of the population at the beginning of the Third Plan in 1971, and is the mainstay of the economy. Objectives within the goal of rural development include: 1) concerns with national food requirements and with export earnings to provide foreign exchange for essential capital and consumer goods; 2) price stabilization; and 3) the up-grading of rural living and working conditions to stem internal migration.

The second priority is industrialization which is recognized as essential not only to satiate consumer demand, but to foster rural development by providing a market for agricultural products.

Education and training, geared towards local realities, are viewed as essential to the political, social, and economic welfare of the nation.

Public Health, social welfare, tourism and commerce are also goals of the Third Plan.

The financing of the Plan is expected to be 51.6 percent public, of which a third derives from State bonds, a half from foreign loan and subsidies, and the remainder from income generated by public enterprises. Private investment is expected to be 82 percent by enterprises and 18 percent by households.

The sectoral breakdown of planned public expenditures is:

Transportation and Communication Infrastructure	38%
Education	13%
Agriculture and Rural Development	13%
Industry, Mining, Energy	10%
Urbanism	13%
Other	13%

The capacity of the government to meet Plan targets may be seriously weakened by the economic slump of the early 1970's and the resulting weakened fiscal performance of the government. Performance during the Second Plan, when actual growth rates exceeded target growth rates, is largely attributable to the economic boom of that period. Planned public investment during the Second Plan achieved targets only in administrative capacity investments

(190 percent of target) and studies (111 percent of target). All other areas fell short: rural production investments were only 9.2 percent instead of 19.4 percent, or 57 percent of the target, while health and welfare expenditures were only 6.7 percent, or 35 percent of the target figure. Despite these set-backs, the Cameroonian government has demonstrated both the will and the capacity to promote the development of the country.

Private investment, an important component of the Plan, is actively promoted by the government. Ninety percent of investments in manufacturing are private, although government bodies (the Cameroon Development Bank and the National Investment Society) participate in many ventures. The government has attempted to make credit available to Cameroonians, resulting in the establishment of small and medium-sized Cameroonian enterprises. The Cameroonization policies of the government with respect to personnel are moderate since the government is sensitive to the possibility of alienating potential investors. Private investment fell in the early 1970's, reflecting the economic slump, but picked up again in 1973. Investment has been minimal, despite the American receptivity.

American investment has been almost non-existant. A proposed pineapple operation by a U.S. firm was not carried out owing to disappointing market surveys in Europe. A major constraint appears to be the lack of Cameroonian organization which would facilitate communication with American businessmen. Government structures are complex and unfamiliar to American investors. USAID might take measures to ameliorate this situation by encouraging the establishment of facilities in OPIC or the Export-Import Bank which would familiarize American investors with the investment process in Cameroon and demonstrate the opportunities that exist within Cameroon's expanding economy.

The attitude of the Cameroon government toward regional integration is very favorable, since Cameroon's economy is the strongest in the region. Neighboring countries in the Central African Customs Union (UDEAC) and Chad, which withdrew from UDEAC in 1970, fear domination by Cameroon. Cameroon has trade surpluses with both Central African Republic and Congo, although it bears a net deficit trade position with Gabon. Attitudes with respect to real economic integration based on complementarity are less enthusiastic, since Cameroon would like to have its own industry (including an oil refinery) rather than to be dependent on neighboring countries.

Cameroon's attitude towards France is more independent than that of its neighbors. In July 1973, Cameroon withdrew from OCAM (Organization Commune d'Afrique et Malgache), a largely cultural organization dominated by France. Soon after, Cameroon withdrew from the francophone African Tourism Development Organization. Economic independence from France is the ultimate goal, and is being sought through independent stances in monetary and economic matters.

TABLE I
GDP BY SECTOR
(billions CFAF current)

Sector	1969-70 Trad.	1969-70 Modern	1969-70 Total	1969-70 % GDP	1972-73 Trad.	1972-73 Modern	1972-73 Total	1972-73 % GDP	% Growth 1970-1975
Primary Sector	79.7	9.0	88.7	35.6	102.7	12.6	115.3	36.8	30.0%
1, Primary producing (plant, animal)	79.7	8.1	87.8	35.2	102.7	11.6	114.3	36.5	30.2
2. Extractive Industry		0.9	0.9	0.4		1.0	1.0	0.3	-88.8
Secondary Sector	19.9	36.6	56.5	22.6	19.3	52.6	71.9	23.0	27.3
3. Manufacturing Industry (organic prod.)	4.7	17.5	22.2	8.8	5.5	23.9	29.4	9.4	32.4
4. Manufacturing Industry (minerals, rubber)	1.5	8.9	10.4	4.2	2.0	12.0	14.0	4.5	34.6
5. Construction	8.2	7.0	15.2	6.1	5.3	10.9	16.2	5.2	6.7
6. Utilities, health services	5.5	3.2	8.7	3.5	6.5	5.8	12.3	3.9	41.4
Tertiary Sector	43.0	61.5	104.5	41.8	46.0	79.9	125.9	40.2	20.5
7. Financial Institution		1.4	1.4	0.6		0.2	0.2	0.1	-55.7
8. Transport, Communications		14.2	14.2	5.7		18.5	18.5	5.9	30.3
9. Services		9.2	9.2	3.7		11.5	11.5	3.7	25.0
10. Commerce	43.0	36.7	79.7	31.8	46.0	49.7	95.7	30.5	20.0
TOTAL	142.6	107.1	249.7	100.0	168.0	145.1	313.1	100.0	25.4

Source: Direction de la Statistique

TABLE II

CAMEROON: BUSINESS TURNOVER OF SELECT MANUFACTURING ENTERPRISES

Sector	(millions of CFA francs) 1967-68	1972-73
Food, Beverage, Tobacco	11,875	28,773
Textiles, Shoes	4,635	10,118
Wood, furniture	356	1,558
Printing	457	528
Chemical, cement, plastic	1,885	7,603
Metallurgical, Mechanical	6,982	12,794
Electrical goods	1,294	2,388
TOTAL	27,484	63,362

SOURCE: IMF, "Cameroon - Recent Economic Developments,"SM/74/187, July 31, 1974, p. 19, and Rapport des Conseilleurs Commerciaux des Pays Membiers de la Communaute Europeenne en poste au Cameroun, 30 Juin 1974, p. 7.

TABLE III

SOURCES AND USES OF NATIONAL INCOME

	(billions CFAF)			
	1969-70	Percentage	1972-73	Percentage
SOURCES: GDP	249.7	80.4%	313.1	80.2%
- non-monetary	46.3	14.9%	52.2	14.2%
- monetary	203.4	65.5%	257.9	66.0%
Imports	61.0	19.6%	77.5	19.8%
TOTAL Sources	310.7	100.0%	390.6	100.0%
USES:				
Houshold Consumption	189.9	61.1%	268.5	63.6%
- Auto Consumption	41.5	13.4%	51.4	13.2%
Administration	12.7	4.1%	13.3	3.4%
Gross Capital Formation	35.3	11.4%	52.0	13.3%
- Enterprises	20.5	6.6%	35.0	9.0%
- Administration	7.3	2.3%	9.5	2.4%
- Households	7.5	2.4%	7.5	1.9%
Exports	66.5	21.4%	66.5	17.0%
TOTAL Uses	310.7	100.0%	390.6	100.0%

SOURCE: Direction de la Statistique, Min. of Plan, unpublished.

TABLE IV

CAMEROON
CONSOLIDATED BUDGET
(billions of CFA francs)

	1966-67	1970-71	1972-73 1/	Percentage Total 1972-73
Current Revenue	31.9	52.1	61.1	100.0%
Taxes on income and profits	4.5	8.0	10.2	16.7%
Taxes on goods & services	23.4	34.8	41.5	67.9%
Other Tax revenue	1.2	1.9	2.4	3.9%
Current Expenditure	30.6	43.0	53.4	
Federal Government	19.4	29.0		
East Cameroon	9.0	11.1		
West Cameroon	2.2	2.9		
Current Surplus	1.3	9.1	7.7	
Public Debt Service	0.4	1.6	3.1	
Capital Expenditure	4.8	4.8	6.6	
BUDGETARY BALANCE	-3.9	2.7	-2.0	

1/ Provisional data.

Source: IMF, "Cameroon-Recent Economic Developments," SM/74/187, July 31, 1974, p. 37.

TABLE V

CAMEROON
NATIONAL REVENUE AND EXPENDITURE

	(billions of CFA francs)		Percentage *	
	1973-74	1974-75	1973-4	1974-5
Revenue				
Direct & Assimilated Taxes	16.0	18.9	21.5	22.5
Customs Duties	48.5	53.2	65.1	63.3
Registration & Stamp Taxes	3.2	13.7	4.3	4.4
Income from government land	.9	1.0	1.2	1.2
Postal & Telecom fees	3.3	3.6	4.8	4.2
Other public service fees	2.3	3.2	3.1	3.8
Contribution, Subsidies	.3	.3	.4	.4
TOTAL	74.5	84.0		
Expenditure				
Recurrent Expenditure	62.2	69.2	83.5	82.4
Capital Expenditure	12.3	14.8	16.5	17.6
TOTAL	74.5	84.0		

* Does not add to 100%, owing to rounding.

Source: AmEmbassy Airgram A-62, Yaounde, July 3, 1974

TABLE VI

CAMEROON
RECURRENT BUDGET EXPENDITURE

		(millions of CFA francs) 1973-74	1974-75	Percentage 1974-75
1.	Internal Administrative Debt	1,145	968	1.4
2.	Pooled Administrative Expenses	10,202	10,072	14.5
3.	State Participations	6,203	7,464	10.8
4.	Presidency	1,469	1,726	2.5
5.	Services Attached to the Presidency	4,000	4,433	6.4
6.	National Assembly	660	744	1.1
7.	Economic and Social Council	150	150	0.2
8.	Ministry of Territorial Administration	2,577	2,842	4.1
9.	Ministry of Foreign Affairs	968	1,053	1.5
10.	Ministry of Agriculture	2,218	2,611	3.8
11.	Ministry of Commercial & Industrial Dev.	410	489	0.7
12.	Ministry of National Education	7,331	8,606	12.4
13.	Ministry of Animal Husbandry	538	631	0.9
14.	Ministry of Employment & Social Insurance	289	329	0.3
15.	Ministry of Equipment, Housing & Lands	3,463	3,678	5.3
16.	Ministry of Finance	3,256	3,464	5.0
17.	Ministry of Public Service	518	601	0.9
18.	Ministry of Armed Forces	7,579	9,089	13.1
19.	Ministry of Information & Culture	631	674	1.0
20.	Ministry of Youth & Sports	735	809	1.2
21.	Ministry of Justice	770	818	1.2
22.	Ministry of Mines & Power	275	342	0.5
23.	Ministry of Planning & Territorial Dev	542	560	0.8
24.	Ministry of Costs & Telecommunications	1,844	2,023	2.9
25.	Ministry of Public Health & Social Insurance	3,952	4,504	6.5
26.	Ministry of Transport	480	520	0.7
	Total Recurrent Budget	62,200	69,200	

Source: AmEmbassy Airgram A-62, Yaounde, July 3, 1974.

CAMEROON
PHYSICAL CHARACTERISTICS

I. Climate

The United Repulic of Cameroon extends between the latitudes 2 degrees and 13 degrees north of the equator. As a result of this geographical position, its southern part lies totally within the equatorial climatic zone while its central and northern zones fall within tropical climates with marked seasonality in temperature and rainfall. The northern and central areas do not only experience a dry season which gets longer as we move further north, they also receive lower amounts of rainfall. Also, dependability on so called "normal" rainfall averages decreases northwards, since extreme variations are much more common than generally perceived. The latest Sahelian drought represents one of such variations and it is quite probable that such occurance can be repeated cyclically or otherwise every few years.

A. The Role of the ITF

The ITF (Inter Tropical Front) or the ITCZ (Inter Tropical Convergence Zone) plays a major role in the climate and rainfall regimes of Cameroon. The ITF position and migration throughout the seasons are responsible for rainfall pattern and distribution throughout most of the country. A brief and generalized description of the ITF follows since its understanding is important to this climatic section.

The ITF forms over equatorial areas on a linear-type belt as a result of excessive and efficient heating over these areas which receive maximal amounts of heat energy from sun's rays. The heating causes air masses to rise over this linear belt along equatorial areas. The upheaval of air masses along the ITF brings about the following results:

1. Cooling of rising air which, in turn, causes condensation, and precipitation in case the rising air contains moisture (if moved in from maritime origins). Such convectional rains occur after heating reached levels in the afternoon (on less forested areas[1]) and are associated with stormy conditions with high instability in the air masses.

2. The rapid rise of air leaves on the surface a relatively low pressure system which barely succeeds to get "replenished" by incoming air rushing from south and north. The nature of the incoming air masses will determine the degree to which the ITF may be intensified as a low pressure system: The greater

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[1] In more forested areas, heat retained keeps high temperature until late at night when convectional storms can be triggered and continued.

the contrast between such air masses, the further the ITF is intensified and established as a low pressure system which keeps attracting air masses from south and north.

As a general rule, most places under the ITF (whether permanently or seasonally) will receive rainfall, provided some air masses attracted to the area by this low pressure system originate from maritime vicinities and therefore carry the necessary moisture to be condensed as convection occurs.

B. The Seasonal Migration of the ITF

During spring and fall, maximal sun's rays efficiency lie very much within the equatorial areas, therefore, the ITF is positioned over these areas and bringing about the usual associated storminess and precipitation.

During northern summer, maximal sun's rays efficiency being north of equator (up to 23½ degrees) causes the gradual "migration" of the ITF to areas north of the equator, and therefore, brings about the associated storminess and precipitation to areas as far as 15 degrees or more north of the equator. Under such conditions during that time of the year, Central and Northern Cameroon receive their rainfall while the southern area is still receiving some rainfall, too, being at the margins of the ITF influence.

During northern winter, when maximal sun's rays efficiency is south of the equator, the ITF migrates southwards together with its associated precipitation leaving the area north of the equator without any rainfall. This is the basic situation in which northern and central Cameroon experience their dry season. However, southern Cameroon, being very close to the equatorial area, does not have a very distinct "dry season" and remains affected to a certain extent by the margins of the ITF both in summer and winter even though to a more limited extent. The so called "Petite Saison Seche" is described for some locations in southern Cameroon.

From the above description, the effect of the ITF becomes clear on drought in Northern Cameroon which can occur under any of the two following situations: 1) insufficient northerly migration of ITF in the rainy season (northern summer) or insufficient duration of its northerly position; or 2) inadequate attraction of wet air masses from south and southwest, or inadequate moisture content in these air masses, having lost some on the way since the central highlands "squeeze" some moisture out by forcing these air masses to rise while crossing them.

C. Orographic and Other Local Effects on Precipitation

The description of the ITF's role on rainfall patterns and distribution over Cameroon is adequate for the general regional aspects. However, some

specific effects have to be considered on the local scene. The orographic effect seems to be most responsible for higher rainfall values on higher altitudes; the western highlands receive much more rainfall than neighboring areas due to their elevation. Also, the Adamaoua Plateau receives relatively high rainfall due to its relief which induces storms and air instability.

D. Precipitation versus Evaportation[1]

For most of northern and central Cameroon, the dry season means the ITF is positioned on equatorial areas or south of the equator, attracting air from the Sahara in the north. The dry continental Saharan air called "harmattan" has very low relative humidity and therefore very high aptitude to absorb any available moisture on its way to the ITF "pump." This causes evaporation in the area to be very high. The example of Kousseri (Fort Fourean) can illustrate the situation where 700 mm of rainfall is counteracted by 3600 mm of evaporation. In the south, on the other hand, 4294 mm of rainfall in Douala is counteracted by merely 600 mm of evaporation.

E. The Rainfall Map of Cameroon

This map shows the following characteristics:

1. Highest[2] precipitation values in S.W. due to:

   a. proximity to maritime origin of air mass;

   b. area constantly affected by ITF and/or its margins.

2. High[3] precipitation value in western highlands due to altitude.

3. Adequate[4] precipitation values in south and central parts of the country, the central receiving higher values than expected as a result of its relief (Adamaoua).

4. Low[5] values in the Benoue basin.

5. Poor[6] values in the Chad basin lowlands.

F. Climatic Zones

Since rainfall alone does not determine the climatic types, the

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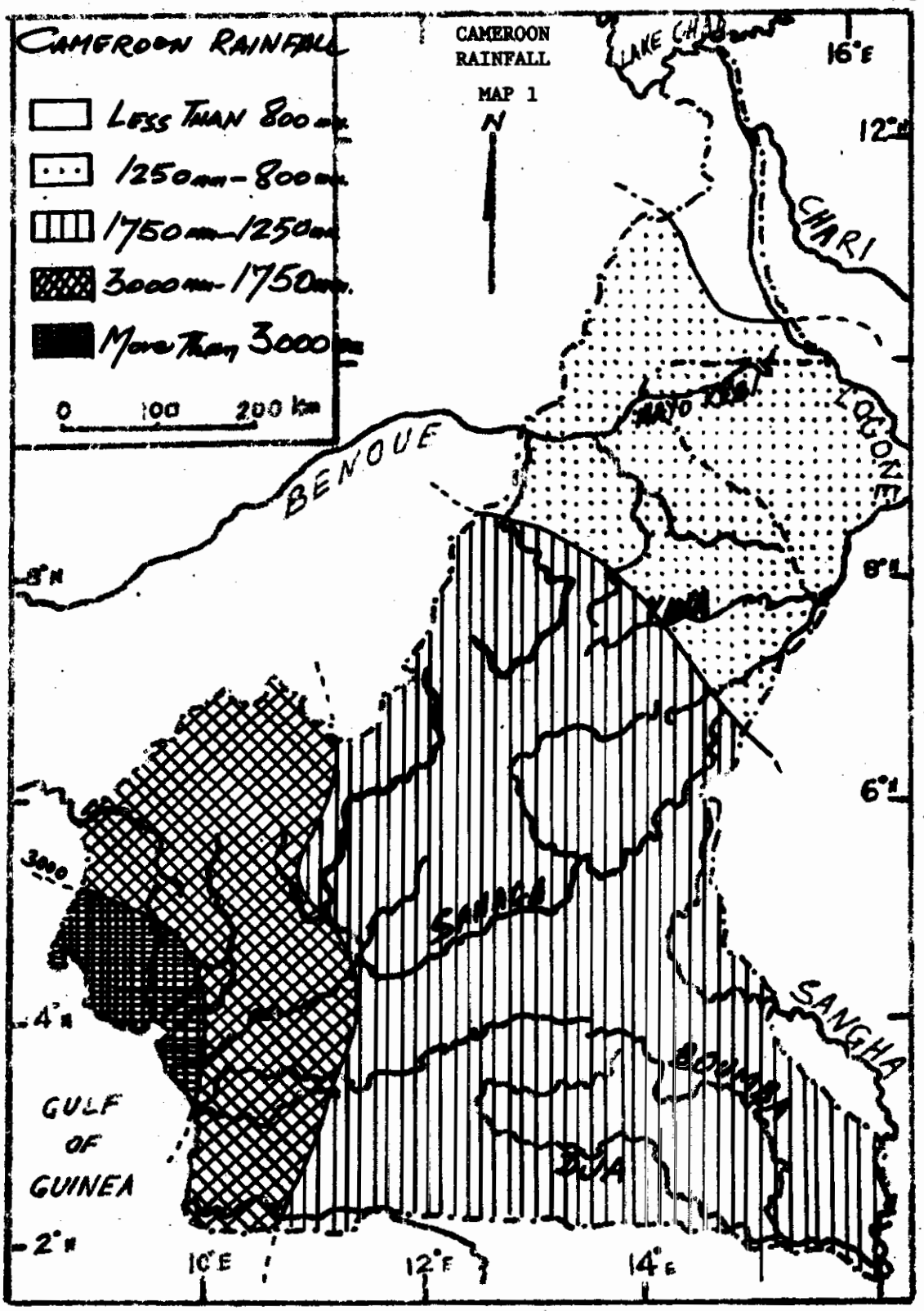
1- evapo-transpiration notions are not dealt with in this section.
2-above 3000 mm.
3-between 3000-1750 mm.
4-between 1750-1250 mm.
5-between 1250-800 mm.
6-below 800 mm.


CAMEROON RAINFALL
LESS THAN 800 mm
1250mm - 800mm
1750mm - 1250mm
3000mm - 1750mm
MORE THAN 3000
0 100 200 km
CAMEROON
RAINFALL
MAP 1
N
LAKE CHAD
16°E
12°N
CHARI
LOGONE
BENOUE
8°N
8°E
6°E
3000
SANGHA
4°N
GULF
OF
GUINEA
2°N
10°E
12°E
14°E

climatic zones map accompanying this report varies from the rainfall maps in several aspects, but basically repeats some of the basic outlines. Letters in the following listing coincide with letters on the respective regions of the map.[1]

A - Regions of Coastal Cameroonian type, in which relief is a modifier to a certain extent.

B - Regions of Coastal equatorial climatic type.

C - Regions of Cameroonian mountainous type climate, in which altitude is a dominant modifier.

D - Regions of Continental or Interior - Equatorial climatic type.

E - Regions of tropical climate alternating between dry and wet seasons of equal duration.

F - Regions of tropical climate with extended dry seasons.

G - Regions of arid tropical climate:

S-southern N-northern

(note that no designations such as Sahel, Soudan, Savanna, etc. are utilized here since this section deals with climate and not natural vegetation zones.)

II. Soils

A. Basic Conditions for Cameroon Soils

Geology and Rock Makeup: Most of Cameroon is made up of crystalline magnatic and metamorphic rocks and very little is made up of sedimentary formations. The volcanic flows, covering parts of the Adamaoua and the western region, further diminish the sedimentary areas by burying a good part of them. Therefore, soils derived from the existing rock patterns tend to be dominated by clay in the southern and central parts and sandy in the north.

The Climate: Rainfall and high temperature usually lead to laterization. In Cameroon, such conditions do not prevail further north of the Adamaoua; from there northwards, the "red" ferruginous soils are the result of aridity and are quite different from laterite. Under the dryer climate yet of the Mandara, soils are very meager since chemical and biological effects are very limited and only mechanical weathering prevails.

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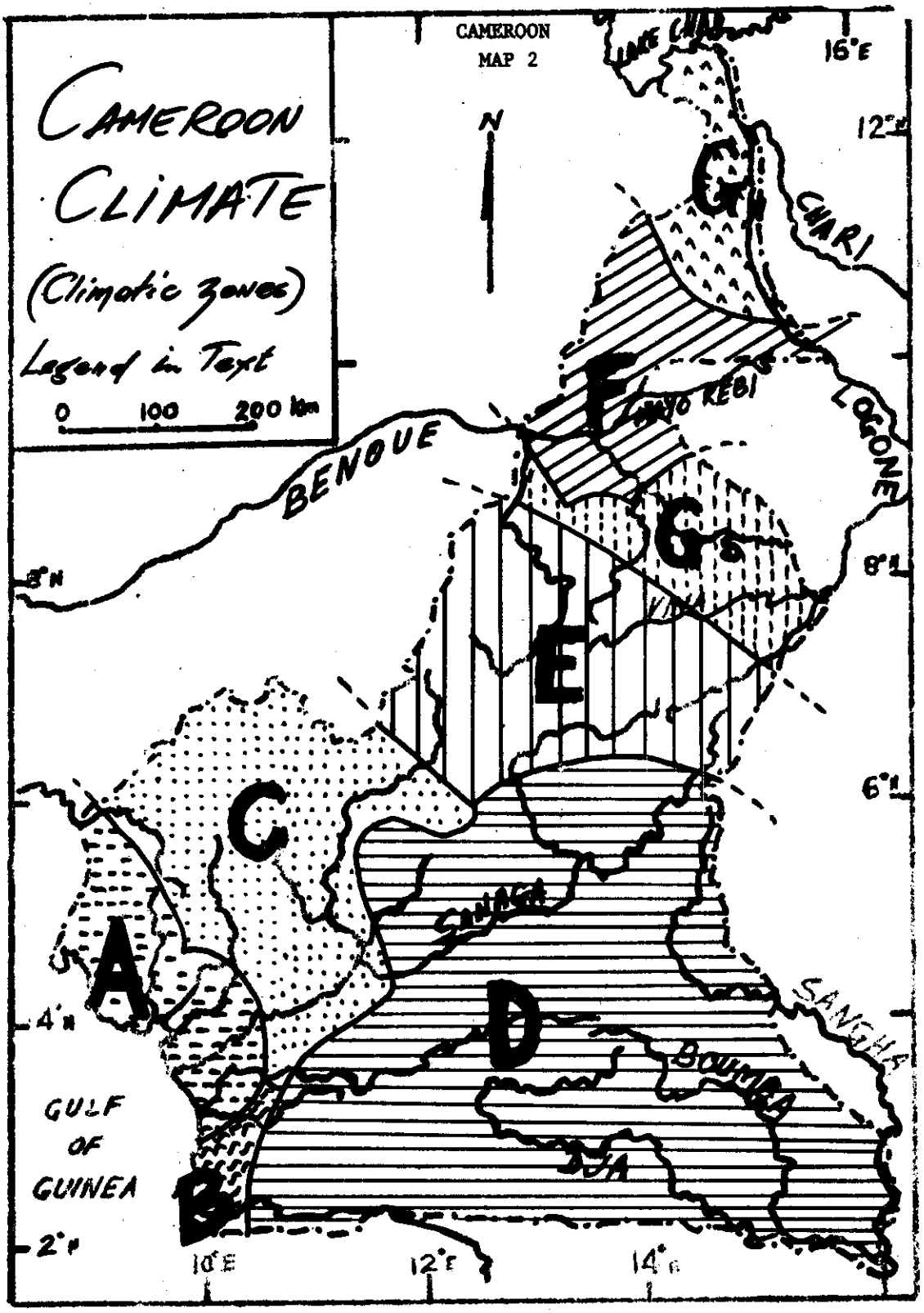
[1]This is adopted from a most recent classification (1972).


CAMEROON
MAP 2
CAMEROON
CLIMATE
(Climatic zones)
Legend in Text
0 100 200 km
N
LAKE CHAD
16°E
12°N
CHARI
LAMIDO REBI
LOGONE
BENOUE
8°N
8°E
6°E
4°N
2°N
10°E
12°E
14°E
SANGHA
BOUMBA
SJA
GULF
OF
GUINEA
A
B
C
D
E
F
G

The Relief: Good drainage is fundamental for good soils. Over the horizontal erosional surfaces of the Adamaoua, laterization develops towards the formation of duricrusts. Steep slopes on the other hand tend to accelerate erosion (as in the northern mountains and the deforested and intensly cultivated west). The better soils are either those located on moderate slopes or the alluvial soils along the valleys. However, alluvial soils in valleys and plains with weak gradients (such as the Logone and the Chad lowlands) tend to be hydromorphic and clogged; canalization and drainage become imperative for their utilization.

The Vegetation: The vegetation is a most responsible factor for supplying and maintaining biological and chemical elements in the soil on one hand and protecting it from erosion and excessive leaching on the other hand. The reduction of evaporation under forest cover slows down the upward migration of undesirable elements closer to the surface. Altogether, the lateritic soil remains young under forest cover and relatively fertile: humus is constantly replenished and undesired elements are kept at depth. Under the Savanna cover, usually affected by fires also, soils are quickly impoverished: humus is destroyed and nutrients are leached to depth since protective canopies are sparse. This increases the already high rates of evaporation, depriving soils of moisture and accelerating upwards migration of undesirable elements.

B. Soil Surveys in Cameroon

The soil survey which started in 1948 in the alluvial plains of the Logone was extended to include most of Cameroon, resulting in a general map at the scale of 1:1 million with explanatory notes. The sources from which this map, originate vary in nature and scale ranging between 1:2000 and 1:50,000.

Mapping of soils have been traditionally the domain of ORSTOM; it is only recently that the U.N. is proceeding with a program of training Cameroonian soil scientists to take over soil survey and research from ORSTOM.

1. All regions north of 10 degrees parallel (cotton, sorghum and rice areas) are mapped at the scale of 1:100,000.

2. Between 10 degrees and 8 degrees north parallels, a soil reconnaissance mapping at the scale of 1:200,000 is about completed.

3. Zones along the axis Garona-Bidzar-Maroua have been surveyed to greater details at the scale of 1:50,000 (3 sheets) including maps of so called "cultural aptitude" which closely designate general soil suitability/capacity characteristics.

4. To the south, reconnaissance work along TRANSCAM R.R. produced maps at the scale of 1:200,000 and 1:50,000.

5. West of Ngaoundere on the pastoral Adamaoua, a detailed map at the scale of 1:50,000 was helpful to grasp soil conservation problems involved in the coalescence of the three major watersheds (Logone, Sanaga, and Niger).

6. In the western highland which is highly populated, systematic work at the scale of 1:50,000 is being resumed, particularly in the alluvial NDOP plain which is temporarily inundated.

7. Finally, in the south, work has been done on detailed scales (1:10,000 to 1:20,000) in connection with several agricultural development plans.

III. Natural Vegetation

The natural vegetation is an important indicator of the total effects of all ecological factors. Therefore, using vegétation formations for the purpose of delimiting ecological divisions should be one of most satisfactory ways in which responses and interrelationships are naturally expressed. The effect of selected ecological factors will be briefly outlined prior to the final description of the major formation and their spatial distribution.

A. Ecological Factors:

1. Climate: Within this fact, humidity is evidently most outstanding, determining the grass zones of vegetation. Within Cameroon, the thick forest disappears as soil does not receive a minimum of 300 mm of water between November and March. The mere tendency for an extended low precipitation period can lead to a seasonal fall of leaves unusual for the humid forest which rejuvenates its leaves over long periods. This is the way the deciduous forest of central south Cameroon is defined and differentiated from the rain forest of south Cameroon.

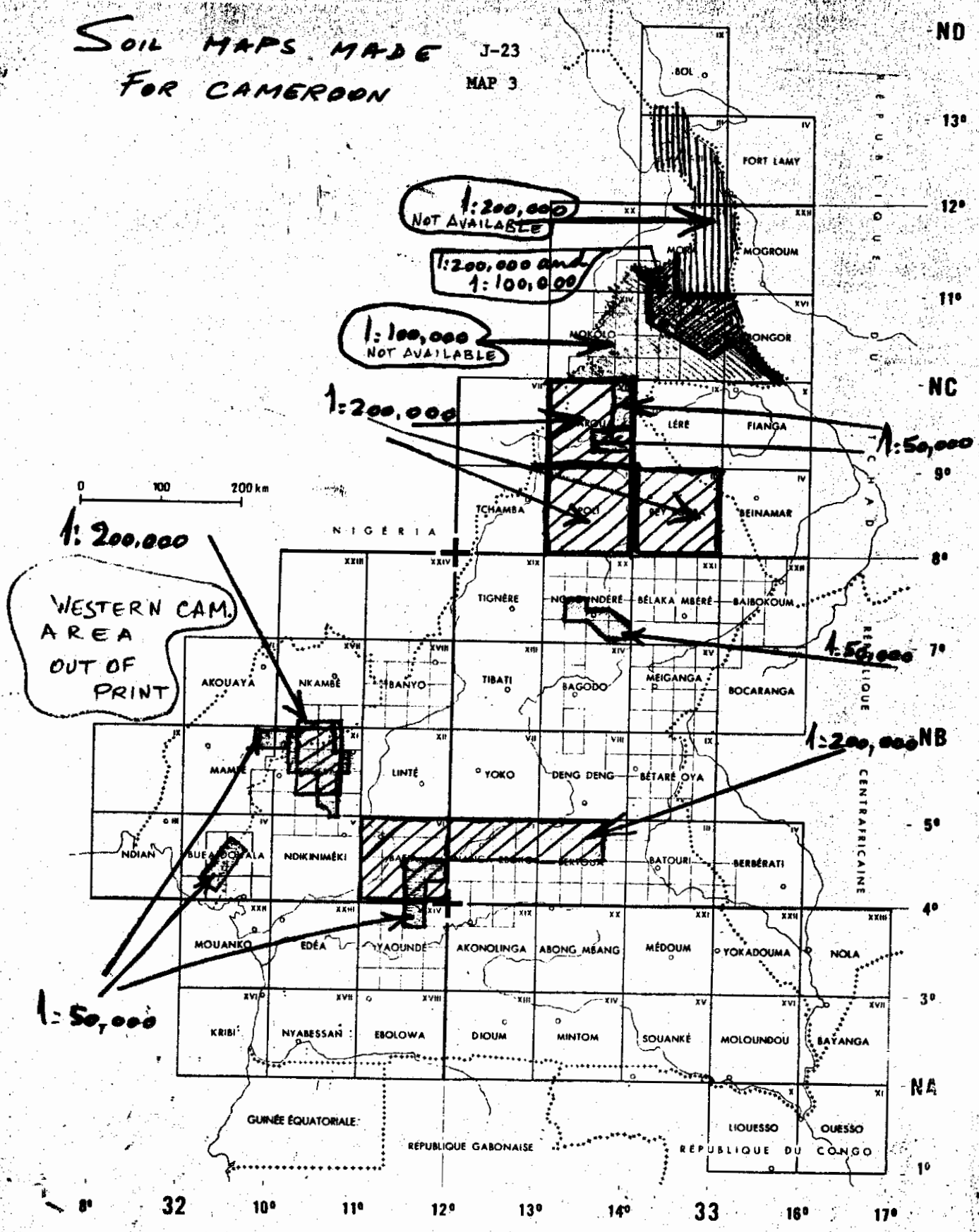
As climate turns tropical, the clear forest type sets in, which is adapted to a dry season of which increasing length northwards leads to the Savanna and Sahel.

2. Relief: The relief determines not only rainfall rates, etc., it is responsible for determining the angles of slope, direction, and degree of exposure to sun's rays, sheltering effects from winds. All this acts upon the vegetation cover and brings about specific distribution of types and characteristics. The thick forest takes a different aspect and a different composition with changes in altitude. This is extremely outstanding in the western highlands.

SOIL MAPS MADE FOR CAMEROON

J-23

MAP 3



3. Soil: Soil holds a very localized effect. In the south, for example, where soils are uniformally ferralitic, only excess in water and salt can locally modify the general nature of the vegetation formation (such as the Coastal Mangrove). Similar local effect is present in inundated valleys such as the Upper Nyong. In the dry zones difference in soil can explain most aspects of the vegetation landscape; dry characteristics are accentuated when coarse gravels are predominant in the soil, rather than silts and fine components.

4. MAN: The role of man has been particularly important in Cameroon. Cameroon was an area of migrations and transit of nomad pastoral groups on one hand (Folain for example); on the other hand, it was the site where mountainous areas served as shelters (Mandara, Bamileke Plateau, etc.). The impact of both groups on the natural vegetation has been considerable. Degradation of vegetation in most zones has resulted in disastrous effects since soils are very fragile and their fertility is limited and hard to rejuvenate under degraded and degenerated vegetation replacement.

The forest, within its most favorable climatic zone, can be reconstituted from its secondary formation if left alone and may reach a primary climax. But as dry seasons get longer further north, such regeneration becomes more difficult or impossible, since any intervention with the climax may bring about final degradation with no return. Several Savanna woodlands are thought to be the result of forest degeneration as affected by man. The clear forest does not transform into secondary formations, and, following forest fires, only grass and few trees remain there to stay.

In view of such notions mentioned above, one should realize that we cannot judge the land potential of these areas by the same criteria we use to appraise our own. The ecological balance is much more precarious in equatorial-tropical margins than our temperate climatic domains. Individuals can be impressed after reconaissance visits by the relative "empty and vast lands" which seem to have tremendous "potential". Such statements should be very carefully examined before being considered for any planning purposes.

B. The Natural Vegetation Map of Cameroon

The generalized map in this text is compiled from most recent sources (1964 and 1971) and represents the basic zones and transitions. Letters in the text coincide with the letters on the map, and the following brief definition of each division serves also as a legend for the sketch map 4.

A - Green, rainforest

B - Semi-decidous forest

C - Trees Savanna

D - Savanna woodlands and grasslands

E - Dry Savanna

F - Steppe (sub-Sahelian to Sahel)

NLDF - Northern Limit of Dense Forest

Mgre - Mangrove

R - "Residual" forest of reduced type

IV. Relief

The United Republic of Cameroon falls within varying levels of elevation due to its geological structure and erosional history. This variability in relief, in turn, causes important consequences in the climatic regimes of the area both on local and regional basis. Therefore, a brief sketch on elevation distribution over the whole country is imperative to the general understanding of its ecological divisions and physiographic provinces.

It is emphasized here that elevation distribution does not always coincide with ecological divisions since elevation is not the only control over the evolution of such provinces; geological make-up, climate as controlled by geographical position, soils make-up, and natural or native vegetation are other important controls resulting in the final ecological divisions.

Relief of Cameroon is generalized here and briefly described section by section starting from the south-western coastal area through the east and north. Numbers in the following listing coincide with the numbers marked on the accompanying sketch map 5.

1. The coastal western and south-western lowland: falling within zero feet to a thousand feet above mean sea level (abbreviated as M.S.L. further in this text). Within these elevation margins, three basins are predominant which are:

   M.B.: The Mamfe Basin

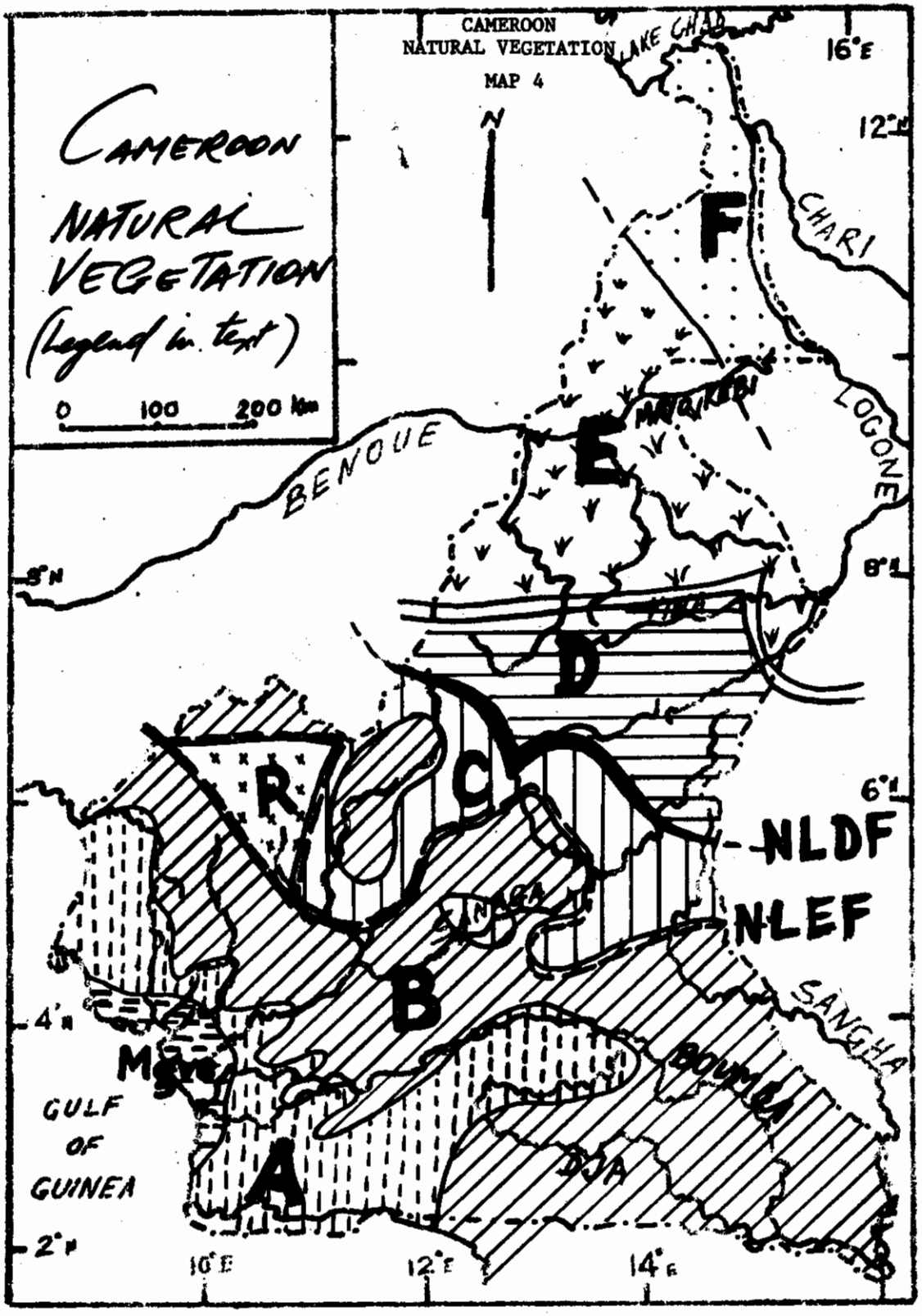
   D.B.: The Douala Basin

   C.B.: The Campo Basin

   With the exception of M.B., D.B. and C.B. have swampy characteristics in their lower sections, and river estuaries (sunken outlets) are surrounded by mangrove swamps due to very low elevations and poor drainage along the coastal area. Within this belt, two outstanding exceptions rise over the whole area which are:

   M.C.: Mount Cameroon (4070 m)

   M.R.: Mount Rumpi (1494 m)


CAMEROON
NATURAL VEGETATION
MAP 4
CAMEROON
NATURAL
VEGETATION
(legend in text)
0 100 200 km
N
LAKE CHAD
16°E
12°N
CHARI
LOGONE
BENOUE
8°N
8°E
6°N
NLDF
NLEF
SANGHA
4°N
GULF
OF
GUINEA
2°N
10°E
12°E
14°E
F
E
D
C
R
B
A
M

2. The Main South-Central Plateau or elevated plain: falling between 2,000 ft - 3,000 ft above M.S.L., this area is separated from No. 1 by a series of steep scarps across which the major rivers flowing to the coastal plain form important waterfalls with high potential for hydro-electric generation (one is already harnessed at Edea where a complex of Aluminum plants is located including ENELCAM, ALUCAM and SOCATRAL power and aluminum processing stations and factories.)

   Most of the surface of this section is flat to gently-undulating with the exception of some residual hills (inselbergs) which withstood the extended periods of erosion that flattened the whole area in the past.

3. The Upper Congo Basin: This area is located in the south-eastern corner of the country and falls between 1,000 ft and 2,000 ft above M.S.L. Three major tributaries of the Congo system flow in this area which are: The Sangha, the Dja, and the Boumba.

4. The Central and Western Highlands: This area is made up of the major uplifted land of Cameroon: a geological up warp along which major fissures activated important volcanoes in the past. Lava flows in substantial thickness have added considerable height to the already elevated land. Elevation in this zone exceeds 3,000 ft above M.S.L. and can reach 6,000 ft to 7,000 ft in certain locations. This area is therefore the major watershed for almost all Cameroon rivers. It is appropriate to divide it into two major sections for the nature of its topography. They are:

   W.H.: The Western Highlands (highly populated)

   A.P.: The Adamaoua Plateau (thin populated)

   Both sections slope less abruptly towards the south than towards the north and west.

5. The Upper Benoue Basin is made up basically of lowlands averaging 800 ft above M.S.L. The area rises up to 2,000 ft in the basins' margins and drops to about 500 ft at its central valley.

6. The Mandara Mountains rise in the northwest to elevations exceeding 3,000 ft in altitude and sloping very steeply to the Chad basin. Surprisingly enough, in spite of steep slope, poor soils and adverse climate, this area makes one of the highly populated clusters in Cameroon.

7. The Chad Basin Lowlands which occupy the northern tip of Cameroon consist of swampy, seasonally inundated lands. This area slopes very gently northwards towards the lake since it used to be the lake bottom in the not very remote geological past. Its soils are mainly lacustrine sediments and there are several evidences in the terrain of previous lake shores and sand dunes. This accounts partially for its poor drainage in addition to the very feeble slope gradients and the seasonal inundation problems. The area is dominated by the lower Logone River, which joins the Chari before debouching into Lake Chad. After the rainy season at the Logone's head waters, the river inundates this featureless plain forming a huge film of water exposed to losses by evaporation and rise in salinity on one hand and on the other hand, subject to capture of these waters by the Mayo-Kebi, a tributary of the Benoue. This capture, if established permanently, may deprive Lake Chad of substantial quantities of water causing some disastrous ecological consequences. (For details, see section on water).

