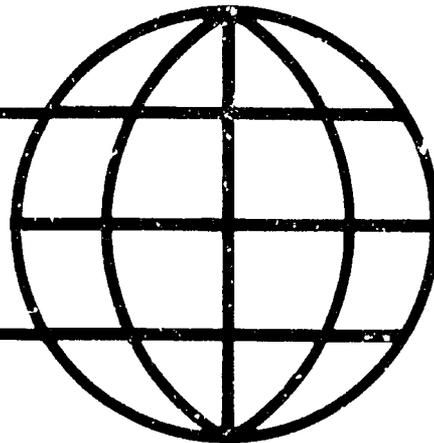


**COOPERATIVE AGREEMENT ON HUMAN SETTLEMENTS
AND NATURAL RESOURCE SYSTEMS ANALYSIS**

THE CAMEROON URBAN FUNCTIONS IN
RURAL DEVELOPMENT PROJECT:
SECTORAL STUDIES

The UFRD Cameroon Project Team
with the assistance of
E. Perry

Rural Marketing Centers Working Group
Clark University/Institute for Development Anthropology
Cooperative Agreement (USAID)



Clark University
International Development Program
950 Main Street
Worcester, MA 01610

Institute for Development Anthropology
Suite 302, P.O. Box 818
99 Collier Street
Binghamton, NY 13902

**THE CAMEROON URBAN FUNCTIONS IN RURAL DEVELOPMENT PROJECT:
SECTORAL STUDIES**

**THE UFRD CAMEROON PROJECT TEAM
with the assistance of
E. PERRY**

**Rural Marketing Centers Working Group
Clark University/Institute for Development Anthropology
Cooperative Agreement (USAID)**

1983

TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES AND FIGURES	iii
INTRODUCTION	1
ADMINISTRATIVE ORGANIZATION	2
Personnel and Equipment	
Adequacy of Regional Service Levels	
Strategy to Improve Administrative Services	
TRANSPORTATION	11
Location of Roads	
Adequacy of Road Services	
Strategy to Improve Roads	
COMMUNICATION	20
Adequacy of Service Levels	
Strategy to Improve the Communications System	
INDUSTRIAL PRODUCTION	30
Productive Sector Activity in the UFRD Region	
Conclusions and Recommendations	
AGRICULTURAL PRODUCTION	38
Constraints to Agro-Sylro-Pastoral Development	
LIVESTOCK PRODUCTION	43
An Overview of Livestock Production	
Livestock Services	
Personnel	
Investment Strategy	
HEALTH	55
Health Services	
Health Care Personnel	
Subareas	
Strategy to Improve Access to Health Services	
EDUCATION	75
School Attendance	
School Facilities and Personnel	
Subareas	
Strategy to Improve Access to Education Services	
References	91

11

APPENDIX A

LIST OF TABLES

1. Administrative Hierarchy of the UFRD Project Area	3
2. Standard MINAT Personnel Requirments for Divisions, Sub-Divisions and Districts	5
3. Proposed Improvement in Administrative Services	8
4. Estimated Construction, Vehicle and Personnel Costs for Proposed Improvements in Administrative Services, 1987	9
5. Road Conditions Reported in UFRD Survey	15
6. Estimted Upgrading and Maintenance Costs for Proposed Improved Roads Program	19
7. Spatial Distribution of Post and Telecommunication Facilities in Project Area	21
8. Distribution of PTT Personnel in UFRD Project Area	21
9. Average Annual Increase in Domestic and Public Telephone Connections	26
10. Estimated Telephone Requirements	26
11. Proposed Improvement in Postal and Telecommunications Services, 1982-1987	28
12. Distribution of Labor Force by Economic Sector (1976)	31
13. Livestock Distribution by Geographic Area, 1979-1980	44
14. Number of Livestock per Human Population by Geographic Area, 1979-1980	45
15. Minel Infrastructure, UFRD Core Project Area, 1979-1980	46
16. Minel Workload Measured in Ruminats per Technical Worker	47
17. Population Served by Various Levels of Health Care Services, 1976	52
18. Comparison of In-Patient Hospital Capacity Throughout Cameroon	57
19. Distribution and Staffing of CSEs and CSDs, UFRD Project Area, 1980	62

20. Distribution and Staffing of Urban Dispensaires, UFRD Project Area, 1982	62
21. Distribution and Staffing of PMIs, UFRD Project Area, 1982	63
22. Distribution and Staffing of CDMPs, UFRD Project Area, 1982	63
23. Distribution and Staffing of Hopital D'Arrondissement, UFRD Project AREA, 1982	64
24. Distribution and Staffing of Hopitaux Departementaux, UFRD Project Area, 1982	64
25. Distribution and Staffing of Hopital Provincial, UFRD Project Area, 1982	64
26. Personnel Averages per Type of Health Facility, UFRD Project Area, 1982	65
27. Program for Provision of Public Health Facilities, UFRD Project Area, 1987	68
28. Program for Provision of Public Health Facilities, UFRD Project Area, 1992	70
29. Comparison of Primary School Facilities and Personnel, 1976-1977	77
30. Ratio of Primary School Classrooms and Teachers to Students, 1976-1977	77
31. Estimated School Age Population, UFRD Project Area, 1980, 1987, 1992	80
32. Enrollment Ratios, UFRD Project Area, 1980-1981	81
33. Repartition et Etat des Ecoles Primaires dans la Zone du Projet UFRD, 1980-1981	83
34. Repartition et Etat des Etablissements Secondaires dans la Zone du Projet des UFRD, 1980-1981	84
35. Educational Averages, UFRD Project Area, 1980-1981	85
36. Programme des Fourniture des Infrastructures Acolaires du Promaire dans la Zone du Projet UFRD, 1987	88
37. Programme de Fourniture des Infrastructures Scolaires du Secondaire dans la Zone du Projet UFRD, 1987	89
38. Estimated Costs for Proposed Education Facilities, UFRD Project Area	90

LIST OF FIGURES

	<u>Page</u>
1. Telecommunications Facilities	22
2. Health Facilities	60
3. Proposed Health Facilities	72
4. Primary Schools	79

INTRODUCTION

This paper reports on eight sectoral studies which were conducted for the North Cameroon Urban Functions in Rural Development (UFRD) Project. The eight sectors are: transportation; communication; administration; industry; agriculture; livestock; health; and education. These eight were selected because the Cameroon government identified them as the ones most in demand of attention and planning.

The UFRD project for which these studies were conducted focused on the relationship between activities located in urban areas and development in rural areas and on planning to strengthen the contribution of settlements to development. In order to select individual projects for investment within the context of the broader spatial and regional analysis articulating rural-urban linkages in the project region, specific sectoral studies were conducted. These studies were informed by and informed the spatial analysis so that investment recommendations reflected both sound spatial and sound sectoral studies. Under separate cover, the spatial and regional analyses performed for UFRD are described. In this other paper, "The Final Report," the conceptual framework of the project is explained, the central place hierarchy in the project region is defined, and the findings of the project enumerated. Also under separate cover, in a "Country and Regional Profile," Cameroon and the project region are described in detail.

ADMINISTRATIVE ORGANIZATION

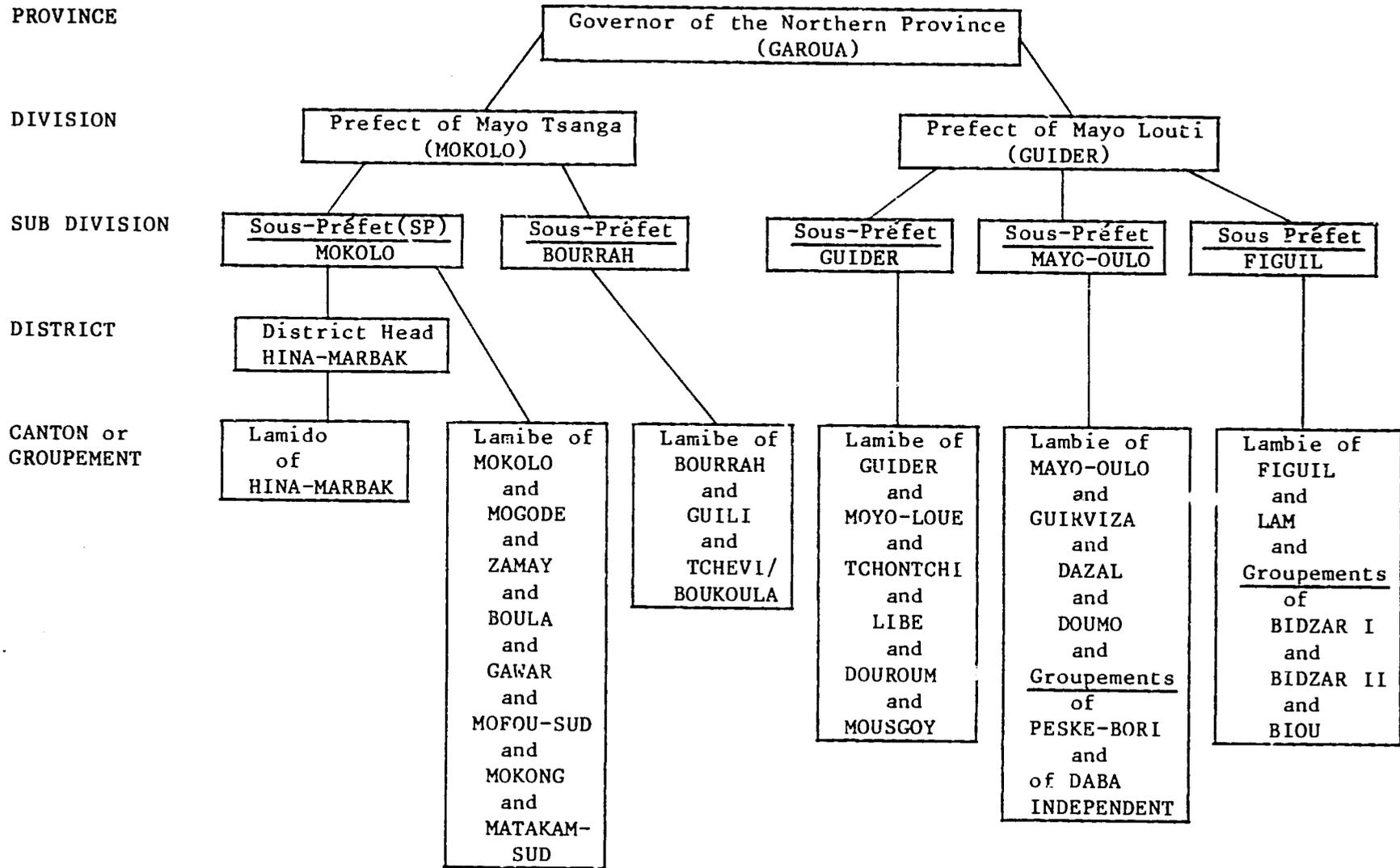
The Ministry of Territorial Administration (MINAT) is responsible for overseeing the functioning of all other national ministries with the exception of the Ministry of Justice. The MINAT administrative hierarchy is responsible for delineating the administrative boundaries of the republic, subject to presidential approval, and for coordinating the administration's program to assure its implementation. The traditional administrative system of the north was already highly structured before European colonization of the region. These structures have been integrated into the territorial administration as auxiliaries of the administration in direct contact with the population.

Table 1 presents the organigram of the territorial administration of the UFRD project area based on the most recent reorganization which took place in December of 1981. The entirety of the Mayo Tsanaga and Mayo Louti Divisions constitute the core project area. They are administered by divisional officers (préfets), who are situated in Mokolo and Guider, respectively. The greater areas of Garoua and Maroua constitute individual subdivisions lying within the divisions, bordering the core area to the east (Diamare) and to the south (Benoue). MINAT services in the Diamare and Benoue are excluded from this discussion as their jurisdiction does not extend outside of Maroua and Garoua, respectively.

The only other administrative divisions not specified in the organigram are the individual villages. Each village is governed by a chief who is either accountable to the cantonal head or associated with a looser agglomeration (groupment) having an administrative head determined by MINAT.

TABLE 1.

ADMINISTRATIVE HIERARCHY OF THE UFRD PROJECT AREA



Personnel and equipment

The personnel required for any divisional, subdivisinal or district headquarters varies little. Because of the recent creation of several administrative units in the project area not all of the new positions have been filled, but MINAT representatives will be named and the necessary staff will be transferred or hired in 1982.

Table 2 shows the personnel requirements of each MINAT service, disaggregated by echelon. The administration officials of the divisional level are the Préfet, the Prémier adjoint and the Deuxième adjoint. Subdivisinal officials are the Sous-Préfet and his Adjoint, while the Chef de district is the only official at district level. By averaging typical numbers of employees for each level of MINAT in the core project area, the total number of MINAT employees may be derived. The two divisions employ about 145 persons, the five subdivisions about 210 and the district about 20, for a total of approximately 375 persons.