V. Water Resources - River Basins

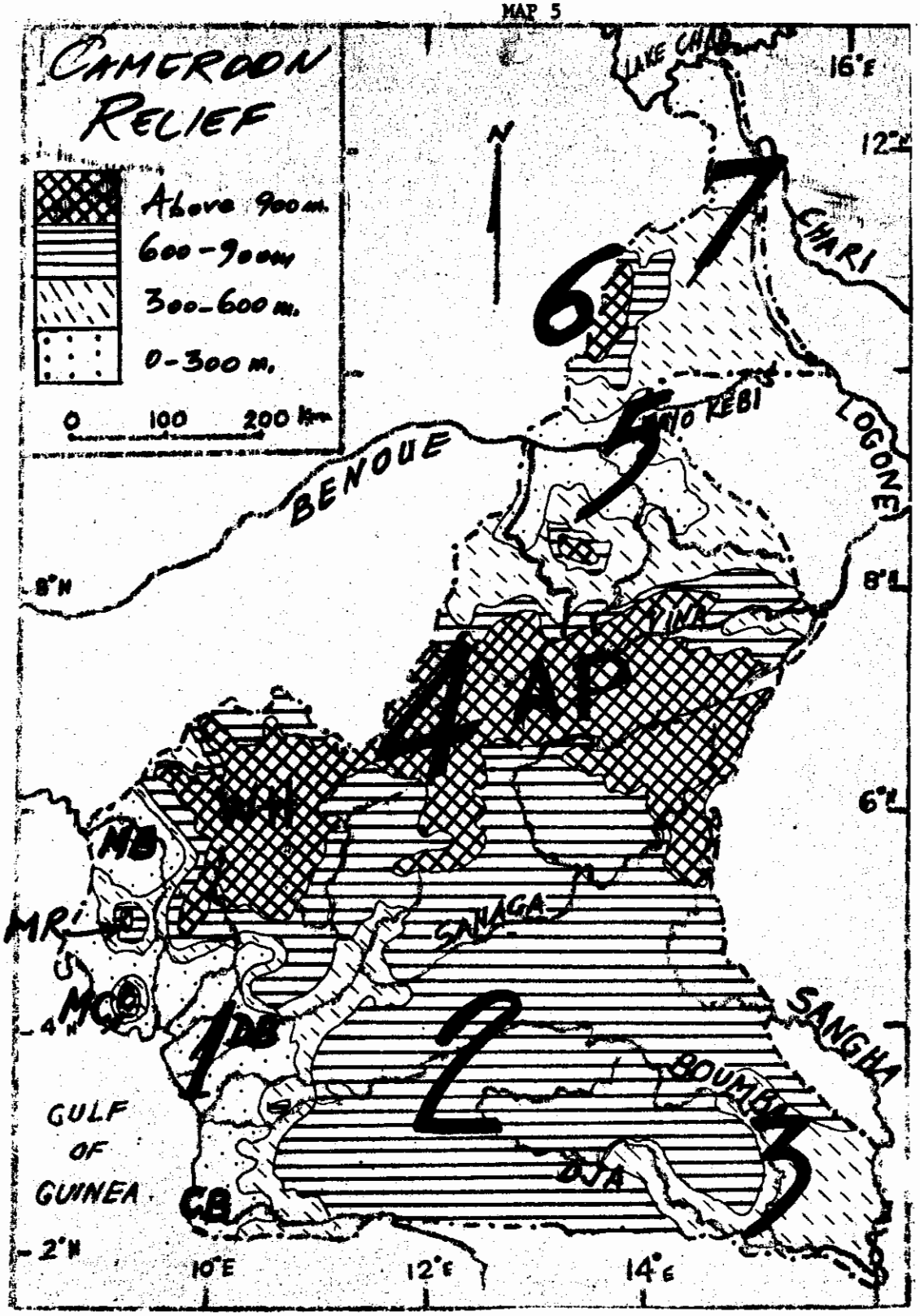
A. Major Groupings

Since Cameroon extends over wide varieties of ecological zones, it is necessary to treat its river basins in different groups according to their flow characteristics, discharges, regimes, erosional capacities, etc. Most sources utilize the following sub-divisions:

1. The Southern Network (Nyong, Dja, and Coastal Rivers) is characterized by a regular regime. Evaporation in the area is slowed down for the high relative humidity of the air and the abundant cloudiness. On the other hand, the dense vegetation causes a high rate of water "absorption" estimated at 1,000 mm. The forest, however, makes an important reservoir of moisture.

2. The Western Network: Here, relief and soil play an essential role. Evaporation is diminished for the high altitude and cloudiness and showers are highly frequent. Erosion here is active due to steep slope and degraded natural vegetation. The volcanic soils are permeable and easily affected by runoff. Therefore, rivers here transport great quantities to their estuaries. The abundance of springs in this area makes up for the tendency of irregularities in the flow regime, which is more obvious in the northern areas where the dry season is relatively longer.

MAP 5


CAMEROON RELIEF
Above 900 m.
600-900 m.
300-600 m.
0-300 m.
0 100 200 km
N
LAKE CHAD
16°E
12°N
CHARI
LOGONE
BENOUE
8°N
8°E
6°E
4°N
2°N
10°E
12°E
14°E
SANAGA
SANGHA
SOUMBA
DJA
GULF OF GUINEA
MB
MR
MC
DB
CB
1
2
3
4
5
6
7

3. The Adamaoua: Because of the well pronounced dry season in this area, river regimes are irregular with several extreme values (some river beds become dry as early as January). The destruction of the original vegetation and the laterization accelerate erosion since no obstacle stands in the way of runoff. Some springs, though, occur in the volcanic areas.

4. The Benoue System: Here, reduced rainfall 1400-1000 mm and high rates of evaporation (5 mm per day starting in April) make for a very irregular discharge regime with high range between high and low water stages. The water deficit in the Benoue balance is estimated at 900 mm and the erosion in the upper basin is very high, estimated to remove 600 to 700 tons per square kilometer of soils and debris. Sandbars are numerous along the streams. The Benoue cannot evacuate the alluvium piled at the mouths of its tributaries in this section.

5. The extreme Northern Network is accentuated by enormous range in the intermittent "mayos". July is the only month with permanent flow and quick flooding occurs in August and September. Between October and May, water runs in depths below the sand, forming useful shallow sources. This water shows up on the surface in ponds, depressions and lowland swamps which are also fed by stream diversions. The high runoff over the steep and deforested Mandara have brought important quantities of alluvium to the plain at the base of these mountains. At Marona, deficit is estimated at 600-650 mm for 800 mm of rainfall. Here, fundamental research is most necessary.

The following table shows the discharge of six selected streams at flood level versus low water - note the range in northern vs southern streams (values are in m^3/sec.)

RIVER	STATION	LOW WATER	FLOOD STAGE
Sanaga	Edea	460	6,643
Mbam	Goura	131	2,440
Nyong	Mbalmayo	30	286
Wouri	Yabassi	56	825
Vina	Wakwa	7	164
Benoue	Garoua	1	2,230

N.B.: The Benoue in particular, a huge system with the greatest range over all the others.

B. The Benoue-Logone "Capture"

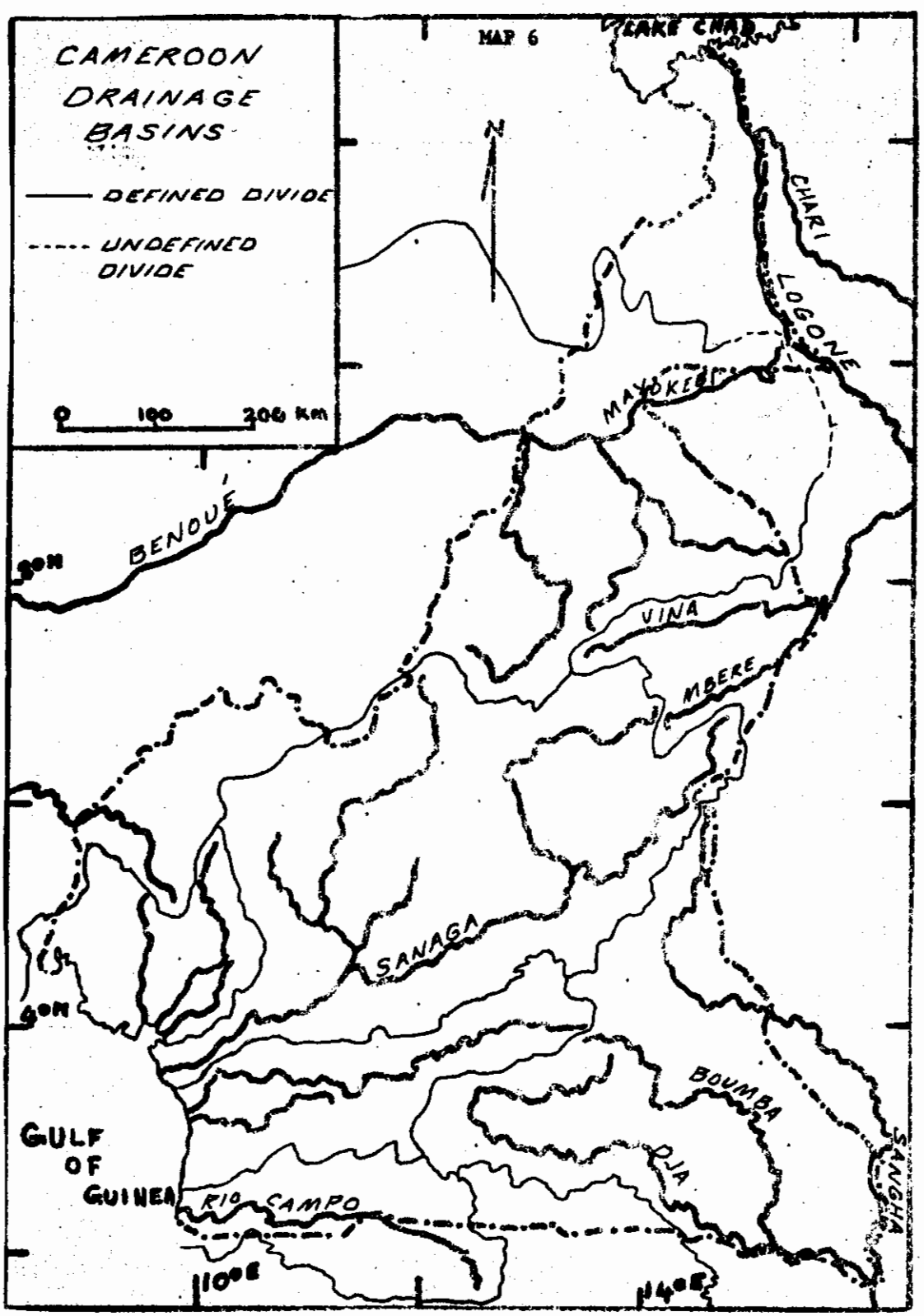
The Upper Benoue River which occupies most of north-central Cameroon flows west into Nigeria to debouch into the Niger and finally to the ocean. The Logone River, on the other hand, starts in east-central Cameroon and debouches into Lake Chad, replenishing it in the rainy season and then contributing its share in keeping the lake's balanced water level and low salinity. The Logone River gets tributaries from northwestern C.A.R. and ends up flowing along the Cameroon-Chad border before entering the lake.

The lower section of the Logone is very flat, having been in the past a part of old Lake Chad bottom. A slight rise in water level above the Logone channel spreads water over a huge area around the flood plain. This phenomena occurs every year following the rainy season and causes widespread flooding and exposure of great quantities of water to evaporation. Dams were built at the lower Logone to protect land there from flooding and that in turn causes a greater rise yet in water level above the dam sites.

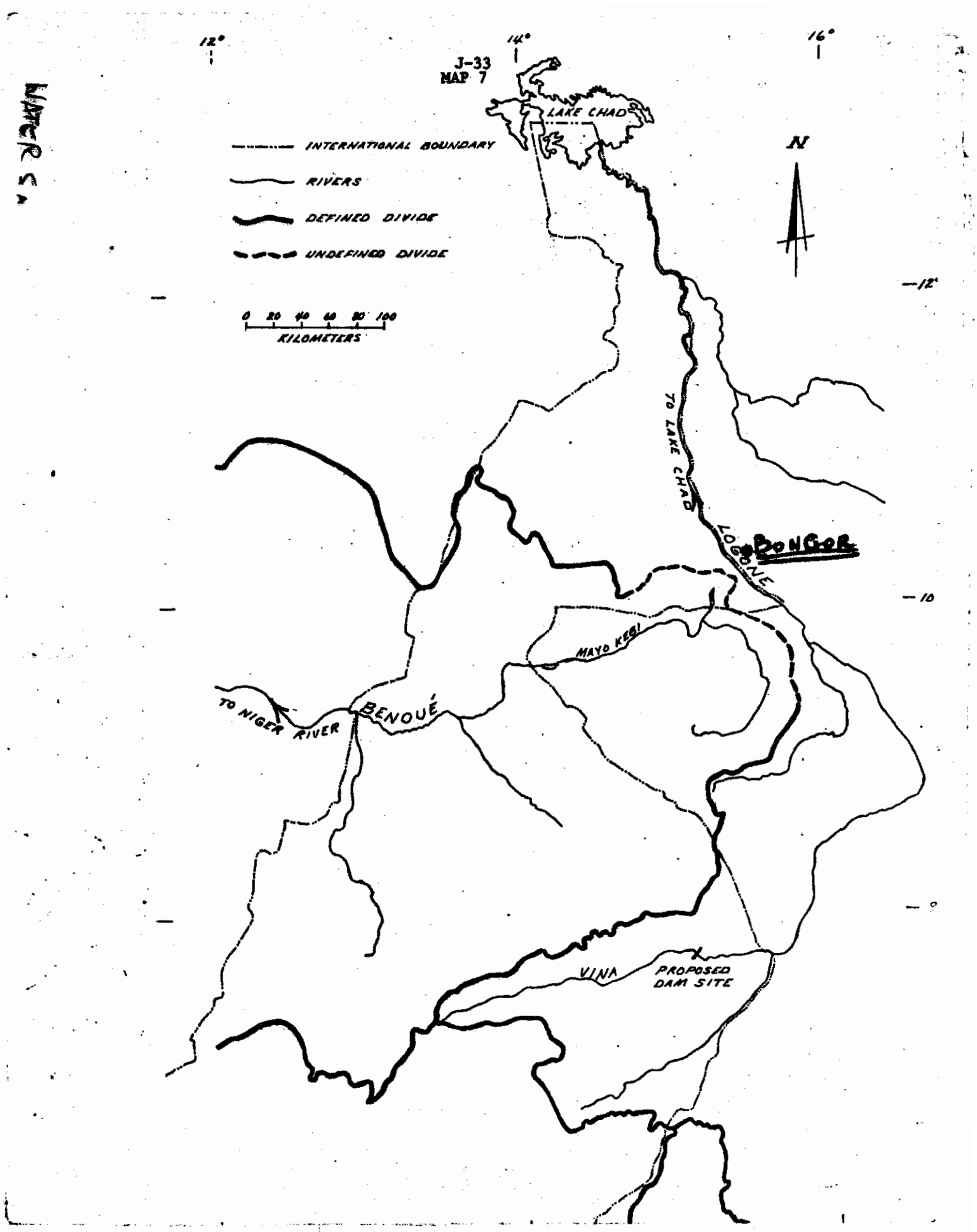
In the vicinity of Bongor (327 m above MSL) the watershed divide between Mayo Kebi (a confluent of the Benoue) and the Logone is very low and ill-defined (dotted line on map). With excessive rise of water along the Logone, water "spills over" the divide into Mayo Kebi, thus depriving Lake Chad from considerable amounts of water. But this is not the major problem, since it is feared, and rightfully so, that repeated "spillovers" may carve a permanent channel large and deep enough to divert the flow of the Logone permanently into the Benoue thus depriving Lake Chad of its contribution. Such "capture" can result in serious "shrinking" and salinization of Lake Chad. Therefore, attention is drawn recently to the problem in search for solutions.

A dam on the Vina (a tributary of the Logone) is being jointly considered by the Chad and Cameroon governments, and USAID has been approached for assistance. Such a dam can regulate the flow on the Logone preventing the excessive rise after the rains in the upper watershed.

There were some questions raised as to the utility of the dam at the particular suggested site, especially considering the relatively small size of the Vina drainage basin. Further examination of the questions and visit to the site and the watershed area makes the suggestion worth considering and very seriously so. It is recommended that AID examine this project for possible participation especially bearing in mind that the dam can provide more water to the Logone lower section in the dry season, besides the conservation of Lake Chad ecological balance which affects its whole basin and inhabitants' livelihood.


CAMEROON
DRAINAGE
BASINS
DEFINED DIVIDE
UNDEFINED
DIVIDE
0 100 200 Km
MAP 6
LAKE CHAD
N
CHARI
LOGONE
MAYO KEBI
BENOUE
8°N
VINA
MBERE
SANAGA
6°N
BOUMBA
DJA
SANGHA
GULF
OF
GUINEA
RIO CAMPO
10°E
14°E

WATER S.


J-33
MAP 7
12°
14°
16°
LAKE CHAD
INTERNATIONAL BOUNDARY
RIVERS
DEFINED DIVIDE
UNDEFINED DIVIDE
0 20 40 60 80 100
KILOMETERS
N
12°
10
0
TO LAKE CHAD
LOGONE
BONGOR
MAYO KEBI
TO NIGER RIVER
BENOUÉ
VINA
PROPOSED
DAM SITE

5. Detailed hydro-geological study in the Mandara region of north Cameroon made by B.R.G.M. and financed by FED covers scattered segments of the region with maps at the scale of 1:500,000. One copy available for reference at FED's Yaounde Office.

6. Detailed hydro-geological study in Northern Cameroon made by LERICI and financed by FED, is a very decent report with maps at the scale of 1:200,000, 1:500,000, and 1:20,000 electric logs and lines, seismic profiles wells, and boreholes data etc. One copy available for reference at FED's Yaounde office.

7. Hydro- geological studies in areas of Cameroon incorporated within Lake Chad Basin commission financed and performed by UNDP/FAO. Copies available at UNDP.

8. UNDP study on ground water in Northern Cameroon, first phase report expected November 1974. Done for the Ministry of Mines and Energy.

D. Surface Hydrology

The country is covered by 70 hydrological stations and a regular yearbook publication provides the basic data for all interested parties: Public works, Railroads, Genie Rural, etc. Analysis and interpretation of hydrological regimes of the Sanaga and Benoue are dealt with in the framework of ORSTOM monographs, some of which are available for sale, others for reference at ORSTOM Yaounde's Office. Small basins (10-50 km^3) considered representative for flow characteristics and relationships with rainfall etc., were selected by ORSTOM for in depth study which can be extrapolated to larger basins. Such studies started in 1955 in different parts of the country and provided decent information for small basins, but little progress has been reached through them with respect to floods in larger basins (500-2000 km^3).

The accompanying map shows the location of these studies of which results can be consulted at ORSTOM office in Yaoundé.

E. Other Donor Activities in the Field of Water Resources

The UNDP is presently engaged in a project which involves exploration and exploitation of ground water in northern and north-central Cameroon. The project calls for digging wells in the granites and other basement complex areas. The wells should supply water to 500 persons/day per well, and average about 25 m of depth. The procedure involves the following steps: 1) Photo-geological preparation which has been completed; 2) Geophysical exploration resistivity tests (both lateral and vertical) and seismic soundings which have also been completed; and 3) drilling boreholes

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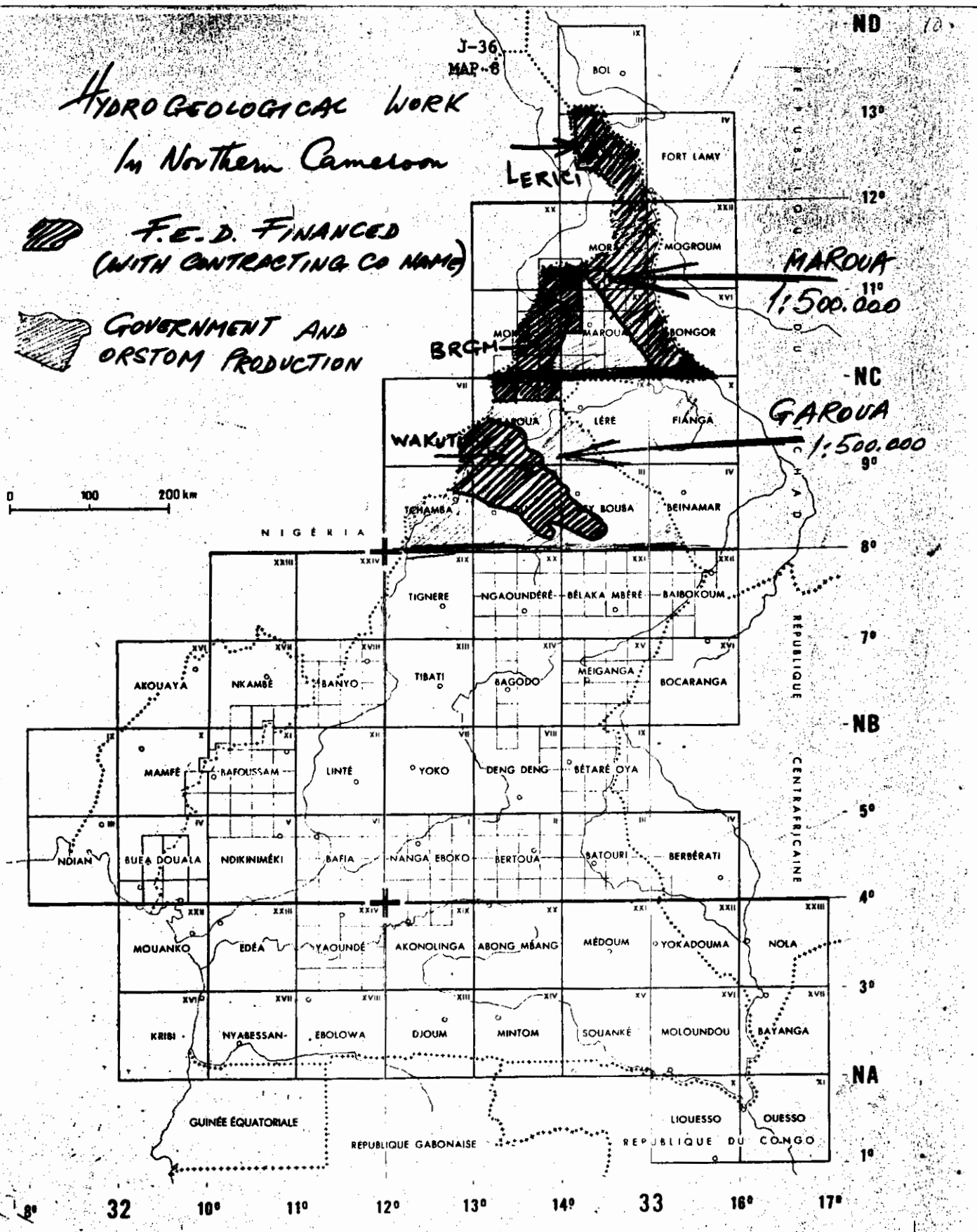
HYDROGEOLOGICAL WORK
In Northern Cameroon
F.E.D. FINANCED
(WITH CONTRACTING CO NAME)
GOVERNMENT AND
ORSTOM PRODUCTION
J-36
MAP-8
LERICI
BRGM
WAKUTI
MAROUA
1:500.000
GAROUA
1:500.000
ND
NC
NB
NA
BOL
FORT LAMY
MOGROUM
MAROUA
BONGOR
LÉRÉ
FIANGA
TCHAMBA
BOUBA
BEINAMAR
NIGÉRIA
TIGNERE
NGAOUNDÉRÉ
BÉLAKA
MBÉRÉ
BAIBOKOUM
AKOUAYA
NKAMBÉ
BANYO
TIBATI
BAGODO
MEIGANGA
BOCARANGA
MAMFÉ
BAFOUSSAM
LINTÉ
YOKO
DENG DENG
BÉTARÉ OYA
NDIAN
BUEA
DOUALA
NDIKINIMÉKI
BAFIA
NANGA EBOKO
BERTOUA
BATOURI
BERBÉRATI
MOUANKO
EDÉA
YAOUNDÉ
AKONOLINGA
ABONG MBANG
MÉDOUM
YOKADOUMA
NOLA
KRIBI
NYABESSAN-
EBOLOWA
DJOUM
MINTOM
SOUANKÉ
MOLOUNDOU
BAYANGA
GUINÉE ÉQUATORIALE
REPUBLIQUE GABONAISE
LIOUESSO
OUESSO
REPUBLIQUE DU CONGO
REPUBLIQUE DU TCHAD
REPUBLIQUE CENTRAFRICAINE
0 100 200 km
8°
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16°
17°
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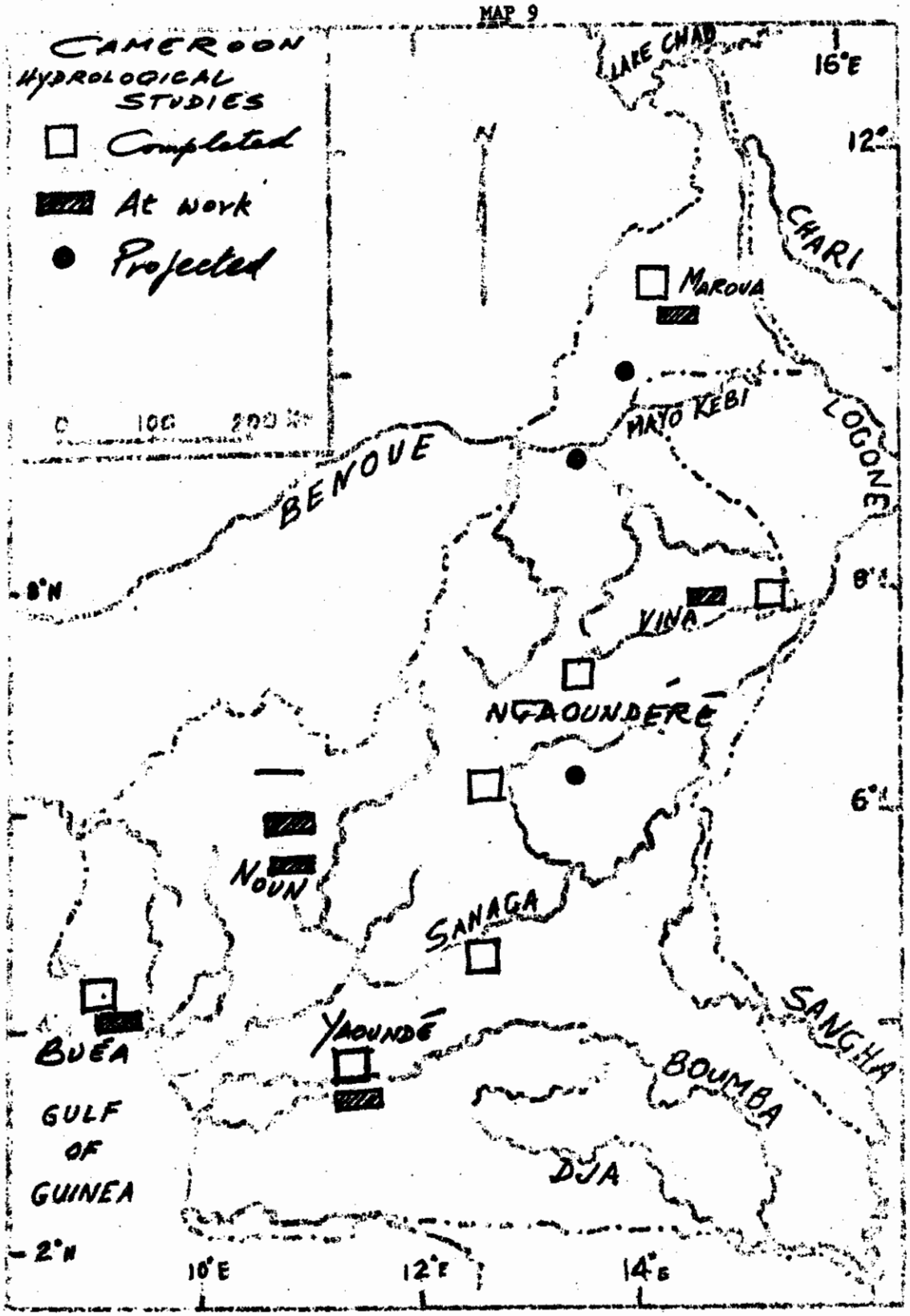
33
1°
3°
4°
5°
7°
8°
9°
11°
12°
13°

MAP 9


CAMEROON
HYDROLOGICAL STUDIES
Completed
At work
Projected
0 100 200 km
N
LAKE CHAD
16°E
12°
CHARI
MAROUA
MAYO KEBI
LOGONE
BENOUE
8°N
8°
VINA
NGAOUNDERE
6°
NOUN
SANAGA
SANGHA
BUEA
YAOUNDÉ
BOUMBA
GULF OF GUINEA
DJA
2°N
10°E
12°E
14°E

in selected localities and if positive results are reached, wells should be dug there. The project is presently at this stage; 26 holes were drilled totalling 741.71 meters, two wells dug and constructed and two others deepened totalling 49.5 meters.

The problems slowing down this project were basically inadequate equipment for drilling in hard rocks and a sub-contractor which has not taken the work seriously. This has caused a formal cancelling of the project to get rid of the sub-contractor and continuing it under a different title. Apparently, the government has not been timely in fulfilling its commitment to the project.

CAMEROON
AGRICULTURAL (CROP PRODUCTION) SECTOR ASSESSMENT

I. Introduction

Agricultural production (including livestock) accounts for about 40 percent of Cameroon's GDP. The country is largely self-sufficient in food production which is expanding at annual rates of growth of 3.0 to 3.5 percent, ahead of the 2.1 percent population growth rate. Approximately 75 percent of the population is rural with incomes which vary from $40-50 per capita in the Northern Plains to $90 - 100 in the forest savanah and coastal low-land areas.

Principal staple foods are maize in the West, plantains, yams, manioc, and cocoyams in the Center South and millet, sorghum, and peanuts in the North. Commercial crops include cocoa, robusta and arabica coffee and cotton, this last grown exclusively in the North. Oilpalm, rubber, and bananas are primarily grown on large-scale commercial plantations.

While there is no severe food problem generally in Cameroon, relative food scarcities, partly as a result of distribution problems, do exist in the major urban centers of Yaounde, Douala, Garoua and elsewhere. The 1972-73 drought resulted in local food shortages in many parts of North Cameroon. Uncertainty about the adequacy of food supplies in the North stimulated the region's subsistence farmers to make a massive readjustment in the area devoted to cash crops versus food crops during the growing season following the drought. While the area planted to cotton, prior to the drought in 1971-72, exceeded 110 thousand hectares, in 1973-74 the area planted to cotton was little more than 60,000 hectares.

There is growing but inadequately documented evidence that food crop yields throughout Cameroon are declining or at best stagnating because of soil fertility exhaustion, insect and plant pests, and competition from cash crops. Sorghum and millet production in the North was seriously affected by drought while maize production in the West is affected by leaf diseases, stem diseases, and competition from coffee production. In the South where roots and tubers and other starchy staples such as manioc, yams, cocoyams, taro, and plantain are dietary mainstays, low yields, plant diseases and pest and competition from cash crop are also common problems.

Cash crop production in Cameroon is also stagnating and declining. The output of cotton in the Northern plains was at a ten-year low in 1973-75 due not only to drought, but also to the drastic reduction in the area planted. Although yields are also low for peanuts, they are rapidly becoming a cash crop in the North and Center South; in recent years approximately 50 percent of the peanut crop has been sold for local consumption or processing into cooking oil to meet local and domestic demand.

In general, the institutional framework in support of food crop production is inadequate to the task of increasing and improving staple production. Input delivery systems for food crop production are virtually non-existant although there is some spin-off of imports into food cropping by virture of the fact that large numbers of subsistence farmers are reached by the input - extension-marketing services of cash or export commodity based companies for cotton in the North, coffee in the West, and cocoa and oilpalm in the South.

Large scale migration to the cities and rapid rate of urbanization have revealed inadequacies and inefficiencies in food storage and marketing networks. Local urban shortages of staple foods have developed and food prices have risen sharply. In addition, the inability to store properly and to move food crops into commercial circuits leads to a considerable loss of income to poor farmers. Similarly, because of the poorly organized markets for food crops, bumper crops as expected for cereals this year in the North also mean low incomes for farmers who are unable to receive a reasonable price for their output.

Although research institutions have produced good results on cash/export crops, research on food crops has lagged behind. Good experiment station results have been obtained under optimal conditions (heavy application of nitrogen fertilizer, effective water control, etc.) which cannot be duplicated or are not economic under actual farmer conditions. Nevertheless, an agricultural research infrastructure exists and it is being restructured to place additional emphasis on food crops. A major shortcoming in agricultural research which must be corrected is the failure to include farming systems in the research program.

Not surprisingly extension services are inadequately trained and few in number in relation to the number of farmers to be reached. Middle and low-level agents that are closest to the farm level, i.e., chefs de poste agricole and moniteurs de base, are also handicapped by bad roads, inadequate transportation and logistic support and small operating budgets. The most effective extension work is carried out within the framework of export-oriented companies as with cotton production in the Northern Province where SODECOTON (formerly CFDT) seconds and trains agents from the agricultural services who deliver inputs, supervise farmers and may even assist in organizing buying operations.

In general, the wider use of animal traction, improvements in hand tools, improved crop varieties, increased fertilizer use where economic (as perhaps in corn production in the West), pesticides, improved weed control, and small scale irrigation could improve and increase food production in Cameroon. Activities to improve and increase food production should be carried out in the context of the total farm enterprise including both cash crops and livestock production activities.

Responsibility for agricultural policy, programs, and projects is divided among the Ministry of Agriculture, the Ministry of Livestock and

a multiplicity of antonomous, usually commodity specific, agencies or companies. This organization structure renders it difficult to coordinate rural development activities, particularly those aimed at increasing staple food production or integrating agricultural and livestock production, while pursuing equally legitimate goals of increasing production of export and/or domestic cash crop production to improve foreign exchange earnings and income of farmers. Although a recent IBRD mission recommended that the Ministries of Agriculture and Livestock be combined, an early reorganization is unlikely. However, Cameroon has taken steps to bring about a closer coordination of rural development activities through the creation of the National Rural Development Fund (FONADER) which is discussed below.

The Government of Cameroon, in setting priorities for agricultural development, will weigh program approaches against economic objectives contained in the current five-year development plan: (1) reducing regional income disparities; (2) contributing to export expansion or import substitution; and (3) alleviating domestic staple food scarcities. These objectives are consistent with AID's Congressional mandate to increase food production and improve nutrition, to assist the development of the rural poor and to rehabilitate ecologically fragile areas (such as the Northern Plains of Cameroon) seriously affected by drought.

II. Agricultural Regions and Crop Production Systems

Five principal regions can be distinguished in Cameroon: The Northern Plains, the Western Highlands, the Western and Coastal Lowlands, the Southern Rain Forest, and the Central Savannah. These five regions are characterized by considerable ecological and climatic diversity and therefore considerable diversity in agricultural production systems. Diversity in soils and climate suggests there is considerable potential for agricultural and food crop development based on regional comparative advantage. Size and population densities also vary from one region to another (Table I).

TABLE I

Cameroon: Area, Population, and Density by Region

	Area		Population		Density
	Area 000 km^2	Percent of Total	Population (Million)	Percent of total	Persons/km^2
N. Plains	100	21	1.4	23	14.0
Central Savannah	135	29	.5	8	3.7
W. Highland	30	6	1.8	30	60.0
W. & C. Lowlands	65	14	1.1	18	17.0
S. Forest	145	30	1.3	21	9.0
TOTAL	475	100	6.1	100	12.8

Sources: United Republic of Cameroon and IBRD.

A. The Northern Plain is the area north of the Adamaoua plateau which is characterized by relatively low rainfalls: 400 to 800 mm over a four to five month season in the northern reaches of the zone and 1000 to 1400 mm over a six to seven month season in the Benoue Valley to the South. Predominate soils are laterites or montomorillinoitic clays. Fertile, alluvial soils in low-lying areas (bas-fonds) are common to both the Benoue valley and the Northern parts of the zone. Regional population is around 1.4 million with densities ranging from 2.1/km^2 in the plains to about 70/km^2 in the Mandara mountains. Rural income is about 40 to 50 dollars per capita.

Sorghum and millet are staple food crops widely grown on small holdings of 2 to 3 hectares. Peanuts and cotton are also widespread. Corn, rice, and manioc are secondary crops produced for home consumption. In the dry season, most of the bas-fonds are planted to a transplanted dry-season sorghum (mouesquari). In the face of mounting rice imports, which have been growing at the rate of 6 percent per year and domestic production that has stagnated at a level of 10,000 MT, Cameroon has begun a major production activity (financed largely by IBRD) in the North at Yagoue (the SEMRY project), and has anticipated achieving a total production of 27,000 MT paddy (around 18,000 MT of rice) by 1980. Demand for rice in urban areas could absorb this output and more.

The average area tilled per farm under typical alternative farming systems in the North is as follows:

Crop	Farming System: Traditional	Animals Traction	Irrigated
	hectares/farm		
Cotton	.05	1.00	--
Peanuts	.05	.07	.25
Sorghum/millet	1.00	.78	1.00
Rice	--	.09	.75
Other	.14	.26	.24
TOTAL	1.24	2.20	2.24

The average labor force per family is four: 1 male and 3 wives, with each wife having two children not in the labor force. Average yields are 600 to 700 kg/ha for millet, sorghum, maize and peanuts, about 1 ton/ha for upland rice, and 500 to 600 kg/ha for cotton. Since 1970 yields have suffered from drought and there is growing but insufficiently documented evidence that yields are declining or at best stagnating because of soil fertility exhaustion.

Although the Northern plains region is undoubtedly the poorest region in Cameroon, considerable potential exists for improving the production of both food (millet, sorghum, corn, rice, manioc) and cash crops (cotton and peanuts) in rationally conceived farming systems based on logical crop

rotation schemes. In addition, there is considerable potential for associating livestock and food crop production both by the introduction and/or diffusion of draft animals and also by incorporating farmer managed cattle fattening in the farm enterprise.

B. The Central Savannah covers two zones: the grasslands of the Adamaoua plateau and the tree Savannah extending to the edge of the southern rainforest. Characterized by an equatorial climate, the Central Savannah has an average precipitation of from 1,100 to 1,500 mm per year during two rainy seasons. Soils in the Adamaoua plateau are partly volcanic and mostly ferralitic in the south. Population is sparse and concentrated along major roads, densities are the lowest of any region in Cameroon, 37/km^2.

Millet, sorghum and maize are the principal food crops in the Adamaoua grasslands and nomadic and transhumant herdsment graze about 1.2 million head of cattle in the area. Sugar is produced by the Sosucam estate at Mbandjock and two commercial ranches fatten cattle on the plateau. Toward the South, root crops and plantain replace cereals as staple crops and cocoa, robusta coffee, and tobacco are grown as cash crops.

The potential for mixed farming and cattle fattening under alternatives systems is good in this region. In the Adamaoua plateau particularly in the area around Ngaoundéré, considerable potential exists for introducing wheat cultivation. Cameroon accords high priority to developing the potential for wheat production as wheat and wheat flour imports have average about 48,000 mt annually in recent years; because of increasing foreign exchange costs, the Cameroon Milling Company (SCM) has been conducting trials with South American and Tunisian varieties. Yields, so far, have been disappointing. The food crops research institute (ONAREST-IRAT) has not yet become involved in wheat research but should. In addition, wheat growing techniques developed for Eastern Nigeria should be studied for possible adaptation in the Adamaoua plateau. There is also a possible role for IITA in promoting wheat production in association with the Cameroonian national research organization as IITA has recently added wheat experts to its staff.

C. The Western Highlands correspond to the western and northwestern provinces where elevations range from 100 to 2800 meters. The region is both heavily and densely populated. (See Table I). Soils are ferralitic red and brown on basalt. Rainfall ranges from 1500-2000 mm over a lengthy rainy season. Food crops are corn, peanuts, beans and taro interplanted with arabica coffee, the main cash crop. Crop yields are low: 1 ton/ha for corn, 500 kg/ha peanuts, 300 kg/ha for coffee beans. Major problems include low-yielding varieties and leaf diseases such as rust and helminthosporium on corn. Farm size in the western province averages one hectare in the densely populated, Bamileke-inhabited areas.

In the area around Bamenda, cattle production is important and the production of non-traditional food crops - Irish potatoes, onions, carrots, etc. - is growing rapidly to meet urban demand.

Throughout the region, a well organized cooperative system, the heritage of the British colonial period, is responsible for coffee production and marketing activities and maintains a good working relationship with agricultural extension services as well.

The most promising food crop development potential for the Western Highlands is in improving and increasing the production of corn (in association with arabica coffee production). There is considerable interest in corn as a subsistence crop, as a source of farm income and as an export crop. Corn already represents the second major source of farm income (after coffee) to farmers in the Highlands and in recent years some corn has been exported to Zaire, Gabon, and CAR. Essentials for a corn improvement program include: (1) production, multiplication, and distribution of leaf disease resistant varieties; (2) soil fertility improvement especially meeting nitrogen requirements; and (3) extension assistance in farm management. Artificial drying for storage and commercialization is also a problem and needs to be considered. A coordinated approach by the research institute (IRAT), agricultural services, cooperatives, and the credit agency (FONADER) would be critical to the success of a corn production effort. Improved high yielding corn varieties are available from the AID-sponsored Major Cereals Institute in Northern Nigeria.

D. The Western and Coastal Lowlands cover parts of three provinces: the Southwest, the Littoral and the Center-South. Average rainfall is 2500 mm. Approximately 50 percent of the population is urban and this heavy concentration creates a growing market for food crops produced in the region and in nearby areas.

The principal food crops are plantain, corn, and root crops, grown by smallholders on farms that average two hectares in size. Oilpalm, rubber and bananas are grown largely in commercial plantations. Robusta coffee is grown in association with food crops. Fruit gathered from wild palm trees represents a sizeable source of income to small farmers. As elsewhere in Cameroon food and cash crop yields are low and output has not kept pace with growing urban demand, particularly in the port city of Douala. The relative absence of farm-to-market roads complicates the food supply problem for the urban centers and leads to loss of substantial income from food crops to farmers.

The most promising food crop development activity is in the area of improving the market organization for both traditional and non-traditional foodstuffs. This implies improving the network of farm to market roads, as well as improved storage techniques for vegetable produce.

E. The Southern Rain Forest includes most of the provinces of Center-South and the Eastern and parts of Littoral and Western. Average rainfall is between 1400 and 1900 mm. The department of Yaounde, Cameroon's capital is most densely populated with $60/km^2$.

Major food crops are plantain, manioc, and cocoyams, and cash crops of cocoa and robusta coffee. Yields of food crops are low; manioc yields, for example, are on the order of 4t/ha. Yaounde is experiencing difficulties similar to those of Douala in assuring adequate food supplies to its fast growing population, and as a result, food prices are rising rapidly. Concern over short food supplies and high prices has led the Government to formulate a program for a "green revolution" in the area surrounding Yaounde. The program, entrusted to a food crop production agency (Mission des Cultures Vivrieres), is just getting underway and has as its goal increasing the production and marketing of plantain and other staples in the area to meet the demand for foodstuffs in Yaounde. Initially the program has met with difficulty largely because of inadequate farm-to-market roads and the unavailability of means of transport to Yaounde from the producing areas.

III. Agricultural Institutions

A. Government Agencies

Responsibility for agricultural policy, programs and projects is divided among the Ministries of Agriculture and Livestock and a multiplicity of autonomous agencies, e.g., SODECOTON, formerly controlled by the Compagnie pour le Developpement des Fibres Textiles (CFDT) which has exclusive control over cotton production and marketing activities in the Northern plains, or Cameroon Development Corporation, which maintains a 30,000 ha oilpalm estate in the Western lowlands. This commodity-specific orientation of cash crop production has resulted in the neglect of food crops in the areas managed by the companies.

The division of responsibility for agricultural policy and programs between the Ministry of Agriculture and the Ministry of Livestock makes it difficult to coordinate programs aimed at associating crop production and animal husbandry. Although a recent IBRD Mission has recommended that the two ministries be combined, an early reorganization is unlikely.

In the past year, the Government has taken a positive step that could lead to better coordination and control of rural development activities. In August 1973, FONADER (National Rural Development Fund) was created by presidential decree. It has a 12 member board of directors chaired by the Minister of Agriculture. Referred to as "la banque des paysans, des eleveurs et des artisans", FONADER will have broad responsibility for all economic and social aspects of rural development. Its major responsibilities

will be to finance and execute rural development projects and to function as an agricultural (including livestock) credit agency. This second function has been emphasized to date. Credit in the form of loans or grants will be provided directly to farmers, either individuals or groups. Farmers' cooperatives which are well established in the former British Western Cameroon constitute one type of group to which FONADER will extend credit. Elsewhere in Cameroon where cooperatives are not well established, FONADER is assisting in the formation of GAMs (Groupes des Agriculteurs Modernes) as a pre-condition for loans in order to provide a guarantee of repayment. Individuals with collateral may also receive credit. Loans for production will have terms of up to ten years but most will have three to four year repayment periods, depending on the type of productive activity for which credit is extended. Most importantly, credit, with minor exceptions, will be in-kind.

At the provincial and departmental level, local communities and agents of the Ministry of Agriculture assist in the formation of GAMS and in the preparation of credit applications. Consequently, skill and training in project planning, implementation and evaluation will be particularly critical to FONADER's success.

FONADER's second largest major area of responsibility will be to finance and execute rural development projects. Project implementation will be left to the provincial and departmental representatives of the ministries or services in question which FONADER itself will finance, coordinate and control. In this connection the need is critical for trained people at the provincial and departmental level to assure that projects are implemented properly.

B. Agricultural Research

As in other former French territories, agronomic research priority has been placed on export crops while research on staple food crops has lagged behind. Research on cash crops has had good results particularly in disease and insect control, less good in varietal improvements. Research station outreach for food crops either from the research institutes themselves or through the extension services is virtually non-existent. Farming systems and farm management research does not exist.

In an effort to gain control of the orientation of all research activity in Cameroon, a new organization, ONAREST (National Office for Scientific and Technical Research), has been recently created to take responsibility for supervising the research now being carried out by eleven independent French research organizations. Agricultural research organizations to be brought under the ONAREST umbrella include IRAT (Institut de Recherche Agronomique Tropicale et des Vivrieres); IRCT (Institut de Recherche de Coton et des Textiles Exotiques); IFAC

(Institut Francais de Recherches Fruitieres Outre-Mer); IFCC (Institut Francais du Cafe et du Cacao); IRHO (Institute de Recherches pour les Huiles et Oleagineux); IEMVT (Institut d' Elevage et de Medecine Veterinaire des Pays Tropicaux); and ORSTOM (Office de la Recherche Scientifique et Technique Outre-Mer). This reorganization could help to reorient agricultural research towards more applied farmer-related programs.

C. Extension Services

Not surprisingly extension personnel are inadequately trained and few in number. They also lack the mobility which would enable them to reach farmers in relatively remote and inaccessible locations. Since extension personnel are so critical in carrying FONADER's credit programs and ONAREST's research activity to the farm level, training and retraining of existing agents at all levels is badly needed. IRAM (Institut de Recherches et d'Application des Methodes de Developpement) is currently conducting a survey of agricultural education and training for all of Cameroon and partially as a result of this study, the Director of Agriculture is considering ways in which to restructure the extension service, which is practically non-existent for food crops, and to concentrate on enabling middle and low level technicians to attend to food crops, as an export crop extension activity.

IV. Program Opportunities in Food Crops Production

The potential for improving and increasing food crop production in Cameroon is good. The variety of soils and climate should facilitate a balanced approach to diversifying agricultural production based on regional comparative advantage implicit in the discussion in part II above (q.v.). Program planning and project preparation should take into account not only this eco-climatic diversity but also Cameroon's objectives for the rural sector: (1) reducing regional income disparities; (2) contributing to export expansion or import substitution; and (3) alleviating domestic staple food scarcities. These objectives are consistent with AID's congressional mandate to increase food production and improve nutrition; assist in improving the quality of life of the rural and urban poor; and to assist in the rehabilitation of ecologically fragile areas (such as the Northern plains of Cameroon) seriously affected in recent years by drought.

A. On grounds of reducing regional income disparities, the Government of Cameroon has accorded high priority to rural development activity in the ecologically fragile Northern plains. The target population in this poorest region of Cameroon includes three distinct groups: sedentary farmers who produce staple cereals and cotton and peanuts; transhumant and nomadic livestock herders; and the "Kirdi" inhabitants of the densely populated Mandara mountains on the western edge of Northern province.

A program to maximize production of food crops among sedentary farmers in the North is probably inadvisable at this time. AID's approach should be to promote balanced farming systems that assure a dependable supply of staple cereals to the farm family and the region and that ensure a reasonable return to the farm family on its investment and risks. Development based on existing farm systems could be pursued by developing a minimum input package for cereal production including provision of treated elite millet/sorghum seed, improved techniques of land preparation, seeding density and weeding, draft animals and credit. Since staple food producers in the North are invariably producers of cotton and peanuts, the latter for home consumption as well as sale, the place of those crops in rotation in the farm enterprise needs to be clearly understood. In addition, most sedentary crop farmers own some livestock, cattle as well as smaller ruminants. Consequently there is scope for associating crop and livestock production both as a farming input (draft oxen) and as an output (farm-fattened draft or other animals).

A food crop production activity in the Northern Plains should incorporate the following elements: (1) input supply, credit and marketing; (2) extension services and training; (3) seed multiplication and demonstration; and (4) farming system research to develop a balanced farm enterprise.

The institutional base exists in the North to coordinate and execute a good crop production activity. It is subject to all of the weaknesses outlined generally in the introduction: (1) weak capacity to plan, execute and evaluate agricultural programs and projects; (2) inadequate food crop research base; (3) virtual absence of effective linkages between research agencies and extension services; (4) inadequately trained and equipped extension services; and (5) storage, distribution and marketing systems that are not adequate to meet regional and urban demands.

AID would assist the existing institutional structure in providing project elements and in forging linkages between the various agencies which exist in the theory but are not operational. The agencies in question include:

(1) FONADER: project coordination and credit.
(2) ONAREST (IRAT, IRCT, IRHO): research, seed multiplication and production.
(3) Delegation of the Ministry of Agriculture: agricultural services including input delivery, extension and training.
(4) Office Cerealiere: cereals, marketing and stabilization.
(5) SODECOTON: input delivery, production extension and marketing of cotton.

The program to be executed by the agencies includes the following activities:

(1) A zone of intensive crop production intervention would be selected probably in the area around Maroua which is

accessible, has a substantial population and above average soils.

(2) Designation of FONADER as project coordinator.

(3) Selection and seed multiplication of higher yielding varieties of sorghum and millet that are suitable in taste and color, in length of straw, that are drought resistant and of correct length of season. Selection of peanuts, maize, upland rice and niebe (cow peas) is also needed. Selection and production of elite seeds would be carried out by ONAREST. Commercial seed could be multiplied by farmers within existing development project areas where other donors or agencies are active: FED, IBRD, SODECOTON.

(4) Distribution of certified seed and seed treatments, (i.e., thioural, grammagram, and lindagram) by agricultural extension agents of the Ministry of Agriculture and agents seconded to SODECOTON.

(5) Development of a package of improved inputs and cultural practices by ONAREST which would include: elite seed, pest control chemicals, oxen power and improved equipment, timely operations, soil management, flood plain management, and small irrigation perimeters.

(6) Distribution of this package of inputs to farmers would be carried out by the chefs de poste and moniteurs de base, i.e., middle and low level extension agents of the Ministry of Agriculture and SODECOTON. Training in extension would be provided by an extension specialist attached to the project.

(7). Improvements of village grain storage as a security permitting a delay in credit repayment. This would permit farmers to keep their grain off the market at harvest time when prices are low, thus enabling them to get a better price later in the marketing season. The recently established Office Cerealiere would have a role in promoting village storage and assuring a market for cereals.

B. Another feasible intervention would be in the promotion of corn production in the Western Highlands region of Cameroon. High priority should be given to the development of this region on the basis of reducing regional income disparities. Corn is important in the West as a subsistence crop interplanted with coffee, as a source of income to smallholders, and as an export crop. Essentials for a corn improvement program would include (1) production, multiplication and distribution of leaf disease resistant varieties; (2) soil fertility improvement; (3) extension assistance in farm management; (4) simple equipment for on-farm village storage;and (5) credit to purchase improved inputs, draft animals, elite disease resistant seeds, and fertilizers. Smallholder corn producers are also producers of arabica coffee. Generally, corn is interplanted

with arabica in the Western Highland region and the effect of fertilizer applied to coffee is likely to be significant, as well, for the intercropped corn. Currently, corn breeding is being carried out by ONAREST at Dschang in the Western Highlands. High yielding varieties developed at Zaria by the Major Cereals Project should be made available for adaptive trials at Dschang. The well-organized coffee cooperative structure with strong links to the agricultural services would be the appropriate vehicle through which to channel inputs and provide extension services.

CAMEROON

LIVESTOCK SECTOR ASSESSMENT

I. INTRODUCTION

Cameroon has good potential for livestock development, but production even at present levels faces difficult problems of tse-tse infestation and in many areas, overgrazing.

Taking Cameroon as a whole, the number of cattle is variously estimated at between 2.4 and 2.5 million head depending on the season of estimate. There are also an estimated 3 million sheep and goats, 0.5 million pigs and 8 million poultry. The estimated value of production in the sector is roughly CFAF 8 billion ($32 million) or less than 10 percent of agricultural gross national product.

Under the Second Plan, CFAF 322 million was invested in animal husbandry, mostly to provide sanitary facilities for cattle. The Third Plan envisages an investment of about CFAF 2.0 billion, of which CFAF 1.0 billion has been allocated for various cattle-breeding projects. The Third Plan's objectives in this sector are: to improve the quality of traditional stockfarming by ensuring health protection for the herd; to modernize cattle breeding through the creation of family stockfarming units as well as breeding and fattening ranches; and to promote the marketing of meat products. The Plan envisages an annual rate of growth of 3.1 percent in the value of animal production during the period 1971/72 - 1975/76. A major livestock development project to be implemented over the six-year period 1974-79 comprises establishing three ranches (each of 20,000 hectares) constructing slaughter houses for Yaounde and Douala, modernizing 12 butcher shops, developing modern livestock production on 150 private ranches and farms, and eradicating tse-tse flies from 800,000 hectares of good pasture land. These projects will be limited to those portions of Cameroon lying south of the Adamaoua escarpment which divides the northern plains from the south. A government-owned parastatal company, SODEPA will develop and operate the ranches and slaughter plants; FONADER (the National Rural Development Fund) is expected to provide credit for private ranches involving small and moderate-sized families and groups of traditional pastoralists. The project, which is estimated to cost US$14.6 million, will be financed largely by a US$11.3 million IBRD loan; the balance will be covered from domestic budgetary resources.

At the present time, the livestock sector in Cameroon receives direct USAID support only through the Lake Chad Basin Commission (LCBC) Asale/Serbewel project. To carry out the national objective of a more even distribution of economic development in the various provinces of Cameroon, the Ministry of Livestock has recently requested development assistance from USAID and other donors for the northern portion of the country, not included in the World Bank loan program. For these reasons, the DAP team recommends that USAID programs for the livestock sector focus on North Cameroon, the portion of the country lying within the Sudan-Sahel Zone that has been most

adversely affected by the drought. It is the area of the country with the lowest per capita incomes and the most difficult development problems.

Because of the extreme diversity within North Cameroon in relation to climate, soils, vegetation, cropping patterns and population density, a land use/land capability survey is recommended as a first step in determining optimum land use patterns and identifying those areas best suited to specific livestock sector interventions.

II. CATTLE PRODUCTION REGIONS

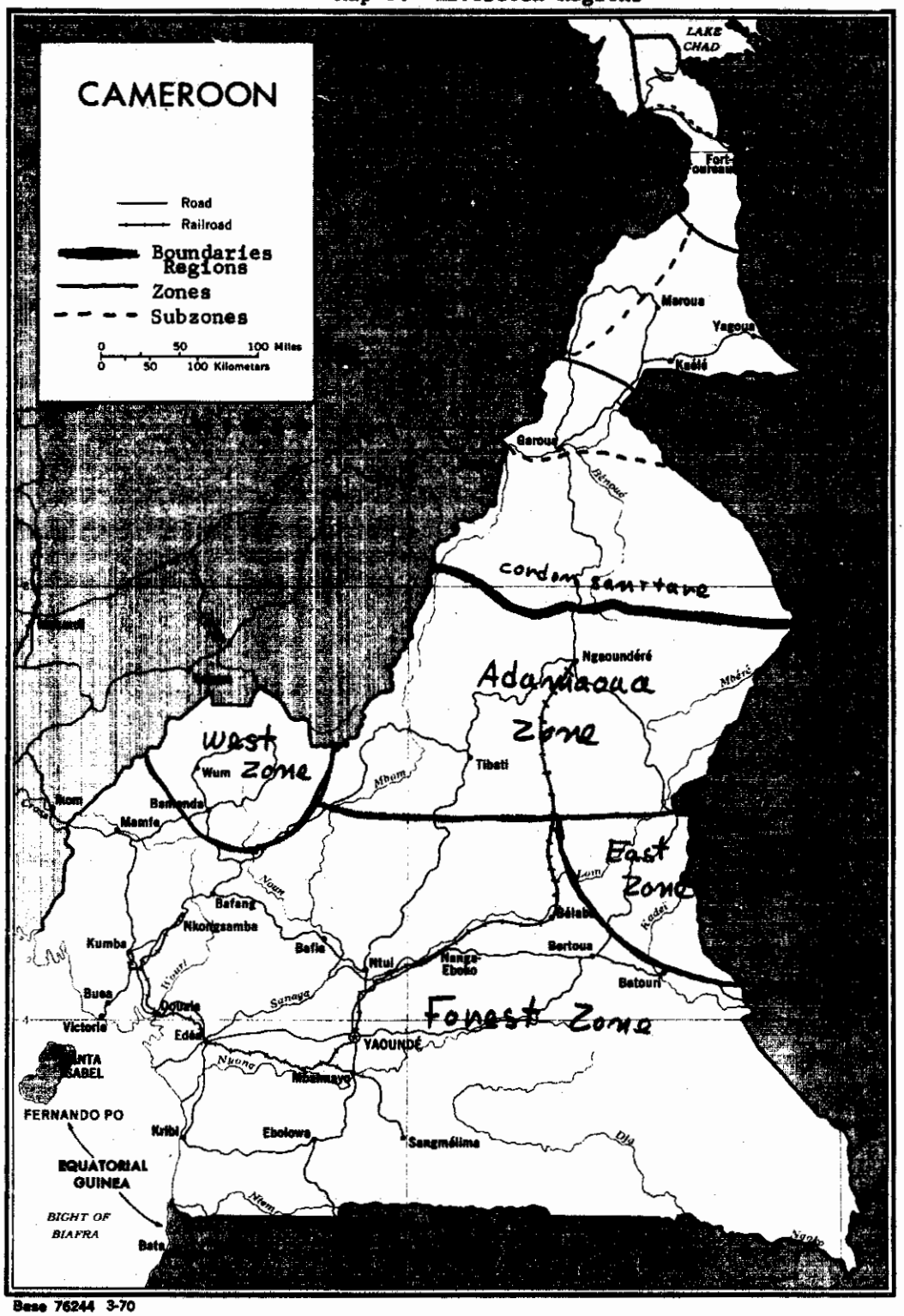
Cameroon can be divided into two principal cattle production and marketing regions and six subregions or zones. Region I lies north of the Adamaoua Plateau (8° - 14°) at an average elevation of about 300 meters. It is separated from Region II, which includes the Adamaoua Plateau, Western highlands, and rain forest areas of Cameroon by a cordon sanitaire which is maintained free of cattle to prevent the spread of contagious bovine pleuropneumonia (CBPP) from the Northern Plains where it is endemic to the south. The cattle free zone which parallels the Adamaoua escarpment contains several game parks and reserves and is heavily infested with tse-tse flies which effectively prevent movement of trade cattle from north to south although a few breeding herds are known to circumvent the cordon by passing via the Central African Republic. Because the two regions have different development problems and are not interrelated by trade, they will be discussed separately.

A. Region I - North Cameroon

The northern production and marketing region can be divided into three zones, comprised of Logone-Chari Departments (Northern zone), Margui-Wandala, Diamare, and Mayo-Dumai Departments (Central zone), and Benoue Department (Southern zone) (see Map 1).

The North Zone contains two subzones, the Serbewel subzone and a subzone of seasonally flooded land lying between the Logone and Chari Rivers and the Nigerian border known locally as Yaeres. Rainfall averages about 600 mm annually. Livestock resident in the zone area are owned by settled Shua Arab farmers who cultivate millet and sorghum as food crops. They graze their herds of sheep, goats, and cattle on the fallow croplands during the rainy season and migrate short distances toward Lake Chad or the Yaeres flood plains during the dry seasons. There are an estimated 120,000 cattle of Shua Arab type resident in the subzone. A more detailed description of livestock types is included as Appendix I. An estimated 200,000 Mbororo cattle on transhumance from Nigeria and Chad enter the Yaeres flood plains during the dry season in search of water and grazing. The Serbewel section of the LCBC pilot project is located in this zone.

Map 1: Livestock Regions



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The Central Zone may also be divided into two subzones. The first, the Margui-Wandala, is a mountainous area with dense human population and few livestock, except a few sheep and goats. Because of intensive cultivation and food shortages, there is little if any potential to improve or expand livestock production in this subzone. However, severe protein malnutrition complicated by a caloric shortage occurs in the subzone. Attention must be given to improving the protein quality and quantity in the diet from non-animal sources.

The Diamare and Mayo-Dani subzone is an extensive plain with comparatively dense human and livestock population. In the central part of the subzone, the livestock owners are of the Fulani tribal group while those in Mayo-Danai are of non-Fulani Sudanic groups. Most livestock owners are also cultivators of sorghum, millet and cotton. Ox-cultivation is very common particularly among the non-Fulani cattle owning groups and is the most widespread of any area in Francophone Africa. Ox-cultivation has been encouraged by both government extension activities and by the CFDT.[1/] The widespread acceptance of ox-cultivation is believed to have contributed significantly to both the area under cultivation per household and to farm incomes. However, because of increasing competition this is declining while the sheep and goat populations are increasing. During the dry season cattle herds are sent on transhumance short distances either to the Yaeres area in Zone I or to other seasonally flooded areas along the Logone River and in Chad. Rainfall in the area averages about 700-900 mm, over a six to seven month period.

The first two zones are at the southern edge of the Sahel where a precarious balance exists between resources and population. Under these conditions, it becomes imperative to plan future development in a comprehensive way, avoiding uncoordinated actions that create further strains on a tenuous natural balance. Development programs in the north should take the form of integrated rural development projects where infrastructure development is implemented alongside the promotion of balanced farming systems to include food and cash crops and livestock wherever possible.

The Southern zone or Benoue department may also be divided into two subzones. Population in the subzone north of the Benoue is moderately heavy with cropping patterns similar to the Central zone. Rainfall averages about 900 mm over a seven month season. Most livestock are owned by Fulani who are also cultivators. Cattle, the dominant species, are grazed in herds of 100 head and more; sheep and goats are less numerous. Nomadic herds do enter the area during the dry season. This zone is also an important cereals, cotton and groundnut growing area which exports some sorghum to Chad and Nigeria, Ox-cultivation is less well established. The subzone north of the Benoue has been largely cleared of tse-tse as has been an adjacent area in Nigeria under a cooperative program effort.

1/ Compagnie Francaise pour le Developpement des Fibres Textiles, now Cameroonized as SODECOTON, Societe pour le Developpement du Coton.

In contrast to the other subzones, the subzone south of the Benoue and Mayo-Kebi Rivers, has a low human and cattle population. The subzone contains two national parks and game and hunting reserves. Tse-tse fly of both riverine and savanna species are present. There are about 3,000 resident cattle in the subzone and the area is visited twice annually by nomadic Mbororo herdsmen with an estimated 20,000 cattle en route from rainy season grazing in the Yola area of Nigeria to dry season grazing areas in the Central African Republic. Small flocks of sheep which are used primarily for family meat and milk consumption accompany the migratory herdsmen.

The subzone south of the Benoue represents the last area remaining for agricultural expansion in the region. Population density, about five persons per square kilometer, is low in relation to agronomic potential. A prerequisite for developing separate livestock production projects or for including livestock in the farming system will be an extensive program of tse-tse fly eradication and land use/land capability studies. Fly eradication will be extremely difficult because of the absence of natural barriers to reinvasion, the high rainfall and vegetation cover, and the sizeable and growing game population. Despite the difficulties, the first block of 125,000 hectares in this subzone is scheduled for tse-tse eradication in 1975. This same block is a gazetted hunting reserve and is being surveyed by IBRD as a potential area of resettlement for settlers from the over-populated Margui-Wandala. Although the potential for development is good, national policy as it relates to agriculture, livestock, tse-tse eradication, game, and tourism needs to be clarified as a prerequisite for defining development projects in this subzone.

B. Region II - South Cameroun

The southern production and marketing region includes roughly 75 percent of the human population and land mass and 60 percent of the cattle population. This Region was not affected by the long drought period. Cattle production occurs in three contiguous production zones which form a belt across central Cameroon (Map 1). The zone designations and 1974 cattle population estimates are the following:

SUBZONE	Number of Cattle
Adamaoua	1,100,000
Western	350,000
Eastern	120,000
TOTAL	1,570,000

The Adamaoua zone and West zone are without parallel as grazing areas in West and Central Africa. These well-watered uplands at elevations of 1,000 to 2,000 meters provide excellent grazing for 8-9 months of the year. Adamaoua and high altitude grassland

vegetation types cover roughly 70,000 km^2 or 15 percent of the land mass. Average cattle density is roughly 5.5 hectares per animal. The elevation moderates temperatures sufficiently to permit a variety of livestock development possibilities.

In the Adamaoua zone, less than 2 percent of the land is used for cultivation and there is a considerable potential for the development of "modern" production models. (See section on SODEPA, p. J-65.)

In the Western zone, a substantial share of the best soils are used for crop production with cattle grazing the steeper slopes and tops of hills.

Because of beginning overgrazing in the Adamaoua zone and the advance of the tsetse fly in the northwest corner of the Plateau, cattle production from the Adamaoua zone is moving into the Guinean and derived savanna vegetation areas at slightly lower elevations in the Eastern zone, an area contiguous with the principal area of cattle population expansion in the Central African Republic.

The largest share of the estimated 1.4 million cattle are owned by either Fulani or Mbororo cattlemen , although ownership is spreading in the western zone among non-Fulani groups. Settlement patterns differ between the two groups: the Fulani maintain permanent villages and the Mbororo permanent but movable camps. Ox-cultivation has been introduced but is not common among farmers. Herders migrate with their cattle off the central uplands to dry season grazing areas usually located on the fringes of the tse-tse belt. In the west, dry season grazing occurs in seasonally flooded valleys. These areas are increasingly being developed for rice production while one important area, the Upper Noun Valley is being flooded by a water control dam. Transhumance distances are usually less than 50 miles. Both tribal groups now grow a significant share of their food requirements near the permanent settlement or base camp.

Although overstocking is not yet a severe problem and the cattle population is still expanding at only one to two percent each year, there are some areas of range degradation near human population centers in the certain areas of Adamaoua Province and in the western zone. On the other hand, there are extensive areas which are under-utilized because of tse-tse infestation. Other reasons for under-utilization of pastures include the lack of roads and other infrastructure and the lack of human population centers with markets for starchy staples and supplies for the herdsmen's families that can be traded for part of the milk production from herds.

With the exception of the eastern zone, the Guinean and derived savanna areas are sparsely inhabited. The estimated area covered by these vegetation types is roughly 85,000 km^2 or 18 percent of the land area. Development of livestock production in these areas will require either breakthroughs in tse-tse control, prophylaxis or the introduction of trypano-tolerant cattle (see Appendix I).

C. Affects of Drought in the Northern Region

Drought in the Northern region has left both crop and rangeland in a virtually denuded state resulting in increased wind and water erosion. Although rainfall was "normal" in 1974, excessive runoff occurred because of the reduction in protective vegetative cover. Increased runoff resulted in a higher than normal but short duration peak flow in the rivers and streams of the Benoue, Logone and Chari systems.

The range condition of most wet season grazing areas has deteriorated with mostly annual grasses remaining in the middle and northern zones. Some deterioration has occurred in the northern Benoue subzone, but little or no deterioration has occurred south of Garoua.

Dry season grazing areas subject to annual flooding from the Logone and Chari Rivers did not receive sufficient moisture from rainy season flooding during the 1972 and 1973 drought years. The impaired range vegetation growth followed by heavy burning and overgrazing drastically reduced the volume of forage produced by the more palatable and nutritious species.

Although some drought-related death losses reportedly occurred, total numbers of animals did not decline in the area. The herd composition is relatively stable and most non-productive animals have been culled and marketed. The drought spurred longer than normal transhumance migrations of primarily Mbororo herds from Nigeria, Niger, and Chad to the shores of Lake Chad and the Yaeres flood plain of the Logone and Chari Rivers. The shoreline of Lake Chad receded as much as 25 km opening up additional dry season grazing.

Drought conditions caused tse-tse fly to recede to riverine vegetation along streams thus opening up new areas for dry season grazing. For the first time in memory, herds from Niger reportedly pushed as far south as the Benoue River. As some herds are reportedly not returning north in their normal migration pattern, a net increase in cattle numbers is believed to have occurred in the area. Among resident cattle owners in the middle and northern zones, sedentary cattle herds have been forced to become semi-nomadic in search of available wet and dry season grazing areas. A gradual long-term shift in dominance of species may be occurring as numbers decline and the number of sheep and goats increase.

The quality of resident livestock has deteriorated to the point where few, if any, animals suitable for export come from these herds. As a consequence, the value of local animals is much less than that of the larger animals produced by migratory Mbororo and Shua Arabs. The sedentary producers are placing more importance on the production of food and cash crops with scavenger sheep and goats providing the local meat supply.

The cash crop producer who had adopted ox-cultivation was hard hit by the drought and by increasing prices for fertilizer and equipment. Few farmers were able to repay loans during the drought and in 1974, little credit was available for purchase of fertilizer and equipment. The increasing value of large animals resulted in sales of draft oxen. Reduction in the number of draft oxen may partially account for the sharp decline in areas planted to cotton.

III. CHARACTERISTICS OF LIVESTOCK PRODUCTION AND MARKETING

Data on cattle numbers in Cameroon is approximate because no direct census of cattle owners has been carried out. Estimates are based on cattle taxes, vaccination and treatment records and personal estimates of local veterinary staff. The earlier estimates of population by zone suggest a total cattle population of 2.4 to 2.5 million, depending on season.

Southern Region: 1/

The age/sex structure of the herds in the Adamaoua Zone has been documented from vaccination center records (see Table I) that indicate that roughly 59 percent of cattle are heifers and cows, 26 percent are males and castrates, and 15 percent are unweaned calves. The large number of cows and heifers in relation to males and castrates indicates that few surplus males are retained in the herds for non-economic reasons. The census indicates that there are significantly more female calves than male calves in the herds. The higher survival rate for females can only be explained on the basis of herdsmen valuing female calves over male calves because of their greater future contribution to family income and thus presumably allowing heifer calves more the dam's milk supply. Higher male calf mortality is a common feature in semi-nomadic herds throughout Africa and must be considered in estimates of meat supply and proposed development programs.

Estimates of herd productivity factors consistent with the census data and cattle marketing in the Adamaoua zone are calving percentage, 60 percent; calf mortality, 25 percent (30 percent female and 20 percent male mortality); effective weaning rate, 45 percent; immature mortality, 7 percent; and adult mortality, 6 percent. The "commercial extraction rate" has been estimated to be about 12.3 percent and allowing for a 1.5 percent annual growth in the cattle population, the "marketed extraction rate," 10.8 percent. These estimates are above those commonly reported for West Africa and reflect the generally favorable climatic, grazing and disease control situation of the South Region.

1/ Data summarized and updated from Ferguson, D.S., "The Potential for the Stratification of the Cattle Industry in Cameroun and Central Africa", Coloque sur l'Embouche Intensive des Bovines en Pays Tropicaux (IEMVT), Dakar, 1973.

Data based on 1971 productivity estimates give estimates of the cattle available for slaughter in the South Region by age/sex categories:

TABLE I

	Total	Percent
Males:		
Mature	76,100	50
Immature	15,000	10
Females	50,000	40
TOTAL	141,100	100

Of the cattle available for marketing, some are slaughtered in the production zones and the rest are exported to other areas. The records of the Ministry of Livestock and Animal Industry indicate that nearly all of the cattle produced in the Western subzone are consumed locally or in nearby population centers and few, if any, enter the flow of trade cattle to urban markets.

The Adamaoua and Eastern zones export 70-75 percent of available cattle to other consumption areas and 25-30 percent are consumed within the zone, about 6-8 percent are slaughtered locally for export by air (4,000 - 9,000 in recent years from Ngadoundere), and roughly 68 percent are exported on hoof or by truck to Yaounde and Douala. Of the 70-80,000 head exported from Adamaoua, roughly 30,000 followed a trade route through Eastern Cameroon; 20,000 a trade route from central Adamaoua to Yaounde; and 20.000, trade routes to Yaounde from eastern Adamaoua and the

Northern Region:

Documenting the cattle industry of North Cameroon is difficult because the region is part of the greater central Chad, northern Nigeria production and marketing zone. The cattle population is believed to fluctuate from less than 900,000 to over one million head in the dry season. Productivity factors have not been studied but are believed to be less than in the south because of more difficult grazing conditions. There are an estimated 15-20,000 pairs of work oxen. Some 60,000 trade cattle entered Cameroon from Chad in 1973. Of these an estimated 20,000 head were slaughtered in Cameroon and 40,000 reexported on hoof to Nigeria. The numbers of Cameroonian cattle exported to Nigeria is not known.[1/]

Meat Canning and Chilled Beef Export North

SOCAMCO's slaughter house and canning factory located in Maroua is a subsidiary of the Cameroun National Investment Society (SNI). Recent statistics indicate in October 1974, 50 head of cattle are slaughtered daily. Beef is exported to Zaire (20 MT per week) and Yaounde/Douala by air. About 250 sheep carcasses are processed for shipment to Douala weekly and a monthly shipment of 400 head is made to Point Noire, Gabon.

The largest share of the cattle slaughtered are Chadian in origin because few of the local Shua Arab carcasses obtain the 160-170 kg dressed carcass weight required for export. Because the plant has only recently begun procurement and export at these levels, management is not certain that numbers and quality will be available on a permanent basis. The supply is being drawn from cattle normally reexported on hoof to Nigeria. Rahaji slaughter cattle yielding 160-170 kg carcass weights are purchased currently for CFA 26,000 ($110.00).

Slaughter sheep come mostly from the vicinity of Yagoua and cost about CFA 2,100 ($8.00) for an annual yielding of 9 kg. carcass.

A small canning factory is part of the operation where lower quality carcasses and pieces can be processed into canned meat. Operations are hampered by a small internal market, outmoded equipment, insufficient water supply and the high cost of cans.

Future prospects for the canning of meat in North Cameroon are mixed because of the dynamic demand for live animals in the Nigerian market, and other meat deficit countries (including Libya, Congo, Gabon, and Ghana) vying for scarce beef and mutton of good quality.

1/ It is difficult to assign natural origin to trade cattle because of the transhumance patterns. Nigerian data suggest that 30,000 cattle enter Nigeria from Chad/Cameroun sources.

Production and Beef Availability

An estimate of the national production of beef and offals by production region is shown in Table III. The data suggest total national production of about 39,000 tons of carcass (with bones) and an additional 9,650 tons of offals.

Neglecting imports and exports from the Southern region but adjusting for Chad imports in the north, the estimated per capita availability of meat by region is as follows:

TABLE II

Region/Area	Population ('000)	Carcass Offals (Tons)	Per Capita Availability (Kgs)
Region I (North)			
Local	-	14,250	-
Imported	-	4,000	-
TOTAL	1,418	18,250	12.8
Region II (South)	4,690	34,600	7.0
TOTAL Cameroon	6,108	52,750	8.6

Annual per capita availability of beef in the north is about 12.8 kg, while that of the south is 7.0 kg with the national average about 8.6 kgs.each year.

IV. GOVERNMENT ACTIVITIES

A. Ministry of Livestock and Animal Industries

The Ministry of Livestock and Animal Industries was created in 1972 and has directorates of veterinary services, livestock production, sea fisheries and a Secretariat General which, besides administrative and related tasks, is charged with coordinating research and training activities and in formulating development programs and projects in collaboration with the Ministry of Planning and Territorial Development. Field activities are divided into seven sectors which correspond to production regions.

The Animal Health Division provides free vaccinations and treatment and is staffed by 16 veterinarians (mostly Cameroonian), about 65 veterinary assistants (technical school level), 110 animal health

TABLE III

Cameroon: ESTIMATED PRODUCTION OF BEEF AND OFFALS BY PRODUCTION REGION

	REGION I	REGION II			TOTAL
	North	Adamaoua Zone	West Zone	East Zone	Cameroon
Cattle Population (No.)	950,000	1,100,000	350,000	120,000	2,470,000
Production Factors:					
Extraction Rate (%)	10.0	11.0	11.0	11.0	10.6
Average Carcass (kgs.)	120	160	160	160	138
Offals percent (%)	25	25	25	25	25
Beef Supplied:					
Cattle Availability (#)	95,000	121,000	38,500	13,000	244,000
Carcass (with bones) (tons) /	11,400	19,360	6,160	2,180	39,100
Offals (tons)	2,850	4,840	1,540	420	9,650
TOTAL (tons)	14,250	24,200	7,700	2,600	48,750

SOURCE: Team Estimates.

assistants and 70 innoculaters. Staff shortages exist for field veterinarians to supervise subordinate staff. In 1972, CFAF 50 million ($200,000), about CFAF 20 (8 cents) per animal, was allocated for disease control of which 80 percent was spent in the Adamaoua zone alone. The efficiency of the Division could be improved by increasing funds available for field staff, drugs and transport.

The Animal Production Division was created in 1973 with responsibility for animal production, marketing, processing and extension services. Livestock extension activities are essentially non-existent.

B. Training

Veterinarians have training abroad in Belgium, France, USSR and the United States. In 1975 some will be trained in Senegal. Training for animal health assistants is provided at the Centre National de Formation Zootechnique et Veterinaire (C.N.F.Z.V.) at Maroua which graduates 20 "nurses" (post primary education) every two years. The CNFZV receives staff support from FAC and the French Volunteer Program. Veterinary assistants (post brevet) are no longer trained because of their poor performance in the field in vaccinating and simple record keeping. Veterinary nurses may now be upgraded after five years of field experience to the assistant category following a competitive examination.

The present staff while adequate in numbers and training for routine epidemic disease control is not adequate for expanded programs of extension activities, tse-tse eradication, range management and other development related activities. Executive junior staff do not receive additional formal training before promotion although such training is planned. The suitability of existing USAID technical bulletins (in French) as self-training manuals for junior staff should be investigated. Training for middle level needs could be assisted by scholarships for training at the proposed Mali Range Livestock School or at Mando Road school in Kaduna, Nigeria. Animal husbandry and development officers are now being drawn from graduates of the National Advanced School of Agriculture at Yaounde. But upper level staff are lacking in range livestock production, ruminant nutrition, entomology and soil conservation - land use planning.

The implementation of specific development projects will require a training component in most if not all of these specialized areas.

C. Research Capability and Network

There are two principal livestock research stations in Cameroon - the Bambui Station in the western highlands and the Wakwa Station on the Adamaoua Plateau. Both stations have the necessary facilities and senior staff for basic production and breeding research programs for the south production region. Senior research staff at Bambui are Cameroonian, those at Wakwa, expatriate.

The Bambui Station is considered to be part of the FAC supported I.E.M.V.T. research network. It has been conducting trials on the dairy production characteristics of African breeds of cattle and pasture/forage related trials for the highland environment. In June of this year 21 head of Holstein and Jersey heifers were imported as a gift of the US-based "Heifer Project Incorporated." Although climatic conditions should not prevent the successful introduction of exotic cattle, the new introductions are said to be suffering from a number of adoption related problems and probably tick and respiratory disease. Introduction of exotic dairy cattle, particularly to small farms, while technically feasible, will face many management and marketing related problems.

The agrostological and genetic research at Wakwa has also been supported by IEMVT but the breeding herd is maintained by the Ministry of Livestock. The breeding program at Wakwa has included the development of the Wakwa breed, a cross between American Brahman and local Adamaoua and Red Fulani breeds. Recently, crosses of other exotic breeds including Charolais and Black Angus have been made. The crosses (including the Wakwa) have suffered considerable problems with striptothricosis. It is clear that selection among the local breeds is the preferred breeding program for beef production given their greater tolerance to local conditions. Both stations have conducted various cattle feeding trials using locally available forages and agricultural by products.

In 1973, the Ministry of Livestock constructed a new research station at Louggere - Fulbe, located near Guider in North Cameroon, a mixed farming area. Basic infrastructure of senior staff housing and treatment facilities have been constructed. The Ministry plans to use this center to support mixed farming activities including the training of farmers in ox-cultivation and related fodder and pasture production and to use the breeding herd to multiply steers for sale as oxen. This kind of development activity represents the highly realistic view of the Ministry that if cattle production is to continue in this region, if must become more closely integrated into the agricultural system. A senior project manager and an agronomist are to be provided by FAC. Some 3,000 ha. are available at the station and an initial herd of 160 Shua Arab cattle have been purchased as the foundation herd.

Less important livestock research stations are the Kounden Livestock Investigation Center for sheep and Ndama cattle and the National Advanced School of Agriculture for Brown Swiss, Ndama - Wakwa crosses and forest sheep.

D. ONAREST

The National Office for Scientific and Technical Research (ONAREST) was created in June 1974. Its objective is to coordinate all research conducted within Cameroon. Of the nine institutes within ONAREST, three have elements related to livestock development:

1. Institute of Social Science Research - social and economic research.

2. Institute of Forestry and Land Fisheries Research - forestry management.

3. Institute of Zootechnique, Pastoral and Veterinary Research - veterinary medicine agrostology and livestock husbandry. (Formerly I.E.M.V.T.).

An important feature of ONAREST is that it will also seek to integrate the research capability of the university staff into the national research program. This is a step designed to make the national research program and that of the university more responsive to specific national research needs. USAID should seek to strengthen this link between research stations and the University through the involvement of ONAREST in studies related to USAID programs and project evaluation studies and should be receptive to requests for assistance in their research programs and staff training. USAID is currently entertaining a request by the Institute of Social Science Research for support of research on migration.

E. SODEPA

The Society for the Development of Animal Production (SODEPA) was formed by the Government of Cameroon in 1974. Its objective is to promote cattle production and marketing in the south production and marketing region. It will be the implementing agent for the recently approved IBRD loan of $11.3 million in support of livestock development. Activities supported by the loan include:

1. Credit facilities and technical assistance to 35 mixed farmers and 115 settled grazers (Bamenda and Adamaoua).

2. Eradication of tse-tse in about 800,000 ha. and control of the southern advance of G. morsitans into Central Cameroon;

3. Establishment and operation of three government-owned 20,000 ha. ranches;

4. Construction of slaughter houses in Douala and Yaounde and assistance to retail meat marketing;

5. Training of ranch and slaughter plant managers, animal production - extension officers, credit officers, and tse-tse fly extermination and survey teams;

6. Preparation of a second stage project for livestock development which will include measures to ensure the effective use of areas cleared of tse-tse flies, expansion of credit facilities to the traditional sector and continuation of tse-tse fly eradication.

SODEPA will provide technical supervision of project activities, operate the slaughter houses and equipment, and staff the new division of tse-tse control within the Ministry of Livestock. Credit activities will be provided through the Fund for Rural Development (FONADER).

This project represents the first major project to develop the sizeable potential for livestock development in Cameroon. While perhaps too large to be considered a "pilot" project, there are many experimental aspects of the project, particularly loans to farmers in the "traditional sector".

F. Trypanosomiasis Control/Eradication Programs

Trypanosomiasis is widespread in Cameroon and is the single most important technical constraint to livestock production in some areas. Fourteen sub-species of Glossina have so far been recorded in Cameroon which fall in each of the three groups: riverine, savanna and forest species. The current available information on species distribution is fragmentary and not completely reliable. The most important cattle production zones in the western highlands and Adamaoua Plateau are part of the tse-tse free corridor extending from the Bamenda and Maiubilla in Nigeria eastward to the Central African Republic. G. tachinoides and G. morsitans savanna species from the north and the forest species from the south are encroaching upon this corridor. The Fulani maintain permanent homes in the safest areas of the plateaus and send their cattle on dry season transhumance into tse-tse infested areas while the Mbororo graze their cattle in less safe areas.

While the distribution of other species is believed to be static or receding, that of morsitans is highly fluid. Large areas in the central north secton of the Adamaoua Plateau which as recently as the late 1960s supported sizeable cattle propulations are now unused. The creation of game reserves in Benoue Division north of the Plateau and hunting reserves on the Plateau encouraged the expansion of game populations thus allowing localized foci of morsitans to expand. Similar experience have occurred in other parts of Africa and illustrate the need for comprehensive national policies as they relate to livestock and game and other forms of land use. A new tse-tse control division has recently been formed with the assistance of a World Bank Livestock Sector Loan.

The full impact of trypanosomiasis is masked to a great extent by a currently well-organized prophylactic and therapeutic program carried out by the veterinary service on the Adamaoua. Some 900,000 anti-trypanosomiasis injections (some 60,000 north of Adamaoua) of an estimated requirement for 1.5 million are given annually. This program absorbs some 84 percent or CFAF 34 million of the funds available for the purchase of drugs by the Division of Veterinary Services. As resistance to drug treatment is likely to develop, this cannot be considered a long-term solution. Thus, tse-tse control must have a high priority in development strategy for the Adamaoua. On the international level, research to develop vaccinations

against trypanosomiasis and more effective drugs would be of great benefit to Cameroon livestock sector development. Some authorities feel that for the full development of the Guinean and derived savanna areas, attention must be given to the introduction and expansion of trypano-tolerant cattle.

In the northern region, the area north of the Benoue River has largely been cleared of tse-tse in recent eradication campaigns carried out in cooperation with smaller programs in Nigeria. The area south of the Benoue remains to be cleared. However, eradication will be progressively more difficult and risky as programs move from north-to-south. Where the vegetation is more suited to tse-tse, there are no suitable locations for tse-tse barriers, and the game parks and reserves create natural fly and tse-tse havens. A national policy related to the complex of issues - game, tourism, cattle and settlement - is yet to be defined. Such policy definition would be greatly assisted by studies of land use/land capability which would take into consideration alternative land use claims and systems of agricultural/livestock production.

For the northern region, two tse-tse fly eradication field units with spray equipment, transport vehicles and one road grader are available. Six additional technicians are being trained for an expanded program. Additional equipment for an expanded program in the area south of the Benoue River will be required. These programs presumably will come under the supervision of the tse-tse fly control division.

V. PROGRAM RECOMMENDATIONS

The potential for the development of the livestock sector in Cameroon is a substantial one. There have been few development projects by donors in the sector prior to the recently approved IBRD loan (see below) yet there are large areas which could be developed for grazing or where production could be intensified. On the other hand, there are also large areas where overgrazing is a severe problem which threatens the long-run ability of the land resource to support a growing population.

The livestock sector recommendations center on the portion of North Cameroon lying north of the Adamaoua Plateau. The reasons for this focus are related to the recent request by the Ministry of Animal Production for specific development assistance in this priority region adversely affected by the drought but for which adequate trained staff are not available for development-related activities.

Identification of specific production-related activities is handicapped by the absence of comprehensive land use and livestock development plans, wide variability in soils, topography, rainfall, population density, extent of overgrazing, and production/management system. The prevailing patterns of livestock ownership coupled with crop production have favored the development of ox-cultivation and enhance the possibilities and success of programs to strengthen and improve the association of livestock with food crop production.

Sub-regional development priorities differ substantially depending upon present production patterns and the intensity of agricultural cropping and grazing use. In the Serbewel division and the central portion of the region, severe overgrazing is evident over large areas. The range/pasture resource is deteriorating and crop yields are said to be declining. Programs must focus upon relieving grazing pressure by the closer integration of crops and grazing and, where necessary, possible establishment of community grazing reserves as a soil and water conservation measure. A broader approach to development assistance in the LCBC Serbewel sector to include range/pasture management and crop forage production seems desirable.

Given the existing cropping and livestock ownership patterns, integrated rural development programs which include assistance to both crop and livestock enterprises on individual farms and communities are required.

Additional pilot zones in the Diamare and Mayo-Danai districts should be considered.

In less intensively used areas such as those south of the Benoue and Mayo-Kebi Rivers, and certain flood plain areas, land use surveys are required as an aid to choosing between alternative land uses which include conservation of water and grain, mixed farm development and grazing reserves. Additional prerequisites for development include tse-tse eradication and a coordinated national policy related to game, hunting, tourism, livestock and crop production in these areas. The development of pilot integrated rural development zones and a livestock sector program in support of specific development activities to include tse-tse eradication, water development and conservation of land and grazing resources are recommended.

While Cameroonian veterinary staff are adequate in numbers and training for a traditional animal disease control program, they are not adequate for the implementation of development related activities. One DVM (French) and 35 veterinary nurses and assistants service a resident cattle population of about 800,000 cattle and 1.8 million sheep and goats and an additional 100-200,000 cattle visiting the area 's flood plain between the Logone and El bid Rivers seasonally on transhumance from Tchad, Nigeria and Niger. Existing junior staff require upgrading. Training for middle level needs is essential. Upper level staff are lacking in range livestock production, ruminant nutrition, soil conservation/land use survey and planning.

APPENDIX I

LIVESTOCK RESOURCES OF NORTH CAMEROON

The various species and sub-species of livestock common to a given ecological zone or zones reflect the nature of the total environment, the producer's background and their felt needs. A baseline inventory of animal resources must then include the relationship between species/sub-species, systems of management and production, stages of development and levels of productivity, primary constraints in production and the overall possibility of intervening to remove identified constraints.

While estimates of the livestock population in North Cameroon are open to interpretation due to seasonal, in - and out-migration, the relative numerical importance of the different species is the following (1973):

SPECIES	NUMBER	%
Cattle	944,715	36.7
Sheep	691,477	26.8
Goats	863,417	33.5
Horses	9,100	0.4
Donkeys	59,386	2.3
Pigs	8,589	0.3
TOTAL	2,576,684	100.0

The numerical importance of cattle and ruminants is as follows: cattle 36.7%; goats 33.5%; and sheep 26.8% in North Cameroon.

CHARACTERISTICS AND PRODUCTIVE ROLE BY SPECIES

The bovine is the animal par excellance throughout North Cameroon as evidenced by their performance and high regard afforded them by the producers themselves. In general three basic tribal breeds of cattle are common to the area. These are Fulani, Shua Arab and Kirdi with, of course, considerable interbreeding among them. The Fulani type is represented by both Gudali and the M'Bororo which in turn includes red and white syb-types. Kirdi cattle carry a measure of trypano-tolerance and have been derived from a taurine (hampless) base. Poli, south of the Benoue, probably has the greatest concentration and purest specimens of Kirdi type. The middle and northern sectors are more or less the domain of Shua Arab cattle although the M'Bororo Fulani range over the entire north of Cameroon. To a greater or lesser degree cattle are raised under a system of subsistence production in which milk figures importantly in the diet of owners. However, this is much less so in the case of Kirdi producers. Cattle are also worked and used as pack animals. Much of the producer's wealth is vested in cattle. Beef is the primary red meat consumed in urban centers.