The equipment required for the twelve MINAT branches consists of office or working space and supplies for the staff members cited in Table 2. In addition, furnished residences are supplied for all officials: six furnished houses for the préfectures, ten for the Souspréfectures and one for the Chef de District are required for operations in the UFRD core area. Each of these seventeen officials is to have a vehicle, or two in the case of the Préfets, since one is a sedan and the other a 4-wheel drive vehicle for trips. Each of the eight administrative units requires a radio receiver-transmitter (radio de commandement).

TABLE 2.
STANDARD MINAT PERSONNEL REQUIREMENTS FOR
DIVISIONS, SUB-DIVISIONS AND DISTRICTS *

	Préfecture	Sous-Préfecture	District
OFFICIALS (<u>Préfet</u> , <u>1er Adjoint</u> , <u>2eme Adjoint</u> <u>Sous-Préfet</u> , <u>Adjoint</u> , <u>Chef de District</u>)	3	2	1
ADMINISTRATIVE ASSISTANTS (<u>Cadres Moyens</u> , <u>Cadres</u> <u>d'Execution</u>)	12-15	6-8	2-4
SUPPORT STAFF (<u>Agents</u> <u>d'Etat</u> , <u>Platons</u> , <u>Mecha-</u> <u>nicrs</u> , <u>Repairmen</u> , <u>Cooks</u> , <u>Drivers</u>)	45-55	30-35	14-18
TOTAL PERSONNEL	70-75	40-45	20-25

* Where figures show a range the data reflects the typical numbers, based on information from the Provincial Headquarters.

(Source: ABDOULAHA KARIMOU, Premier Adjoint au Préfet de 1er Benoue, interview, Garoua, January 26, 1982).

Adequacy of regional service levels.

Before the administrative change that took place in December 1981 the estimated 509,000 inhabitants of the core project area were served by just five administrative services.¹ At the time, the average population of 85,000 people was served by one administrative center. In 1976 the national average was one center for 41,000 persons. Recent alterations have increased the number of administrative units to six, thus improving the average population served by each administrative center to 64,000 persons.

Many administrative facilities were already in place in the zone at the time of the recent reorganization of administrative boundaries. In most cases it is simply a matter of upgrading the services. This upgrading involves the provision of additional facilities, equipment and personnel to existing centers.

Strategy to improve administrative services

The fifth five-year development plan recognized the importance of bringing government service nearer to the population. The latest reorganization of administrative boundaries reflects this objective. Moreover, this reorganization is consistent with the general strategy of UFRD interventions which attempt to improve access to functions necessary to the social and economic development of a region. In order to make the new administrative organization as effective as possible, and thus strengthen its links with the population, the following strategy is proposed:

1. This consisted of the province in Garoua, the divisions of the Benoue and Mayo Tsanaga (ex-Margui-Wandala) and the subdivisions of Guider, Mayo, Oulo, and Bourrah.

1. All pre-December 1981 administrative centers should be upgraded to national standards for buildings, equipment and personnel.
2. All new administrative centers should be equipped according to national standards.

Based on these criteria, improvement in administrative services are proposed (Table 3). These include the following:

- 1 district headquarters upgraded to subdivision standards
- 1 new division headquarters
- 1 new district headquarters
- 6 new lodgings for officials
- 5 new vehicles, including one 4-wheel drive vehicle
- 6 new traveler's quarters
- 320 personnel (including existing as well as proposed)
- 1 radio de commandement (RAC)

Estimated costs for these improvements comes to CFAF 1.1 billion (Table 4).

TABLE 3.

PROPOSED IMPROVEMENT IN ADMINISTRATIVE SERVICES

ADMINISTRATIVE CENTERS	FACILITY	RESIDENCES	VEHICLES	TRAVELER'S QUARTERS	RAC	PERSONNEL ⁴
1. Guider	Division Headquarters	<u>Préfet, Premier Adjoint</u> <u>Deuxième Adjoint</u>	4 ³	1	-	75
2. Mayo Oulo	-	-	-	1	-	45
3. Figuil	Subdivision Headquarters ¹	<u>Sous-Préfet</u> ² and <u>Adjoint</u>	1	1	-	45
4. Mokolo	-	-	-	1	-	75
5. Bourrañ	-	-	-	1	-	45
6. Hina Marbak	District Headquarters	District Officer	-	1	1	25

1. This is the upgrading of the district headquarters to the status of a subdivision.
2. This is upgrading of the district officers's quarters to sous-préfet standards.
3. One of these vehicles is a 4-wheel vehicle for use by the préfet.
4. This includes all personnel called for by national standards.

TABLE 4.

ESTIMATED CONSTRUCTION, VEHICLE AND PERSONNEL COSTS FOR PROPOSED IMPROVEMENTS IN ADMINISTRATIVE SERVICES, 1987

Type of Facility	Number of Facilities	Construction Cost per Unit ¹ CFAF (000,000)	Total Construction Cost ¹ CFAF (000,000)	Number Vehicles	Vehicle Cost per Unit ² CFAF (000,000)	Total Vehicle Cost ² CFAF (000,000)	Number of Personnel	Average Cost per Person ³ CFAF (000,000)	Total Personnel Cost ³ CFAF (000,000)
District Headquarters (1)	1	15	15	1	3.6	3.6	25	.52	65
Subdivision Headquarters(2)	1	354	10	1	2.8	2.8	135	.52	390
Division Headquarters (3)	1	75	75	4	2.3	9.3	150	.53	400
TOTAL (4)	3	-	100	6	-	15.7	310	-	855

1. All construction costs are based on 1982 data and do not include escalation in the future.
2. Vehicle costs are for 1982 and do not include escalation in the future. The prices cited are current tax-free (hors taxe) market prices in Garoua.
3. Personnel costs are averages per facility. They are for 1982 and do not include escalation in the future.
4. This is the approximate cost of a new sous-préfecture whereas the construction in Figuil will only be an upgrading of the existing District facility.

Continued . . .

TABLE 4. Continued
ESTIMATED CONSTRUCTION, VEHICLE AND PERSONNEL COSTS FOR PROPOSED
IMPROVEMENTS IN ADMINISTRATIVE SERVICES, 1987.