Sheep are represented by two basic sub-types in North Cameroon. In the higher elevations and areas of Kirdi tribal concentration, a small variegated type occurs that would trace to an early introduction to

Africa of Ovis longipies stock characterized by horizontally twisted horns.

In all other areas the sheep would have descended from a historically later introduction of Ovis platura in which horns were coiled flat against the face. Today all of the sheep of the area are haired animals, are not normally milked and are grazed in with nomadic cattle or kept as scavengers on farms. It is noteworthy that mutton is the favored red meat of North Cameroon. Sheep increase in size from south to north and internal parasites increase in keeping with the level of rainfall. It is probably safe to say that internal parasites pose the single greatest constraint to sheep expansion. It should be noted that Sahel ecotypes of sheep enter North Cameroon along with migratory cattle herds in the dry season, and as slaughter animals during major Moslem holidays. The species warrants greater attention than previously provided by the veterinary service.

Goats are ubiquitous throughout all of Cameroon. Two basic sub-types can be observed although they are poorly defined as to type and distribution with considerable crossbreeding among them. A short-legged, dwarf-like specimen predominates from the coastal rainforests to the middle zone of North Cameroon. Colors are mixed, with russet sides and darker colors along the top and bottom lines the most common. In the middle belt of the north, heavy bodied dwarf-like animals give way to a lighter boned grey goat that favors greater aridity and that probably trace their ancestry to the grey nomadic animals of the Sahel. Goats are not milked but their skins are valuable and their meat is widely consumed in rural areas. In all areas goats are maintained as scavenger animals without organized husbandry. Their extreme hardiness, resistance to death, high reproductive rate (20-25 percent multiple births), and ability to survive on marginal land - the denudation of which they are major contributors - permits them to multiply in over-stocked and crowded areas. Being almost devoid of flocking instinct, controlled grazing with the species is difficult to attain. In general they graze the degraded land resource base, but cause and effect are not easily separated.

CATTLE BREED-TYPES

The Shua cattle, also called Wavdara, Choa, or Arab Zebu, are basically a short-horned animal. It is thought that the present Shua cattle are derived from the herds which accompanied the nomadic Shua Arabs (meaning Black Arabs) from the country east of Lake Chad to the Dikwa area of Northern Nigeria. Today Shua cattle are found south and southwest of the Lake in Nigeria and the middle/northern belts of North Cameroon. This same general type of cattle extend east of Lake Chad through Ouaddai, Batha, and Kanem prefectures. In fact, the Baggara Arab cattle common to Darfur and Kordofan Provinces of Western Sudan are closely allied to the Shua. Shua cattle in Cameroon are far from pure as compared to the prototype animals found in Bornu Province of Nigeria. They are medium to small in size averaging no more than 1.2 meters in height behind the hump. They are semi-nomadic to sedentary, primarily associated with

agriculture, and because of their docility make good draft oxen. They are however, rather light for heavy plowing. The cows are better than average milkers. Coat colors are normally dark red or brown, but pied with black or red on white is not unusual. The Bornu ranch near Maiduguri, Nigeria is attempting to purify and further improve the Shua breed.

The Adamaoua Plateau can be taken as the nuclear home of Adamaoua Guadali Cattle. Within Cameroon itself two major sub-races can be identified. There are the Ngaoundere and Banyo, both Fulani stock and only semi-migratory. The Ngaoundere can be taken as the prototype animal, measuring about 110 to 125 cm at the withers with a live-weight of 350 to 500 kg. They are distinguished by a characteritically flaccid hump. The most common coat colors are brown, red and white, and black and white. The Banyo strain is slightly taller, the hump is firmer, more erect and sited higher above the withers, and the horns are slightly longer than in the Ngaoundere. Coat coloration is red or white with prominent white patches on the face and underline. North of the Adamaoua Plateau and south of the area inhabitated by Shua Arab cattle, one finds a mixture of poorly defined types of Adamaoua cattle. Also, M'Bororo cattle, both red and white varieties, are commonly encountered as large migratory herds.

CAMEROON
EDUCATION AND HUMAN RESOURCES SECTOR ASSESSMENT

Cameroonian reunification and reorganization of the educational system

When Cameroon became the United Republic of Cameroon in August 1972, the country established a political and administrative structure which permitted it to move towards the consolidation of its educational system. Until that time the Federal Republic had operated two seperate systems of primary and secondary education, each with its own Ministry of Education. The two systems, one modeled on France's educational system in East Cameroon and one modeled on Great Britain's educational system in West Cameroon, were capped by a Federal Ministry of Education and a bilingual (French and English) Federal University.

Cameroon now has one Ministry of National Education, which has been preoccupied for the past two years with blending the French and British primary-secondary school patterns into one national pattern. The West Cameroon pattern consisted of 7 years primary, 5 years lower secondary, and 2 years upper secondary. The East Cameroon pattern consisted of 6 years primary, 4 years lower secondary, and 3 years upper secondary. The revised system will consist of an overall 13 year pattern. Primary and secondary teaching will continue to be in English (with French taught as a second language) in the Southwest and Northwest Provinces and in French (with English taught as a second language) in the other Provinces of Cameroon. The University of Yaounde (formerly the Federal University of Cameroon) will continue to function as a bilingual institution.

Reunification of Cameroon has also permitted State control of higher education and research vis-a-vis expatriate interest and control in these areas.

At the time of national reunification, a Cameroonian was appointed as Vice-Chancellor of the University of Yaounde to replace the former French Rector of the Federal University.

On June 6, 1974, the President issued a decree which brought all scientific and cultural research under the control of a National Office of Scientific and Technical Research, attached to the Ministry of Planing. All of the various research institutes and agencies of the country have been consolidated into nine institutes, each to be headed by a Cameroonian. Other institutes may be created by presidential decree in the future. The nine institutes are:

- The Institute of Perennial Crops
- The Institute of Food and Textile Crops

- The Institute of Forestry and Fisheries Research
- The Institute of Zootechnological, Pastoral and Veterinary Research
- The Institute of Hydrological, Geological and Mineral Research
- The Institute of Industrial and Technological Research
- The Institute of Medical Research and the Study of Medicinal Plants
- The Institute of Human Sciences
- The Institute of National Education

Summary of Educational Programs in Cameroon

General primary school enrollment amounts to 70 percent of the school age population. However, there are wide discrepancies from one part of the country to another, varying from nearly 100 percent in the south-central region to 17 percent in densely populated sections of the northern region. Enrollment in 1970-1971 was 934,000,with enrollment projections of 1,100,000 for 1975-1976 and 1,275,000 for 1980-1981. The annual enrollment growth pattern is 4.2 percent for 1970-1971, 3.3 percent for 1975-1976, and 3 percent for 1980-1981. Most of the primary schools, especially in the former West Cameroon, are operated by religious organizations, with funding by the government.

General secondary school enrollment in Cameroon is approximately 8 percent of the age group population, which is close to that of comparable countries. Total enrollment for both upper and lower level secondary schools were 56,000 in 1970-1971, which was an increase of 13.8 percent over the preceding year. Projected enrollments are: 83,050 in 1975-1976 (8.2 percent annual increase) and 119,300 in 1980-1981 (7.5 percent annual increase).

Vocational and technical education enrollments in 1970-1971 amounted to 19,130. The relationship between vocational and technical schools and the labor market is not clear, since no in-depth study of manpower needs linked to this level has been made. A special study of training at this level linked to manpower needs in the northern region was, however, financed by the World Bank. Schools of this type are both public and private. They range from post-primary rural craft and domestic science sections to "Lycees Techniques" which offer the full secondary cycle. The government intends to make technical education more relevant to economic needs through moderate extension of the technical schools, structural and curricular reforms, and the provision of up-to-date equipment.

Oddly enough, there has never been a public skilled-worker training school in the coastal region, where 75 percent of the qualified labor

force is employed. A draft decree has been drawn up to rectify this situation through the creation, at Douala, of a National Center for Permanent Skilled Trades Training. The Center will be linked closely with industries of the area, both through their participation in the Center's Administration's Council and through their actual training activities.

Agricultural education at the secondary level aims almost exclusively at training a limited number of civil servants at skilled worker and technician levels in agriculture, forestry, animal husbandry and cooperative management. According to the 1972 World Bank team report, eleven small dispersed institutions served an average annual overall enrollment of 250 trainees, with a total teaching staff of 40. These institutions are subsequently being expanded and upgraded, with substantial foreign aid inputs.

Training for primary school teachers is in the process of reform, with a major capital input from a more comprehensive World Bank loan. Teachers have been unqualified, and primary school inspectors (especially in former West Cameroon) have been either non-existent or unqualified to exercise any effective quality control. Private teacher training colleges have consequently been closed down in the Southwest and Northwest Provinces. Budget overruns were so high in comparison to primary school output for West Cameroon in 1970-1971 that 1,000 unqualified teachers were dismissed as an economy measure. Primary teacher training reform is now tied to national primary education reform. The problems in the future will not be so much one of adequate numbers of teachers as it will be one of the appropriateness of teacher training.

There is still a large proportion of expatriates teaching in secondary schools, particularly at the upper level. An IDA financed project to increase the capacity of the Higher Teacher Colleges (ENS) to 850 student places and the 80 places provided at the ENS annex for English-speaking teachers in the western part of the country will raise the proportion of Cameroonian nationals who teach in secondary schools from its 1972 position of 65 percent to 85 percent in 1980-1981. The reform of the secondary teacher training program is also tied to the general educational reform.

Higher education is provided through the faculties, institutes and higher schools of the University of Yaounde and the ENS. Post-secondary enrollments increased from 1,275 in 1965-1966 to 2,700 in 1970-1971. Enrollments were distributed as follows: 1,095 students in law and economics, 110 management, 450 arts, 25 journalism, 105 theology, 430 sciences, 90 medicine, 45 agronomy, 335 education, and 15 sports and community development. The 1970-1971 teaching staff amounted to 220, with 5 percent expatriate. The government plans to add a Polytechnical Institute to the University to train higher technicians, engineers and technical teachers for upper secondary schools. Creation of the Polytechnical Institute is a part of the emphasis on industrial development in the 1971-1976 Plan.

Non-formal education is so diverse in Cameroon that it is difficult to describe in any analytical way or to assess its impact. There is very little coordination or exchange of information in this area of education among government ministries. Government, international organizations (e.g.ILO), bilateral voluntary organizations (e.g. Peace Corps, Swiss Association for Technical Assistance, Dutch Volunteers), and private voluntary organizations (e.g. missions, CRS, INADES) all operate a variety of programs. These range from in-service training for civil servants, to farmer training, youth clubs and community development. A division of the newly created National Institute of Education is responsible for all non-formal education in the Cameroon, but it will be several years before it can analyse and promote a more coordinated utilization of non-formal education by Cameroon.

The Ministry of Planning wants the whole secondary and post-secondary educational system to become more technically oriented, consistant with plans to "localize" positions in the industrial and technological sectors and the development of Cameroonian industry. The Ministry of National Education is expected to implement a plan which over the next five years will have 25,000 students enrolled in technical training out of a total of 90,000 secondary students. The University, in addition to establishing its Polytechnical Institute, is expected to adopt a "technological vocation". Plans call for 50 percent of post-secondary students to be oriented towards technology, with 25 percent of the remainder in letters and 25 percent in science.

With the recent nationalization and consolidation of research institutes under ONAREST, within the Ministry of Planning, Cameroon should be in a position in a few years to make fairly accurate assessments of its manpower needs and forge stronger links between all of the country's education and human resource development needs and its highly diversified programs of education. In the meantime, the country's formal education system alone is faced with a situation of limited job outlets which a recent French government assessment described as 100,000 school leavers at all levels produced each year in a country which has 200,000 salaried employees.

Education Finance

Primary education is supported chiefly by the central government, either directly or through subsidies to the private religious groups that operate the schools. Deficits are made up through collections from parents. Local administrations sometimes contribute labor and materials towards school construction.

Private schools operate more cost effectively than do public ones. For example, at the primary level unit costs for the public schools in 1972 were 26 U.S. dollars versus 17 U.S. dollars for Catholic schools and 18 U.S. dollars for Protestant schools. Unit costs increase proportionately at the secondary and post-secondary levels, but low enrollment in the University,

plus housing and other costs related to the provision of professors through external aid, etc., cause unit costs to jump radically, especially in certain faculties: law $453, letters $1,320, sciences $1,505, health $3,620, agriculture $6,040, and teacher training $3,230.

Government education expenditures are approximately 20 percent of the national budget. Capital expenditures for education development are financed from the following sources: central government 45 percent, local authorities 1 percent, external aid 42 percent, and private sources 12 percent according to the 1971-1976 Plan.

Education Reform

Education reform in Cameroon is a general preoccupation of the Government which gets expressed in a variety of forms and at several academic levels. Reference has already been made to the University of Yaounde adopting a "technological vocation" and to plans to increase the proportion of technical training students at the secondary school level. Reference has also been made to a general education reform after national reunification. This reform was, in effect, an operation to blend one national system out of two historically and structurally different colonial heritages.

A more pervasive and development oriented reform is related to bringing the educational system more into harmony with Cameroonian socio-economic realities, particularly at the primary school level. This reform, aimed at "ruralizing" the educational system, is based on a recognition of the predominatly rural characteristic of the Cameroonian economy and culture. President Ahidjo describes "ruralized education" in the following statement:

> "True ruralized education is one which integrates the African person into his collectivity and, drawing its force and originality from the African spirit, offers a young man or young woman opportunities to find a place, according to his or her abilities and with modern skills, in the labor market."

The most talked about educational reform program is IPAR, which is the acronym for the Institute that was created to organize and implement the "ruralization" of primary schools in East Cameroon in 1968. Following reunification, the Government has recently launched an IPAR project for the former West Cameroon.

UNESCO and UNDP funding for IPAR/East have been extremely heavy in comparison to the results produced to date. AID has also contributed to some of the capital financing for equipment. The IPAR project originally sprung from a UNESCO project to upgrade the qualifications of East Cameroonian primary school teachers. The UNESCO experts reportedly took the position that there was no point in upgrading or training new school teachers

without changing the schools, and they succeeded in securing funds to launch the IPAR project in Yaounde.

IPAR's chief objectives are to teach children to understand their local environment,to learn what they can do about improving it, and "to learn how to learn". The IPAR staff and the teachers they retrain have been working in an isolated, closed system. They have studied the local environment and then come back to Yaounde to prepare manuals of lessons on observation of the local environment. They have also prepared readers with texts and illustrations based on the local milieu. Teachers are brought to the center at Yaounde and trained to use these materials, after which they begin pilot classes at chosen centers.

The teachers and pupils are supposed to get the local community involved as much as possible and work towards improvements which their observations and learning about the local environment have brought to light.

Curriculum materials are written and printed at great expense before they are introduced into the pilot classes. Under present arrangements it has only been possible to introduce the new program and materials for one grade at a time, beginning with the first grade. At the rate IPAR/East is progressing, it may take until 1981 before a complete 6-grade cycle of curriculum materials and retrained teachers are functioning in pilot classes at selected schools around the country.

There have been numerous criticisms of the IPAR/East approach, among them the following:

1. The "pre-digested" study of the local environment by the child with a teacher who follows a manual for the exercise convinces the child that his environment is mediocre and causes him to want to leave that environment rather than try to improve it.

2. The preparation of teaching materials which are subsequently spoon-fed to the teachers is no way to develop initiative in teachers who are in turn supposed to develop initiative in the pupils.

3. The use of French for the school program prevents dialogue with the adult environment.

4. Printing materials at great cost and training teachers to use them eliminates any flexibility or a chance to modify the materials as the experiment progresses.

5. Expansion of the program can move no faster than the financing of materials production and schedule will permit.

IPAR/West has only begun its work. Profiting from the experience of IPAR/East, it will undertake no pilot projects or recommend any reforms until it has completed two years of exhaustive research and consultation.

Expatriate specialists, supplied by UNESCO and European bilateral donors, are at work on the research and consultation with their Cameroonian counterparts. In addition to studying the physical, biological and social environmental of the region, they are consulting with school personnel, government officials, parents and others as to the forms of education the people of the country want, need, and can afford. At the end of the two-year research period, the team will make its recommendations to the government through the National Institute of Education.

The National Institute of Education, created in September 1973, and now brought under the umbrella of ONAREST, has been charged by the government with the advancement of educational reform. Both of the IPAR operations,as well as the related teacher training college activities, have been brought under its research and policy development control. It will take a year or two for the new relationships to become consolidated, but the prospect of more positive outcomes from the IPAR initiative has been improved by the establishment of an INE controlled role.

Recommendations

In general, priority should be given to support for education projects which are linked to other AID projects in Cameroon or the Sahelian zone.

A. In-service training, as opposed to AID funding for formal pre-employment education, will be a more effective utilization of AID training support in Cameroon. The formal system is in a state of flux. The Cameroon government is seeking its own solutions, and the impact of foreseeable AID funding would be of little consequence for the financing of pre-employment training per se. AID support could be either in response to an in-service training need as presented to AID by GOC or in support of an in-service training need which is identified during the course of the design of a project which AID plans to support.

B. AID should seek to respond to those requests from GOC for training support (usually in-service, but pre-employment in exceptional cases) which at the same time increased the capacity of an institution or organization located in Cameroon to provide training for persons coming from other countries of the region.

C. AID support for education and human resources development at the grassroots level (e.g. farmer training) and "outreach" approaches in Cameroon will be more effective and more likely to reach priority target groups if it can be done through organizations that are already operating effectively with this type of approach. Organizations and programs like INADES, the Pedagogy Center of ENSA, CRS, the group which coordinates the farm couple training center at Goyang, etc., could with AID support implement programs that otherwise would require extensive time and expense to develop delivery mechanisms for the desired training. Given the multiplicity of voluntary,

government, and parastatal development organizations that might claim to be effective operants for this type of training and education, AID should first survey and evaluate the performance of records of organizations in Cameroon which fall into this category.

D. Cameroonian assertion of national control over scientific and technical research in the country in terms of the need for critical research to be done before both short and long-term investments are made in many development projects: Time should not be lost whenever the opportunity presents itself for AID to support the capacity of Cameroonians to perform development research tasks on priority problems and to strengthen the new Cameroonian institutes which demonstrate a willingness to move ahead with operational programs of research that favor more successful project identification and design in AID priority assistance categories. This type of support is especially recommended whenever the institute in question can engage the University's interest and participation in its projects, thereby drawing the University closer to a concern for development questions and into a more responsive relationship with the government.

E. The University of Yaounde has reached the point in its development where it can no longer overlook or tolerate what has been a haphazard, ad hoc approach to the organization of post-graduate studies. To the extent that AID support for the University's administration to develop the most relevant possible post-graduate training program matches a need for increased Cameroonian capacity to conceptualize and implement development programs which are relevant to AID priorities, AID should explore ways it can contribute to development of the best possible design of a post-graduate teaching and research program at the University. AID inputs should be both for the support of short-term U.S. specialists, as requested by the University, and for the support of travel of University of Yaounde administrators and professors to learn from the approaches other universities in Africa have taken to similar post-graduate training problems.

F. As the course of the new developments of INE and the two IPAR projects unfolds, AID should be prepared to examine points at which U.S. expertise or financial support would promote the contribution of new forms of primary education to develop in the region of projects it supports or plans to support. U.S. specialized inputs would probably be most appropriate in the area of educational technology and the utilization of various media. Financial support could be considered for special research on teaching methods or innovations in the local organization of primary education, or for the support of a project to extend the use of an innovative approach to the utilization of local materials for making school supplies (such as a simple method for making paper from elephant grass.)

CAMEROON
HEALTH SECTOR ASSESSMENT

Introduction

Cameroon occupies 489,019 km^2 of land which supports a population estimated at 6.1 million, although the first true census has yet to be done and is scheduled for 1975. Seventy-five percent of the population is rural and 47 percent is under the age of 15. The birth rate is estimated at 34/1,000 with mortality at 18/1,000 and the growth rate at 2.1 percent per year. Population density varies from 2.5 per km^2 in the east to as high as 72 in selected western areas with the national average around 12.

The Government is planning to implement the first national census in November of 1975. The official position is that more people are required to provide an adequate population base for development. However, unlike the other Central African countries visited, there seems to be very little effort made to distort the data available or to interfere with the census. To the contrary, a high level national coordinating council for the census has been named and is utilizing both Cameroonian officials and expatriate assistance in an effort to insure that the 1975 census will be complete and will provide valid data for development planning in all sectors.

1. Major Health Program

The spectrum of diseases active in Cameroon is similar to that of other Central West African countries. In order of descending morbidity rates these conditions are:

- Gastroenteritis and dysentery
- Respiratory infections
- Measles
- Malaria
- Complication of pregnancy and childbirth
- Intestinal parasites
- Malnutrition
- Skin diseases
- Trauma
- Tuberculosis
- Leprosy
- Goiter (prevalent at a rate of 40 percent in certain areas)

In keeping with the spirit of the Third Plan, the Government, as represented by the Ministry of Health, is dealing with these diseases on an increasingly preventative basis. For example, health education and sanitation programs are being supported widely throughout the demonstration health zones.

Malnutrition: Malnutrition was the seventh most frequently encountered disorder found in a 1973 WHO study. WHO maintains a regional nutrition expert in Yaounde to be of assistance to Cameroon, Chad, Gabon, and CAR. In Cameroon the Ministry of Health has a Bureau of Nutrition which maintains nutrition data for the country, coordinates nutrition education of health professionals and the public (through the school system and pamphlets).

Nutrition programs are increasingly geared toward education, with the target students being mothers. Nutrition surveys and studies are conducted (now under the auspices of ONAREST) and some of these studies have recently led UNDP to support a project for the local development of enriched foods and another project to test the prophylactic value of iodized salt in dealing with the endemic goiter situation in the east.

According to a 1972 study on Industry and Commerce in Cameroon, Cameroonians produced and consumed approximately 133,000 tons of vegetable protein and 23,500 tons of animal protein, which provided a daily per capita intake of 70 grams of total protein, of which 10 grams were animal protein. The WHO recommended consumption rate for animal protein is 12-15 grams per day, hence the average consumption is not bad in Cameroon. However, due to wide variation in the availability of protein foods, there exist regions where daily protein intake is wholly inadequate. The poor internal transport system in Cameroon inhibits the exchange of protein foods from areas of high production to less fortunate locales. Other problems contributing to regional shortages of protein foods are lack of crop variety, rural exodus reducing field labor, a lack of understanding concerning nutritional needs and food preparation. Studies in Cameroon reveal that children in the urban areas have a higher incidence of severe malnutrition than their rural counterparts.

The recommended protein intake for adults is one gram per kilogram daily and for children it is two or three times that figure. It has been demonstrated that consumption of low protein tubers like manioc and plantain garnished with hot, spicy sauces permits volume and taste satisfaction long before an adequate protein level can be reached.

WHO feels that the best approach to this problem is through health education utilizing national radio, schools, and outreach demonstration projects reaching the villages. To assist with this effort, the University Center for Health Services (CUSS) is considering training a cadre of nutrition agents, and curriculum development is already underway.

Goiter: Like many African countries, Cameroon has an unusually high incidence of goiter. This has been documented for over 30 years, with certain Cameroonian areas having an incidence of over 90 percent.

Thus, the Cameroon is a country with a growing, yet moderate, population which is afflicted by a common spectrum of diseases associated with the tropics and with some degree of poverty. The nutrition state

is not seriously hindering the population, yet if the situation were better understood by those affected, they could do much with the resources at hand to alleviate their health and nutrition problems. The need to better understand in order to participate in improving their condition is the need which led to the definition of the first priority of the health sector programs: To increase the ability of the people of Cameroon to participate actively in development efforts by providing them with comprehensive curative, preventive and health education services.

2. Health Infrastructure

The facilities component of the health sector is being addressed by the Government's modernization and expansion plans for hospitals and health centers. The target is to provide approximately four hospital beds per 1,000 inhabitants. The Ministry of Plan states that current capacity of the 109 existing hospitals is 16,000 beds compared with a present need for 24,000. The Third Plan laid out an ambitious facility construction schedule which has not been adhered to, due to intervening priorities in other sectors, as was the case with the implementation of the Second Plan.

The basic pattern of facilities planned follows WHO recommendations with a hierarcy from a national hospital (500-1,00 beds) to regional hospital centers (9-10 beds), and elementary health centers. The latter category would exist at the village level and would not have hospitalization capacity. In addition, since the Second Plan, a network of Rural Preventive Medicine Units has been planned at the departmental hospital level, but programs have been very slow with less than half of those scheduled for completion during 1970 actually being realized.

One significant facility carefully described as an objective of the Third Plan is a 1,080 bed general hospital in Yaounde. To date there has been no program made toward its construction, although numerous studies have been conducted. There is strong opposition to this hospital on the grounds that its recurrent expenses would cripple the health budget and that its staffing requirements would drain the graduates of Cameroon's University Center for Health Services, precluding their use in rural programs as planned.

Perhaps the key to improvement of the health sector in the Cameroon lies in human resources development, broadly defined. That is via projects designed to meet the just goal mentioned earlier, "to increase the ability of the people of Cameroon to participate in development activities by providing comprehensive curative, preventive and health education services," and via conventional training programs aimed at increasing the quality and quantity of available health personnel.

3. Personnel Availability

At the time of the Third Plan's publication there were 150 physicians in the country, or one per 22,000 population. Of these, only 87 were Cameroonian, and the rest expatriate. The goal stated for 1973 was 400 (or 1 physician per 10,000 people). Similarly, goals were established for several levels of health professionals as appears in Table 1.

The Ministry of Health is staffed almost entirely with Cameroonian professionals with a minimum of expatriate technical assistance. Although the Ministry of Health is fully staffed with professionally trained Cameroonians, there appears to be a lack of integrated data collection and coordinated planning for the evolution of the health services (in two weeks virtually no documentation of information required for the formulation of the Fourth Plan 1976-80 could be obtained from the Ministry).

Prior to the development in 1969 of the University Center for Health Sciences, approximately 20 Cameroonians per year received medical degrees abroad. There are no available figures to indicate what percentages of these were lost through the "brain drain" to other countries, but estimates run as high as 50%.

Recognizing the need to block this loss of skilled manpower and to train health workers specifically suited to the team delivery of rural health care, the Cameroon government developed the University Center for Health Sciences (CUSS). It was the first significant departure from traditional French medical education to appear in Africa. The curricula were developed to address the health needs in rural Cameroon. Several members of the health care team were to be trained by the same institution, sharing the initial core courses.

This approach to medical education attracted assistance from WHO, France, Canada, and the US, and the program developed to the point at which last year there were 209 medical students, 44 nursing students, and 17 lab technicians enrolled. Although several varieties of team members were anticipated, the CUSS began with traditional MD's, nurses, and technicains, and classes have only recently moved into the para-medical levels of training.

The first class of 36 physicians is expected to graduate in June 1975 and will be obliged to serve the Cameroon Government for 10 years. With 35-50 physicians turned out annually, the MD supply will improve dramatically. The main shortage of manpower does not seem to be at the top (MD's) of the professional pyramid, however, but at the bottom (para-medical personnel.)

At present, a great deal of the health care delivered in rural areas is administered by people with little or no formal health training. The Third Plan estimates that a full 80% of rural preventive medicine staff is inadequately trained. Eventually, CUSS intends to develop

TABLE 1

Public Health Personnel Training Goals - Cameroon 1973

CATEGORY	STATUS	OBJECTIVES 1973	EXISTING	TO BE RECRUITED OR TRAINED
A2	Medical Officers	400	250	150
	Pharmacists	45	16	29
	Dentists	18	8	10
	Sanitary Engineers	8	1	7
A1	Senior Technicians Public Health	68	13	55
	Senior Technicians Laboratory	20	5	15
	Senior Technicians Sanitation	20	5	15
	Senior Technicians Social Services	14	0	14
B	State Registered Nurses	1 298	656	702
	Laboratory Technicians	60	0	60
	Sanitation Technicians	36	2	34
	Dental Mechanics	24	2	22
	X Ray Mechanics	10	1	9
	Social Welfare Workers and Educators	148	39	109
C	Staff Nurses	2 762	952	1 810
	Assistants Laboratory Technicians	150	0	150
	Assistant Sanitation Technicians	78	10	68
	X Ray Operators	50	3	47
	Assistant Social Welfare Workers	296	43	253
D	Nursing Aides (1)	4 990	580	4 410
	Sanitation Aides	326	107	219
	Social Welfare Aides	350	158	129

(1) Figures given under this heading also cover the private sector.

To cope with these requirements the State will continue with the action already undertaken and will set up new training establishments during the 3rd Plan:

— The University centre for Health Sciences (CUSS) to train medical and paramedical staff

— The Garoua Nursing School;

— The Yaounde and Ayos Nursing Schools;

— The nursing Aide Centres at Douala, Ebolowa, Garoua, Abong-Mbang and Victoria.

programs for these levels of health workers, but for the present, perhaps retraining of those health workers already serving the rural population would have a greater impact. CUSS officials are in agreement with this line of reasoning, but they caution that their staff and facilities are already overtaxed with growing CUSS programs, and that any retraining of existing health workers could not depend upon CUSS for support in the immediate future.

Also addressing this need to provide health services to the rural population during the time that CUSS graduates are in too short supply, OCEAC is utilizing itinerant health agents to work in demonstration zone villages developing rural health committees. These agents are trained and salaried by the Ministry of Health but spend over 80 percent of their time seconded to the OCEAC village health committee project. OCEAC is also active, via the AID-supported project, in providing the health education component for the training of nurses, itinerant agents and primary school teachers. OCEAC has also recently been asked to develop the public health section of the nursing training program in Chad, CAR, Cameroon, Congo and Gabon.

Perhaps the second manpower training priority for Cameroon, after the training of health workers to work at the village level, is the need to increase the capacity for project design, implementation and evaluation within health professions at all levels. Nearly every member of the health team has administrative responsibilities and these are often as important as the direct application of technology to the impact of programs, yet health workers in both the developed world and the less developed world are notoriously unprepared for their management roles.

Officials at all levels of the health sector in Cameroon commented on the need for training in health services administration, including planning and evaluation, to be incorporated into the curriculum of all health personnel training programs and to be made available to presently employed health workers via workshops or seminars to be conducted in the Cameroon.

4. Summary of Sectoral Constraints and Causes

Scarce financial resources, inadequate quality and quantity of trained personnel, absence of data concerning all aspects of health, shortages of equipment and materials, poor maintenance facilities and critical transportation problems all inhibit the development of the health sector in Cameroon.

5. Government Plans and Priorities in Health

The priorities established by the Cameroon have been expressed successively in the Second and Third Plans and recently by the Ministry

of Plan in an address to the DAP Team. These priorities are remarkably consistent over time and reflect those generally supported by USAID. They are:

> To increase the ability of the people of Cameroon to participate in development activities by providing comprehensive curative, preventive and health education services throughout the country.
>
> To direct the focus of services to preventive medicine directed at the rural population.
>
> To increase both the quality and quantity of health manpower development.
>
> To increase the quality and quantity of health facilities.
>
> To decrease the morbidity and mortality of disease sufficiently to raise life expectancy from 43 to 55 years by 1980.
>
> To promote medical research and data collection.

These priorities have been established by an almost all-Cameroonian staff at the Ministry of Health in spite of severe financial constraints as well as lack of support from the Ministries of Plan and Finance. It may be remembered that during the Second Plan (1966-1970) the health sector received less than half its planned budget, averaging only 9 percent of the national budget. Although funds allotted to health in the Third Plan (1971-1975) have increased by 87 percent, the share of health in the national budget has dropped below 7 percent and the per capita increase has been only 13 percent. External assistance is expected to provide nearly half of the Third Plan health budget.

6. Evaluation of Government Plans

The Government's health priorities are general and can be expected to be valid 5-10 years from now. Their simple expression, however, does not necessarily indicate that resources are ultimately allocated as outlined in the development plans. The health sector in the Second Plan (1966-1970) was planned to have its budget for recurrent expenses increased by 16.2 percent, yet it increased by only 6.7 percent. The other expressed "priority" sectors, such as education and rural community development, also fell considerably short of planned increases. On the other hand, expressed non-priority sectors, such as the military, found their attual budgets increased much more than the Plan called for. The health sector

received only 35 percent of the investment planned in the Second Plan and this was offset by administrative capital expenditures being 190 percent of those planned.

With this fiscal background (similar figures are not yet available for the period of the Third Plan 1971-1975, but the same pattern appears to be emerging), it is not difficult to appreciate how the health priorities expressed remain fairly constant. The priorities and the planned budgets to meet the main health problems attract external aid, yet the planned projects have little chance of being effective when their actual implementation is precluded by budget shifts away from the health sector.

7. External Assistance

As stated above, these external sources are expected to provide nearly half of the Third Plan health budget. Some of the activities being funded by donors are outlined below.

The Ford Foundation is planning a six week workshop in Yaounde next year for upper level health officials from Africa. The Pan African Institute for Development is doing a series of seminars on project design and management, and is investigating the feasibility of involving senior health officials in this series. ONAREST, the governmental agency responsible for coordinating research activities in all sectors in Cameroon, has also expressed the need for skilled managers in all sectors and has asked AID about the feasibility of sponsoring workshops for government officials which focus on the integrated multi-sector approach to development aimed at rural self-determination which AID is taking in the DAP exercise.

The Ministry of Health in the Cameroon has participated in the development of the multi-donor project USAID calls the Strengthening of Health Delivery Systems (625-904), and is looking forward to participating in it when it becomes operational. The project will attempt to enhance the planning and administrative abilities of senior and intermediate level health officials through the use of Africa-based training centers.

While the FED and FAC assistance is largely in the curative arena, USAID, like UNDP and Canada, has sought to focus on preventive programs, health education, and manpower training - all aimed at improving the health and life state of the rural poor. AID's past support of these goals is reflected in several active assistance projects as follows:

On the curative side, AID has little direct involvement although it has some indirect involvement through the activities of the Harvard University faculty members at CUSS. Increased activity in curative services is not foreseen at this time. On the other hand, AID is heavily involved in preventive medicine through the provision of measles vaccine, epidemiology services to OCEAC and, indirectly, through manpower training

and health education projects. AID's contribution to manpower is mediated through the assistance to CUSS by the Harvard maternal and child health team, a grant to hospital construction, the University of North Carolina teaching methodology project, and the Harvard curriculum development project. Further manpower training is carried out in the health education project based at OCEA and in the demography seminar conducted by IFORD. AID will continue to be active in manpower development by maintaining the present activities and investigating ways to augment them, especially in the area of training in health services administration at all levels through the Strengthening of Health Delivery Systems Project. AID assistance to OCEAC's health education effort is contributing to the development of a community participation health services model in the Mefan demonstration zone that can be used in training of all CUSS students. AID is now assisting with the preparation for the national census effort and is investigating projects in rural health agent training and strengthening of urban maternal child health centers.

8. Possibilities for AID Interventions

The Health Sector in the United Republic of the Cameroon is much more advanced than in the other Central African countries. From the vantage point of a potential donor agency, one is presented with a country in which the parameters of health and need are much less demanding of assistance than found in the neighboring countries. On the other hand, the development of the health infrastructure and the talent available in the Cameroonian health officials reflects the ability of the Government to participate in health programs to an extent not even approached elsewhere in Central Africa. From the standpoint of need, countries such as Chad and CAR deserve attention before Cameroon, but Cameroon is the country in which AID has the best opportunity to assist projects to which the Government has already given priority and to make an input into program with the greatest likelihood of success. However, given the magnitude of AID's present involvement in the health sector, and considering the capacity of the government to absorb still more health programs, AID should probably concentrate on maximizing the effectiveness of the existing programs cited above.

CAMEROON
NUTRITION PROFILE

Population

Total: 6.1 million
Growth rate: 2.1 percent (6.8 percent in urban areas)
Rural population: 87.2 percent of total
Major tribes:
- Pahouins
- Bassas
- Bamilékés
- Sudanese
- Foulbés (Peuls) - northern savannas
- Kindis

Agriculture

Major crops:

Millet and sorghum	426,000 tons in 1971
Corn	355,000
Rice	22,000
Manioc	930,000
Sweet Potatoes and yams	328,000
Pulses	42,000
Peanuts	195,000
Cottonseed	27,000
Sesame seed	58,000
Palm oil	56,000
Bananas	125,000
Coffee	88,500
Cocoa	112,000

Peanuts, cottonseed, palm oil and bananas are raised as both food and cash crops.

Livestock and poultry:

Cattle	2.1 million head in 1970/71
Sheep	1.1 million
Goats	2.6 million
Pigs	350,000
Poultry	8.7 million

With the exception of pigs and poultry, which are raised principally in the south, the livestock are confined either to the central Adamaoua Plateau or to the Sudanian zone where the cattle are the property of the Foulbés. The exploitation of livestock in Cameroon meets with unusual difficulties. The presistence of the tsetse fly on the bank of the Benue River poses a

dangerous barrief to cattle migration southward; in addition, the conditions of the northern herds are such that a sanitary cordon must be established to protect the healthier herds of the Adamaoua Plateau. These central herds cannot be further enlarged because of the narrowness of the plateau itself and the diminution of the pastures during the dry season from December to March. There is, therefore, a great need to use the meat of the northern herds to supplement the meat supplied by the central herds. The future of the northern herds appears to be governed by the capability to breed half-caste animals that are more resistant to tsetse-borne disease and thus able to travel through the dangerous tsetse barrier.

General

Government agricultural policies have aimed at regional specialization in food and export crops, improved marketing and distribution circuits, and promotion of cooperatives.

Storage

Earthen silos raised off the ground are the typical village storage facility. The contents are protected against moisture and rodents but not insects.

Fisheries

Fishing is limited to the area around Kribi and Douala and to a few Tilapia ponds in the Yaounde and Dschang areas. Two kinds of fishing are practiced in the Douala Bay area: industrial fishing by motorpowered trawlers that operate in the brackish waters of the estuary of the Wouri River and in the salt water of the high seas; and artisanal fishing by individual fishermen who use manpowered canoes or sailboats and stay close to the coast. The fish are sold in the coastal towns of the Douala area such as Joss, Deido, Bonapriso, Bali, and New Bell, or in suburban agglomerations of Douala such as Béséké.

Diets

In the sudano-sahelian zone of the north, the basic cereal is millet, contributing 90 percent of the caloric intake. Different types are grown, depending upon the quality of the soil and the desired maturation rate. Corn is a supplemental food and manioc, yams and sweet potatoes are eaten occasionally, particularly during the dry season (December-May). Peanuts play only a minor role in the diet. Pulses, sesame seeds and wild leaves are frequently used in sauces. Wild fruits are gathered and eaten. Cattle are kept primarily for wealth but some animals are butchered for local sale or meat processing prior to export. Milk is an important staple of the male diet but women do not drink it. In normal times, these diets provide an average daily caloric intake of 2,200 calories per person. The

total protein intake is adequate all year round; animal proteins are on the short side but available throughout the whole year; calcium, vitamin A and vitamin E intakes are quite low.

In the equatorial forest zone plantain is the basic food. In the intermediate zone corn is important and in the savana to the north manioc is the staple. Game is caught and consumed in the forest and savanna but in the intermediate zone cash crops occasionally provide enough money for the purchase of meat in the markets. The calories provided by these diets average only 1,416 per person per day, representing an alarming shortage. Protein intake is also very low. The diet is deficient in all nutrients except vitamin C.

In the southern forest region the basic foods are roots and tubers, especially manioc, plantains and bananas and a so-called bush butter (sa) that comes from the seeds of Pachylobus edulis and also from palm oil. These basic foods are standard as they are always present in the single major meal prepared by the women for their families. Other foods may include vegetables, such as gumbo, tomatoes, onions, chilies and mushrooms; fruits such as citrus, mangoes and avocadoes; rice; corn, and legumes. Peanuts are popular for use in sauces or as a muching food when freshly harvested. Beef is purchased in the market from Hausa herdsmen or from local butchers who trade with Hausas in Yaounde. By contrast, mutton, goat's meat and pork are never acquired at the marketplace but are obtained by the home-slaughtering of animals which are allowed to run unfetterred about the village, fending for themselves. Game has become scarce. Some fishing is done by rod and reel, but most is carried out by women and children who dam small streams and poison the contained water. Eggs, like chicken, serve mostly as sacrificial offerings, but are becoming more popular as a food for children. Occasionally they are fried and put into sauces. Milk in condensed, sweetened form is a delicacy for well-to-do women and children. The preferred drink is still palm wine. Quantities of food are inadequate and the population of this region seems to be under-nourished in general. The two major deficiencies are found in animal protein and riboflavin. Sizeable deficits occur for all nutrients but two: niacin and ascorbic acid (vitamin C). These deficits are present year-round.

Nutrition Programs

Nutrition concerns in Cameroon are coordinated by a National Committee of the World Fight Against Hunger which is under the control of the Minister of Planning and Development. Each large MCH center includes a milk distribution program and a diet demonstration room where mothers with their young children go to learn how to feed the children correctly with dishes prepared from local products. There is also a milk distribution area in each pediatric hospital ward.

CAMEROON
HOUSING SECTOR ASSESSMENT

I. Background

In response to a request from GURC early in 1974, AID conducted a shelter sector study of the Cameroon in June. The study was conducted at a propitious time, for the Ministry of Equipment, Housing and Land had completed for discussion a draft National Housing Policy statement calling for a high-priority GURC effort to meet the needs of urban low-income families primarily through sites and services programs. This emphasis is consistent with AID's own "Shelter Program Objectives"* which gives high priority to undertakings submitted by host countries which benefit low income groups. Following upon the shelter sector study, AID agreed in principle to a $10 million HG program to assist in the financing of the GURC sites and services program and further agreed in principle to provision of the technical assistance necessary to the implementation of the program.

Discussions between AID and GURC on program development and implementation were scheduled to start early in 1975.

II. DAP Objectives

For the DAP period AID will, in collaboration with the CCCE, direct its program toward helping the GURC: 1) complete the National Housing Policy which was initiated by the Ministry of Equipment, Housing and Lands; 2) develop its capability to implement low-cost housing programs such as sites and services programs; and 3) develop a mechanism for mobilizing capital for housing construction, such as a savings and loan system or a national housing bank.

In consideration of both the AID shelter program objectives and the GURC draft National Housing Policy, AID efforts will be so structured as to benefit directly or indirectly the lower income levels of the population.

III. Shelter Needs

Urban population, defined as persons living in communities of at least 5,000 population where more than 50 percent of the work force is engaged in non-agricultural activity, totaled 1,250,000 in 1972, or 22 percent of the total population. Compared with an overall national growth rate of 2.1 percent, urban areas are growing at an annual rate of 6 percent with the growth rate in some cities as high as 8.5 percent, 10 percent, and even 11 percent. By 1980, a total of almost 40 percent of the population is expected to be urban.

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*PD-55 (Revised) October 22, 1974.

The vast majority of the urban population live in improved traditional housing. Densities in the older areas are high, running up to 500 persons per hectare in the New Bell area of Douala. Access to utilities, while present in the older neighborhoods, is limited: a survey of the Town Strangers neighborhood in Buea identified 3 to 10 families sharing a kitchen and WC. Recent development has taken place in outlying squatter areas, at somewhat less density, but without access to piped water and more distant from employment centers.

GURC estimates a need for 26,940 urban housing units a year for 1974-75 and 34,000 units per year for the period 1976-80. Official programs in 1973-75 built or financed about 1,000 units. These were completed structures of modern materials, which because of standards and construction costs could not be priced within the reach of families at even the medium income level.

IV. Housing Sector Policy

The Second Development Plan (1966-71) identified about 6.8 percent of total investment for investment in the urban shelter sector. Public investment was limited to planning and to provision of urban infrastructure (especially utilities) and represented 8.8 percent of public investment. Housing construction was the responsibility of the private sector.

The Plan also called for establishment of a specialized ministry to deal with housing, an objective realized in June, 1972, by creation of the Ministry of Equipment, Housing and Land.

The Third Development Plan (1971-76) called for proportionately less (although quantitatively more) public investment, again in planning and infrastructure, and a much greater private investment, 70 percent of which was to be in low-income housing. As a result, combined public/private investment in urban shelter was to rise to 9.4 percent of overall plan investment.

The Third Plan also addressed itself to "the tremendous scope of the problems of urban growth to be faced in the major cities of the Cameroon" and called for an urban survey of housing conditions.

In response, the new Ministry of Equipment, Housing and Land organized a special commission to elaborate a new national housing policy. A draft has been prepared and is presently under review by the GURC. It identifies the following aspects of the existing situation:

- quantitative housing needs;
- constraints, including high construction costs, land tenure problems, and insufficient city plans;

- income distribution, identifying medium urban incomes of CFAF 22,000 ($88) for Yaounde and CFAF 18,000 ($72) for other urban centers.

The draft policy proposes a variety of action programs emphasizing assistance to low-income families. These include sites and services programs in Douala and Yaounde, provision of infrastructure to existent squatter areas, technical assistance to self-help efforts and the development of domestic financial resources for housing.

V. Constraints

A. Financial

Capital requirements for the long-term financing of conventional home construction have been met exclusively from external sources, specifically the French aid program. Medium-term funds (7-8 years) are provided to the Cameroon Development Bank (CDB) by the Central Bank. At the present time, the only national savings program is the postal savings systems, and there is no housing-oriented savings program. (A savings-for-housing program attempted through CDB was not successful.)