Type of Facility	Number of Residences	Construction Cost per Unit ¹ CFAF (000,000)	Total Construction Cost ¹ CFAF (000,000)	Number of Traveler's Quarters	Construction per Unit ¹ CFAF (000,000)	Total Construction Cost ¹	Total Cost ⁵ CFAF (000,000)
District Headquarters (1)	1	25	25	1	9	9	118
Subdivision Headquarters(2)	2	18 ⁶	25 ⁶	3	9	27	455
Division Headquarters (3)	3	30 ⁷	65 ⁷	2	9	18	567
TOTAL (4)	6	-	115	6	-	54 ⁵	1,140

5. The total costs do not include the price of equipment or furnishing.
6. The unit cost refers to the only new construction, 17.5 million francs, for the construction of the Adjoint au Sous-Préfet. The total cost, 25 million, includes 7 million in upgrading costs to convert the District Officer's residence in Figuil to a Sous-Préfet residence.
7. The Unit cost refers to the most expensive new construction that of the Préfet's residence in Guider. The total cost includes the two residences for the First and Second Adjoint au Préfet, at 17.5 million francs each.

TRANSPORTATION

Public, private and parastatal organizations are all active in the provision of road infrastructure in the project zone. Since 1979 the Ministry of Equipment (MINEQ) has taken over full responsibility for national, provincial and divisional roads in Cameroon. Intercommunal routes and tracks are largely the responsibility of the divisional headquarters (préfectures), though each year the MINEQ Ad Hoc Committee on Roads determines how to divide the burden of maintaining rural routes between MINEQ and the prefectures. Local village tracks are overseen by the cantonal or groupement headquarters.

The MINEQ organigram at the regional level has two major branches, the Provincial Road Services (Service Provincial des Routes) and the Road Subdivision or Base of Operations (Base des Routes) for Guider, Mokolo, Maroua and Garoua. Each base and road service has its own equipment and personnel as summarized in Table 1. Each préfecture intervenes through the structure of its union (syndicat des communes), which in principle is provided with road-working equipment and a garage. In practice the activities of the syndicats are negligible because of their poor condition and general lack of equipment.

The heads of the thirty-two cantons or groupements in the UFRD zone periodically mobilize the local population to build or maintain roads using only such hand tools and other materials as are available to the members of the community.

A few private firms currently dominate the public works sector in the north. They are contracted by MINEQ for specific projects, individually or in association. The principle companies active in the region are Colas, COGEFAR, Wayss & Freitag. All are based in and around Garoua and are active on a large

scale in the Northern Province. They have at their disposal whatever personnel and equipment is necessary to fulfill the terms of their contracts.

SODECOTON has undertaken to implement rural road improvements in the framework of the Center-North Project, as it has previously for the Northeast Benoué Project and the Southeast Benoué Project. Much of the experience, equipment and personnel already at SODECOTON's disposal, particularly from the Southeast Benoué Project, is being transferred to the Center North Project. The head road engineer, the head of the garage, mechanics and the two foremen will oversee some one hundred workers to begin work during the first quarter of 1982. The project is to cover 400 kilometers, much of which is in the UFRD zone.

Location of roads

The existing 964 kilometer network of roads and tracks in the UFRD zone registered by the National Geographic Center in 1975 can be divided into six categories as detailed in Table 2. The principle characteristics of the network are that the zone is surrounded by over 500 kilometers of national and provincial roadways of which 370 (or 38 percent of the total 964) lie within the zone. There are few roads of intermediate quality (87 kilometers, or 9 percent of the total). The majority of the area is served by dry season roads and tracks (507 kilometers, or 53 percent of the total).

There are two major road projects presently underway in the zone. One is Divisional Road 14 (Bidzar-Guider-Mayo, Oulo-Dourbeye) contracted by Wayss & Freitag in association with the Colas firm. The road will thus be upgraded from a secondary road to a primary paved road. It will link National Route 1, between Garoua and Maroua, at Bidzar to Provincial Route 1, extending from

Garoua to Mokolo, at Dourbeye. The second road project is to upgrade Provincial Route 2, between Maroua and Mokolo, to the category of a tar/macadam primary road.

Adequacy of road services

The number of kilometers of road serving the project area is on the average nearly identical to the national average. The 964 kilometer network of roads in the UFRD zone spread out over the 7,328 square kilometers ($.132 \text{ km/km}^2$) is comparable to the 6,500 kilometers serving the 475,000 square kilometers of the country as a whole ($.137 \text{ km/km}^2$) (Cameroon 1981a).

A comparison between the proportion of the network represented by the highest road categories reveals that the zone is particularly well served in terms of national and provincial routes. Thirty-eight percent of the zone's network is composed of Category I and II roads, which is more than twice as great as the 16 percent proportion that was found to be the 1980 national average (Cameroon 1980a).

The problems of the inadequacy of road service in the area arise primarily from conditions other than those related to the major axes. Chief problems are inaccessibility to the highlands portion of the zone in particular and insufficient road maintenance, especially those other than the major axes which roughly define the perimeter of the zone.

Calculating the distance between the settlements of the zone and determining the location of existing all-weather roads, those under construction or those for which financing is assured (including Bidzar-Dourbeye, Mokolo-Maroua, Guider-Zamai, and Mokob-Dourbeye roads) shows that the average distance traveled by inhabitants of the core project zone to reliable road infrastructure

is 9 kilometers. Populations in the mountainous heart of the zone often must travel a good deal further than this average.

The juncture between the subdivisions of Bourrah (near Teleki), Mayo Oulo (near Mandara), and Guider (near Douroum) is approximately the center of the enclave zone delimited by a 9 kilometer band of access on either side of the major roads. This isolated area represents approximately 15 percent of the total surface area of the UFRD zone.

Four smaller subregions on the outside of the national-provincial ring road circumscribing most of the core project area are also cut off. Using the same 9 kilometer benchmark to delimit areas cut off from the most important flow of goods and services in the region, the four areas are roughly centered around Tourou to the extreme north, Matafal on the eastern edge of the zone, Bassira in the southwest, and the Guirviza-Dazal-Doumo subregion on the western border.

The maintenance problem, which the administration recognizes it should address before it plans for new road construction, is made fully apparent in the data collected on road conditions in the initial UFRD survey (Table 5). Analysis of the data reveals that only three of the seventy-two villages surveyed did not express the need for road, bridge, or culvert installation, repair or enlargement. Most villages are in need of road enlargements (68 percent overall), repairs (85 percent) and additional bridges or culverts (75 percent), averaging more than one such work per village. The principle villages of Guider are the best served of all the subdivisions surveyed, followed by Mayo Oulo, Mokolo and Bourrah.