GURC budgetary constraints also have limited its investment in urban infrastructure during the 1971-76 Development Plan to substantially less than the amount planned.

B. Structural

Primary structural constraints to effective GURC action in the shelter sector have been identified as the absence of a national policy, problems of land tenure, the lack of housing finance institutions, insufficient city plans and GURC/Municipal correlation.

1. National Housing Policy - Policy has been drafted and released for discussion on the ministerial level.

2. Land Tenure - GURC promulgated a uniform land tenure law in July 1974, establishing a national system of tenure and clarifying the categories of public ownership. It is too early to determine the effect of this major reform.

3. Housing Finance Institutions - The draft National Housing Policy recommends several measures to stimulate savings for housing; this is also recommended in the Cameroon Shelter Sector Analysis.

4. City Plans and GURC/Municipal Correlation - City plans are prepared on a very low budget on a very large scale. These schematic plans must be developed on a smaller scale so that they can be useful, responsibility and funds must be determined as between GURC and the Municipalities, and outmoded master-plans must be updated.

C. Construction Costs

These were 60 percent higher in Cameroon than in Abidjan or Dakar, and recent increases in cement and fuel prices have not yet had their full effect.

According to AID's Shelter Sector Study, at least 21 percent of the cost of construction in the modern sector is for imported materials or labor, and probably another almost 10 percent represents expatriated profits.

Use of self-help building techniques and, predominately, local materials, as is implicit in a sites and services program, will make housing available to lower income groups by reducing the expatriated component of housing costs.

D. Manpower

The shortage of qualified managers and technicians, while scarcely unique to either Cameroon or the shelter sector, is a major constraint to implementation of a low-income shelter program. Program determination, site selection and basic design parameters require an experienced and consistent input in order to avoid building in higher costs as a result of slipping into the use of more costly conventional design criteria with which the technicians are more familiar.

Project design, engineering and construction supervision present less of a constraint in view of the capacity of the National Housing Authority (SIC) and its access to qualified expatriates.

A major constraint lies in the lack of persons skilled in community organization and management of low-income housing and shelter concentrations, an area critical to the success of sites and services programs.

VI. Employment

Traditional house construction provides a method whereby unskilled and underemployed workers can be converted over a period of a few years into semi-skilled workers who can meet the requirements in the urban market for labor in all categories of construction. It is a technique particularly valuable in countries, such as Cameroon, which have problems

of chronic unemployment and underemployment. If the GURC can maintain a substantial shelter program, it will not only provide employment in construction, but also in the construction materials and allied industries, such as home furnishings.

VII. Shelter Institutions

Three Cameroonian institutions deal with shelter, the Cameroon Development Bank (CDB), the National Housing Authority (SIC), and the Ministry of Equipment, Housing and Lands.

A. Cameroon Development Bank (CDB)

CDB has a mortgage program to finance the construction of completed homes and a program of two-year loans for purchase of construction materials. Mortgage loans are made primarily to salaried employees who can also provide a co-guarantor, and because of the cost of construction and the nature of the guarantees required, are limited to upper income beneficiaries.

CDB, while recovering somewhat from its previous financial difficulties, still demonstrates financial weaknesses which reinforce the reluctance of its top leadership to attempt lower-income programs with greater underwriting risks and increased administrative expense.

B. National Housing Authority (SIC)

SIC is the only major housing developer in Cameroon and continues to benefit from French technical assistance at the top administrative levels. Technically its projects are competently administered, and the technical office has the capacity to handle a substantially expanded program with minimum expansion of staff.

SIC had about 1,500 units under management at the end of 1974, with a computerized accounts operation with a capacity of 7,000. It has the accounting and administrative capacity for a comparable expansion of its regular rental housing operation.

SIC is not staffed to undertake the substantial community organization effort required for a successful sites and services program, and its leadership lacks enthusiasm for the concept. While it has an accounting, it lacks what could be termed a management capacity and, possibly, interest in sites and services.

C. Ministry of Equipment, Housing and Lands

The Town Planning and Housing Department of the Ministry has stimulated discussion of sites and services, headed up preparation of the

draft national policy, and should assume a major role in its execution. Its staff is very limited, and cannot absorb without considerable technical assistance the major increase in its responsibilities required for supervision of the execution of the new policy, particularly with respect to sites and services.

AID now has under consideration a DG project to provide such technical assistance to the Ministry in connection with the implementation of a proposed HG loan for sites and services.

VIII. Other Donors

The only other donors in the shelter sector are the French, who provide all the long-term housing funds for CDB and SIC, which to date have been directed to the financing of middle and upper income housing, and are represented on the Boards of Directors of both agencies. French technical assistants are assigned to CDB, SIC, and to the Ministry of Equipment (including the heads of the town planning and housing divisions).

IX. Current AID Program

The current HG program, approved in principle November 1974, provides a guaranty of up to $10 million for pilot sites and services projects in Yaounde and Douala, to be directed towards families below the median income in their respective cities. This program is to be the initial step in a larger, more comprehensive program.

In connection with this, a PRP has been prepared for a DG project, which will fund three housing advisors in Cameroon and Gabon. In Cameroon, the project will assist the Ministry of Equipment, Housing and Lands to develop the institutional capacity to undertake sites and services programs on a continuing basis.

X. Proposed New AID Programs

Continuing sites and services or other programs directed at low income families will be elaborated on the basis of feedback from the initial programs. As an illustrative example, the second round of projects may include activity in other urban centers experiencing greater than average growth, such as the large provincial capitals (Garoua, Befoussam) or Regional Centers (Ngaoundere, Maroua, Bertoua) as defined in the 1971-75 Development Plan (or successor Plan).

Program development should begin sufficiently early prior to the end of the current HG program to permit GURC to budget for a continuing and consistent shelter program.

In addition to continuing attention to questions of national housing policy and management capacity in the low-cost housing programs, emphasis will be placed on actions which will lead to the development of financial institutions capable of generating savings and other domestic capital, and channeling it to the long-term financing of low and middle income housing programs.

CENTRAL AFRICAN REPUBLIC

MACRO-ASSESSMENT OF ECONOMY

Overall Performance of Economy

The most recent national income accounts available for C.A.R. are for 1967, when GDP amounted to $195.6 million and GDP per capita was roughly $135. Production in the modern sector is estimated to have increased by 4 percent per annum between 1960 and 1966, and by 9.4 percent between 1966 and 1971. (See Tables I and II, Appendix). The volume of food crop production between 1966 and 1971 increased by an average annual rate of 13.9 percent, while export crop production increased by 9.2 percent over the same period and forestry production expanded by 20.4 percent annually. Given a population growth rate of 2.4 percent, average income per capita appears to have increased substantially during that period.

A. Sectors

In 1967 agriculture and forestry accounted for about 30 percent of GDP, followed by commerce (25%), mining, manufacturing and construction (20%), and government (16%).

Agriculture

Agriculture remains C.A.R.'s most important economic sector, providing a livelihood for nearly 85 percent of the population, and accounting for half of registered exports in 1970, including cotton textiles (20 percent of exports). The principal food crops are groundnuts, cassava, maize, sorghum, sesame and rice, most of which are consumed on a subsistence basis. About 10 percent of groundnuts are marketed, of which half is processed into oil. Most sesame is also processed into oil. Cassava or manioc is the largest crop, accounting for 70 percent of food production in 1971. Maize and rice production have increased in recent years and account for 7 percent and 2 percent of food production respectively. Foodstuffs accounted for about 17 percent of imports in 1970.

The main export crops are cotton and coffee, which accounted for 44 percent of non-UDEAC exports in 1970. Tobacco and rubber are exported in smaller quantities. Cotton production has more than doubled since 1966, while coffee production declined from 12,400 MT in 1970 to 6,000 MT in 1972, owing to labor shortages and adverse weather. Efforts to provide better extension services to farmers and to encourage effective use of fertilizers and pesticides were expected to increase coffee production in 1972 to 11-15,000 MT, approaching the 15,000 MT quota requested from the International Coffee Council. 1/

1/ IMF, Central African Republic: Recent Economic Developments, SM/72/258, Dec. 11, 1972, pp. 1-9. The value of the CFA franc has shifted in terms of the dollar from $1 = CFA 223 in October, 1974 to $1 = CFA 208 as this went to press in March, 1975.

Cattle raising in CAR is limited to the tsetse-free plateau region of Bambari in the central part of the country and to certain districts bordering on Cameroon. The national herd is estimated at 700,000 head, bred by about 10,000 nomadic herdsmen. Despite recent increases in the cattle population, animal health has impeded sufficient increase to satiate the domestic market. CAR imports about 50 percent of its meat from Chad and Sudan.

Tropical rain forests cover some 3.5 million hectares in CAR, of which 1.0 million are exploited. Timber production started to expand in the 1960's through 13 private foreign-owned companies. Expansion in recent years has been on the order of 20 percent per annum. Wood products accounted for slightly over 6 percent of exports in 1970.

Mining

Diamonds are the only mineral presently produced in CAR, although significant uranium deposits exist, and copper, nickel, cobalt, and platinum have been discovered. Diamond production was a significant element in CAR's economic growth during the 1960's, reaching a peak export level, $19 million, in 1968. Production declined from 609,400 carats in 1968 to 468,100 carats in 1971 owing to the withdrawal of the major mining company, following disputes with the government over marketing and taxation. The industry was opened up to artisanal digging in 1969, upon the acquisition of a $60 license, reduced to $2 in 1972. Smuggling has been widespread and has resulted in significant losses in government revenue. Another detrimental effect of artisanal digging has been the drawing off of labor from agricultural production, especially coffee. The country is in dire need of rationalizing its exploitation of diamonds, both to maximize government revenue, and to minimize losses in agricultural production.

Manufacturing

Manufacturing is still at an early stage in CAR and is based on the processing of agricultural products, forestry resources, textiles, light import substitutes, and a diamond cutting factory. Most production is domestically consumed, although textiles, radios, motorcycles, and beer are exported, primarily to UDEAC countries.

The textile companies constitute the basis of the industrial sector, producing blankets, towels and cloth. Between 1966 and 1971, cotton output more than doubled. Local brewery and soft drink plants expanded production by 5 percent annually between 1966 and 1971. Beer exports were about 50 percent of production 1970, but recently local demand has increased substantially and 40 percent of beer consumed is imported.

Transportation

Transportation remains a major obstacle to development. A landlocked country, CAR depends on costly and time-consuming routes through neighboring countries. About 90 percent of CAR's foreign trade moves a total of 1125 miles, down the Oubangui River into the Congo River to Brazzaville, where transshipment is made by rail to the harbor of Pointe Noire. Inadequate loading facilities at Brazzaville limit bulky timber exports, creating occasional backlogs for six months or more. Furthermore, the Oubangui River is not navigable for a month or more every year. In 1974, owing to the drought, the river was not navigable for four months. Roads to Cameroon (and the Douala railway) and Chad exist, but are poorly maintained. Only about 200 of the 20,000 kilometers of classified roads are paved, and many are impassable for several months of the year.

B. National Product

Foreign Trade and Payments

Following many years of deficit, CAR's trade balance was characterized by large surpluses averaging about $20 million per annum between 1970 and 1972. This surplus was more than entirely consumed by the large net outflows for service payments, resulting in goods and services deficits averaging $26 million. Unrequited transfers of about $10 million have offset this deficit only partially. (See Appendix, Table III.) Net foreign assets of the banking system declined from $1.46 million in 1968 to a negative position of $7.4 million in 1972. 1/

Exports in 1970 amounted to nearly $50 million, of which 41 percent were diamonds, 22 percent cotton, 23 percent coffee, and 6 percent timber. Imports in 1970 amounted to about $40 million, of which foodstuffs comprised 17 percent, capital goods 25 percent, consumer goods 35 percent, and primary materials for industry 15 percent. 2/ Both imports and exports remained stable between 1970 and 1972.

CAR's main trading partners are France, which received 48 percent of exports and provided 44 percent of imports in 1970; and the European Economic Community, with 18 percent of exports and 14 percent of imports. Exports to the United States have declined from 28 percent in 1968 to 0.2 percent in 1970, owing primarily to the diamond trade. Trade with UDEAC countries comprised 6 percent of exports and 20 percent of imports. 3/

1/ IMF, p. 47.
2/ CAR, Annuaire Statisque, 1970, pp. 163-4.
3/ IMF, p. 50.

Government Finance

A major constraint for development in CAR has been financial management. There has been a continuing deterioration in the budgetary situation of the government since 1966, the last year a budget surplus occurred. The investment budget, which has also been increasing, augments this deficit. Thus, public debt payments amounted to an estimated 7.7 percent of fiscal income in 1973, but is expected to decline to around 6 percent in 1974. 1/

The government has taken measures to bring the situation under control. Budget estimates have become increasingly realistic since 1973, although the predicated deficit for 1974 is $8.4 million. The government's austerity program includes control of civil service salaries, but the government is also deficit-financing numerous development projects. A favorable development is the return of the IMF economic survey team after the government's refusal to receive them in 1973 owing to criticism of financial management. The IMF is presently prepared to extend a credit of $500 million, reflecting confidence in an improved situation.

Government revenues and expenditures appear in Tables IV and V of the Appendix. The 1973 and 1974 budgets (Table V) were more realistic than previous estimates in that they anticipated deficits of $8.4 million in 1973 and $6.2 million in 1974. However, the 1973 budget was revised several times, each time forecasting a larger deficit because custom duties on imports fell by 14.8 percent. Given an anticipated increase in revenue of 19 percent for 1974, budget revisions may again be necessary for FY 1974. Projected expenditures increased by 11 percent between 1972 and 1973, and by 12 percent between 1973 and 1974. However, actual expenditures for 1972 were lower than projected expenditure, and actually declined from the 1971 level by nearly one percent. The budget deficit will probably be financed as in the past by a budget subvention from France, and by postponing payment to creditors.

A breakdown of actual expenditures is unavailable. A breakdown of projected expenditures shows that personnel outlays in 1973 account for 49 percent of operating expenditures or 41 percent of total project expenditures. Projected operating expenditures account for 87.4 percent of the 1974 expenditures. (See Table VI Appendix.) To the extent that the projected 1974 budget reflects actual expenditures,

1/ Airgram A-80, Amembassy Bangui, 16 April 1973.

the GOCAR compares favorably to other African countries. Salary expenditures are relatively low, and health and education expenditures are relatively high. Defense expenditures (including Ministry of Interior and some components of the Presidency) increased significantly over 1973 levels, but education and foreign affairs expenditures also expanded.

The ability of the government to carry out development programs has improved in recent years. Much of the increase in government expenditures is in the form of public investment in development projects and infrastructure, as well as growing debt payments and mounting defense expenditures. The government is demonstrating a strong will to promote the development of the country, which has great potential over the long run, even though spectacular shortrun results are unlikely.

C. Human Resources

CAR's population is not accurately known. Estimates range from 1.5 million to 3.2 million, with a growth rate of about 2.2 percent. An estimated 850,000 persons are employed in agriculture. There were roughly 50-65,000 salaried persons at the end of 1971, of whom roughly one-fourth were employed in commerce, agriculture and forestry, one-fourth by the government, and one-half by industry and other services. Employment in the government sector in 1970 included 49.8 percent titled functionaries; 41.8 percent support personnel; 4 percent contractors of which three-quarters were foreigners; and 4.4 percent non-conventional workers. 1/ One-third of civil servants work for the Ministry of Education, while the Ministries of Defense and Health employ the next largest number.

Bangui, the capital, claims the majority of both workers and enterprises, with 50 percent of the total 421 enterprises in the country, 51.5 percent of unskilled labor, and 70.9 percent of annual salaries. 2/ Seventy percent of all enterprises are in urban areas (defined as prefectures or sou prefectures). The only enterprises in rural zones are cotton, coffee, or tobacco companies, or timber and mineral extractive industries. Unskilled rural labor is given a very low priority by workers, since it involves hard physical labor with very low recompense. 3/ The rural-urban income ratio averages 1:7.

Primary school enrollment is about 170,000 students or 50 percent of the population age group. Primary school attendance has doubled during the last decade. Secondary school attendance is about 9,270, up from 1550 ten years ago. 4/ A new university opened at Bangui in 1969 and several technical and administrative schools exist.

1/ Emploi et Formation en R.C.A., Yvest Willaert, UNDAT and Ministry of Plan, Bangui, Sept. 1972, p. 60.
2/ Les Motivations de l'Exode Rurale en R.C.A., UNDAT, POP/INF/142, 24 May 1973, p. 35ff.
3/ Ibid., p. 11.
4/ UNDP, Country Programming, DP/GC/CAF/R.1, 24 April 1972.

International out-migration is a serious problem in CAR. A majority of the young people who leave the country for studies abroad never return, and some who complete studies at home find ways to go abroad. Government planning to combat this problem appears to be non-existant, although through careful slotting of government positions against foreign (mostly French) scholarships given the wave of out-migration could be stemmed. Presently, students who go abroad have no assurance of a job when they return.

Government Priorities

Since attaining independence, CAR has prepared several development plans: A Preliminary Investment Program (1960-62); an Interim Development Plan (1965-66); a Four Year Plan (1967-1970); and a new Five Year Plan (1971-75) which had not been officially adopted by 1973. The 1967-70 Plan is the most comprehensive of these plans. Table VII (Appendix) lays out the planned and actual expenditures of that Plan. The Plan targets 85 percent attained, with 18 percent of actual expenditures for agricultural production, 21 percent for industry, 22 percent for physical infrastructure and 27 percent for social infrastructure.

The 1971-75 Development Plan doubled the annual investment targets of the previous Plan and devoted two-thirds of investments to directly productive sectors (agriculture, mining, industry); one-fifth to physical infrastructure; and the remainder to social infrastructure. This Plan coincides with "Operation Bokassa" which aims to:

(1) integrate the rural masses into the market economy by reforming marketing and exchange structures;

(2) educate and train a new generation to take over economic activities; and

(3) promote the industrial sector for rational exploitation of national wealth.

The overall policy of the government is to centralize control over agricultural production (including procedures that are tantamount to forced labor), and to promote free enterprise in other sectors.

Almost all visible evidence of development, however, is limited to Bangui with its myriad construction projects.

The attitude of the CAR government to regional organizations is largely favorable. Relations with France exhibit a love/hate relationship resulting in periodic ousters of groups of French technicians. However, the government is dependent on France for both aid and budget

subventions. UDEAC is headquartered in Bangui and trade within UDEAC seems to be beneficial. CAR is further dependent on regional cooperation owing to its land-locked situation.

Table I

Central African Republic: Volume of Manufacturing Production, 1966-71

	1966	1967	1968	1969	1970	1971
			(In thousands of hectoliters)			
Beer	86.4	96.8	90.8	92.1	110.2	118.6
Soft drinks	21.9	22.4	26.3	28.0	31.9	30.1
Vegetable oils	13.6	15.3	19.5	19.9	22.0	26.2
Groundnut oil	9.3	10.1	11.5	...	...	...
Cottonseed oil	2.0	2.2	4.0	...	...	...
Sesame oil	2.3	3.0	4.0	...	...	...
			(In thousands of metric tons)			
Butter	17.0	20.0	29.2	...	...	...
Cheese	17.0	20.0	36.2	...	...	...
Soap	2.3	2.6	3.2	2.5	3.3	2.9
Ice	0.3	0.4	0.5	0.5	0.7	0.8
Bricks	4.5	6.1	6.5	6.4	6.9	6.0
			(In millions of meters)			
Cotton textiles	5.2	5.3	6.0	8.3	14.5	12.9
			(In millions of pairs)			
Footwear	0.6	0.5	0.3	0.5	0.7	0.6
			(In millions of units)			
Plastic bottles	0.7	0.8	0.7	0.2	0.5	1.8

Source: Data provided by the C.A.R. authorities.

I.M.F. Central African Republic: Recent Economic Developments, SM/72/158, 11 December 1972, p. 16.

TABLE II

Central African Republic: Estimates of Agricultural Production, 1965/66-1971/72

(In thousands of metric tons)

	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71	1971/72 1/
Food crops							
Cassava (dried)	...	236.0	243.0	250.0	500.0	500.0	...
Groundnuts	60.5	60.0	74.3	68.1	75.0	74.0	74.0
Maize	32.0	36.0	40.0	40.0	47.2	48.0	49.5
Sorghum	43.2	35.0	41.9	32.6	44.3	47.0	...
Sesame	7.5	9.3	13.0	14.0	14.5	16.5	17.4
Rice	6.5	6.5	7.6	9.8	12.3	17.0	13.9
Potatoes	0.4	0.4	0.4	0.2	0.4	0.5	0.6
Vegetables	0.7	0.7	0.7	0.7	0.6	0.7	...
Palm products	1.5	1.3	1.0	0.7	0.8	0.8	0.9
Export crops							
Cotton 2/ (ginned)	8.8	14.7	17.8	21.6	22.1	19.7	19.5
Coffee 3/	11.6	9.3	8.3	9.2	12.4	10.4	6.0
Tobacco	0.5	0.7	0.9	0.8	1.0	0.9	0.9
Rubber	1.1	1.0	0.8	0.9	0.8	1.1	1.0
Lumber	224.0	217.0	253.0	361.0	465.0	498.0	...

Source: Data provided by the C.A.R. authorities. I.M.F., C.A.R. Recent Economic Developments, SM/72/258, 11 December 1972, p. 4.

1/ Estimate.
2/ Cotton season starts in December.
3/ Coffee season starts in October.

TABLE III

Central African Republic: Balance of Payments, 1969-72

(In billions of CFA francs)

	1969	1970	1971	Prel. Est. 1972
Goods				
Exports, f.o.b.	10.64	13.73	13.88	13.60
Imports, f.o.b.	9.59	11.00	11.25	10.69
Trade balance	1.05	2.73	2.63	2.91
Services (net)				
Freight and merchandise insurance	-3.89	-4.59	-2.58	-2.44
Other insurance and transport	-0.92	-1.39	-1.22	-1.99
Travel	-0.48	-1.12	-0.73	-1.17
Investment income	-0.39	-0.57	-0.79	-0.68
Services under aid programs	-1.70	-1.89	-1.97	-2.17
Other services	0.29	0.31	0.77	0.34
Total	-7.09	-9.25	-6.52	-8.11
Services for which payment not yet made 1/	-1.41	-1.72	-3.19	-1.95
Total goods and services 2/	-7.45	-8.24	-7.08	-7.15
Unrequited transfers (net)				
Private	-0.42	-0.37	-0.57	-1.04
Official	3.47	3.32	3.51	3.42
Total	3.05	2.95	2.94	2.38
Total current account	-4.40	-5.29	-4.14	-4.77
Nonmonetary capital				
Private	0.25	1.17	0.38	0.25
Official arrears	1.41	1.72	3.19	1.95
Other official	0.28	-0.07	0.52	0.62
Total capital account	1.94	2.82	4.09	2.82
Errors and omissions (net)	-0.39	1.24	1.32	---
Total current and capital accounts (including errors and omissions)	-2.85	-1.23	1.27	-1.95
Allocation of SDRs	--	0.44	0.39	0.38
Overall balance	-2.85	-0.79	1.66	-1.57
Monetary movements (increase -)				
Central Bank	1.68	0.77	-0.73	
Commercial banks	1.17	0.02	-0.93	
Total	2.85	0.79	-1.66	1.57

Sources: Data provided by the C.A.R. authorities; and staff estimates. IMF, p. 46.

1/ Includes some imports and capital.

2/ Includes some capital.

TABLE IV

Central African Republic: Government Budgetary Revenue and Expenditure[1] 1966-72

(In billions of CFA francs)

	1966	1967	1968	1969	1970	1971	1972 Original budget	1972 Modified budget
Budget revenue	8,724	3,887	9,706	10,331	9,636	10,515	11,680	13,805
Proportional and progressive income tax	810	850	1,080	1,340	1,397	1,382	1,256	2,066
Personal taxes	781	717	799	576	720	914	988	1,025
Taxes on production and domestic transactions	1,478	1,711	1,737	1,736	1,757	1,708	1,716	1,790
Taxes on foreign trade	3,609	3,585	3,853	3,814	3,517	3,861	4,023	4,408
Other tax revenue	516	532	1,184	1,658	1,285	1,872	2,197	2,381
Nontax revenue	1,530	1,492	1,053	1,207	960	778	1,500	2,135
Current expenditure	7,994	9,376	10,402	10,759	10,662	11,657	10,421	12,559
Wages and salaries	3,645	4,214	4,220	4,797	5,691	6,028	5,585	6,598
Materials and supplies	2,281	2,444	3,264	3,361	2,816	3,671	2,772	3,761
Transfer payments	2,068	2,718	2,918	2,601	2,155	19,58	2,064	2,200
Current surplus or deficit (-)	730	-489	-696	-428	-1,026	-1,142	1,259	1,246
Capital expenditure	-618	-499	-279	-258	-650	-1,407	-1,259	-1,246
Overall surplus or deficit (-)	112	-988	-975	-686	-1,676	-2,549	--	--

Source: Appendix Table V of I.M.F., Central African Republic: Recent Economic Developments, SM/72/258, p. 31.

1/ Budgetary operations as recorded in Treasury final accounts (imputations définitives). Figures for 1966-69 include operations carried out during the complementary period.

TABLE V

BUDGET OF THE CENTRAL AFRICAN REPUBLIC

REVENUE ESTIMATES 1972 - 1974 (millions of CFA francs)

($1 equals approximately 240 CFA francs)

	1974		1973		1972	
	Receipts	% of Total	Receipts	% of Total	Receipts	% of Total
CURRENT RECEIPTS						
Direct taxes	4,653	29.6%	4,102	30.9%	4,348	31.5%
Indirect taxes (customs & sales taxes)	6,663	42.4%	6,377	48.0%	6,460	46.8%
Stamp and other taxes	1,841	11.7%	866	6.5%	963	7.0%
Total Fiscal Receipts	13,157	83.8%	11,345	85.4%	11,771	85.3%
State Revenues	206	1.3%	234	1.8%	305	2.2%
Diverse Receipts	1,603	10.2%	1,203	9.0%	1,171	8.5%
UDEAC Solidarity Fund	740	4.7%	500	3.6%	500	3.6%
Receipts from previous budgets	---	---	---	---	41	.3%
Total Non Fiscal Current Receipts	2,549	16.2%	1,937	14.6%	2,017	14.6%
TOTAL CURRENT RECEIPTS	15,706	100.0%	13,282	100.0%	13,788	99.9%
EXTRAORDINARY RECEIPTS	---		---		17	.1%
GRAND TOTAL OF RECEIPTS	15,706		13,282		13,805	

Source: Airgram A-48, AmEmbassy Bangui, 1 June 1974.

Table VI

PROJECTED 1974 EXPENDITURES

Operating Costs	
Public Debt & Pension	8.0%
Presidency (including Industry & Commerce Tourism	3.5%
Ministry of Interior Surete National)	6.6%
Ministry of Defense	9.7%
Ministry of Education	12.8%
Ministry of Foreign Affairs	4.1%
Ministry of Public Health	5.3%
Ministry of Agriculture	4.7%
Shared Expenses (for local government)	12.0%
Subsidies and Contribution (Domestic & Int'l Org.)	8.1%
Other Ministries (13)	14.6%
	82.4%
Investments	17.6%
(General studies, statistics, Production, transportation and television, social development and International Organizations)	100.0%

Source: Airgram A-48, AmEmbassy Bangui, 1 June 1974.

TABLE VII

Central African Republic: Expenditure Under the 1967-70 Development Plan

(In billions of CFA francs)

	Total expected expenditure 1967-70	Actual					Actual as per cent of expected
		1967	1968	1969	1970	Total 1967-70	
Production	15.20	6.27	3.37	2.54	1.19	13.37	88.0
Agriculture	6.58	2.45	1.68	0.77	0.76	5.66	86.0
Mining	1.94	--	0.10	0.65	--	0.75	38.7
Energy	0.48	0.13	0.15	0.21	--	0.49	102.1
Processing industries	6.20	3.69	1.44	0.91	0.43	6.47	104.4
Physical infrastructure	6.48	2.50	1.10	2.07	0.96	6.63	102.3
Transport and telecommunications	5.08	2.31	0.73	1.77	0.81	5.62	110.6
Tourism and commerce	1.40	0.19	0.37	0.30	0.15	1.01	72.1
Social infrastructure	11.30	2.67	1.97	2.32	1.47	8.43	74.6
Education and health	3.35	1.45	0.34	0.56	0.34	2.69	80.3
Urban development	7.16	1.06	1.25	1.26	1.05	4.62	64.5
Information and administrative equipment	0.79	0.16	0.38	0.50	0.08	1.12	141.8
Research and studies	3.25	1.00	0.73	0.52	0.18	2.43	74.8
Total expenditure	36.23	12.44	7.17	7.45	3.80	30.86	85.2

Source: Data provided by the C.A.R authorities.

I.M.F. Central African Republic: Recent Economic Developments, SM/72/258, 11 December 1972, p. 21.

CENTRAL AFRICAN REPUBLIC

AGRICULTURAL SECTOR ASSESSMENT

Introduction

The Central African Republic with sparse population, relatively favorable climatic conditions, and significant unexploited resources has good agricultural development potential. This potential will be difficult to realize within the time frame of the Development Assistance Program because of a number of constraints that include: inadequately and ill trained agricultural extension personnel; the relative absence of applied agronomic research on principal food crops; and deterioration and degeneration of planting material and seed stocks.

Over and above constraints that are specific to the food crop subsector of agriculture are low levels of education and lack of trained manpower in the population at large, precarious internal and external financial situations, limitations imposed by the small size of the domestic market, inadequate and expensive transport networks to other markets which condemn CAR to an indefinite status of relative isolation.

Physically land-locked and on the periphery of major economic and trade patterns, CAR has sufficient resources to sustain its traditional subsistence agricultural production system. It should be noted, however, that CAR is already exhibiting similar, although more limited, symptoms of ecological degradation including overgrazed pastures, declining productivity, and soil erosion. In a certain sense, the relationship between a resource base that can sustain a subsistence existence and an ecology whose fragile nature is only beginning to be comprehended illustrates perhaps that the margin of survival is for the present sufficiently wide to provide the time required to undertake preventive measures. Such measures will face difficulties as great as those experienced in the Sahel. In fact, programs undertaken in CAR may prove to be even more difficult to implement since the government lacks the sense of urgency associated with the drought, its priorities are less clearly identifiable, and external donor attention is not focused upon the country's problems. In the best of circumstances development will be slow and given the extremely low base, will result in unspectacular incremental changes in patterns of life and personal expectations. In the longer run, social and economic development will not come from any one specific project or sectoral program but will be the result of a cumulative impact of programs in all sectors.

Geography, Population and Agricultural Production Systems

The Central African Republic is a vast, well-watered plateau, the northern portion of which drains into the Chari Basin and eventually into Lake Chad. By far the larger, southern portion of the country drains into the Oubangui River, a confluent of the Zaire. This southern region forms a transition between the equatorial forest and the sub-Saharan savannah.

In the south, climate is humid and tropical but not as oppressive as that associated with many of the coastal areas of west and central Africa. Two rainy seasons occur in this zone, a short season of rains between March and May and a longer period extending from July through October. In the northern section of CAR there is only one, shorter rainy season. Vegetation varies from the tropical rainforest in the southwest to semi-desert in the northeast. The great bulk of the land is open savannah.

Population estimates (1970) range from 1.5 to 2.3 million and is growing at a rate of 2.8 percent annually depending upon source. A census to be conducted under United Nations auspices in March 1975 is expected to give a more reliable estimate. The distribution of population is sparse and density is low, about 2.4 per square kilometer with the greatest concentration in western CAR. The eastern third of the country is virtually uninhabited. The urban population is estimated to be 26 percent of the total and is concentrated in Bangui, the capital and four smaller urban centers.

Agriculture remains CAR's most important economic sector, providing employment for nearly 85 percent of the population. The most important crops are manioc, peanuts, sorghum and rice; of secondary importance are corn and sesame. The share of agriculture in GDP (including subsistence crops) valued at current market prices is 30 percent (1970). Cotton and coffee together account for 75 percent of all agricultural exports.

The principal staple food for the majority of the population is manioc which is grown in most regions with annual production around 500,000 tons. Peanuts are produced in the north and east-central areas; usually in relation with cotton. Peanuts are an important subsistence food crop; production in 1971/72 was estimated to be 74,000 tons with 10 percent being marketed, about half of which is processed into cooking oil for the domestic market. Corn is grown in the southern and central parts of the country; production is around 45 to 50,000 tons annually. Millet and sorgum are grown in the north and production is 50,000 tons, while rice production along the rivers in the south totals about 14,000 tons. Sesame production totalled 17,000 tons in 1971/72; most of this crop is processed into oil.

Cotton production is normally the farmers' main source of cash income although some receipts are also earned from the sale of peanuts, sesame, and cereals. In the area around Grimari in 1973/74 farmers earned more cash per hectare from peanuts than from cotton.

Yields of cotton this year will be low because of insufficient fertilizer, insects, and prolonged rain during flowering, and farm income will suffer accordingly. Most other crops produced by the subsistence farmer, sorghum, millet, corn, and rice usually command low prices at harvest time. If

stored and sold by the farmer during the dry season, price and farmer returns can increase substantially. Improved on-farm or village storage could facilitate more orderly marketing as well as assure adequate supplies to both producer and consumer and higher incomes to farmers. With more orderly markets and assured production, subsistence farmers would voluntarily produce cotton for sale and eventual export.

Agriculture Institutions

The institutional infrastructure to support food crop production activities is inadequate. The responsibility for planning, coordinating and executing food production projects is entrusted to a newly formed Bureau of Coordination and Studies in the Ministry of Agriculture and is just beginning to carry out its functions and although the bureau is well-staffed, it lacks experience. Implementation of projects at the local level is constrained by insufficient and ill-trained extension agents. Agricultural research effectively came to an end with the dismantling of the French research institutes in 1970.

production scheme managed by UCCA (Union Cotoniere Centrafricain) the cotton monoply that is managed by CFDT and financed in large part by FED. A typical situation is exemplified by the Grimari district where there are 19 agents (moniteurs de base) that serve (theoretically) 8,758 farmers. In addition to cotton, these farmers produce manioc, peanuts, upland rice, corn, and sesame, yet the agents are almost exclusively involved in delivery of inputs and information for cotton production.

Program Recommendations

Promising areas for program development in CAR include: (1) applied agronomic research on the major food crops; (2) production, multiplication and distribution of improved seed; and (3) improvement of extension services.

As in many other west and central African countries, CAR's agricultural policy until recently has emphasized export crop production, principally cotton and coffee, at the expense of food crop production. However, deterioration and degeneration of seed stock and planting materials coupled with declining yields have created a realization that increased and improved food production must receive the highest priority. The current five-year development plan (1971-1975) incorporates quantitative and qualitative goals for food crop production and the new five-year plan (1976-1980) will incorporate similar goals.

To accomplish the goals of increasing and improving food crop production, the Ministry of Agriculture with assistance from UNDP-FAO has embarked upon a program that will attempt to: (1) reestablish previously existing research capability for food crop production; (2) produce elite seed of major food crops including cereals and oil-seeds; and (3) assist in training extension agents in improved food production practices. The Development Assistance Program for CAR should strongly support these efforts which are basic to improving food crop production. Since UNDP-FAO have taken the lead in this area, U.S. assistance should be provided in close cooperation and coordination with them. Such an association would accomplish the objective of improving food production possibilities, at the same time minimizing the number of American technicians to be recruited and stationed in CAR.

Bilateral assistance in food production in association with other donors provides a unique opportunity to influence and orient CAR's agricultural policy over the medium and long-term. In addition, relationship between the International Agricultural Research Institutes (including the Major Cereals Institute in northern Nigeria) and CAR should be further developed. The anticipated reestablishment of national agronomic research and extension capabilities should facilitate this important research linkage.

CENTRAL AFRICAN REPUBLIC

LIVESTOCK SECTOR ASSESSMENT

Introduction

The Central African Republic (CAR) is located in the heart of Africa, between 15 degrees and 25 degrees longitude and the fourth and ninth parallels. The area of the country is 238,000 square miles and the population is estimated to be 2 to 2.5 million giving an average population density of approximately ten persons per square mile. There are areas of population concentration along roads and in the central-south part of the country but zones of dense populations do not occur.

The CAR is part of the central African plateau with average elevations of 2000 to 3000 feet. Highest elevations occur in the western part of the country, which is an extension of the Cameroonian Adamaoua plateau. There is one long dry season from mid-November to mid-March. With the exception of tropical rainforest in the southwest portion of the country, the predominant vegetation types are derived and guinean savannah characterized by fire climax savannah woodlands on higher and drier areas and forest salients in most water courses. The vegetation and climate provide suitable habitat for flossina species throughout the country. The impact of tsetse fly and trypanosomiasis on cattle production are discussed in later sections, but can be readily observed from Map 1.

CAR's distance from the sea and the absence of developed rail or road links to ocean ports manifest the country's geographic isolation and make expansion of its international commerce difficult. The main freight artery is through the river port of Bangui via the Oubangui and Congo Rivers. Goods travel by river barge some 700 miles to and from Brazzaville, where they are transshipped over a 300-mile rail line connecting with Pointe Noire, the nearest seaport. Bangui is also an important transshipment point for goods destined for Chad. Domestic distribution of commodities within CAR and onward routing to Chad are made over an extensive, unpaved road network, parts of which become impassable during the rainy season.

Cattle Production Zones - CAR 1/

The presence of cattle in CAR is recent, dating only from the early 1920's. At about the turn of the present century, the Bororodji or M'Bororo tribe (one of the affiliates of the Fulani peoples), then inhabiting an area of southeast Nigeria, fled eastward to avoid Islamization.

1/ The best written description of the industry in CAR are included in Lacuouts, Sarniguet and Tyc, Les Cheptel Bournou de la Republique, Centre-Africaine, Production, Commercialisation et Perspective d'Avenir.

They quickly spread over northeastern Nigeria, the Adamaoua Plateau of Cameroon and into the Baguirmi area of Chad. This eastern migration brought M'Bororo cattle to the plateau of west-central CAR by the early 1920's and into the Bambari area of the southcentral part of the country by the 1940's.

In the years 1955-1966, the French imported nearly 5,000 head of trypano-tolerant cattle into CAR, chiefly from Ivory Coast, and distributed them widely in farming areas under an arrangement of loan-and-repayment-in-kind. The major objective of this program was to encourage the use of animal traction in support of cotton production.

More recently and as a result of drought, areas along the Gibingui River in the vicinity of Crampel, are progressively being used by cattle on other than a dry season basis. The estimated livestock population by types is given in Table 1. The estimated cattle distribution population by production zone and cattle offtake for 1974 are presented in Table 2. The two principal cattle production zones in relation to tsetse fly incidence are shown in Map 1 and are described in the following sections.

A. Western Zone - Bouar: The heart of this zone is in the high elevations around Bouar of the eastern extension of the Adamaoua plateau, an area relatively free of tsetse flies. This sandstone plateau serves as home base and provides rainy season pasture for an estimated 500,000 to 600,000 M'Bororo cattle and is the primary production zone of the country. The area is cut by many steep sided ravines, heavily galleried with trees that are interspersed with open parkland. Overgrazing in some sites is leading to erosion and degradation of this rather fragile land resource base. The area is well watered with over 1200 mm of rainfall in a rainy season from May to early November.

1. Breeds: Although there are animals carrying admixtures of Adamaoua Guadali blood and a few trypano-tolerant cattle in the zone, zebus, particularly the large-framed M'Bororo breed, predominate. M'Bororo cattle are ideal migratory animals because of their hardiness and adaptability to a wide range of environmental conditions, varying from extreme aridity to high rainfall.

2. Management Practices: The traditional M'Bororo management pattern common to other countries is followed in this production zone. Grazing herd size is 50 to 100 head with herd composition strongly influenced by cows being milked for subsistence consumption and income. Milk is a staple in the daily diet of the producers and is also bartered for limited supplies of local food items.

Herds move off of the high plateau in November seeking dry season grazing to the south and east at distances seldom exceeding 200 kilometers from Bouar. However, this area is infested by the tsetse fly G. Fuscipes (see Map 1), which presents a considerable risk from trypanosomiasis infection.

MAP 1

TSETSE FLY DISTRIBUTION AND CATTLE PRODUCTION ZONE

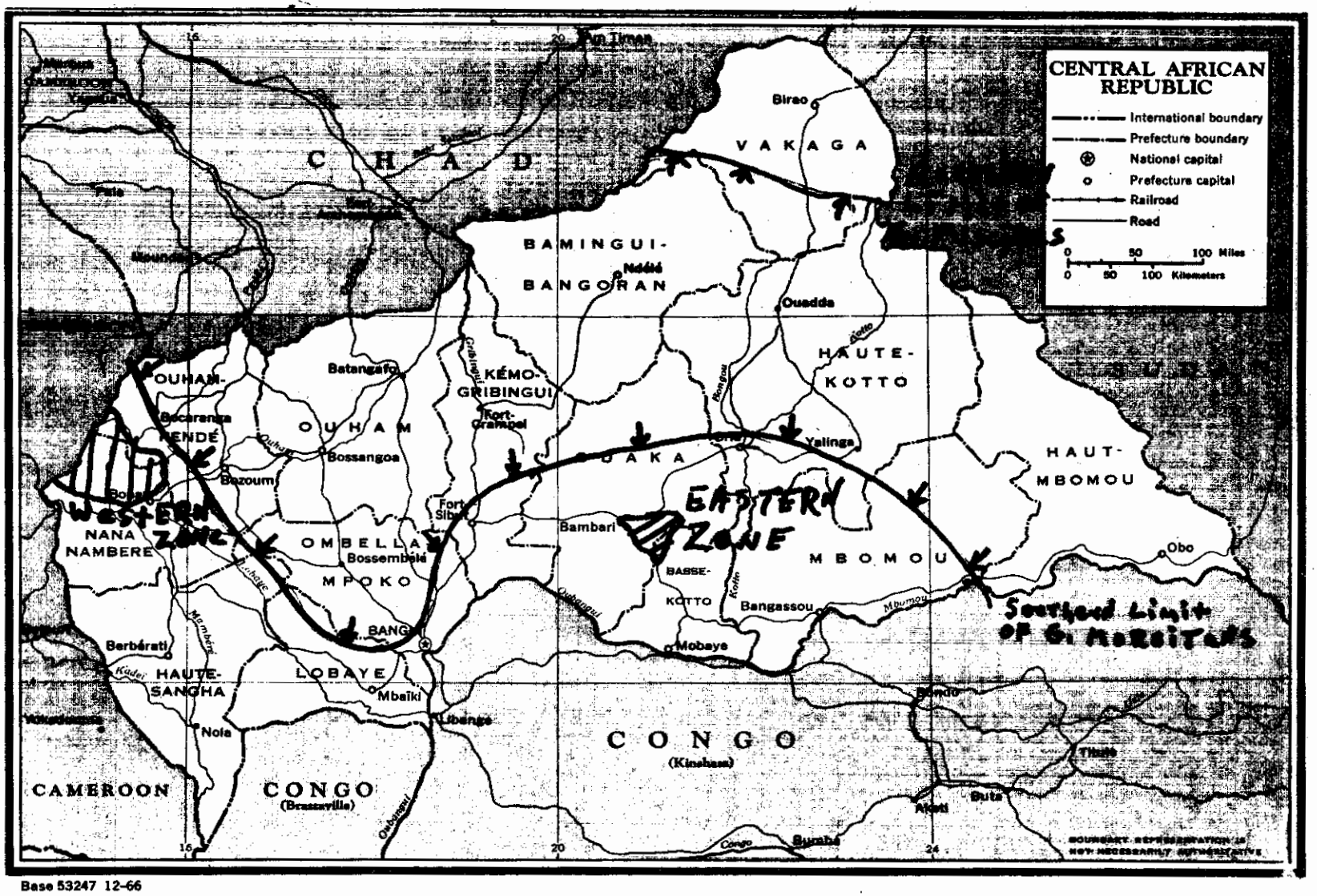

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TABLE 1 - CAR: LIVESTOCK POPULATION ESTIMATES, 1974

Species	Number	Percent
Cattle	700,000	54.5
Goats	500,000	38.9
Sheep	35,000	2.7
Pigs	50,000	3.9
TOTAL	1,285,000	100.0

TABLE 2 - CAR: ESTIMATED CATTLE DISTRIBUTION AND PRODUCTION, 1974

Production Zone (Center)	Number	Percent	Annual Offtake	
			Number	Percent
West (Bouar)	555,000	79.29	49,950	9.0
East (Bambari)	125,000	17.86	11,875	9.5
North Central (Grampel)	5,000	0.71	450	9.0
Dispersed*	15,000	2.14	1,725	11.5
TOTAL	700,000	100.00	64,000	

*Trypano-tolerant animals are dispersed in agricultural areas.

M'Bororo owners reportedly form test herds to probe prospective new grazing lands, thereafter moving into or avoiding the area according to test results. By this means, they are able to graze their animals at the very edge of the rain forest during the dry season with minimal risk. This innovation has led to cattle being grazed in areas formerly thought completely unsuited for zebu cattle.

3. Nutrition: The geological formation (sandstone) and climate (high rainfall) of the area result in deficiencies of calcium, salt, and possibly other minerals. Efforts to correct this deficiency include limited feeding of "natron", a crude carbonate deposit obtained from Chad. The reported 50 to 55 percent calving rate is no doubt related to mineral deficiency, since water and pasturage are in relative long supply compared to most other areas of subsahara Africa.