A national trend which contributes to the deterioration of roads everywhere, and which increases the need for road services, is the rapid increase in

TABLE 5.

ROAD CONDITIONS REPORTED IN UFRD SURVEY

SURVEY RESULTS	REGION	UFRD ZONE	GUIDER/ FIGUIL SUBDIVISION	MAYO OULO SUBDIVISION	BOURRAH SUBDIVISION	MOKOLO SUBDIVISION
Number of Villages Surveyed		72	15	8	6	43
% of Villages in need of road enlargements		68%	26%	50%	100%	81%
% of Villages in need of road repairs		85%	47%	75%	100%	95%
% of Villages in need of bridge/culvert enlargement		31%	13%	25%	66%	23%
% of Villages in need of repair of bridges/culverts		26%	33%	25%	66%	19%
% of Villages in need of replacing bridges/culverts		0.17%	0	0	50%	19%
% of Villages in need of bridges/culverts		76%	53%	75%	66%	86%
Average number of bridges/culverts needed by village		1.28	0.75	1.00	1.88	1.56

the number of vehicles in Cameroon and the resulting increase in traffic on the roads. As of 1978 the estimated number of vehicles throughout the country was 83,000. The average annual growth rate of additional vehicles since 1973 was 13 percent. Assuming a constant growth rate in the 1980's, by 1986 the number of vehicles on the roads will have doubled since 1978.

In conclusion, the number of kilometers of paved roads appears sufficient, through the status of secondary all-weather roads is inadequate and leaves large portions of the region completely cut off or difficult to reach during much of the year. This becomes an obstacle to economic development of the area, as a high degree of accessibility is essential if the region is to progress. In other countries where rural roads have been extended economic benefits have included: increased efficiency, reduced costs and expanded agricultural production. Certain critical changes seem to occur as a result of road development, including:

1. the adoption and diffusion of new agricultural technologies;
2. marked increases in the productivity of agriculture, agro-industries and small-scale industries;
3. substantially improved local transportation permitting people from rural villages to sell increased production in the nearest market town;
4. improved access to information, important in promoting development;
5. increased access to health facilities and schools (Rondinelli and Ruddle 1978).

Strategy to improve roads

Cameroon's government authorities have acknowledged that past national development plans have emphasized building up road infrastructure as opposed to the maintenance of existing roads.¹ The new policy places a priority on upgrading and maintaining rural routes rather than on additional kilometers of tarmac road. The current government policy coincides with the priorities of the UFRD project for road interventions in the zone as the program stated below is constituted wholly of upgrading of existing roads and of their maintenance. In order to overcome the deficiencies in the transportation system described above and to facilitate overall development of the region, a five year transportation development program has been elaborated. The following strategy has been adopted in formulating this program:

1. All village centers should be linked to provincial or national roads or to all-weather roads giving access to one of these two roads.
2. No area in the project zone should be at a distance of more than 15 kilometers from a provincial or national road or from an all-weather road.

On the basis of the above strategy, nine new road sections constituting a total length of 162 kilometers is composed for the region. (1) and (2) above were considered in setting priorities for construction. By order of priority the proposed roads consist of the following:

1. Provincial, national and all-weather roads consist of those existing as well as those under construction.

1. Doumo-Guirviza-Dourbeye
2. Tourou-Ouro Tada
3. Wanarou-Mayo Ladde
4. Gambourrah-Bourrah
5. Douroum-Mousgoy
6. Libe-Larbak
7. Boukoula-Tchevi
8. Babouri-Sorawel
9. Matafal-Babarkin

Total cost is estimated at CFAF 1077.3 million (Table 6).

TABLE 6.

ESTIMATED UPGRADING AND MAINTENANCE COSTS
FOR PROPOSED IMPROVED ROADS PROGRAM

Type of Road	Number of Kilometers	Construction Cost per Unit ² (CFAF 000,000)	Total Construction Cost (CFAF 000,000)	Maintenance Costs per Unit ³ per Year (CFAF 000,000)	Total Maintenance Costs Over Five Yrs. (CFAF 000,000)	Total Cost (CFAF 000,000)
All-Weather 5m 50 Rural Track ¹	162	6	972	0.13	105.3	1077.3

1. This includes works such as bridges and culverts.
2. Based on SODECOTON experience in South East Benoue Project. Costs are not escalated for the future.
3. Estimated maintenance costs are provided by Ministère de l'Équipement and are not escalated for the future.

COMMUNICATION

The distribution of mail and the transmission and reception of telecommunications is the responsibility of the Ministry of Post and Telecommunications (PTT). The Ministry of Territorial Administration operates a network of radio communication (radio de commandement) between all divisional, subdivisional and district headquarters and Garoua. Newly named districts such as Hina Marbak will have radio units installed during the course of 1982.

Some firms and organizations have instituted private lines of communication outside of the public network. SODECOTON, for example, operates a mail route between its diverse services lying outside of the principal PTT centers. Numerous agencies and organizations in the project zone use air freight pouch services to expedite mail, particularly from Maroua and Garoua to Yaounde. Transport and freight firms (e.g., MORY, SCTA, SOGETRANS, SOCOPA0) operate telex and radio services across the country, primarily for their own use and secondarily for outside clients. In addition, the NOVOTEL hotels in Garoua and Maroua have telex services open to hotel or outside clients, and the firm contracted to construct the international airport in Garoua operates a telex service for its own internal use. Table 7 shows existing public post and telecommunications facilities. There are altogether: four post offices in the project area, of which one is a provincial post office; two departmental post offices and one arrondissement post office (Map 1). The arrondissement post office, located in Guider, will soon be upgraded to the level of a departmental post office. In Figuil an arrondissement post office has been officially created; construction of a new post office will begin shortly in Garoua. Postal savings account facilities are available at all existing post offices

TABLE 7.

**SPATIAL DISTRIBUTION OF POST AND TELECOMMUNICATION
FACILITIES IN PROJECT AREA**

Centers ----- Services	Garoua	Maroua	Guider	Mokolo	Figuil	Mayo Oulo	Bourrah
TA Radio	x	x	x	x	x	x	x
Post Office	x	x	x	x			
Telegraph	x	x	x	x			
Telephone	x	x	x	x			
Telex	x	x					

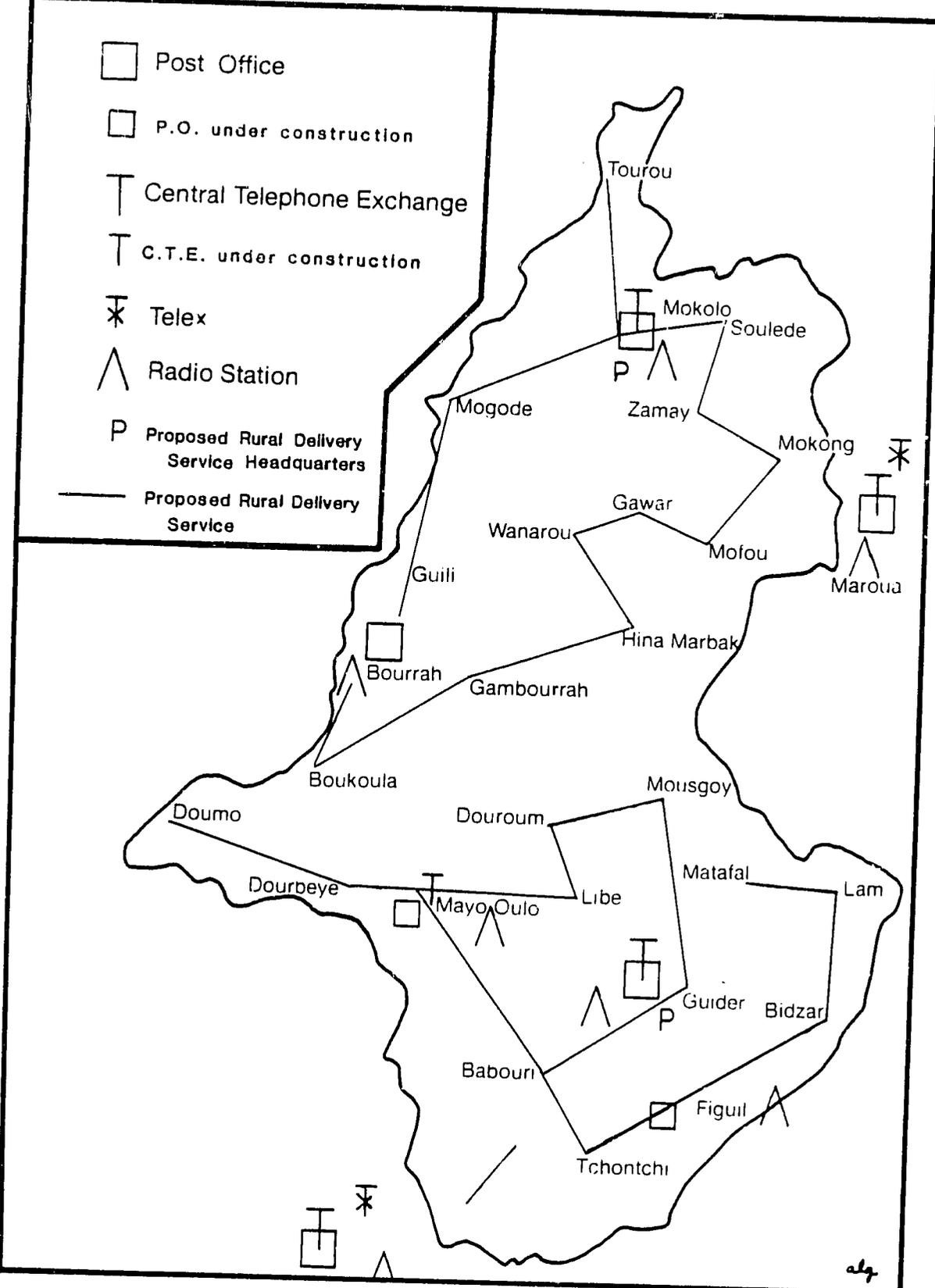
TABLE 8.

DISTRIBUTION OF PTT PERSONNEL IN UFRD PROJECT AREA

Centers	Post Office	Telephone	Equipment Repair	Telegraph (BCR/ECTR)	Microwave	Accounting
Garoua	26	16	2	11	8	1
Maroua	23	9	7	na	5	1
Guider	6	10	0	2	0	1
Mokolo	6	12	0	1	0	1
TOTAL	61	47	9	14	13	4

MAP 1

TELECOMMUNICATIONS FACILITIES



alg

and money orders are accepted and issued. Mail is moved through the zone outside of the centers with post offices by a semiformalized system of couriers. Each canton or groupement chief maintains a representative in the subdivision headquarters where mail arrives from divisional postal headquarters in Maroua and Garoua. Once mail arrives in each of the thirty-two cantonal groupement headquarters it is then distributed by persons going to outlying destinations or is collected by persons who come in from the hinterland.

The Poste Automobile Rurale (PAR), while nonexistent in the project zone, is a system that has been initiated in the Diamaré department to conduct postal functions along an established route and schedule to include the larger rural centers. These functions range from posting and delivery of mail and money orders to deposit and withdrawal from postal savings accounts.

Each post office is equipped with telephone and telegraph or telex services. Garoua, Maroua, Guider and Mokolo each have a technical service (central téléphonique) responsible for intra and inter-urban telephone communication. Direct telephone communication exists between each of these centers. Each of the four centers with telephone service have an automatic exchange. There is an exchange with a capacity of 600 lines in Garoua within 1980 working connections of 600 (292 public and 308 private). The system is in the process of being expanded to 2,400 lines with completion expected in 1984. The other telephone exchange working in the project area are as follows:

1. As of January 1982 the populations of Mayo Oulo and Figuil still depended on Guider for mail delivery, and Bourrah population depended on Mokolo even though Mayo. Oulo and Bourrah became subdivision headquarters in 1980 and Figuil in 1981. Mokolo is a divisional headquarters, but still depends on Maroua for its weekly mail delivery.

1. Maroua - an exchange of 600 lines capacity with 354 working connections (129 public and 215 private in 1980);
2. Mokolo - an exchange of 300 lines potential capacity with 111 working connections (59 public and 48 private) in 1980;
3. Guider - an exchange of 300 lines potential capacity with 97 working connections (44 public and 53 private) in 1980.

In addition, an automatic telephone exchange is being installed in Mayo Oulo. Its initial capacity will be for 100 connections.

The distribution of PTT personnel appears in Table 6. Garoua has a total of sixty-four employees, Maroua, forty-five (excluding telegraph personnel), Mokolo, twenty and Guider, nineteen.