4. Disease Incidence: While rinderpest - the major killer of the past - is under reasonable control, other diseases remain rampant in CAR. Bovine pleuropneumonia (CBPP), tuberculosis (TB), anthrax, blackleg, liver flukes, bovine cysticercosis, and tick-borne diseases are a constant threat. This is all apart from the omnipresent trypanosomiasis. Moreover, zoonoses - diseases of animals transmitted to man - are known to bear great importance, but unfortunately clinical data are lacking. Tuberculosis is judged to be very high among cattle in the western production zone. Over six percent of the cattle originating in CAR inspected at the Bangui abattoir in 1974 had tuberculosis.

B. Eastern Zone

This zone which has developed over the past 30 years is centered on and to the east of the Kotto River. It supports an unknown number of M'Bororo cattle, variously estimated at between 100,000 and 200,000 head. The zone is relatively important as an agricultural area and also contains many trypano-tolerant cattle in its southern reaches.

The chief limiting factor to expanding cattle production is trypanosomiasis because of the presence of G. Fuscipes. However, ticks and other flies pose serious disease problems. CBPP is not present in the zone.

Management differs from the west zone in that seasonal migrations are extremely limited and involve only short movements to the south and southeast which is unusual for M'Bororo cattlemen. Marketing presents no problem, as the offtake finds ready outlets, both in the area and in Bangui. The reasons for the virtual absence of tsetse fly remains to be clarified but may be related to the comparatively open vegetation except along water courses and to the progressive reduction in the game population.

TABLE 3

CAR: BANGUI ABATTOIR-SANITARY INSPECTION (BEEF)
(first 8 months 1974)

Country of Origin	Number of Carcasses Inspected	DISEASE INCIDENCE		
		Tubercu-losis	Tapeworm Cysts	Liver Fluke
		(Percentages)		
CAR	6,717	6.1	1.2	15.0
Chad	25,490	4.5	1.8	12.5
TOTAL	32,207	4.9	1.1	13.0

C. Trypano-tolerant Cattle Introductions

As indicated in earlier sections, the colonial administration of CAR initiated the importation of trypano-tolerant cattle from Ivory Coast, Mali, Senegal, and Upper Volta into the cotton growing zones. Introductions were of three types, the "Baule," a cross between West African dwarf shorthorn and larger zebu stock; "Pure" West African dwarf shorthorns; and Ndama. From the original introduction of about 5,000, there are now an estimated 15,000 head in the country.

The French introduced trypano-tolerant cattle to permit the expansion of cattle production into tsetse-infested areas and more importantly to introduce ox-cultivation in cotton production. The lack of on-farm energy other than that of the farmer and his family was seen as the single most important factor limiting the expansion of area planted to cotton.

The introduction of ox-cultivation has not been notably successful. First, farmers in cotton growing areas had never husbanded or used cattle. Second, the introduced breeds are somewhat small for plowing. Third, when placed under the stress of heavy work, trypano-tolerant cattle experience severe cases of trypanosomiases. As a result, the use of oxen in the cotton growing areas is now limited primarily to carting. However, trypano-tolerant cattle have been increasing in numbers and are providing a small contribution to local meat supplies.

In the northeast sector, ox-cultivation is said to be spreading spontaneously southward from Chad and Cameroon. In those areas some cattle are owned by farming groups such as Fulani and Sara who do have cattle-keeping technology. One would expect this spread to continue where equipment is available and trypanosomiasis permits. This is a development which should be encouraged.

Livestock Marketing

A. Commercial Cattle Trade

Information about the commercial cattle trade of CAR is incomplete. Surplus cattle from the western production zone supply western population centers but are primarily marketed in Bangui during the dry season. Consequently, marketing occurs when most herds are grazing within a distance of 200 kilometers from Bangui, and the short trek to market results in little or no loss in condition or weight. In some instances sales, made directly to dealers in Bangui, permit herders to circumvent the long chain of middlemen so prevalent and necessary in more remote grazing areas of west and central Africa.

Indications are that producers readily dispose of all true surplus animals, while continuing to build up their herds with breeding females. Data collected at the Bangui abbatoir during 1974 indicates that only 22 percent of animals of CAR origin were classified as females (see Table 4).

TABLE 4

CAR: BANGUI ABATTOIR THROUGHPUT OF CATTLE BY CATEGORY

(first 8 months 1974)

Country of Origin	MARKET CLASS			TOTAL	
	Bulls	Castrates	Cows	Number of Head	Percent
CAR	505	4,685	1,527	6,717	20.9
Chad	5,924	14,069	5,497	25,490	79.1
TOTAL	6,429	18,754	7,024	32,207	100.0
Percent	20.0	58.2	21.8	100.0	

TABLE 5

CAR: ESTIMATED ANNUAL SUPPLY OF TRADE CATTLE BY SOURCE, 1974

Source and Disposition	Number of Head	Remarks
Local Production	64,000	From all zones.
Imports	30,000	On hoof
Total Available	94,000	From all sources.
Local Consumption	85,000	Controlled and uncontrolled.
Exports	9,000	Chiefly associated with stateless migratory herds.
Net Deficit	21,000	Recent average year

The annual offtake for the zone is estimated at about 9 percent with annual herd increase of some two percent. However, it is not easy to identify where all of the offtake is marketed. Some possibly moves to markets in Cameroon, Congo, and Zaire. In any event, the availability of markets does not pose a serious constraint to expanded production in the zone.

The estimated annual supply of trade cattle in CAR by source and estimated cattle exports as carcus meat is given in Table 5. Our best estimates would indicate that some one-third of total beef consumed is imported on the hoof, primarily from Chad and some 64,000 head produced within CAR, and roughly 9,000 exported. Of the estimated 85,000 head slaughtered in CAR annually, roughly 33,000 herd were slaughtered at the abattoir in Bangui in 1973. The expected slaughter in 1974 is 45,000 (Table 5), of which about 600 carcasses will be airlifted to Congo. The existing abbatoir is inadequate and a new one to operate as a commercial company is scheduled for FED financing at a cost of CFAF 850 million.

Cattle prices on the Bangui market average CFAF 30,000 for a 300 kilogram slaughter beast or CFAF 100/kg. The official retail price of boneless lean beef is CFAF 300/kg, while the actual prevailing price is CFAF 400. Illicit slaughter is also widespread in the capital city area. Per capita beef consumption is roughly 8 to 10 kg for the whole country, but exceeds 20 kg in Bangui.

B. Trade Routes

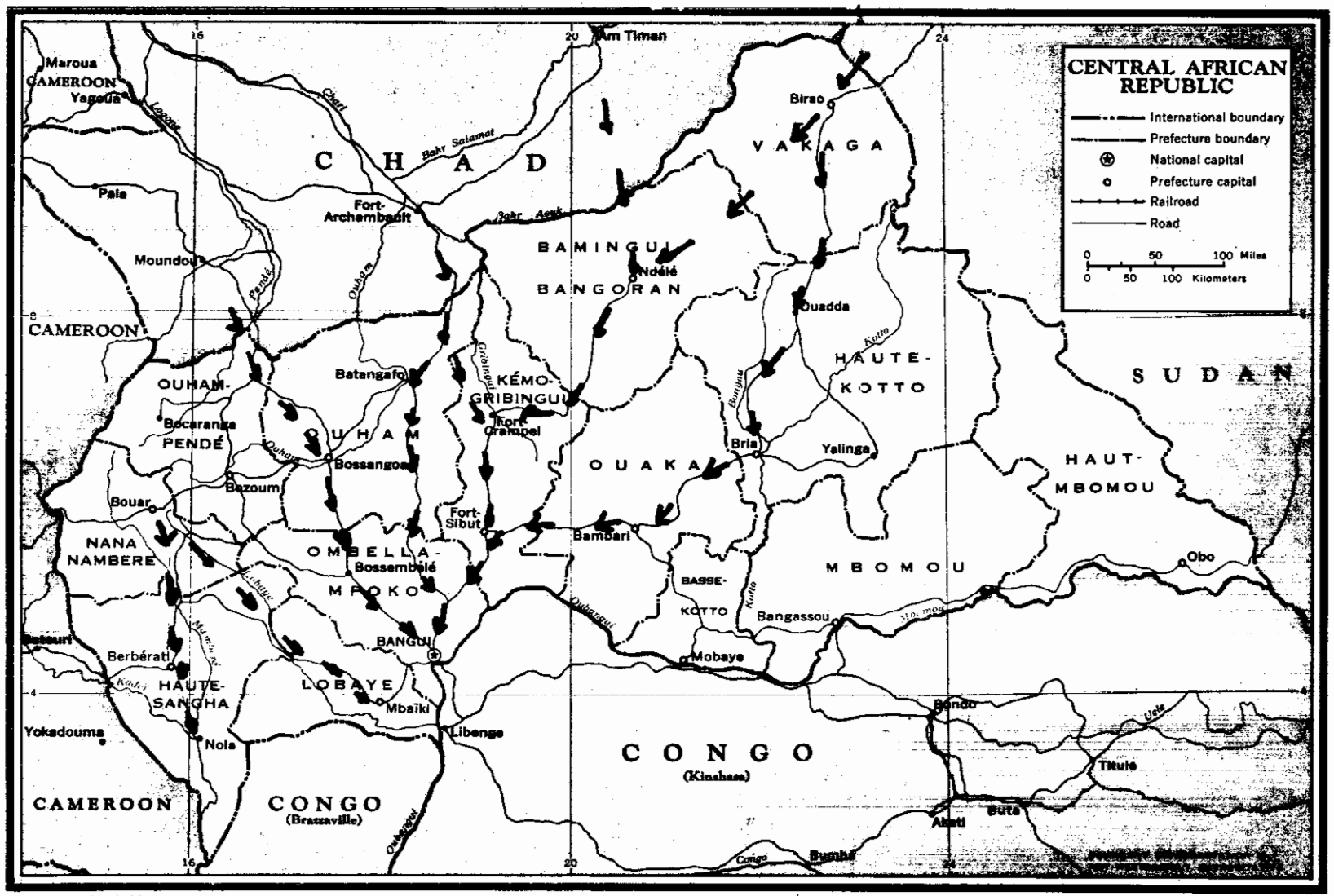
The 20,000 to 40,000 head of imported cattle entering CAR annually move along main roadways. The only Government assistance to this movement is provided by two quarantine stations at Batangafo (on the Sarah-Bangui Road) and Birao. Neither station is functioning due to a lack of veterinary supplies. Cattle entering from eastern Chad and/or the Sudan in the dry season pass through Birao; whereas, the Batangafo route handles mostly rainy season entry from south-central Chad. The main trek routes for both domestic and imported trade cattle are shown in Map 2.

C. Cattle Fattening

In common with a number of other African countries, CAR has visions of capitalizing on relatively cheap cattle from Chad for fattening. To this end an area of 24,000 ha has been largely cleared, fenced and cross-fenced at M'Bali, 35 kilometers west of Bangui to be used for dry season fattening. Development of the site extended from 1966 to 1970. FED has provided CFAF 120 million to date and the Ministry of Agriculture about CFAF 30 million. It is expected that the ranch will be used for the first time in the 1974-1975 dry season as a fattening operation. Only about 5,000 ha. is presently usable because water is available in the dry season only in paddocks which front on the river traversing the area. Management

Map 2

Commercial Trade Cattle Routes



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of the operation is by a commercial company which expects to fatten imported cattle, slaughter in Bangui, and airlift the carcasses to Congo. This would support the planned new abattoir in Bangui but would not directly contribute to CAR cattle industry development.

Government Activities and Training

Prior to the departure in 1970 of French technicians, 15 veterinarians administered a rather comprehensive livestock service and animal health program for the developing animal industry. Today the estimated 700,000 cattle, 500,000 goats, 40,000 sheep, and 50,000 swine of the country exist without effective technical services. CAR presently has five local veterinarians, an additional three will return from training abroad in 1975, followed by five in 1976. Plans call for ten additional veterinarians to be trained by 1980. Twenty-one veterinary assistants are on duty throughout the entire country.

A veterinary assistant's training facility, the College Technique d'Elevage de Bouar, was financed by FED for an expected annual enrollment of 15 students. The school is staffed by a single Russian-trained veterinarian and has a current enrollment of 89 students in a 4-year program. This subprofessional school could fill a pressing gap in technical staff for the country, but lack of instructors, isolation of the site at Bouar, and financial difficulties preclude this at present. The number of students being trained in relation to need must be questioned.

The campus is also the site of CAR's major veterinary disease diagnostic laboratory which has also suffered because of the absence of technicians, reduced budgets, and general decline in logistic support. Staff of the laboratory also double as teachers at the school.

Development Program

A. An Overview and Prospective

CAR has enormous land resources and a low human population density. The livestock industry is in an incipient stage of development and accounts for some 12 to 16 percent of total agricultural production. Provided the myriad of technical and general socio-political problems can be overcome, the industry has an exceptional long-term potential for growth.

B. Donor Activity - Principal Projects

1. USAID: At the current time, there are no USAID projects in livestock sector of CAR.

2. UNDP/FAO: UNDP/FAO is in the second year of a 3-year project (ending in 1975) directed at the control of CBPP in the western zone. Some

500,000 cattle have been vaccinated using 12 mobile teams. Unfortunately, diseases of this sort do not lend themselves to control by unilateral country action. There is some indication that cattle are being brought to project centers from Cameroon just for CBPP vaccination.1/ It is also noteworthy that the project is very fragile, depending entirely on UNDP/FAO logistics and operational support. However, CBPP outbreaks have declined from 40 in 1972 -- the beginning year of the control program -- to only 5 minor ones in 1974. It is manifest that the technology to cope with this disease is at hand, but weak government support capability2/ and the possibility of reinfection from outside cattle (North Cameroon and Chad) leave the future of the disease control program in jeopardy unless project support continues beyond 1975.

3. European Development Fund: FED is undertaking a CFAF 400 million three-year project in the Bambari area to improve the lot of M'Bororo cattlemen. The program calls for veterinary service, simple road construction, social services, and controlled grazing. They view the project as a high risk, experimental effort to ascertain the extent to which M'Bororo herdsmen can be induced to settle.

Indications are that technological inputs are necessary if this production is to expand. Moreover, the various alternative interventions possible and cost/benefit ratios remain to be clarified. Alternatives include clearing to destroy fly habitat; crossbreeding to introduce trypano-tolerance in the M'Bororo herds and the multiplication and improvement of trypano-tolerant animals. The experience obtained in this project could have important implications for developing other areas of riverine tsetse in west and central Africa.

6. Program Recommendations

Because CAR, unlike many African countries has no population pressure, it has the time to seek solutions to development problems, but it lacks the basic elements for growth and is tending to make the same mistakes in the livestock sector so common to more heavily populated areas of the continent.

1/ Cameroon does not vaccinate cattle in the border area so that the introduction of infected cattle can be quickly identified. Cameroon veterinary officials were not aware of the changed disease status in CAR.

2/ Local veterinary staff were completely immobilized in the dry season of 1974 because no fuel was available locally for department owned vehicles.

At the national level there are planning and budgetary deficiencies; whereas at the technical and sub-professional levels there is a lack of trained manpower. In the short-term AID technical assistance could, at relatively low cost, undertake to contribute to staff development in the following ways:

1. Provide range management and animal production expertise to the FED built Veterinary Assistants Training School at Bouar. In the absence of infrastructure and amenities in the area, this might involve supplying two Peace Corps instructors to the school.

   A problem inherent in the training of veterinary assistants is that few, if any, students coming from cattle owning groups are enrolled in the school. A pilot development program for livestock owning households which involved an interchange of ideas and technology between staff, students and cattlemen would greatly improve the teaching program, and could form the basis of future development projects.

2. To the extent suitable English speaking candidates can be identified, participant training to either the BS or MS degree level (in the field of general animal production and range management) would contribute to professional staff development and Government leadership. The USSR is offering fellowships in veterinary science, and USAID contribution at the professional level in this field is not required.

At a higher level, AID has a unique opportunity to foster a logical and orderly concept of animal resources development in CAR:

1. In the first instance an observation and inspection tour of other African countries for selected Government officials to see livestock programs in operation should provide insights into new approaches to CAR development. Countries visited should include those of East and Central West Africa and include range livestock projects and trypano-tolerant cattle development programs.

2. Concurrent with the following observational tour, consideration might be given to fielding a multi-disciplined AID team to evaluate CAR's agriculture/livestock resources and development potential. On the livestock side, the team would need to include expertise in 1) veterinary sciences; 2) entomology (tsetse); 3) animal production/genetics; and 4) range management/tropical grasses.

3. Subject to findings of the survey team, consideration might be given to the provision of a general animal resources development planner (assigned to the appropriate ministry) to assist in formulating overall policies and programs for livestock development.

CENTRAL AFRICAN REPUBLIC

PHYSICAL CHARACTERISTICS

I. Relief

The Central African Republic is located along the major watershed divide which separates the rivers flowing north to Lake Chad and those which flow south toward the Congo basin. Therefore, its relief is characterized by a major "backbone" extending from east to west across the whole country. In both extrem ties of this "backbone" elevations rise to culminate 1330 m above M.S.L. in the east and 1356 m in the west, while in the middle area they average 500-650 m above M.S.L.1/. Most recent sources (1973) divide C.A.R. in the following manner: (letters on the map coincide with letters in text)

A. The Yade Massif in the N.W. which rises to the highest known altitude in C.A.R. (1356 m).

B. The sandstone dissected plateau of Bouar-Carnot-Berberati with elevations ranging between 600-1100 m (this is one of the areas of diamond secondary deposits besides its being an important storage for ground-water and better pasture land).

C. The central divide "backbone" extends from west to east across the whole country (elevations 500-600 m).

D. The dissected southern lands of the upper Oubangui tributaries which parallel most of southern CAR borders.

E. The sandstone plateau of Ouadda-Mouaka which is another important reservoir of ground-water and has some diamond deposits, too. To the south of this plateau there are some important uranium bearing formations.

F. The Upper Chari watershed area, which is the southern part of the Chad Basin.

(Both E and F tend to be below the 500 m level in elevation).

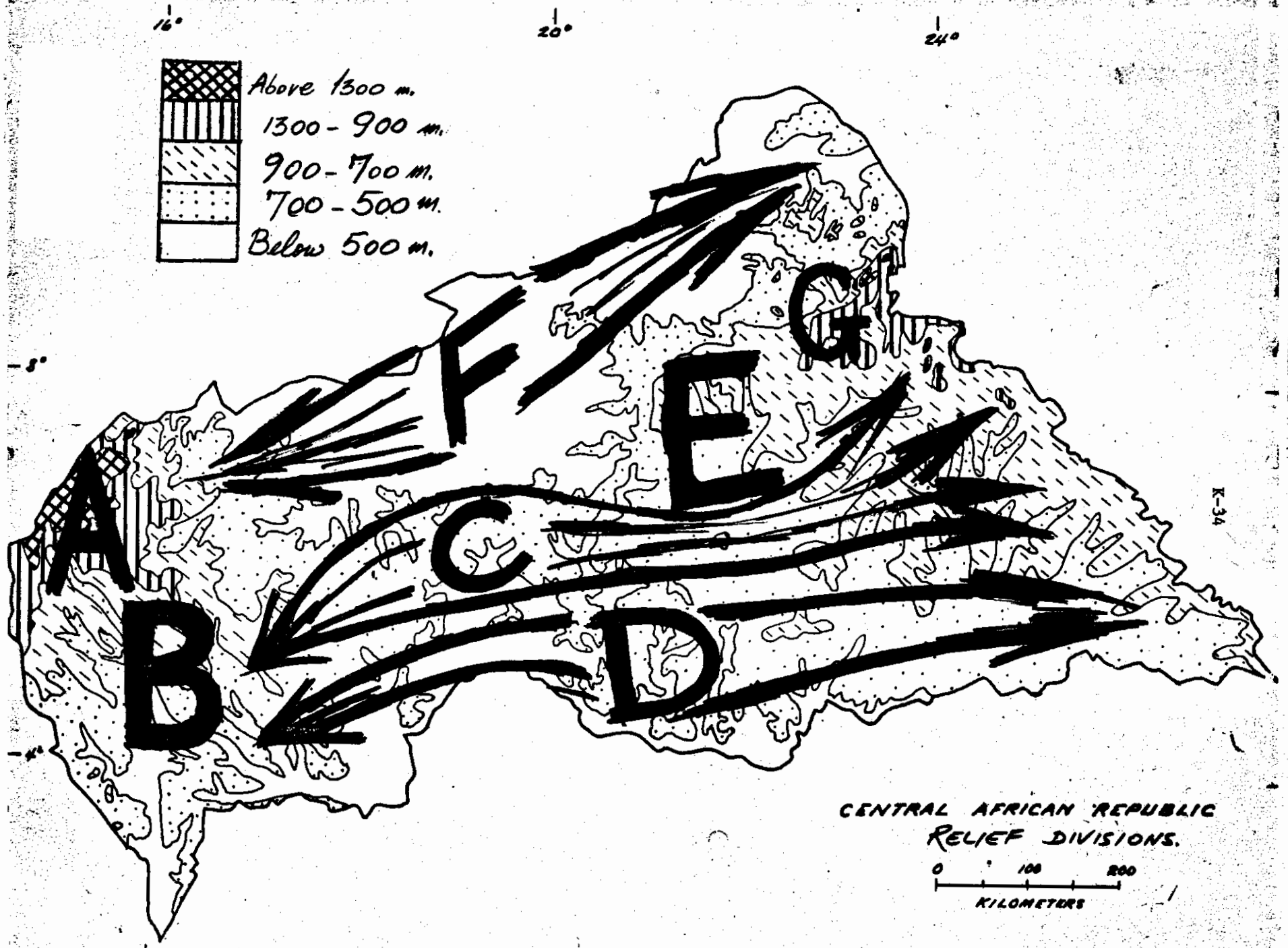
G. The Bongo Massif which rises to 1330 m above M.S.L. near the Sudanese border and makes the second highest area of CAR. It is most remote and least inhabited.

II. Water

A. The River Systems

The river systems in CAR begin systematically at the major

1/ M.S.L. = Mean Sea Level


16°
20°
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Above 1300 m.
1300 - 900 m.
900 - 700 m.
700 - 500 m.
Below 500 m.
A
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C
D
E
F
G
CENTRAL AFRICAN REPUBLIC
RELIEF DIVISIONS.
0
100
200
KILOMETERS

central-African "backbone" which extends from west to east across the whole country. This major watershed divide separates between the northerly flowing rivers, belonging to the Chad drainage basin and the southerly flowing rivers which are collected by the Oubangui River, which belongs to the Congo drainage basins.

The major northerly flowing streams are collected by the Chari River and by the Logone, of which some important tributaries come from Cameroon. The northerly flowing systems experience higher variations in their flow regimes than the southerly flowing ones, since most of their lower watersheds fall in areas receiving lower amounts of rainfall and longer dry seasons.

Several streams in the southern system form important waterfalls along their course which, in some cases, provide good to fair potential for hydro-electric plants.

B. Water Resources

The hydrological problems in CAR are complicated and have to be reviewed in a somewhat different approach. The problems of water quality seem to be more important than quantity which still is inadequate but not as severe as the question of quality. Most of the water in CAR, besides its high rates of microbiological pollution, lacks important minerals and salts (Ca, Mg, etc.) necessary for humans and livestock. This deficiency has become clear upon observation of local livestock by DAP team experts and was noted by the health sector member, too. This seems to be an important factor, to which little or no attention has been devoted in the past and a reasonable and practical aspect for the U.S. to look into on a local and regional basis. CAR officials, who are aware of the problems, seem to welcome any assistance from any source in this endeavor.

The hydrological regime of CAR is basically known to a certain degree and there are adequate data for its interpretation. Generally speaking there are very high variations in the regime of the Chad basin amounting to a range as wide as 5-100 m^3/sec between low and high water periods.

In the rivers flowing to the Congo basin, there is a marked difference between the eastern and western systems. In the western system (Lobaye and Sangha) variations are not great (150-750 m^3/sec), while the eastern systems have much greater variations.

In the Bangui area, fluctuations can be as high as 500-14,000 m^3/sec with 500 m^3/sec being typical for the driest two months and 14,000 m^3/sec for the wettest two months, leaving eight months of the year with a fluctuation of 3,000-1,500 m^3/sec.

Variations as mentioned above have important implications on hydro-electric energy supply. Power shortages are experienced in Bangui every year during the low water discharge periods at BOALI (the major hydro-electric source for the city). BOALI II, being an attempt to remedy the situation, will not solve the problem even at the recent rate of power consumption in the city. The jointed and deeply weathered quartzites "swallow" huge quantities of water throughout the year. This phenomena, remaining "masked" in the high water periods, becomes critical at the low water stage. Additional potential sites for hydro-electric power, such as the Lobaye, present serious problems of distance (150 km) with investments and losses involved in long transmission lines.

A notion introduced by Prof. Ciocardec from the Bokassa University at Bangui concerning a practical solution to the problem seems well worth looking into. It involves building a low cost dam on the Oubangui near the Safari Hotel in Bangui where several islands occur and can be integrated as part of the dam. During low water stage, when Baoli I and II cannot supply the necessary power, water level in the Oubangui below the dam becomes low and creates favorable conditions to operate turbines and generators which can fill adequately the power needs even for future projected Bangui power consumption. Keeping the water level above the dam high throughout the year will also make for year round river transport from Bangui downstream which is vital and usually disrupted at the low water stage.

C. Other Donor Activites in Water Resources

The FED have initiated and financed in the last few years a project of springs and well digging and management throughout CAR. Within the project 300-400[1] wells were dug at the cost of 200 million FCFA and in the process the "springs" part was dropped. The work was contracted to Genie Rurale, S.T.H. and Gorguet Co. Today, all wells are dry for a variety of reasons besides the drought. The FED has no precise records as to the number of wells, their depth, their position relative to geology and groundwater, or even their actual location. FED's answer to questions was "when there is no water in the creeks there is no water in the wells." The loose management on the part of the FED have resulted in the "loose" operation of contractors. The main problem, however, remains in the lack of geohydrological studies made prior to the project. It is quite feasible now to deepen some of the wells at certain locations following a geohydrological survey and get adequate water supply; such a survey is a must before any investment is made, no matter how little.

Also, it is felt that springs around the Mouka-Ouadda plateau and Bouar-Carnot-Berberati plateau (B and E in the relief map, see relief section) can be very dependable if managed and make a worthwhile matter

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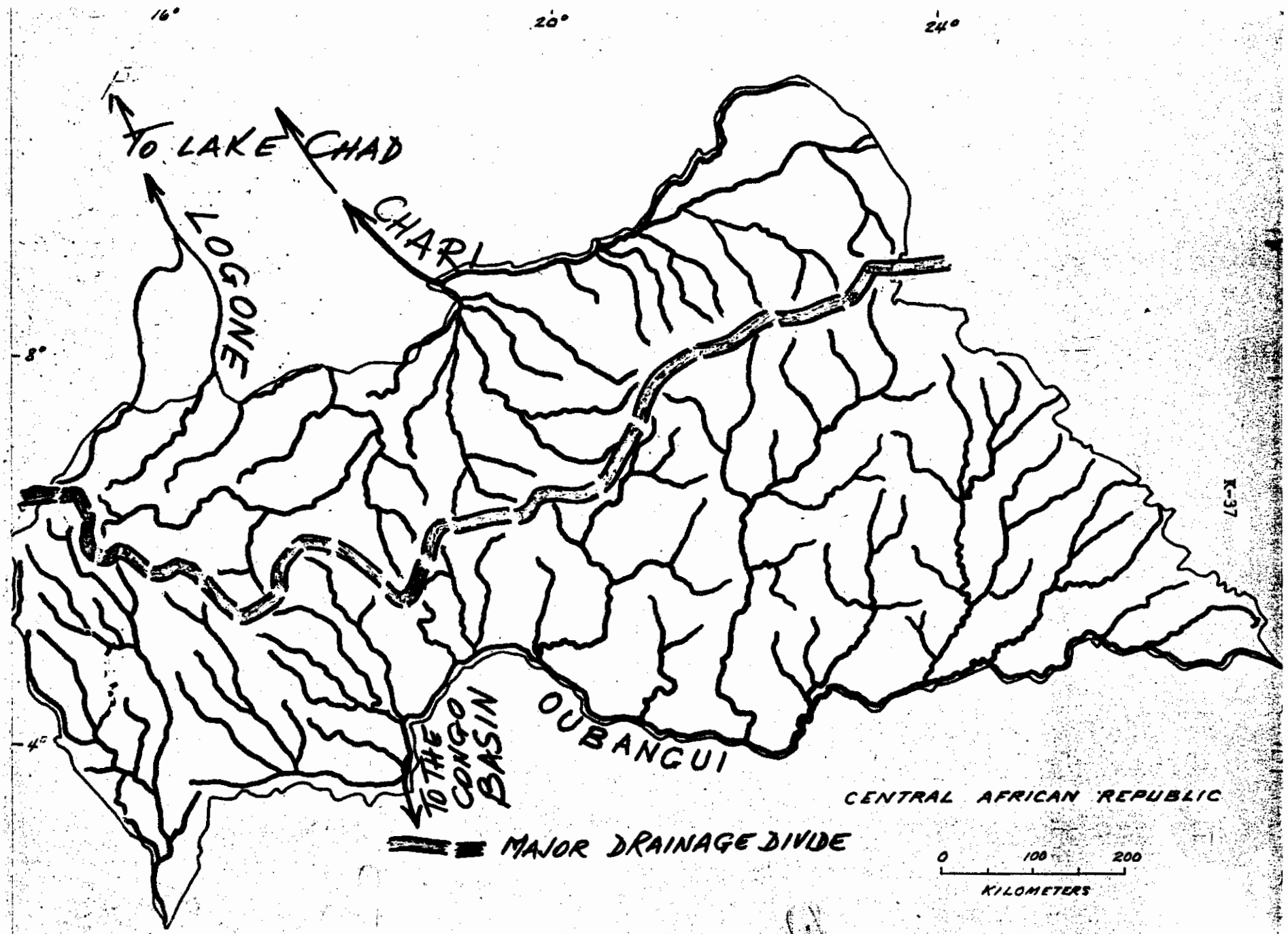
[1]No precise figure can be obtained from the F.E.D.


16°
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TO LAKE CHAD
LOGONE
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OUBANGUI
TO THE CONGO BASIN
CENTRAL AFRICAN REPUBLIC
MAJOR DRAINAGE DIVIDE
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to look into. The Ouadda section is most important since it falls within the more arid sections of CAR.

The constraints in the way of making progress in water resources investigation and exploitation are:

1. Lack of local hydrologists and hydrogeologists. None are expected to graduate in the next year or two and even then some in-the-field training would be necessary before they can beome active. Most geologists, etc., are foreign and are there for a limited period and for high rentability type investigations. The French assistance program provides one geologist who is affiliated with the CAR Army, but he often is replaced every year or two just after becoming aquainted with the local conditions.

2. Lack of laboratory facilities in CAR. Samples often have to be shipped for testing.

3. The common logistical difficulties, scarcity of equipment, drilling rigs, vehicles, etc.

III. Soils

Soil scientists at the ORSTOM Center in Bangui have been active mapping CAR soils at the scale of 1:100,000. The work has been completed at this scale but remains unpublished. Since the maps are in a single-hand, colored-copy, they cannot be made available to any potential user. However, a few sheets at that scale have been joined and printed by ORSTOM in France at the scale of 1:200,000. The reduction in scale did not affect the degree of detail which existed in the 1:100,000 original sheets. The printing of some northwesterly sheets did not make them available to potentail users in CAR, since Bangui's ORSTOM Center does not have them there for sale.

ORSTOM Center in Bangui has also completed a hand-colored copy of CAR soils map at the scale of 1:100.000 (in two sheets east and west) with a great degree of detail. This map is expected to be printed by Paris ORSTOM in the future as a part of a complete set at the same scale which includes the following (all prepared by the Bangui Center also):

1. Geological Map of CAR
2. Geomorphological Map
3. Tectonic-Structural Map
4. Phytogeographical Map (Natural Vegetation)
5. Geophysical (gravimetric) Map

All the above maps will be printed in two sheets, east and west, at the scale of 1:100.000.

A. The Major Soil Groups

The variety of climatic, relief, vegetation and geological factors create a special pattern in the major soil groups encountered in CAR. They are generalized in the following list in which numbers coincide with the numbers on the accompanying map.

1: Deep, sandy, porous red soil poor in minerals on the sandstone plateau.

2: Association of old red soils, deep on the plateau with duricrusted horizons, and much thinner on slopes where they become more ochre-yellowish in color.

3: Highly duricrusted soils (mainly on the surface) with some red soils formed from iron rich rocks.

4: Soils under forest cover and frequently flooded.

5: Association of red soils, soils with much gravels and sometimes capped by duricrusts on the plateaux and upper parts of slopes, towards the slope base, they become yellowish and west.

6: Association of deep red soils, soils with much gravel content and swampy soils.

7: Association of ferroginous tropical soils, black vertisils with clays, sometimes with calcarious concretions, and soils of depressions.

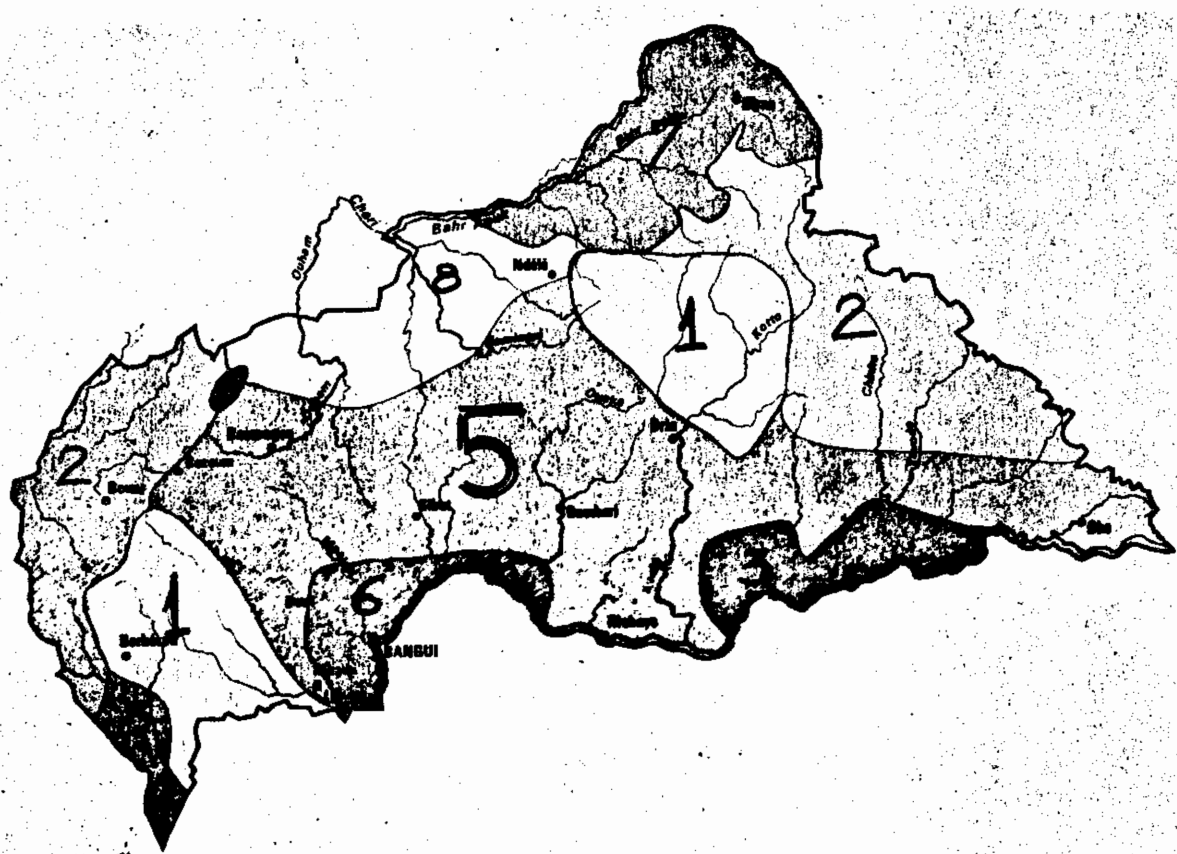
8: Association of ferruginous tropical soils, mainly beige in color but with residues and concretions of ferralitic red soils, gravels at certain depths and soils of depressions.

This generalized sketch has been adapted from the 1973 edition of the CAR atlas since no other maps have yet appeared in print.

IV. Climate

A. Climatic Zones of the CAR

The shape, orientation and extension over latitudes of the CAR, produces a variety of climatic zones over the country which are modified only in some localities by the relief. The relative position of these



<u>CENTRAL AFRICAN REPUBLIC</u>
<u>MAJOR SOIL GROUPS</u>

zones to the Inter-Tropical Convergence Zone (ITCZ or ITF) play a major role in the country. The migration of the ITF (see explanation in Cameroon report, climate section) accounts for the seasonal variation.

In general the country is divided into the following regions:

1. The Equatorial Region: This area falls mainly south of the 4°n parallel. Most of it receives rainfall quantities in excess of 1600 mm a year. There is a short dry season which may extend from December to January. The relative humidity remains high throughout the year and temperatures are subjected to very limited diurnal or annual variations.

2. The Intertropical Climatic Region: This area extends generally between the 4 degrees and 9 degrees north parallels and has a well defined dry and wet season alternation. The wet season, though, is longer than the dry one and the rains average 1400 mm. During the rainy season, little temperature variations are felt, but, in the dry season, variations become much greater both in temperature and in relative humidity. This area is fully under the influence of the ITF during the rainy season.

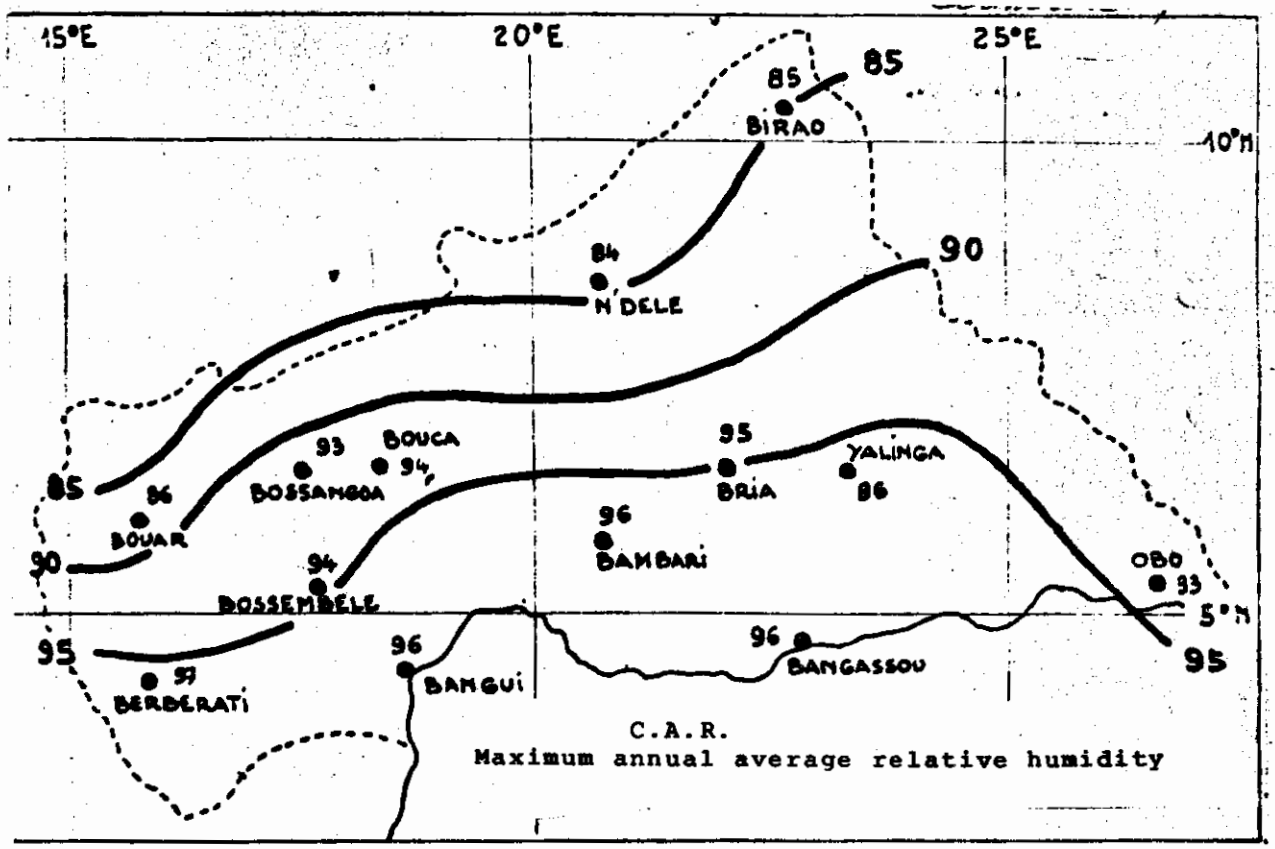
3. The Sub-Sahelian Climatic Region: This area falls mainly north of the 9 degrees parallel and is characterized by a dry season which can be as long as the rainy season. Rainfall average in this area falls below 1200 mm and a very wide range of variation in temperatures and relative humidities occurs during the dry season.

4. The Plateaux and Highlands Climatic Regions: This type of climate prevails both in the eastern and the western extremities of the CAR. It is very similar to the intertropical type and moderated by the high elevation. Temperatures are usually lower and so the maximal relative humidities. Storminess in those areas is much higher than in the low-lying intertropical zones.

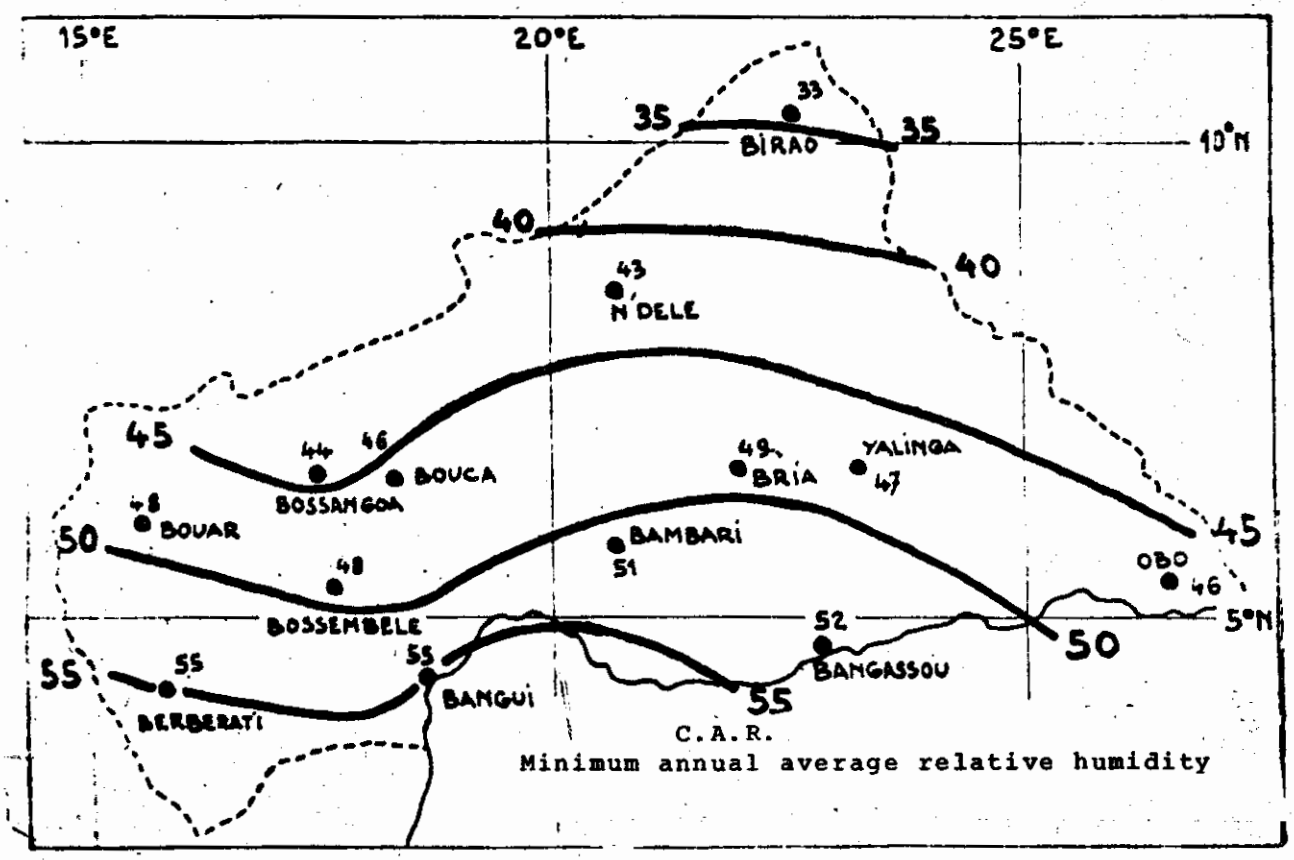
Maps on the following pages show the distribution of temperature and relative humidity values in the CAR. Note the clear tendency for gradual decrease in relative humidity values northwards and the effect of the eastern and western highlands on the temperature pattens (temperatures expressed in centigrade).