Adequacy of service levels

At present, the estimated 707,700 inhabitants of the project area are served by just four PTT centers. This gives an average population served of one post office per 177,000 inhabitants, more than four times as many as the national average of 40,000 persons served by each postal service (Cameroon 1981a). If completed in 1984, the facilities currently under construction in Figuil and Mayo Oulo will improve the average to one for 118,000 population which is still seriously inadequate when compared to national averages.

In terms of national norms, none of the centers are sufficiently staffed. Personnel per PTT complex average fifteen post office employees, twelve telephone personnel, two equipment repairmen, four telegraph technicians, three microwave technicians and one accountant. Table 8 demonstrates the significant disparities that exist between centers. The inadequacies appear even more critical when compared with national norms. For example, the provincial post

office in Garoua should be staffed, according to national standards, by seventy employees. However, at the present time personnel number only twenty-six.

It appears that telephone service in the area is adequate now and for at least the next five years. Assuming that past trends will continue, there will be an average annual increase in private connections per center ranging from twenty-eight to twelve and in public connections from twenty-seven to eleven (Table 9). It is estimated that growth of connections in Mayo Oulo will experience an annual increase in private and public connections over the next five years of five and six, respectively. The estimated number of private and public connections for 1987 is shown in Table 10.

In conclusion, while telephone capacity in the region appears adequate for at least the next five years, postal services are severely inadequate and constrain development in the area. The introduction of improved infrastructure would allow an increased flow of information, capital and commodities.

Strategy to improve the communications system

The five-year development plan recognizes the generally poor condition of post and telecommunications infrastructure as well as the fact that many areas have insufficient access to services. Based on this assessment, the Government calls for better maintenance of actual infrastructure systems as well as an expansion of the system. The UFRD approach is fully consistent with the strategy and goals of the five-year plan. The proposed strategy consists of the following:

1. Top priority should be given to upgrading all existing post and telecommunications to acceptable norms;
2. In those administrative centers (not including the district of Hina Marbak) where there is not presently a postal facility, one should be

TABLE 9.

AVERAGE ANNUAL INCREASE IN DOMESTIC AND PUBLIC TELEPHONE CONNECTIONS

Center	Date of Functioning Telephone Exchange	Telephone Connections 1980		Average Annual Increase	
		Private	Public	Private	Public
Garoua	1971	808	202	28	27
Maroua	1971	215	169	20	12
Mokolo	1975	46	59	12	15
Guida	1976	48	44	13	11

TABLE 10.

ESTIMATED TELEPHONE REQUIREMENTS

Center	Number of Private Connections	Number of Public Connections	Total Connections	Total Capacity
Garoua	448	427	875	2,400
Maroua	315	189	504	600
Mokolo	103	134	242	300
Guider	110	99	217	300
Mayo Oulo	25	30	55	100
TOTAL	1,014	879	1,893	3,700

constructed (the most urgent need for postal services exists in the centers);

3. To increase access to postal services in the most cost-effective manner Postes Automobiles Rurales should be established in the Mayo Louti division from Guider and in the Mayo Tsanaga division from Mokolo.

The post offices in Garoua, Guider, Figuil and Mokolo are or will soon undergo upgrading or reconstruction. This leaves the post office in Maroua which is badly in need of reconstruction. It is recommended that a new post office be built in that town.

At present all divisional and subdivisonal centers have post and telecommunications facilities, except Bourrah. It is recommended that a post office be located in this settlement to serve the population of Bourrah, its hinterland.

The post offices and telephone exchanges in Mokolo and Guider have inadequate personnel when compared with regional averages. It is proposed that an additional thirty-seven postal workers and two telephone equipment repairmen be assigned to those places by 1987 (Table 11).¹ For the proposed post office to be located in the subdivision of and for the one currently under construction in Mayo Oulo and Bourrah it is recommended that each receive a postmaster and five clerks as called for according to national standards. At present the post office in Figuil has a postmaster but no other staff. It is proposed that staff be posted in Figuil. Finally, as a means of offering increased postal

1. Two technicians would be required in Guider to maintain and repair telephone equipment in Guider and Mayo Oulo.

TABLE 11.

PROPOSED IMPROVEMENT IN POSTAL AND TELECOMMUNICATIONS SERVICES, 1982/87

Centers	Construction of New Post Offices	Additional Personnel					Par	Costs (CFAF 000,000)		Total
		Postal	Tele- phone	Equipment Repair	Tele- graph	Micro- wave		Accounting	Capital	
1. Maroua	1							150		150
2. Guider		10		2			1	7	35	43
3. Mokolo		10					1	7	36	36
4. Mayo Oulo		6							18	18
5. Bourah	1	6						23	18	41
6. Figuil		5							15	15
Total	2	37		2			2	187	123	310

1. Costs figures are for 1982 and do not take into account future inflation.

2. Recurrent cost figures include only personnel costs and PAR fuel costs. Personnel costs are estimated to average CFAF 50,000 per employee per month.

service coverage in a relatively cost-effective manner it is proposed that two postes automobiles rurales be established, one for Mayo Louti and the other for Mayo Tsanaga. The weekly rounds should consist of the UFRD village centers. As these places serve a whole hinterland population, they would be ideal locations to conduct postal business. In Mayo Louti the circuit should comprise the following centers: Guider - Mousgoy - Douroum - Libe - Dourbeye - Guirwiza - Doumo - Babouri - Tchontchi - Figuil - Bidzar - Lam - Matafal - Guider. In the Mayo Tsanaga division the suggested itinerary is: Mokolo - Tourou - Mogode - Guili - Bourrah - Boukoula - Gambourrah - Hina Marbak - Wanarou - Gawar - Mofou - Mokong - Zamai - Soulede - Mokolo. Each circuit would require a 4-wheel drive vehicle and an additional postal worker. Table 11 presents proposed locations and specific improvements in postal and telecommunications resources. The estimated total cost of these improvements for the period 1982-1987 amounts to CFAF 310 million.

Interventions identified above will improve linkages between the various levels of the city-town-village hierarchy while strengthening ties between the project region and the rest of the country. This forms a framework upon which productive development may take place. The strategy for improvement of the system of communication in the project area supports and is supported by proposed actions in other sectors. There is an intended integration with other sectors of the economy. For example, better communication is essential to the maintenance and efficient functioning of all sectors. At the same time other sectors, such as roads, make possible more efficient functioning of the communications sector.

INDUSTRIAL PRODUCTION

The socioeconomic development of an area depends largely, if not entirely, on the growth of its productive activities across all sectors and subsectors, and across all scales of private enterprise activity. The development of such activities in the country and the region must therefore be examined. In addition, the key constraints and opportunities which present themselves to various types of enterprises (placing particular attention on the possibilities for promotion of productive small units) must be defined. From this analysis, basic conclusions may be drawn and specific recommendations outlined.