B. Rainfall Distribution and Variations

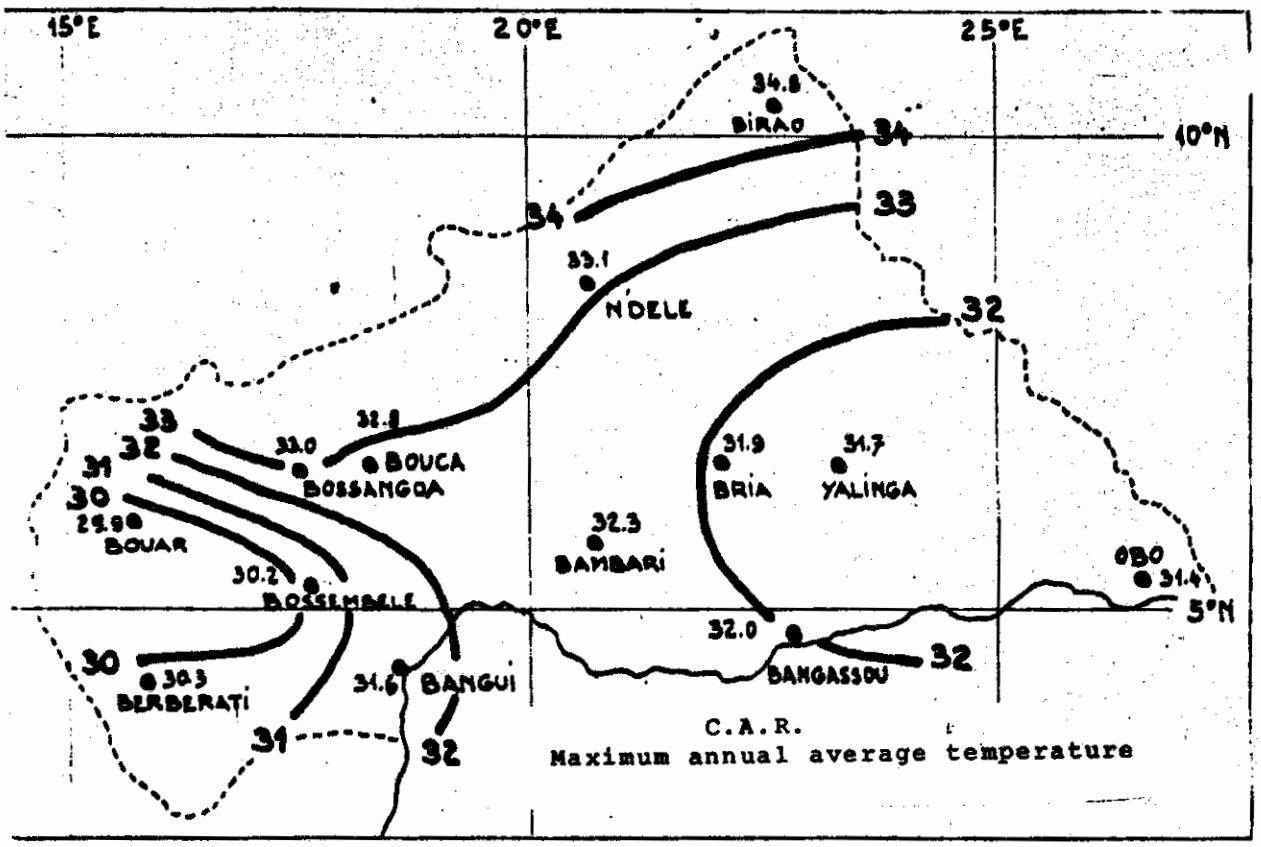
The CAR, given its inland location, has some of the properties typical of continental climates. Regardless of whether a certain location there is within the equatorial or the sub-Sahelian zone, variations from the yearly average will always be important, both in quantity and distribution. The following example, taken from Bangui (the capital)



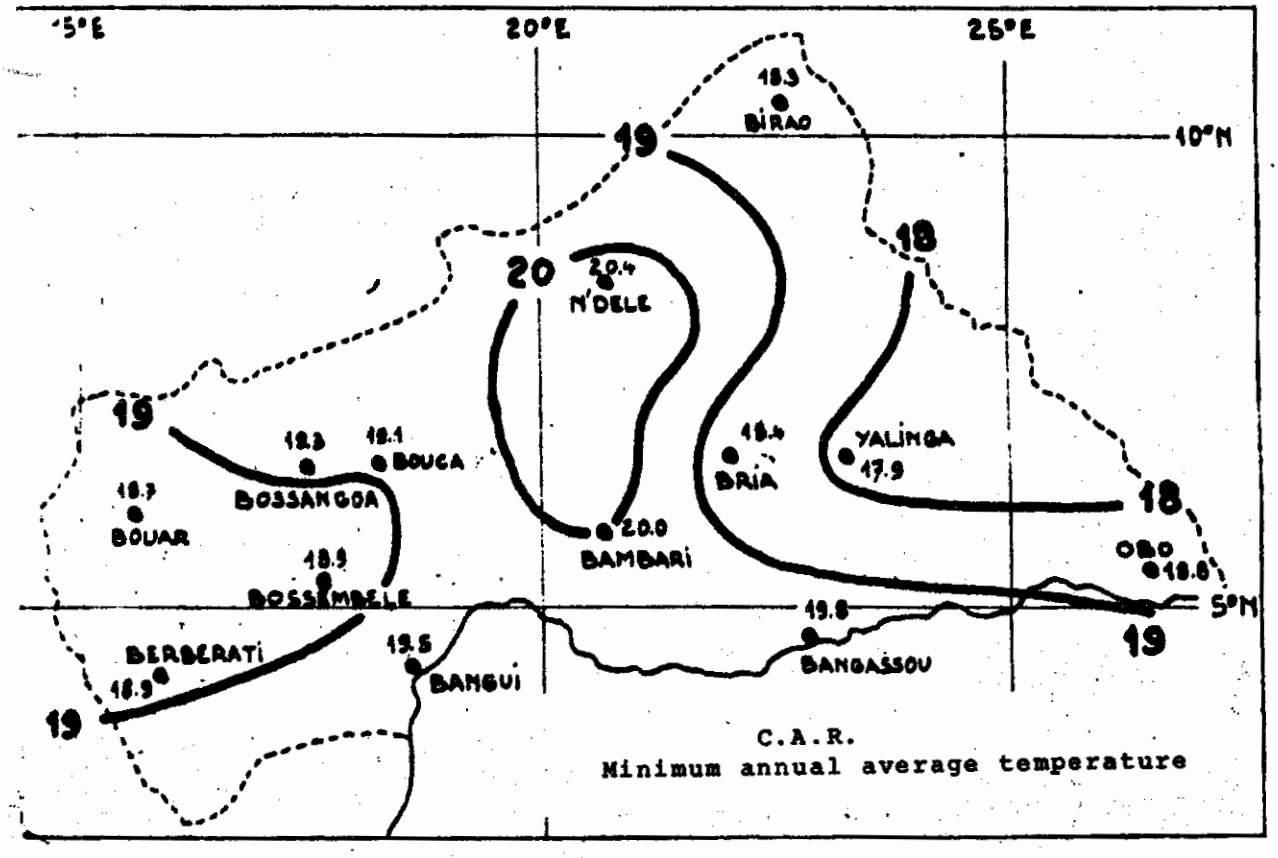
C.A.R.
Maximum annual average relative humidity



C.A.R.
Minimum annual average relative humidity

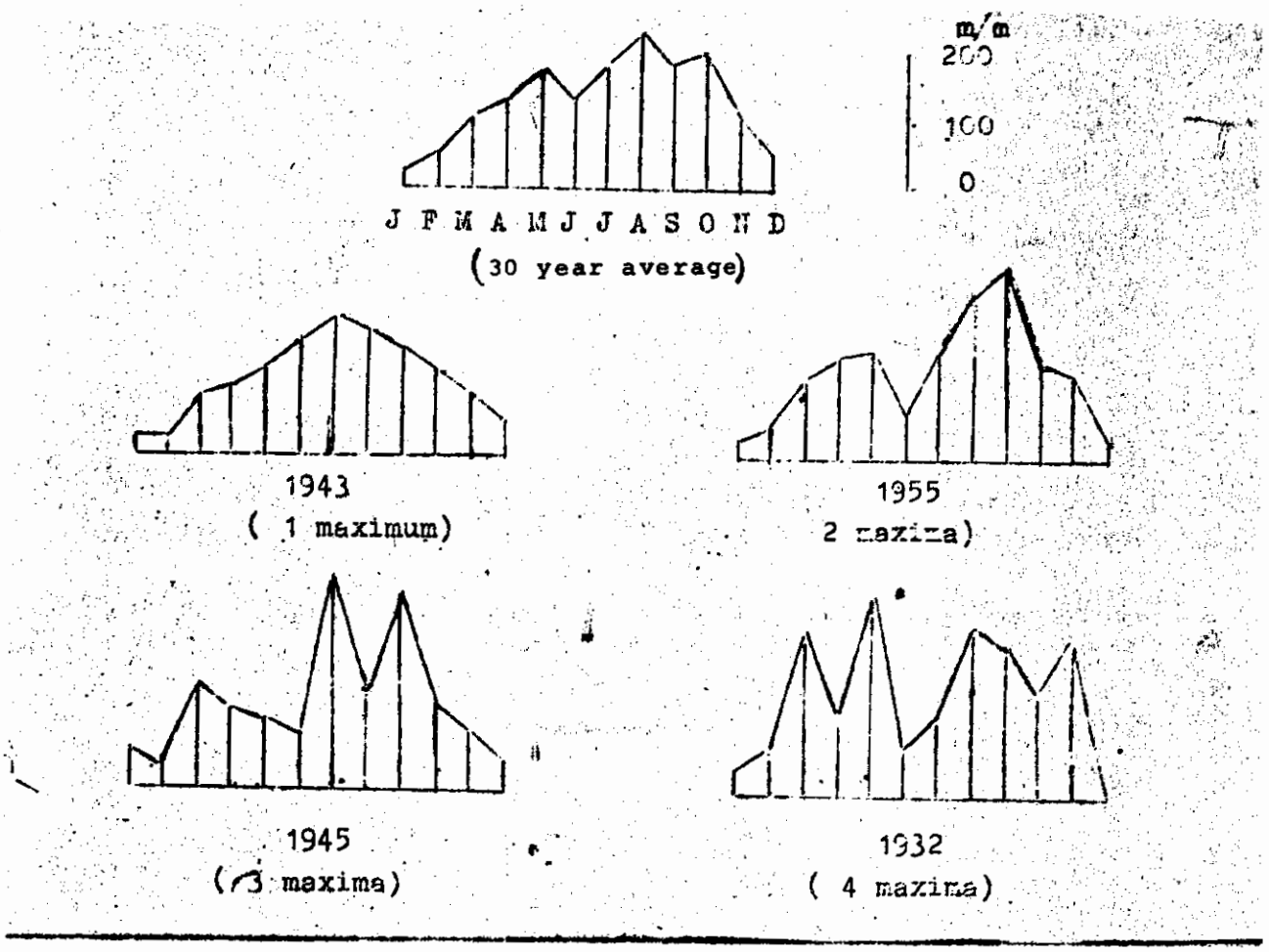


C.A.R.
Maximum annual average temperature

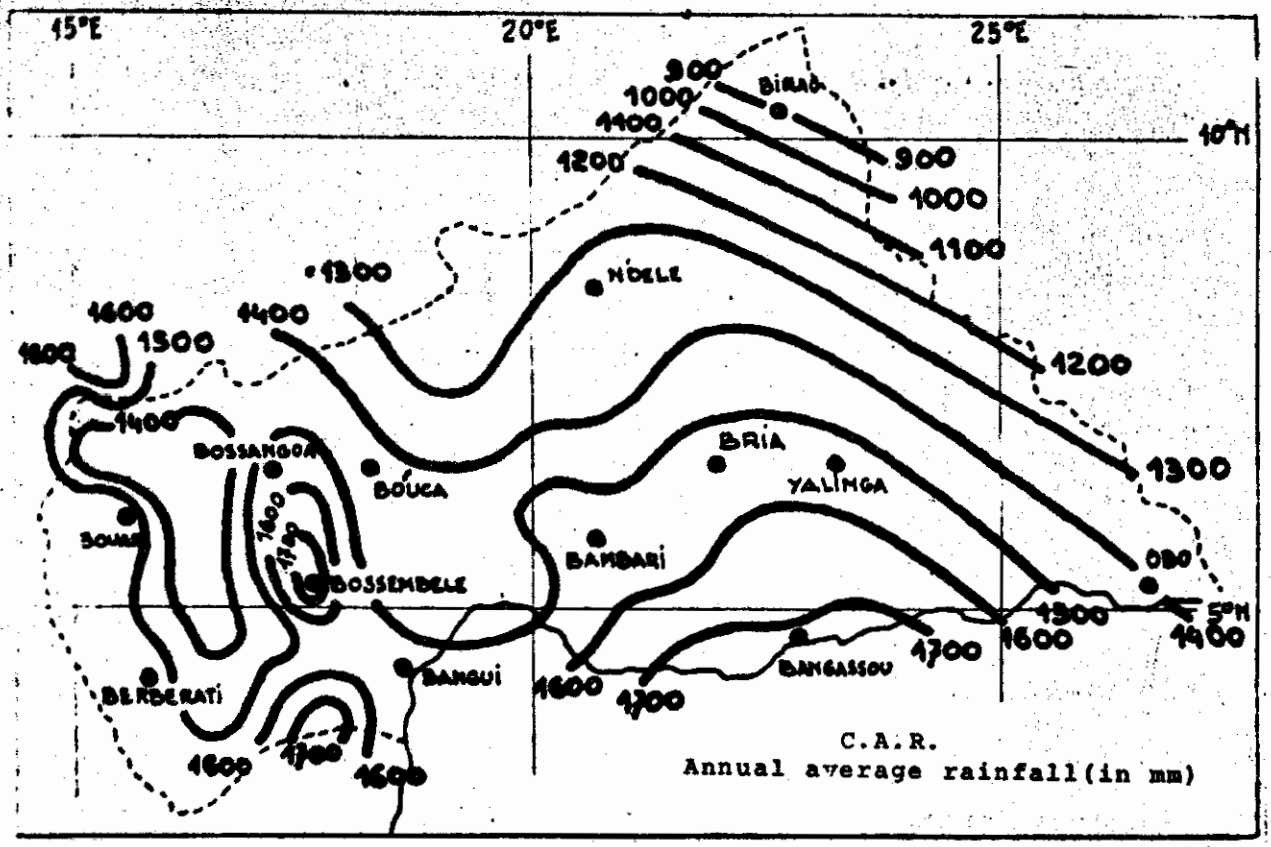


C.A.R.
Minimum annual average temperature

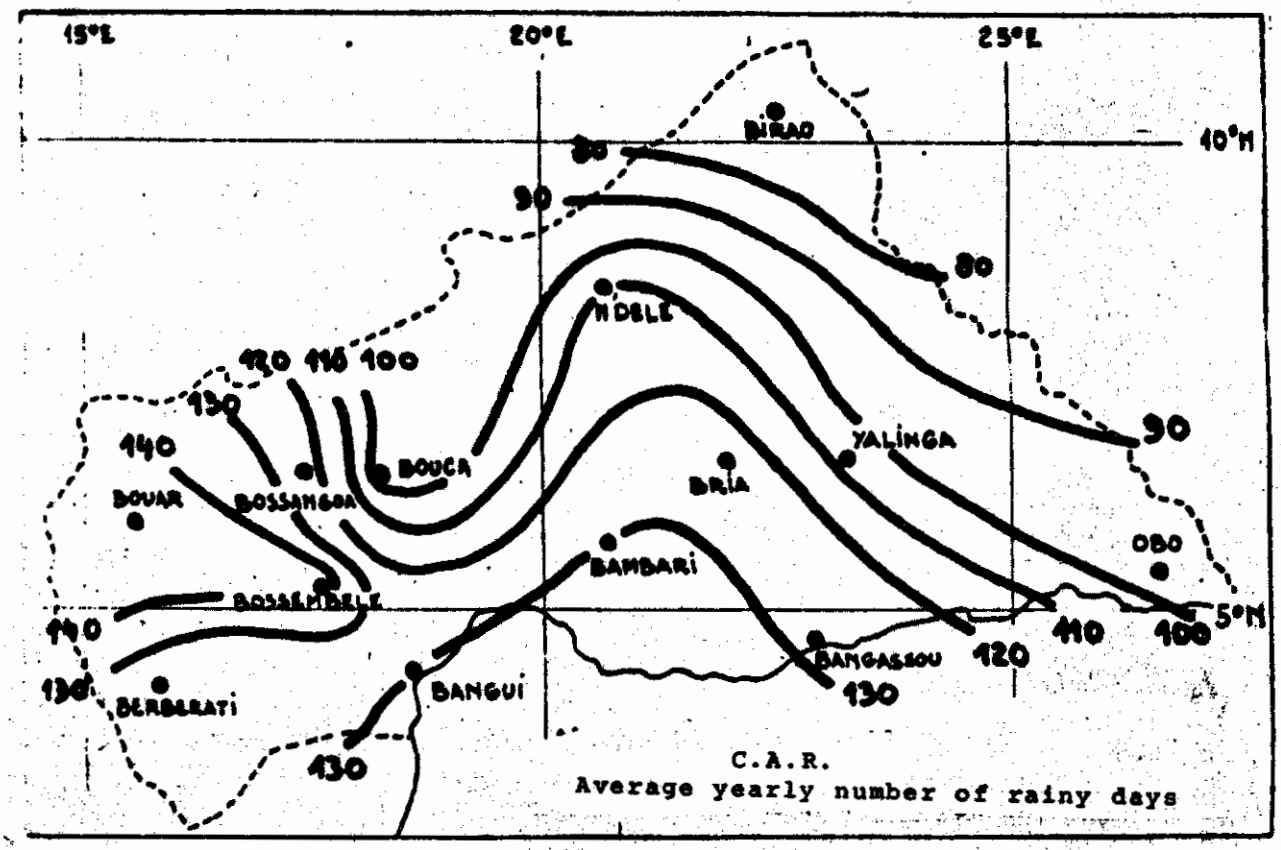
shows how there can be one, two, three and even four peaks of rainfall during the year.



Besides the variations in patterns and distribution throughout the year, there is a tendency for rainfall quantities to deviate widely from the annual average. This phenomena becomes more outstanding northwards, where rainfall averages are lower, relative humidity is lower and the dry season is much longer than the south. Aridity in northern CAR is much more severe than perceived of, and direct effects of the Sahelian droughts are felt in that area, both in terms of rainfall received and water supply which dwindled severely in all sources. The following map shows rainfall distribution over the CAR in mm and the normal yearly number of rainy days.



C.A.R.
Annual average rainfall(in mm)



C.A.R.
Average yearly number of rainy days

CENTRAL AFRICAN REPUBLIC
EDUCATION AND HUMAN RESOURCES DEVELOPMENT

I. INTRODUCTION

The Central African Republic's educational system is comprised of organizational structures and activities administered mainly by the Ministry of National Education, the Ministry of Health and Social Affairs, the Ministry of Agriculture, the Ministry of Employment, the Ministry of Youth and Sports, and the Presidency. Some of the non-formal educational activities which have been organized by the Ministries of Agriculture, Employment and Health and Social Affairs in the past consumed considerable effort and expense, but no assessment of their residual effect was brought to the attention of the DAP team. However, current and proposed non-formal educational activities will be included in the following assessment.

II. OVERVIEW OF THE CAR EDUCATION SYSTEM

The education system of the CAR serves a territory larger than France, whose population in the last five years has been variously estimated from 1.5 million to 3 million people. More than 40 percent of the population is under 14 years of age.

Educational Finance: The central government is primarily responsible for financing education. Local government and community contributions are mainly in kind, e.g. labor and materials for construction of primary schools. Public education is free, and many (formerly all) post-primary students are given assistance through a large scholarship program. Public funds are channeled mainly through the Ministry of National Education, which administers about 75 percent of government recurrent expenditures on education; the balance being devoted to scholarship support and specialized vocational courses.

Present educational expenditure is estimated at 25 percent of the total government budget. In 1970, government expenditure on education was 2.2 billion CFA francs, or 20 percent of the total budget and 4 percent of GDP. Most of the funds are spent on teacher's salaries, scholarships and other recurrent costs. Government capital expenditures on education was only 45 million CFA francs for the five-year period 1967-1971.

Ministry of National Education (MinEd): CAR's MinEd operates a program of education from kindergarten through university. All private general primary and secondary schools were nationalized in 1964.

A MinEd kindergarten ("maternal school") exists only in the capital city of Bangui. It enrolls about 300 children, 10 percent more boys than girls. A second "maternal school," to be built also in Bangui at a cost of 202 million CFA francs, will accommodate 1,000 more children.

The 1973-1975 primary school enrollment was 194,424 pupils, of which 64,605 were girls (33%) and 129,819 were boys (67%), or 66% of the school age population.

The large proportion, 77 percent, of unqualified teachers who work in primary schools has been one of the major causes of the low productivity in CAR's primary school system. In 1970, there were 2,040 of the country's 2,650 salaried primary school teachers who did not meet official qualifications for the positions they held. A program to upgrade the qualifications of these and other teachers has been initiated through an institute founded by UNESCO which is called "The Permanent National Institute for the Improvement of Educational Professionals" (INPPPE). The INPPPE would require 20 years to upgrade the 1970 groups of 2,040 unqualified primary teachers at its present rate of intake, which is 100 teachers per year.

Classrooms are overcrowded, with the number of pupils per teacher reaching as high as 100 in many instances. The average number of primary school pupils per teacher for the whole country is 63. Crowded classrooms, under-trained teachers, and the practically unchanged French primary school curriculum of fifteen years ago causes an understandably high dropout and repeater rate. The apparent ratio of pupils who pass the primary school leaving exam (CEPE) is 14.5% of the entering class. The number of repeaters has been so high that for the period 1964-1971 an average entering class of 1,000 pupils required a total of 4,903 pupil-years to produce 176 pupils who passed the CEPE.

General secondary schools are divided into lower and higher cycles, which are 4 and 3 years in length. A student who sits for the "Baccalaureat" exam at the end of secondary school will have spent at least 13 years of his life in primary and secondary schooling. Only ten secondary schools ("Lycee") offer the full program of both cycles of general secondary education. Half of these ten "lycees" are located in Bangui. The lower general secondary cycle is offered by schools called "College d'Enseignement General," of which there are 18. The general secondary schools enroll only 4 percent of the relevant age group.

Enrollments for 1973-74 were: 14,442 (12,118 boys and 2,324 girls) at the lower level, and 1,870 (1,714 boys and 156 girls) at the upper level. For the same school year, 970 students passed the exam at the end of the lower cycle (BEPC), and 122 students (110 boys and 12 girls) passed the exam at the end of the upper cylce ("baccalaureat"). The literary bias and high academic standards of these schools reflect their classical orientation towards further education higher up the academic ladder.

The technical education is offered by MinEd through three schools, all in Bangui. The technical "Lycee" comprises the full seven-year secondary program, enrolling 703 studnets in 1973-1974. Two technical

"Colleges" offer the lower secondary level, with 606 boys enrolled in the college of technical trades and 407 girls enrolled in the "Feminine Technical College."

Teacher training is offered at two levels: preparation for teaching in primary schools and preparation for teaching in the lower cycle of secondary schools. Candidates are recruited for training to teach in primary schools after they have passed the BEPC exam at the end of four years of secondary school. Their training course lasts for three years. Candidates are recruited for training to teach in the lower cycle of secondary schools after they have completed at least one year of the upper cycle of secondary schools. Their training course consists of a preparatory year plus two years of teacher training. Upper secondary cycle teachers must have completed university before they are eligible to teach.

Total enrollment in the two primary teacher training schools for 1973-74 was 280, with 89 students enrolled in the school which prepare teachers for the lower secondary level. Personnel who teach at the post-primary level in CAR are predominately expatriate, 79 percent in 1970, with a proposed reduction to 28 percent by 1980.

Higher education was launched in CAR with an ordinance in 1969 that established Jean Bedel Bokassa University. Its first building was erected in 1970. Total 1973-1974 enrollment for the University and its institutes was 320, with an additional 135 students enrolled in a special two-year pre-university legal training program. The law and economics faculty was 163 students enrolled, followed by the letters and human sciences faculty with 48, leaving the institute of agronomy and mines-geology with 42 and 33 students respectively. A medical shool is to be opened soon.

Construction of university buildings is paid for from the national budget, while their equipment and furnishings are paid for through aid from France, USSR and Rumania. The French government meets 50 percent of the recurrent operating costs.

Students in law and economics must go to the University of Abidjan to complete the fourth year of their degree program. All but three professors at the university are expatriates. Within the faculty of sciences, the teaching staff in physical sciences are supplied by the USSR and the teaching staff in biological sciences are supplied by France. This year the science teaching load will be extremely light: 13 French professors for 10 students in biological sciences and 14 Russian professors for 20 students in physical sciences.

Beyond the students enrolled at Jean Bedel Bokassa University, there are an estimated 400 Central African students studying on scholarships outside the country. Many of these students, particularly in

France, reportedly do not follow the course of study for which their scholarship is intended. With the exception of students who go to USSR and Rumania, many (figures are unavailable) do not return.

Ministry of Health and Social Affairs: All paramedical, public health and social workers are trained through programs organized by the Ministry's directorate for health and social work training. Trainees in nursing, public health, and social work share a common core of training. As for the new medical school, the Ministry's directorate for training will determine the curriculum content, but it will not control the school's administration. The new school of medicine will be a part of the university and therefore attached to MinEd.

To avoid the loss of trained doctors to employment outside CAR, the Ministry has devised a new program for training "higher medical technicians" to serve in CAR and perform much of the work which doctors do. Some CAR paramedical and public health trainers and workers receive their advanced training through the regional program of CUSS (University Center for Health Sciences) at Yaounde.

The Ministry's own training programs are grouped in a National Institute for Medico-Social and Public Health Training (INEMS). The INEMS programs will soon move into a new building on the university campus, where it plans to develop a teaching and residential complex. INEMS also operates four annex institutes outside Bangui, three of them for health and midwifery aides, and a fourth, at Damara, is for the training of community development workers.

Ministry of Agriculture: Four schools provide for the training of agricultural cadres in CAR. Three of them are under the direct control of the Ministry of Agriculture. Two schools train basic, lower level cadres to be extension and operations agents, one for agriculture and one for livestock. The third school trains middle-level technicians to work in the Ministry's administration at Bangui and across the country.

A fourth institution, which is under the control of the Ministry of National Education because it is a part of Jean Bedel Bokassa University, is the University Technical Institute for Agronomy (IUTA). The Institute is located at the agricultural experiment station at M'Baiki. Talks are about to get underway between the Ministry of Agriculture and MinEd to correct the absence of any MinAg input to the organization and content of the IUTA curriculum.

The MinAg directorate for education is also responsible for in-service staff training and for a nutrition education program which is carried out through the Ministry of Health and Social Affairs.

None of the MinAg teaching staff have had any pedagogical training to complement their technical training. Nor has the MinAg Directorate

for Education prepared, or been provided, any kind of manpower analysis to guide the organization of its training programs. Its training efforts appear to be ad hoc, even though institutionalized. For example, the basic cadres livestock training center has more than 90 students enrolled who are taught by one CAR veterinary instructor who has recently returned from a training program in the USSR.

Estimates for the number of farming units in CAR vary from 250,000 to 350,000. At the present time 70 percent of their production is auto-consumed by the producing units. A joint UNDP/CAR/French government team, which recently designed a UNDP project for the consolidation of educational reform through the establishment of a National Pedagogical Institute, pointed out that the training and support for these farming units will be the key to the development of their potential productive capacity. The MinAg Directorate for Education is not yet to the point where it can conceptualize a comprehensive, collaborative approach to dealing with the education needs of these farming units as a national group. It appears still to be at the stage of looking at a horizon which goes no farther than ministry staffing needs, leaving the ultimate objectives of the staff training yet to be defined.

Presidency Training Programs: The National School of Administration (ENA) is under direct trusteeship of the Presidency. ENA, located at Bangui, provides levels of training for administrators to work in the civil service from the sub-prefecture upwards. The training program for middle-level (sub-prefect) administrators recuits students through a comprehensive exam given to holders of the BEPC. Their training course consists of two years at ENA plus a one-year field internship.

Candidates for training for higher level positions (prefect and chief of service) are recruited from baccalaureat holders. They also follow courses at ENA for two years before being placed in a one-year internship. The two years of course work at this level count as credit for the first year of studies in law at Jean Bedel Bokassa University.

Each of the two levels of training provides a shorter cycle, one year of course work plus one year of internship, for administrators who have been in civil service for at least four years.

Because the government is short of qualified administrators, the ENA interns are almost always placed in a vacant position where they work full-time, a condition which does not permit them to continue their studies and broaden their experience during their internship.

The expatriate teaching staff for ENA are provided by the French government. They do practically all of the teaching and supervision. Some courses are taught on a part-time basis by CAR nationals who occupy high - level positions in government, including one or two at ministerial level. There are 22 full-time professors, who are teaching a total of 45 students for the 1974-1975 academic year.

A unique feature of the ENA program is that all students must be enrolled in the National Army during the time they take the residential part of their course. The army provides dormitory, dining and recreation facilities for them immediately behind the ENA class building. An army officer supervises the student residential facility, and the students live there under military discipline for the duration of their studies. Sixty students can be accommodated in the military residential facility.

In 1975, ENA will introduce a training course for magistrates. At that time, its acronym will change to ENAM (Ecole Nationale d'Administration et de Magistrature).

Other Ministries: The Ministries of Employment, Public Works, Post and Telegraph, and Youth and Sports have set up their own training institutions for training related to their specialized functions.

III. PROBLEMS IN THE EDUCATION SECTOR

The internal and external inefficiencies of the primary school system are evident from the description given above. Efforts to rectify it have not been effective until now. A political decision has been taken, however, to opt for the "school for collective development" approach for primary education. Several pilot schools have been set up to experiment with the approach. The idea of the primary school serving the double role of providing the academic training for the 6-12 age group and at the same time serve as a center for the development of the surrounding community was introduced to CAR through its participation in the Council of African and Malagasy Ministers of Education (CAMES), whose Secretary General, Joseph Kizerbo, is located at Ouagadougou. The idea for the "common" or "collective" development approach to primary education has been advocated in Africa and Madagascar by a French Catholic lay group called CODIAM. The French government supports the functioning of CODIAM's Director and staff as official advisors to CAMES for the development of schools for collective development in francophone countries. One of the critical factors for primary education reform in CAR will be the retraining of all its primary school teachers for the school for collective development approach, if it is indeed eventually implemented.

The 1971-1975 Plan for CAR envisaged two objectives to make primary education more efficient in operational terms:

1. Increase the number of pupils completing the primary cycle by:
   a. reducing the number of pupils per class by 10%,
   b. increasing the teachers' qualifications,
   c. improving the physical conditions of the classrooms, and
   d. constructing new classes.

2. Achieve a more efficient vocational guidance program for those who complete primary school by setting up a national records system, with a file for each pupil by name, which could be converted to a computerized operation.

In spite of the intentions set forth in the Plan, there appears to be no sign of improvement. The situation has even grown worse in terms of the teacher/pupil ratio and the numbers and quality of new teachers being trained. The UNDP/CAR/French Government team referred to earlier could find no evidence in May 1973 of any official document which tended to reconsider the present structures and objectives of the primary education system.

The bottlenecks caused by the abrupt narrowing of the education pyramid after primary school places tremendous pressure on all forms of secondary education. About half of the 6,086 pupils who successfully passed the primary school leaving exam in 1973 were able to enter secondary school that year. The other half, added to the nearly 15,000 pupils who failed the exam, have little or no opportunity to apply whatever they may have learned.

At the general secondary school level, the high failure and drop-out rate in the lower cycle for the relatively small number of students who enter (4% of their age group) results in neither enough students to go on to the baccalaureat nor to enter the middle-level job market. Between 1971 and 1976, the 48,000 students who fall into this category, plus an equal number who did not enter secondary school, will not find employment in the modern sector. Added to this is the problem of the inappropriate vocational training provided at the secondary technical schools in relation to the real job needs of CAR.

The above problem is also linked with a teacher training program that has continued to be ineffective in terms of quality; although in numbers it should meet the needs for replacement of expatriates and expansion of the system by 1980.

Data on wage employment for CAR in 1970 indicate that expatriates filled as many as 75 percent of professional and technical positions, 24 percent of middle-level supervisory positions, and 17 percent of semi-skilled positions. Estimated needs in terms of educational requirements by 1980 are for 1,000 university, 1,000 upper secondary, and 10,000 lower secondary graduates. Once again, these needs may be met in numbers but not necessarily in reference to the qualifications for the positions to be filled.

In his review of the report on a UNDP project for the creation of a National Institute of Pedagogy in CAR, the UNDP Resident Representative

emphasized the constraints in the above area as: "...(1) the complete lack of coordination and correlation of efforts between applied research activities loosely undertaken so far by the Centre de Recherches et d'Application Pedagogique (CRAP) and direct training activities at the Ecole Normale Superieure, the Ecole Normale d'Instituteurs, INPPPE, at primary and secondary levels of education, and (2) the lack of relationship between the educational system and the country's need for qualified manpower."

Higher education development and scholarships for study outside of CAR seem destined to follow the course which has already been set. They are mainly influenced by the ability of the CAR government to raise or assign funds to them, particularly the development of Jean Bedel Bokassa University. There is a special inter-ministerial scholarship committee which is coordinated by the Ministry of Planning, but all final decisions with respect to scholarships are made within the Presidency. Ministries which operate their own training programs, such as the Ministry of Health and Social Affairs, and even the University (for certain courses), are setting their entrance level requirements and organizing their training programs to prevent the academically "upward and outward" movement of their students through the university and out-of-country scholarship offers. For example, the Ministry of Health and Social Affairs has for some of its courses begun to recruit students who failed their exams at the end of the lower or upper secondary levels, but who are nevertheless very intelligent and capable of being trained in paramedical fields outside the formal educational system.

A final problem to underscore in terms of an assessment of the education/human resources development sector in CAR is the embryonic state, if not nonexistence, of any effective development outreach or grassroots development program which serves the CAR people in the traditional sector, or which serves those who are thrown back upon the traditional sector through failure to become productively involved in the modern sector. Furthermore, what people do in the traditional sector, why they do it, and why they don't change their ways, has scarcely been explored in socio-economic terms.

A development outreach program which holds promise for the rural masses in CAR is the Community Development Training Program, which placed its first 20 graduates in three communes of the Basse-Kotto region this year. A remarkably effective seminar which the Pan African Institute for Development's Ecole des Cadres helped the Ministry of Health and Social Affairs organize with the farmers and local administrators in October 1974, developed a program of work for new community development workers. The approach which the Ministry used in the seminar enabled it to learn more about why people in rural areas do or do not change.

IV. DONOR ASSISTANCE IN CAR RELATED TO EDUCATION AND HUMAN RESOURCES DEVELOPMENT

The French Government is the largest single donor of assistance to education in CAR. Its contributions are funds for recurrent expenses, equipment, buildings, personnel (mainly teaching and higher level administrative personnel) and scholarships for training outside of CAR.

The European Development Fund (FED) is the second largest contributor, mainly for school construction and equipment. The USSR provides staff for the university, and secondary school teachers. The U.S. (Peace Corps), Canada, Germany, and UNESCO provide some secondary school teachers. AID provides scholarship support for PAID programs and the AAU Interaf program.

A World Bank project, negotiated in 1972, for a credit of U.S. $3.9 million provides for the following:

(a) construction and equipping of:

- four new lower secondary schools (CEG) and an extension of an existing one;
- additional facilities for science and practical subjects in four lycees;
- extension to the technical lycee; and
- a new secondary teacher training college (ENS).

(b) seven man-years of specialists' services to assist in education planning and project implementation.

(c) a unit for the implementation and overall supervision of the project.

The total cost of the project is estimated at U.S. $5.4 million and the foreign exchange component at U.S. $2.8 million. The UNDP Representative reported that construction on the buildings is progressing.

The World Bank appraisal team report sets out the following objectives for the project:

> "...assist in the implementation of the government educational policy by: (a) providing lower secondary facilities for the teaching of a broader curriculum; (b) adding science and practical subject rooms to four existing lycees; (c) improving the facilities for technical and commercial courses; (d) establishing a college to train secondary school teachers; and (e) helping with the preparation of a long term educational development plan."

Of the UNDP expenditures for the CAR 1972-1976, 39.1 percent is devoted to human resources development. A number of projects funded through the UNDP umbrella are worth noting:

1. A project to provide three planning experts and one UNDP volunteer to help the government services with the execution of the current Plan and the preparation of the next one. Provision is made for the training of CAR counterparts to replace UNDP experts.

2. Aid for special pilot application of training in extension work for CAR MinAg technicians. The project, which lasts from January 1973 to March 1976, provides for the equipment and vehicles needed to establish several pilot farming zones. Scholarships will be provided for the training of the CAR counterpart technicians.

3. A project, which will terminate in late 1975, to provide UNDP and ILO assistance to the Center for Rapid Skill Training, especially for training and retraining government office workers and their administrators. The center was originally established with AID funding through ORT.

4. A project, with ILO staffing, to extend an original project for the training of rural artisans (blacksmith, mechanics, masons, carpenters) and young farmers, and then set them up in farming, in pilot zones, or at a trade in a population center. Training is included for the CAR counterparts of the ILO specialists.

5. A project to train and retain community development workers under the aegis of the Ministry of Health and Social Affairs. UNDP inputs are for staff at the training center at Damara and three years of expert field supervision and follow-up for graduates of the Damara training center. This project was referred to in an earlier section of this report.

One UNDP project merits being singled out for special attention: assistance to the National Institute of Pedagogy (IPN). The IPN was created by the government as an arm of the Ministry of Education to reform the CAR educational system. IPN is charged with renewing the contents and methods of education and training in CAR so they will be better adapted to the needs and resources of the country.

A joint team composed of specialists from UNDP, UNESCO, the CAR Government and the French Government spent several months of early 1974 developing the organization and program of work for the project, which had already begun to be put into effect in January 1974. One of the unique features of the project is the collaboration and integration of donor financing and technical assistance personnel for the design and implementation of the project.

The new IPN will relate to, without replacing them, the existing teacher training and research institutions. It will be both an operational and research organization. In addition to a central administrative service, IPN will have four major departments:

1. Research and the development of new teaching methods, and adult education;
2. Upgrading and permanent in-service training of teachers;
3. Documentation and the production of new teaching materials; and
4. Psychology and vocational guidance.

The joint project design team was careful to avoid recommending the establishment of an institution which would only be a regrouping under one roof of all the various disconnected educational training and research activities which are scattered around Bangui. Is is important for real integration to take place between all of the IPN departments. The working out of this integration among the various technical assistants (some of whom have just begun six year contracts for the projects), as well as between the CAR Government and the donor organizations, will be a critical consideration for the integration of any additional donor assistance into the project later on.

V. DAP RECOMMENDATIONS FOR AID IN CAR

A. Assistance for the development of people who participate in the traditional sector: More than half (57.6%) of CAR's economic activity is in the traditional sector. Of the estimated 650,000 economically active population, 70 percent are in the subsistence sector. Services and infrastructure for health care, transportation, education and information are the least adequate in areas where people in the traditional sector live.

Optimum areas for support of activities which would promote the development of people in these areas are:

1. The Community Development Training Program. Early in the five-year DAP period, AID should sponsor an evaluation of the training program, along with its follow-up supervision of graduates and the methods used (such as the Basse-Kotto Seminar) to integrate them into the region of their assignment. If the results of the evaluation are positive, AID should support the extension of the program.

The Ministry of Health and Social Affairs, which has overall responsibility for the community development program, appears to be the most dynamic and functionally integrated ministry in CAR. Its ability to organize integrated approaches to local development and manage interministerial relationships at the center in Bangui has already been proved to some extent.

2. The National Pedagogy Institute (IPN) and its related Center for Applied Educational Research: Within the context of the UNDP coordinated support for the IPN project and educational reform in CAR, particular attention should be paid to the role of primary schools and adult education programs in those zones of the traditional sector where the community development training program concentrates the installation of its graduates. Several years of progress into the UNDP/IPN project should take place before local experience will be substantial enough to evaluate with respect to support for research on ways primary and adult education might be linked to community development programs.

B. In-Service training and retraining of government and parastatal organization personnel whose performance is critical to the development process: The development of secondary and higher education programs in CAR appears to be moving in a pace and style that seem best left to work themselves through on the basis of present forms of donor support and internal socio-economic factors. Additional external donor efforts would not be sufficient to re-orient the thrust of the development of these institutions in the foreseable future. A more useful application of additional assistance would be to direct it towards improving the professional performance of CAR graduates of the system after they have entered employment.

In light of the above, the following types of activities should be considered for AID support.

1. The participation of civil service and parastatal personnel in regional in-service training programs: These programs could be either the shorter-term training seminars such as those organized by PAID's Center for Project Management or longer-term programs such as the paramedical training programs at CUSS/Yaounde OCEAC health education training, or the PAID's Ecole des Cadres.

2. Support for the expense of consulting services and logistics to enable CAR Institutions and Training Services to develop in-service training programs: The National Institute for Medical and Health training (INEMS), because of its location within the framework of the Ministry of Health and Social Affairs, is in a favorable position to organize in-service training activities both within the Ministry and in relation to other ministries. The National School of Administration (ENA) also has the potential to develop short-term in-service training programs for different staff groups in government. Funding to help them tap the experience of organizations like PAID or CAFRAD, or individual specialists would be a key element in enabling them to explore and initiate programs of this type. AID should explore ways to support the consulting and logistical expenses to enable institutions of this type to design and organize short-term training activities. The design and organizational activity support should be tied to support for a series of short-term training programs aimed to achieve specific job performance objectives.

3. Support for the Ministry of Agriculture to provide in-service training for all levels of staff. The first area which AID should explore with the CAR MinAg is the extent to which special pedagogical training for technicians who are teaching in its three training institutions would increase the effectiveness of their students' performance on the job after graduation.

In addition to the UNDP pilot project to train MinAg technicians as extension workers, there is a need for the Ministry to develop the capacity to provide in-service training for whatever type of personnel performance is called for. AID should pay special attention to the relationship between any agricultural or livestock development project it might support in CAR, and MinAg capacity to train or retrain the personnel in performances required for the accomplishment of the project.

C. Participation in financial and technical support for the effective design and implementation of a renovated primary education system: The UNDP project with the CAR Government which is entitled "Assistance to the National Institute of Pedagogy" (IPN) has been referred to frequently throughout this paper. It holds the most promise for making any constructive changes in the educational system, particularly at the primary level. The "school for collective development" approach, which is currently envisaged as the model for the form which primary schools should take in the future, is most directly relevant to people living in rural areas who participate in the traditional sector.

Since the IPN project is just getting underway, AID should wait one or two years to allow for the integration of the various financial and human inputs and the development of research and program activities before it begins to explore how it could best participate in support for special aspects of the project. Even though the UNDP plans to make its first evaluation of the project in March 1975, it is felt by some that sufficient time will not have lapsed to allow for measurable progress to have been made on the integration of the various components and for program activities to have been through any full operational cycle.

When the time is appropriate, AID should consider participation in support of the project, at least in the following areas:

1. Provision of education technology inputs which draw on specialized U.S. knowledge and capabilities: These inputs could consist of such activities as the supply of short-term specialists and the training of CAR nationals in the areas of radio and other media and techniques for teaching at a distance.

2. Support towards the retraining of all primary teachers in connection with the reform: Apart from the retraining that would be required to enable all primary teachers to operate in the style of a radical approach like the "school for collective development", most primary teachers require

further training in order to function adequately in the present primary school program. AID should, however, not consider support for upgrading the general qualifications of primary teachers in CAR unless it is linked to retraining for a changeover in classroom behavior which promotes a renovated and efficient primary education program.

3. Support for the training of CAR nationals to design and plan a more efficient and integrated national system of education: In line with AID priority emphases in assistance to educational development, no substantial commitments should be made for the support of education projects in a country unless there is assurance that the educational system is progressing towards a more economic and efficient operation. Unless CAR nationals in the Ministry of Planning, MinEd and the IPN are being trained to design and implement the conversion of the country's total educational system to a more cost effective, functionally efficient and integrated operation, AID should first look at whether it should support their training in this area before making any commitments on other forms of educational assistance.

There is one final observation to be made about the integration of any AID support into development projects in CAR: The UNDP plays a remarkable role in coordinating a variety of development assistance efforts in CAR. AID should not only utilize the facilitative and coordinative capacity of the UNDP in CAR, but it should also strengthen and support it by working closely with the UNDP from the initial stages of any project support exploration through to the stage when it decides on the form of the implementation of that support.

CENTRAL AFRICAN REPUBLIC
HEALTH SECTOR ANALYSIS

A sectoral analysis of Health, Nutrition and Population with respect to the Central African Republic presents the expected panorama of the small population in an isolated tropical country, suffering from the diseases of poverty seen throughout the developing world, and attended to by a health delivery system which is barely operable in remote areas due to personnel and material needs.

Demographic Background

Located near the geographic center of African continent, the Central African Republic contains a population of approximately 1.7 million on 623,000 square kilometers of land. (This population figure is the estimate held by PHA/POP and agreed upon by the UNFPA agent presently in Bangui to assist with the 1975 census. The CAR official estimate is 3.2 million population.) The present population density is 2.7/ square kilometer with a very uneven distribution favoring Bangui and the Western regions, with almost no people (6%) in the Eastern half of the country. Approximately 25 percent of the population is found in the six largest towns of which Bangui with a population of 300,000 is the only one larger than 50,000.

The growth rate of the population is probably around 2.6 percent with estimates running from 2.2 (Government of CAR) to 4.4 (UNFPA and Grandes Endemies). The population is young as is found in all countries with high fertility and high mortality; 40 percent of the population is younger than 15 and only 2 percent is over 60. (See Table I). These statistics are based on a number of estimates, the most detailed of which was developed by the Service des Grandes Endemies during its disease surveillance activities. A national census is scheduled for March 1975 and will be largely funded (about $800,000) by UNFPA. The critical constraint affecting the success of the census promises to be the ability of the government to mobilize 200 vehicles for a period of two weeks of counting. Teachers will be used as counters during the spring vacation.

Mortality Setting

The mortality for the population is 26 per 1000 per year; for children under 15, it is 48 per 1,000; and for infants, it is 109 per 1000 as reported by the Ministry of Health in 1974. The Ministry lists the causes of these high mortality rates as:

1. Infectious and Parasitic Diseases
2. Respiratory Infections
3. Metabolic and Nutrition Problems
4. Gastrointestinal Diseases

Table I

POPULATION DISTRIBUTION

Region of the West:

Haute-Sangha	235,306
Sangha Economique	
Ouham	262,998
Ouham-Pende	232,283
Nana-Mambere	198,720
Lobaye	150,510
Ombella-M'Poko	396,657
Total	1,476,474

Central Region:

Basse-Kotto	183,223
Ouaka	190,972
M'Bomou	127,240
Kemo	
Gribingui	134,031
Total	635,466

Regions of the North and North East

Haute-Kotto	44,392
Haut-M'Bomou	53,564
Bamingui-Bangoran	27,780
Vakaga	17,860
Total	143,596

This classification of illnesses is not all-inclusive, and contains confusing duplication and overlapping diagnoses, yet it is clear that the main causes of mortality are conditions associated with poor water and sanitation.

Organizational Structure

The Ministry of Public Health and Social Welfare is an institution headed by the Director General and divided into six divisions:

1. Urban Health and Hospitals
2. Rural Health and Epidemology*
3. Pharmacy*
4. Training Programs*
5. Social Welfare
6. Administration and Finance

The Ministry is presently very strong with a competent Central African physician serving as Director General and French physicians directing three of the major divisions*cited above. There is no significant private sector active in the CAR health system.

Financial Setting

The most recent UNDP review of the Second Plan pointed out that the Health and Social Affairs sector was allotted 2,160,000,000 CFA or 2.75 percent of the total budget. (Of this, 1,382,000,000 CFA were marked for health. This represents 1.76 percent of the national budget.) In addition, 1,572,000,000 was expected to be forthcoming from external aid (42 percent of the total). This amounts to a government expenditure of $1.05 per capita annually for health and social welfare as compared with $2.58 for Cameroon and $7.05 for Gabon.

Health Manpower

The training of personnel ranked as the second priority behind the development of a basic rural health service in the Second Plan 1971-1975, and is expected to remain as a top priority throughout the foreseeable future.

CAR is entirely dependent upon sending people to other countries to be trained as physicians (a situation "Operation Bokassa" hopes to alter during the course of the Third Plan). However, the Ministry had created the National Institute for Medico-Social and Public Health Training (INEMS) to address the training of paramedical personnel.

INEMS has grown since its origin in 1967 to the point where it now trains nine levels of paramedical personnel and brings non-credentialed nurses and health aides back for retraining regularly. Table II outlines the output of INEMS to date. An additional level of clinician between a doctor and a nurse is previewed for the near future and will be called Superior Health Technician. All levels of paramedical personnel receive their training or recycling at the INEMS Center in Bangui with practical field training being done at the WHO sponsored demonstration zone at Bimbo.

INEMS is receiving its support from the national budget and from German aid and is able to grow as rapidly as teachers can be identified. At the same time of the DAP visit, the principal constraint affecting INEMS operations was a lack of funds which precluded the purchase of paper and stencils, and the INEMS Director had prepared a request for U.S. Self-Help assistance.

All INEMS students receive scholarships. Half of them are paid by UNICEF and half by the national budget.

Health Facilities

The Central African Republic is divided into 17 Prefectures, 49 sub-prefectures, 171 Communes and 7,800 villages. The hierarchy of the health delivery system follows this administrative organization shown below:

National Hospital in Bangui	700 beds
General Hospitals in the 5 large prefectures	640 beds
Prefecture Hospitals in 10 remaining prefectures	545 beds
Health Centers in 32 sub-prefectures	1005 beds
Sub-Health Cities in 71 communes	
Health Posts in 156 villages	

In addition to the hospitalization capacity of 2890 beds shown above (less than 2 beds per 1000) there are 788 maternity beds in 40 maternities throughout the country, and there are 76 beds in three leprosariums.

Those facilities which cannot hospitalize patients include 11 urban health centers in Bangui, as well as 71 sub-health centers and 156 health posts listed above. Expansion of health facilities planned for the period

TABLE II

INEMS GRADUATES

Level of Training	1974 Graduates	Total Graduates	Enrolled
1. State Diploma Nurses	24	74	103
2. Assistant Nurses	53	144	60
3. Midwives	9	25	68
4. Sanitation Assistants	9	8	31
5. Social Workers	8	14	50
6. Health Aides	10	18	20
7. Assistant Midwives	12	22	20
8. Hygiene Aides	14	23	20
9. Community Development Aides	16	160	20

In addition 45 nurses per year are give three months of in-service training and 200 health aides are given two months retraining courses annually.

of the Third Plan (1975-1980) include:

6 Maternities

9 Health Posts

10 National Public Health Laboratory

11 Rural Welfare Centers for training rural women

1,280 bed Medical-Pediatric Hospital in Bangui

Several MCH Centers in the Interior

1 National Sickle Cell Anemia Center.

This expansion is planned to be financed by the national budget, FED and FAC with AID self-help funds assisting with some of the MCH Centers.

Given the disease and infrastructure above, the Government of CAR maintains its priorities, as expressed in the Second Plan, as the development of basic health services throughout the country and the training of qualified health workers at all levels. The focus will be on preventive programs directed at rural populations and will be patterned after models of delivery of health care being tested in the BIMBO demonstration zone near Bangui. Maternal-Child health will remain a principal objective and health education will be the main technique employed. In addition, the Ministry of Health plans to establish a statistical service to collect and analyze the data which, to date, has been unavailable for planning purposes.

The principal activities of other donors assisting CAR in the health sector area are:

FED:	Disease campaigns, rural health centers
FAC:	Active in provision of scholarships, technicians and construction
USSR:	Personnel, materials, construction
Germany:	Active support of INEMS, funds and materials
Korea:	Personnel and materials
Romania:	Medications
UNDP via WHO:	Scholarships, advisors, materials
UNFPA:	Census coordination and financing
UNICEF:	Scholarships, materials, and vaccines

The United States is currently involved in the health sector in CAR as follows:

1. Regional Public Health Training Project No. 625-11-54--510 which provides two health education specialists to develop the health education aspects of the BIMBO demonstration zone. In addition, they teach health education in the paramedical programs of INEMS and in teacher training programs.

2. Strengthening of Health Delivery Systems Project No. 625-11-590-904 through which measles vaccine is provided to Grandes Endemies in Bangui.

3. The CDC epidemiologist stationed with OCEAC in Yaounde is available as needed to the CAR Ministry of Health.

4. Self-Help funds have been used for the construction of a number of small MCH Centers, dispensaries and provision of emergency operating supplies to training programs.

~~The Ministry of Health~~ expressed their wish that the U.S. would continue to aid its efforts in the health sector, giving specific attention to continuation of the measles vaccine provision and the health education effort. In addition, they requested assistance for their maternity and MCH Center construction program, as well as the supply of five trucks to the Grandes Endemies.

From a nutrition standpoint, CAR is in need of a basic nutrition surveyor. A brief study conducted in 1972 by the Regional WHO Nutritionist indicated that caloric intake was generally adequate. The average daily per capita consumption of manioc is about 400 grams. Protein intake varied widely but was generally inadequate and UNDP and Peace Corps are developing a national fish-culture experiment to address this problem. Nutrition education directed at training mothers to make better use of the foodstuffs available should provide the greatest chance for improving the rural nutritional status for the immediate future.

The drought which has severely affected the Sahel countries, has had very little demonstrable impact upon the health status of CAR. The villages bordering on Chad have long suffered from lack of water, supplies and personnel, but these conditions hardly became worse with the drought, with the exception of the phenomenon that concerned village wells. These wells for the most part are shallow, and many dried up during the drought. As they were unprotected, the villagers started using dry wells as refuse dumps and then concentrated around the remaining wells in such numbers that physical contamination of the water was inevitable.

Luckily there has been no cholera introduced into these areas yet and the only mortality changes relate to increased gastroenteritis. The Service des Grandes Endemies has stated that access to an adequate, protected water supply is probably the greatest health need in northern CAR.

In summary, CAR is a small, lightly populated tropical country which has traditionally allocated only a small percentage of its national budget to the health sector. In health, as in all other sectors, external assistance in terms of funds and personnel plays a critical role. The spectrum of diseases and the approach to dealing with these diseases is similar to that seen in most tropical, former French, countries. There has been little worsening of the situation due to the recent drought, yet there are a number of critical constraints to the realization of a good health program which preceeded the drought.

After simple finances, the greatest of these constraints are shortages of qualified personnel at all levels. The initial step in providing the basic data needed will be the National Census effort next year. This project is already receiving enough financial and technical support from UNFPA to succeed. The critical factor at this time is cooperation from the government, and with the official wish to report more people than exist; the prospects of receiving the needed cooperation are not encouraging.

Much of the external assistance in the health sector is aimed at health manpower development, and there are a number of good programs under way at INEMS. In addition to these programs, CAR could use access to training in health services administration, planning and execution for its upper and middle level personnel.

CAR is one of the two francophone countries on the Coordinating Council for the Strengthening of Health Delivery Systems Project 625-904, and is looking foward to being able to submit candidates for health management training.

For the possible future, AID can make a valuable input to the needs of CAR by maintaining programs directed at health manpower development, and by exploring the possibilities of extending the services provided in the Bimbo zone to cover a broader area.

GABON
MACRO-ECONOMIC ASSESSMENT

I. Overall Performance of Economy

A two-year export boom led by primary product export earnings (mostly oil, but also lumber, manganese and uranium) has given Gabon the highest per capita income in Sub-Saharan Africa of about $1,000 in 1974 (and the second highest in Africa, following Libya and surpassing South Africa.) This economic boom reflects the natural resource endowment of Gabon and massive foreign investment rather than a determined leadership devoted to the development of rural areas. At present, 60 to 70 percent of Gabonese live in relatively untouched rural areas. Rural inhabitants earn less than $200 per capita according to official figures, but most are little more than subsistence producers. The only cash crops are coffee, cocoa and groundnuts produced in limited areas. 1/

Thus Gabon can best be characterized as an enclave economy based on oil production in the Port Gentil area, manganese and uranium in the Franceville area, and lumber exploitation in the central part of the country. Rich iron ore deposits in the Belinga area have yet to be exploited. Libreville, the capital, reflects the economic boom, with its myriad construction activities.

The wealth of Gabon cuts with a double edge. On the one hand it provides the country with unprecedented resources which could be devoted to development activities; on the other hand, it fosters a complacency which evades the sense of urgency and determination without which development cannot occur. The lack of incentive and will to develop is evident at all levels of the social structure, from the government, which devoted a mere three percent of its development funds to rural development in the Second Plan (1971-1975); to the educated, who could hold any of 5 to 6 jobs when they enter the labor market; to the farmers and fishermen, who can earn a minimum of 30,000 CFAF per month ($150) as unskilled workers and have therefore little incentive to fish or farm even if they can earn as much as 45,000 CFAF monthly.

Structurally Gabon remains a developing country with a large majority of the population imprisoned in the subsistence agricultural cycle, and a very poor transport infrastructure. Some of its most pressing problems, however, are diametrically opposed to those of most developing countries. First, there is a labor shortage. Imported labor from neighboring countries is regarded as a long-term threat, and is limited by official policy. Essential laborers for high priority projects such as the Trans-Gabon railroad and key industrial needs are imported from other African countries such as Dahomey and Senegal, often for limited time periods.

1/ The value of the CFA franc has shifted in terms of the dollar from $1 = CFA 223 in October, 1974 to $1 = CFA 208 as this went to press in March, 1975.

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Secondly, Gabon suffers from a very low rate of population growth which characterizes other tropical countries. Owing to disease (30% sterility among females), malnutrition, and weak health services, as well as high infant mortality rates (the rate of stillbirths is 37% for males and 17% for females coupled with high mortality rates for young children), the population growth rate was only 0.8 percent in the 1960's and has attained approximately 1 percent in the early 1970's. Given a population base of 490,000 in 1970 and about 500,000 in 1973 (World Bank estimates based on 1960 census; official estimates range to 1,002,000), the internal growth rate is not likely to alleviate the labor shortage in the foreseeable future.

Thirdly, rural areas suffer from a population exodus far more serious than most developing countries. Owing to the shortage of labor, both men and women (women have excellent job opportunities since the labor market is so open) leave rural areas. The rural-urban migration rate has been 7 percent with Libreville alone absorbing fully one percent of the population annually. Many work for lumber and other extractive industries in rural areas, and therefore contribute nothing to agricultural production. Thus rural inhabitants tend to be the young and the aged: the 15-45 age group has disappeared from the rural scene.

Thus the development prospects of Gabon, given its resource endowment, are excellent. But the probability that serious grass-roots development efforts will be made in the foreseeable future is very low. The development of the Trans-Gabon railroad and other transport infrastructure has a potentially significant contribution to make to rural development, although in the short run its major effect will be to draw labor away from rural areas. But without the initiative and support of the government, little development is likely to occur.

A. Sectors (See Table A)

1. Agriculture

Agriculture in Gabon contributed less than five percent to GDP in 1973, down from 9.1 percent in 1970. Production appears to be stable, or falling slightly, over the past few years, despite the fact that about 70 percent of the population live in rural areas. The mainstay of subsistence production is manioc and bananas.

Only one percent of the land is cultivated presently (85% is tropical forest). The main commercialized products are coffee (538 tons in 1973) and cocoa (4,210 tons in 1973), accounting for 8 percent of exports in 1973. Some peanuts, yams, corn, vegetables, sugar cane, and rice are also grown in small quantities. The country imports most of the food consumed in urban areas including fish although the country has abundant fish resources. Imports of food in 1973 amounted to $22.5 million or 14 percent of imports.

TABLE A

Valued-Added by Sector of GDP (Gabon) - 1970
(billions of CFA francs)

Primary Sector	14.1	19.9%
Agriculture	6.4	9.0%
Forestry	7.7	10.9%
Secondary Sector	37.9	53.4%
Mining	26.3	37.0%
Energy	2.4	3.4%
Lumber Industry	1.5	2.2%
Other Industry	2.3	3.2%
Construction	5.4	7.6%
Tertiary Sector	19.0	26.7%
Services	6.4	9.0%
Commerce	12.6	17.7%
TOTAL	71.0	100.0%

Food production appears to occupy a low priority with the government. Perhaps after the road and railroad infrastructure are completed, the profitability of agricultural production will be enhanced. Given the sparseness of the rural population (5 inhabitants per square mile), and the overall lack of labor on the land, this assumption is highly questionable.

The Second Plan (1971-1975) devoted less than 3 percent of planned expenditures to rural development, mainly for cocoa, coffee and groundnut production, vegetable farming and livestock development.

2. Industry

Gabon's economic boom is based on the extraction of wood, manganese, uranium, and petroleum . The wood industry accounted for 30 percent of exports and approximately 13 percent of GDP in 1970, of which 11 percent was sheer extraction of wood, and two percent was contributed by sawmill production. This sector of the economy employs more people than any other sector. Eighty percent of the wood is okoumé, which is used for making plywood. About 170 local firms and 30 foreign firms control the lumber industry, the foreign firms controlling 70 percent of exploited area and 75 percent of production. Since 85 percent of Gabon's surface is covered

by tropical forests of which 20 percent has begun to be exploited, this industry is likely to remain strong, especially when the Trans-Gabon railroad facilitates transport. The world economic situation may erode the market demand for wood, but this problem seems unlikely to effect Gabon owing to the uniqueness of its wood.

Petroleum has taken a strong lead as the most rapidly growing sector in the economy. Production increased by 20 percent in 1973 and is expected to increase again by 27 percent in 1974. However, the value of oil exports is expected to increase by a factor of five, from $83 million in 1973 to $400 million in 1974. The petroleum is based at Port Gentil, where some refining capacity exists and is being augmented.

Overall mining (including petroleum) accounted for 43 percent of GDP in 1970. Production of manganese has been stable at nearly 2 million tons. Uranium production increased nearly three-fold between 1972 and 1973, owing to technical difficulties in 1972. All magnesia uranate concentrate is sold to France.

Other industry in Gabon (3% GDP in 1970) is limited to beer and soft drinks, cigarettes, cement and building materials.

B. National Product

1. Balance of Payments

Exports amounted to $226.3 million in 1973, up 4 percent from 1972. Petroleum accounted for 37 percent of exports, timber exports for about 30 percent, manganese and uranium for about 25 percent and coffee and cocoa for 8 percent.

Imports amounted to $148.0 million in 1973, and consisted of

Heavy equipment and machinery	39%
Metal products	18%
Chemical and mineral products	18%
Foodstuffs	14%
Electrical & manufactured appliances	2%
Wood and paper products	7%
Other	2%
	100%

The balance of trade was therefore very positive at +$78.3 million, as it has been for years. This situation however, has historically been reversed by investment income and repatriated earnings. In 1970, the

latest year for which figures are available, the current account balance was nearly a million dollars in deficit after the repatriation of profits. This was compensated by transfer payments (aid) and investments (both public and private). This tenuous situation is probably being alleviated by the recent oil boom which has increased the government's portion of revenue substantially.

The major trading partner is France, who received 75 percent of exports and provided 58.3 percent of imports in 1972. The U.S. followed with 9.1 percent of exports (mostly manganese, some oil) and 11.2 percent of imports (heavy equipment for the lumber, oil and manganese industries). West Germany was the third largest trading partner with 7 percent of exports and 10.4 percent of imports.

2. Government Budget

The budget of the government amounted to CFAF 36,943 million in 1973, 60 percent for the operating budget and 40 percent for the development budget.

Government revenues have increased substantially in recent years, from CFAF 15,600 million in 1968 to CFAF 36,943 million in 1973. A large proportion of income derives from import taxes (43%) and export taxes (10.6%), as well as from government ownership of major enterprises (See Table B).

TABLE B

Sources of Government Revenue - 1973
(millions of CFAF)

Ordinary Receipts	27,914	73.6%
Import Taxes	13,465	42.0
Direct Taxes	9,077	14.2
Development loans	2,100	6.8
Export Taxes	3,272	10.6
Income from government enterprises	4,793	13.1%
External Receipts	4,810	13.3%
TOTAL REVENUE	36,943	100.0%

Principal uses of government revenue include the principal ministries cited in Table C. The use of the development budget for 1973 is unavailable; in 1970, the development budget was devoted to public debt service (16%), investment projects (54%), administrative construction (16%) and railway investment (14%).

TABLE C

Government Expenditures - 1973

Operating Budget (by principal ministries)	CFAF (000)	Operating Budget (percent)	Total Budget (percent)
Education	2,964	13.3	8.0
National Defense	2,107	9.5	5.7
Public Health	1,730	7.8	4.7
External Affairs	879	4.0	2.4
Interior	744	3.4	2.0
Police	772	3.5	2.1
Other Min. & Expend.	13,017	58.6	35.2
Total Operating Budget	22,213	100.0	60.1
Development Fund	14,730		39.9
TOTAL GENERAL BUDGET	36,943		100.0

The financial situation of the government is clearly improving, given the growth of revenues, and is likely to improve further with the windfall of oil revenues commencing in 1974. There should be little or no financial constraint in carrying out development programs.

C. Human Resources/Employment

With a total population of 490,000 in 1970, and a population growth rate approaching one percent, Gabon experiences a human resource problem in terms of both quantity and quality. About 70 percent of the population lives in rural areas. The major cities are Libreville (100,000), Port Gentil (50,000), Lambarene (10,000), and Franceville (10,000). There are about 5,000 French technical assistants in the country, and about 12,300 non-indigenous Africans (1970 figure). The rural-urban migration rate is 7 percent with Libreville absorbing nearly one percent of the total population annually. There seems to be no major problems stemming from international out-migration to France or other countries.

Education in the country is widespread, although the current literacy rate is only 15 percent. There are 688 primary schools (including 309 religious schools) with 110,466 students officially enrolled. With an estimated 160,000 people under the age of 15, this official figure suggests

a near 100 percent primary school ratio. There are 48 secondary schools with an enrollment of 11,734 students. The country is also abundantly endowed with schools of higher education, including 10 technical and commercial schools; 11 apprentice centers; 4 teacher training schools; 14 specialized schools in health, police, administration, postal services, engineering, etc; and a university with 79 students.

The employment situation appears to be excellent for both the educated and the unskilled. In 1970, there were 57,199 salaried workers in the private sector, of which 21% were employed in construction, 19% in forestry, 16% in services, 13% in industry, 10% in commerce, 9% in mining, and only 1% in agriculture. Another 16,702 salaried workers were employed by the public sector. Thus there were 73,901 salaried workers in the modern sector (27% of the active labor force aged 14-49).

Population and labor estimates for Gabon show that 50 to 60 percent of working age people are still in the traditional agricultural sector, and that many women work owing to the shortage of men in the labor force.

TABLE D

Population and Labor Estimates - 1970

Population	490,000
Estimated Active Population (14-49)	274,000
of which	
Traditional Agriculture Sector	130 to 160,000
Wage Earners	74,000
Others	40 to 70,000
Male Labor Force	120,000

Source: IBRD, Current Economic Situation of Gabon, Vol. II, December 20, 1971, p. 5.

The role of the extractive export industries in the employment situation is clear: an estimated 42% of total private salaries and 53% of expatriate salaries emanate from the enclaves. A striking feature of the enclaves is that 64% of their payroll is earned by 8% of their employees. As Gabonization of employment is increased, domestic purchasing power and government revenue should increase accordingly.

II. Government Policies

A. Development of Plan

Gabon's economy has traditionally been led by extractive industry exports. Originally based on lumber exports, the economy is further propelled presently by oil, manganese, uranium, and potential iron ore production. The growth of enclave export industries has been accomplished by massive private foreign investment and the presence of foreign technicians. This basic strategy for development seems to underlie current planning, bending only to expand health and education facilities in order to Gabonize the labor force, and to build an infrastructure which would promote rural development, at the same time encouraging the expansion of existing extractive industries.

The Second Plan (1971-1975) calls for an investment of CFAF 150 billion (about $600 million) of which CFAF 84 billion is private. Private investments include petroleum research, a pulp industry complex, a nitrate fertilizer plant at Port Gentil, an extension of the oil refinery, some small manufacturing plants, a modern deep sea fishing operation (30% Japanese), hotels in Libreville, and a deep-water port at Owendo with refrigeration capacity.

Public sector investment is dominated by transportation infrastructure for a railroad, roads, and a port, absorbing 30 percent of public sector investment. The port of Owendo is regarded as crucial for the further industrialization of the country by permitting more economic import of equipment and by promoting the fishing industry. The Plan also calls for an international airport at Franceville, for which there appears to be little economic justification. As regards urban infrastructure the Plan calls for CFAF 500 million annually for public buildings, housing, and a new Presidential Palace at CFAF 1 billion. A sports stadium costing CFAF 1.6 billion is planned for Libreville.

The government investment program for forestry includes CFAF 1.8 billion to continue a program for replanting okoume trees. Finally, despite the importance attached to rural development, less than 3.0 percent of public outlays are allocated to this sector. In recognition of the likely labor shortage in agriculture owing to the construction of the railroad, the government is attempting increased production by concentrating investments in agricultural plantations with high economic rates of return. The projects are to effect some 90,000 cocoa, coffee and groundnut farmers who will receive production and planting premiums as incentives. A series of expermental projects for fruit, vegetables, irrigated rice, and cattle breeding are also planned, based on ten-year contracts with selected farmers.

Health and education in the Second Plan comprise 3.5 percent and 2.8 percent of public outlays respectively. In education, the goal is to raise the proportion of students who complete the six-year primary education cycle, and to upgrade secondary, technical and higher education, including the establishment of a university.

B. Regional Politics

Gabon is a member of the United Nations, the Organization of African Unity (OAU), the African and Madagascar Organization (OCAM), the Central African Customs and Economic Union (UDEAC) and an Associate Member of the Common Market and the Organization of Petroleum Exporting Countries (OPEC). The latter two of these regional organizations reflect Gabon's economic interests with respect to trade (75% of trade with Europe) and with respect to its petroleum reserves.

Gabon's relative lack of interest in Africa is suggested by the fact that it does not participate in the African Development Bank. Gabon's policy has been one of autonomous development based on the country's abundant resources and on external assistance (including South Africa). Gabon's use of UDEAC has reflected this policy: Gabon imports large amounts of foodstuffs and manufactured products, some of which originates in UDEAC, and presumably should be interested in the expansion of UDEAC imports at lower prices. Gabon is also worried about labor migration from surrounding countries, and has used UDEAC to negotiate labor agreements with the government of Cameroon. But Gabon has shown no willingness to include oil in UDEAC preferences. Gabon seems to perceive little benefits accruing from participation in African organizations, compared to its economic interests elsewhere.

GABON
HEALTH SECTOR ASSESSMENT

I. Major Health Problems

To date, in spite of the concentration of manpower and facilities, the life expectancy in Gabon still hovers around 40 years and the frequencies of communicable diseases remain high. Specifically malaria, gonorrhea, flu, measles, pneumonia, tuberculosis, and parasites are the diseases with the highest incidence in 1973 as reported by Grandes Endemies.

These diseases are best dealt with by preventive programs, but such efforts are dependent upon a reasonable data base for planning and evaluation. Presently there is virtually no data base, although Grandes Endemies has instituted a reporting system involving 60 outlying health centers sending in monthly disease and treatment statistics. However, there is no one available to verify and analyze the data obtained.

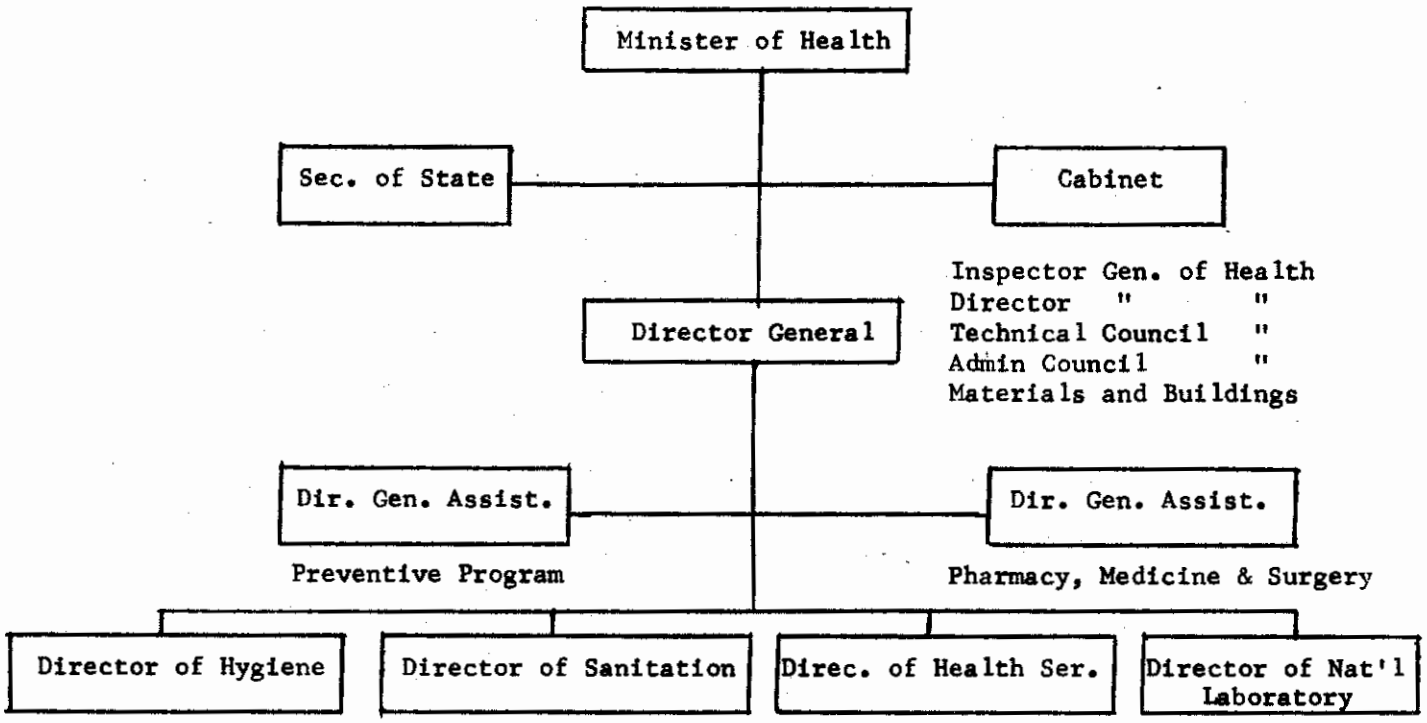
Nutrition studies have been done in Gabon including a 1950 study by Dr. H. Peret; another in 1970 by Dr. Martin Samor (now WHO Rep. in Ouagadougou); and more recently in 1973, by Dr. Martineaud (WHO nutritionist in Yaounde). These studies agree that while there are occasional cases of malnutrition and rare cases of Kwashiorkor, the problem is not one of a shortage of critical foodstuffs, but one of ignorance concerning nutrition and lack of motivation. The WHO nutritionist stationed in Libreville feels that the best approach to the problem (namely, that the population is content to grow those crops which take the least maintenance, i.e. bananas and manoic) is to expand nutrition education efforts in the school system and to combine this with demonstration projects such as school cookhouses.

UNESCO has a modest school garden program which is not having a large impact due to governmental apathy. FAO has trained people to grow cash crops on their agricultural research stations only to find that their graduates go out and start very successful truck farms but quit after two or three months of earning 80-90,000 CFA because they have all the money they want.

As with the other aspects of the development issue in Gabon, the constraint is not financial, but a shortcoming at the policy level with respect to being able to identify problems from adequate data, to establishing priorities among problems and to the implementation of those projects aimed at dealing with top priority problems. It is a question of management and/or administrative ability.

II. Health Infrastructure

The infrastructure of the health delivery systems includes the Ministry of Public Health and Population which is structured as diagrammed below:



The health facilities picture in the Gabon is not as distressing as in most countries. Gabon has 10 hospitals, 30 medical centers and 145 dispensaries, which provide 3800 hospital beds (one bed per 134 people using a population base of 509,000). The number of facilities for the size of the population is much more adequate than many developed countries, but the Ministry is concerned about providing adequate facilities for the expected (desired) population increase and is rumored to be planning a massive expansion of perhaps as many as 75 new hospitals. This should be verified with the Ministry of Health.

The budget of the health sector in Gabon is the highest in West and Central Africa being $8 million in 1973 ($16 per person using 500,000 population). In addition to this level of financing, the budget actually tripled in 1974 with the increased oil revenues, and the Ministry of Health feels that it will continue to enjoy 5 to 6 percent of the national budget. Prior to the recent increase in wealth, about 45 percent of the investments in the health sector were covered by foreign assistance coming mostly from FED,FAC, and WHO.

III. Personnel Availability

Its key personnel are essentially Gabonese but there is a strong French technical assistance presence which appears to be responsible for most of the data collection and analysis. Similarly, only 20 percent of the 126 physicians in the country are Gabonese with nearly all the rest being French. There is approximately one physician per 4,000 people (or one per 8,000 using official population figures). The government hopes to increase the number of physicians as rapidly as possible so it can keep up with its projections of population growth. The Ministry did not have data regarding the number of physicians training abroad, but Gabon, under the Ministry of Education, started its own six year medical school in 1973 with initial classes of 15 to 20 students. The first graduates are expected in 1978.

The Ministry would not release similar figures for the numbers of nurses and paramedical personnel working in Gabon. Apparently, information regarding the number trained and employed in Gabon is guarded to cover the serious exodus of health personnel to work in other countries.

IV. Summary of Sectoral Constraints and Causes

Gabon is a tropical country straddling the equator and containing a land area of 267,000 square kilometers and supporting a population of slightly over 500,000 (according to the Dept. of Commerce and Grandes Endemies sources; the official Government of Gabon figures and those presented by WHO is 1,002,000) which is 79 percent rural with 34 percent of the total population under the age of 15.

The growth rate estimates range from 0.8 percent (IBRD) to 2.2 percent (Government Gabon). The official population policy is that the country needs to increase its population significantly in order to supply the manpower needed for development. This policy is reflected in the exaggeration of population size and growth rate cited above, and in legislation restricting family planning activities.

The needs for services, facilities, personnel, and funds are distorted when calculated on a per capita basis because the official population denominator is double the most likely correct estimate. Likewise, use of the same population base would reduce the mortality and morbidity statistics by 50 percent giving an inaccurately low incidence of disease. However, the morbidity statistics as reported by the Service des Grandes Endemies are based upon their population figures of 509,000.

On the basis of the paucity of data supplied by the GOG to the DAP consultant it seems impossible to decide what the most critical constraints are with the rapidly expanding national budget, helping to remove the financial constraints to the development of a comprehensive health care delivery system. The shortage of data and the near-absence of trained

Gabonese with a public health orientation emerge as the critical factors impeding progress in this sector. AID assistance via the Regional Strengthening of Health Delivery Systems should provide the opportunity to partially alleviate this manpower constraint by assisting with the training of health services administrators, program planners and evaluators, bio-statisticians and epidemiologists. The training requirement for health and nutrition educators can also be met under this program as well as the Regional Public Health Training Project. The lack of a data base is being addressed by the Service des Grandes Endemies, and AID assistance to this effort is probably best through the manpower approach mentioned above.

V. Government Plans and Priorities in Health

In 1965 the Government of Gabon published a Fifteen-Year Plan for the Development of Health Services from 1966 to 1980 which is the most recent available health sector analysis. Although it is based upon 1964 figures, the priorities established then are the same as those that should apply today:

a. The development of a national health statistics service.

b. The training of health workers at all levels.

c. The development of a national health education program.

d. Evaluation of present curative and preventive services.

e. The conducting of epidemiologic and nutrition surveys.

Since 1965 there has been little progress with respect to these priorities with the exception of the training of health workers, especially at the paramedical levels.

VI. External Assistance

Current USAID assistance available to Gabon in the health sector is directed toward these priorities. AID assistance includes:

a. CUSS Project 625-531: Under this project funds are made available to support Gabonese candidates at the University Health Center in Yaounde where they may receive training at either the medical or paramedical levels. To date this opportunity has not been utilized.

b. African Health Training Institutions Project (PHA/POP): This project, contracted with the University of North Carolina, provides a specialist in medical education methodology who is based in Yaounde and who is available for consultation in curriculum development, training in techniques, etc.

c. Regional Public Health Training Project 625-510: The project is based at OCEAC in Yaounde and provides health education consultation to the Central African countries. It has operating health education projects in demonstration zones in Cameroon, Chad and CAR and has sent participants from those countries and Gabon for health education training in Antwerp.

d. CDC has assigned an epidemiologist to OCEAC in Yaounde who serves as a consultant to the epidemiology services in the Central African countries. He has assisted in training epidemiologists from these countries, including Gabon.

e. Measles vaccine and ped-o-jet spare parts continue to be supplied under Project 625-904 but AID intends to terminate this assistance as soon as the recipient countries can assume the responsibility for it themselves, hopefully next year. In the case of Gabon the constraint affecting their taking over is not financial but administrative; there is inadequate logistical expertise available to administer the purchase of ped-o-jet spare parts (in the opinion of Grandes Endemies staff).

f. The Strengthening of Health Delivery Systems Project 625-904 has been developed with the active participation of several donors and the countries of West and Central Africa. It is designed to provide public health and management training to health workers at all levels, utilizing centers based in Africa. The Ministry of Health in Gabon has participated actively in the development of this project and looks forward to its becoming operational in the near future.

GABON
SHELTER SECTOR ASSESSMENT

I. Background

In September, 1973, the President of Gabon requested A.I.D. to review the possibility of developing a Housing Guaranty Program. Shortly thereafter, AID undertook a shelter sector survey. Based on the shelter sector team's findings, AID agreed in May 1974 to undertake a $5 million Housing Guaranty Program. This program was designed to:

a. Help the government develop a National Housing Policy and plan for its implementation;

b. Cooperate with the Government of Gabon (GOG) and the Caisse Centrale de Cooperation Economique (CCCE) in the development of the new port city of Owendo; and

c. Assist the Ministry of Housing, Town Planning, and Land Registry and the inexperienced National Housing Office (NHO) to develop and implement an effective national housing program.

The GOG's investment in housing has been structured to follow the pattern established in colonial days which is to build conventional housing projects with housing units built with concrete block, paved streets and all utilities included. By adopting this method of construction, the GOG has eliminated the majority of the population in Libreville, where approximately 75 percent of the families live in squatter settlements with no specific program to alleviate the situation. However, the decision by the GOG to establish a Ministry of Housing and the National Housing Office seems to reflect a new focus by the GOG on its shelter program.

II. DAP Objectives

For the DAP period, AID will, in collaboration with the CCCE, direct its program towards helping the GOG: (1) develop a National Housing Policy which will focus on providing shelter for low income families; and (2) organize the NHO into a strong national housing institution capable of carrying out the GOG's shelter program. With the exception of the low medium income housing units to be built in Owendo (the GOG's new port city), AID will direct all its shelter inputs, whether housing guaranty capital, development loan funds or technical assistance grant funds, to families below the median income levels in their respective cities.1/ AID selected

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1/ A.I.D. Policy Determination No. 55, dated October 22, 1974.

this income group as its target because:

a. The squatter population in Libreville (90,000) and Port Gentil (45,000) is, because of migration from the rural areas, multiplying at the rapid rate of 7 percent annually. At this rate of growth, the population of Libreville will double within twelve years.

b. Low-income families have not heretofore received any assistance from the GOG. Thus these families, without land or access to credit for construction loans, build shelters in rapidly spreading squatter areas.

III. Shelter Needs Compared to Production

The most pressing need for shelter is in the urban areas of Libreville and Port Gentil where the population is increasing at the rate of approximately 5 to 7 percent annually. Based on the limited information available, it is estimated that there are 25,000 housing units in Libreville of which 75 percent are squatter units which do not have water or basic sanitation. Port Gentil has similar problems. In addition, there is a need for 1,800 to 2,000 shelters annually in the above cities just to meet the needs of its expanding population. It is estimated that the two major organizations financing housing, the Gabon Development Bank (GDB) and the Societe Gabonaise d'Amenagement et Equipement Immobiliere (SGAEI), average approximately 130 units annually. It is estimated that an additional 175 squatter units are built each year in the two urban areas for a total of 305 units where there is a need for 1,800 to 2,000 to keep pace with the population growth.

IV. Housing Sector Policy

The GOG housing policy during the Second Development Plan (1971-1975) focuses primarily on the production of conventional housing in order to meet the needs of a growing urban population of the gainfully employed. In this sense, its housing policy is related to the overall plan objective of increased industrialization.

Public investment for shelter under the plan is limited to funding urbanization cost and providing housing units for government functionaries assigned primarily outside the capital. The shelter section of the GOG Development Plan provides for a 1.5 billion CFAF ($6 million) investment by the public sector and a 5.3 billion CFAF ($21.2 million) investment by the private sector. Investment by the private sector during the first three years of the plan totaled approximately 2 billion CFAF ($8 million).

The GOG has not yet developed a National Housing Policy of the type being considered in a number of other developing countries. However, at the urging of AID, the GOG is now considering steps to develop a National

Housing Policy and a Plan for its implementation. To this end, President Bongo issued a decree in October 1974 creating a Housing Program Coordinating Bureau with a Roving Ambassador as its Coordinating General. In assisting the GOG to develop its National Housing Policy, AID expects the GOG to direct its primary effort towards families below the medium income levels of the urban or country population.

V. Employment

Traditional house construction provides a method whereby unskilled workers can be converted over a period of a few years into semi-skilled and skilled workers who can meet the requirements in the urban market for labor in all categories of construction. If the GOG can maintain a substantial shelter program, it will not only provide employment in construction, but also in the construction materials and allied industries, e.g. home furnishings.

VI. Shelter Institutions

There are three institutions in Gabon which develop or finance housing units. These are:

a. Gabon Development Bank (GDB)

The GDB is 54% owned by the GOG, 22% owned by the CCCE, with token shares by others. The purpose of GDB is to give technical and financial support to all projects that will contribute to the economic and social development of Gabon. During the first three years of the plan period, the GDB invested an average 500 million CFAF in housing. However, in 1973 the total was reduced to less than 300 million CFAF because of the shortage of long term credit. The GDB generally finances housing classified as middle or higher middle income housing (not to exceed $28,000 from CCCE funds).

b. SGAEI

The major institution involved in the housing sector is SGAEI. It is primarily owned by the GOG (57%), but with substantial Caisse Centrale ownership (42%). It was formed in 1960 to undertake all studies and operations directly or indirectly related to the improvement or development of urban and rural housing. It has been the key to the GOG's housing programs, and since 1966 has built 1,244 housing units, representing a total investment of 2.1 billion CFAF. Nearly all of the SGAEI's units were in the middle and higher middle price range. There is a strong CCCE influence in this organization, with the Director General a CCCE representative. This organization will be responsible for that part of the HG program to be implemented at the new port city of Owendo.

c. The National Housing Office (ONH)

The ONH is a public agency under the supervision of the newly formed Ministry of Housing, Town Planning, and Land Registry. The ONH, created in 1973, is to promote and develop social and low income housing and to be the implementing arm for the GOG's future housing program. Unfortunately, it is only staffed by a few people and needs substantial assistance before it can become the organization capable of developing and implementing a national housing program. One of the objectives during the DAP period is to assist the GOG develop the ONH into a strong and viable housing institution. The ONH is to be the implementing organization for the sites and services (2.5 million dollars) part of the proposed HG program. However, before AID is prepared to authorize its HG program, the ONH has to show it has the technical and administrative capacity to carry out the program.

VII. Constraints

a. Manpower - The shortage of qualified managers and technicians, while scarcely unique to either Gabon or the shelter sector, is a major constraint to the implementation of a sites and services program and to the development of a National Housing Policy. Project design, engineering and construction supervision are major needs of the ONH. In addition, the ONH needs to develop individuals skilled in the organization and management of a national housing institution. To assist the ONH attain these skills, AID is prepared to provide short term and long term technical assistance to the GOG. AID is also prepared to provide technical assistance to the GOG in its efforts to develop a National Housing Policy and Plan.

b. Financial - Capital requirements for the long term financing of conventional housing has been provided primarily by the GDB and SGAEI through funds obtained from discounting notes at the Central Bank or from the CCCE. Public investment in the shelter sector is generally limited to infrastructure which is then passed on as a grant to middle and higher income families who use the urbanized lots to build conventional homes.

The GOG in January 1973 created a National Housing Fund which through a 3 percent wage tax generated approximately $2.4 million in 1974. This fund is to be divided equally between the Ministry of Public Works, for infrastructure projects, and the ONH for social and low income housing. With the GOG's increase in export earnings (oil and other minerals), AID believes the GOG is in the position to substantially increase its investments in the shelter sector. AID's insistence that the GOG must agree to begin to develop a National Housing Policy before AID will begin implementation of its HG program is the means for helping the GOG to recognize the need for:

1. an increase in GOG capital in the shelter sector; and

2. a redirection of its capital towards lower income families.

The GOG cannot continue to build 300 to 400 housing units a year when the population growth in its two major cities requires 1,800 to 2,000 shelter units per year.

VIII. Other Donors

The only other donor in the shelter sector are the French, who provide all the long term funds, are represented on the Board of Directors, and provide technical assistance for GDB and SGAEI. RHUDO maintains regular contact with the Libreville director or CCCE, the French aid fiduciary. However, IBRD is considering financing a water system for Libreville, and this might possibly be combined with elaboration of a master plan for the city and sites and services.

IX. Current AID Program

The current program approved in principle in May 1974 calls for GOG establishment of a Task Force to develop a comprehensive National Housing Policy and a timetable for its preparation as a condition precedent to the following two-part HG program:

a. $2.5 million participation in joint HG-GOG-CCE financing of a housing project for skilled and semi-skilled workers to be developed by SGAEI, the National Housing Authority, at Owendo, a satellite of Libreville, site of the deep-water port facility at the terminus of the Trans-Gabon Railroad and focus of the associated industrial development.

b. $2.5 million to enable NHO to undertake a sites and services core housing program directed at urban families of below medium income, on sites to be jointly determined by GOG and AID.

In order to assist the GOG develop the organisational capacity to carry out a successful shelter program, AID is now considering a technical assistance project which will provide administrative and engineering assistance to the National Housing Office (NHO).

X. Proposed New Programs

Future AID programs will depend upon the nature of the National Housing Policy adopted. Preparation of urbanized lots in conjunction with a future planned IBRD-financed water system for Libreville is one possibility;

workers housing associated with continual industrial development in connection with the Trans-Gabon Railway, particularly where non-enclave concentrations might be feasible at Boone (interior terminus of the Trans-Gabon, first phase), is another.