There is no precise definition of what constitutes a "productive" sector activity. It is a relative term used to distinguish more productive sectors from less productive ones, thus making it necessary to make the distinction on a case-by-case basis. For present purposes, however, the term is applied generally to non-traditional agriculture, non-traditional agroprocessing and other manufacturing (at all scales of activity), modern construction (e.g., using cement), and trade and service activities that provide inputs to the foregoing.

Productive sector activity in the UFRD region

The industrial activity of Cameroon is concentrated in the southern and coastal areas of the country. There is relatively little activity in the UFRD project area, or in the whole of the Northern Province, for that matter. As indicated in Table 12, while in 1976 some 2.5 percent of the rural labor force of the country was engaged in manufacturing activities, such an employment occupied 0.7 percent and 1.7 percent of the respective labor forces of the

TABLE 12.
DISTRIBUTION OF LABOR FORCE BY ECONOMIC SECTOR (1976)

SECTOR	CAMEROON		Bourrah + MOKOLO + Koza ARROND.(%)		Figuil + GUIDER + Mayo Oulo ARROND.(%)	
	TOTAL(%)	RURAL(%)				
FOOD CROPS	59.1	68.6	92.7		86.1	
EXPORT/INDUSTRIAL CROPS	15.7	17.7	0.1		3.0	
LIVESTOCK	2.8	3.5	4.7		5.3	
FISHING	1.4	1.3				
FORESTRY	0.4	0.3				
EXTRACTIVE INDUSTRY	0.05	0.03				
MANUFACTURING	4.8	2.5	0.7		1.7	
WATER AND POWER	0.1					
CONSTRUCTION AND PUBLIC WORKS	1.8	0.9	0.3		0.7	
TRADE AND SERVICES	4.2	1.4	0.5		1.3	
TRANSPORT & COMMUNICATIONS	1.4	0.3			0.1	
FINANCE, INS., REAL ESTATE + BUS SERVICES	0.2	0.03				
PUBLIC AND OTHER SERVICES	8.0	3.3	1.1		1.7	
T O T A L	100.00	100.00	100.00		100.00	
ABSOLUTE NUMBER	2.56 MIL	2.01 MIL	0.16 MIL		0.06 MIL	
<u>SOURCE:</u> Cameroon, Government of. 1976.						

arrondissements of Figuil, Guider and Mayo Oulo, with about 1,100 workers in each location. There is some degree of undercounting in the census data because it did not include secondary occupations of a productive nonagricultural nature (e.g., farmers are also potters or blacksmiths), but since this undercounting must have been systematic, the relative condition of the North has likely remained unchanged.

While small in terms of direct employment and numbers of firms, such industrial activity as does exist has considerable economic impact on the North in general, and on the UFRD Project area specifically.

One of the earliest and most significant industrial activities has been cotton production and transformation undertaken by SODECOTON, beginning in 1963. The giant firm operates cotton ginning units in Guider, Garoua and Maroua, and cottonseed oil plants in the latter two towns as well. Together these five units directly employ between 300 and 650 workers, depending on the season. This figure excludes other personnel engaged in SODECOTON's non-plant operation so that total firm employment totals about 1,900 people. The more important impact of SODECOTON's operations, however, has been through direct linkages to cotton producers. It has raised the incomes of several thousand agricultural families over the years, a great many of whom reside in the UFRD project's southern areas. Through the recently announced US\$74.7 million Center-North Project, financed in part by IBRD/IDA credits, it is anticipated that SODECOTON's impact will come to be felt by about some 160,000 farm families in the Northern Province. In addition, it may be noted that the intended effect will not be based exclusively on cotton production. SODECOTON is beginning to expand its range of interests in crops, and in rural development

ment activities in general (World Bank 1981c). As a forward linkage, CICAM employs 900 workers in the production of cotton textile in Garoua.

Another major employer in the area has been CLMENCAM which produces cement in Figuil and employs 250 workers. A similar though much smaller enterprise, Ets. Rocaglia Pierre, has employed about 60 workers in the extraction of lime near Figuol since 1946.

Up until 1981, these four enterprises have constituted the basic "modern" productive enterprises in the area. With varying degrees of impact, they have served to raise the level of available disposable income available. At the same time the government has made the North a focus of special attention. It has made significant public infrastructure investments in the north (e.g., roads, airports, public building), has increased the level of personnel posted to the region, and has influenced the growth of national and international tourism to the area. The combination of all these factors has added to the the income effect generated by the four enterprises already mentioned. These "leading" actions have thus yielded attractive conditions for the growth of other trade, service and manufacturing activities that meet local demands.

One of the major productive units in this regard is SABC, the brewery in Garoua which employs 370 people. More recent enterprises of a similar nature include: GLACECAM, an ice-making unit in Maroua employing 10 people since 1978; SOCAPROD which employs 120 workers in Garoua bottling soft drinks; LACTO-SAHÉL which has employed 20 people since 1975 making dairy products; and CAMLAIT which has 10 workers, also making products derived from milk. One may note that these are all relatively recent undertakings.

In addition to these documented enterprises, the region, particularly in places such as Garoua, Maroua, Guider (to a much lesser extent Mokolo and

Figuil), has witnessed a rapid expansion in the number of productive small enterprises that address local demand. These have included truck farms, poultry farms, bakeries, grain mills, tailoring, shoe manufacture, printing, furniture making, cement-block making and construction in general, metalworks, mechanical repair units, small metal parts manufacturing, watch repair, mattress making, the production of flour sifters, and a large array of other useful products and services. There has been considerable dynamism among these small enterprises in recent years.

One of the curious features of these developments, however, is the massive disparity between the size of the very large enterprises and other smaller ones. There are a handful of giant industries on one hand and a large number of very small ones on the other. There is almost nothing in between these two extremes. Much of this can be explained by the effect of national industrial policy. The large firms, SODECOTON, CICAM, CIMENGAM and SABC are the ones which have benefited from administration of the Investment Code during the last two decades. Nationwide, conditions have not been propitious for the development of smaller and more indigenously controlled enterprises. The result in the North is evident in the foregoing discussion of the characteristics of the area's productive sector.

The situation is unfortunate because the relatively recent increase in the region's consumer demand is one of the most supportive conditions to establish and expand a wide range of enterprise types across a much wider range of sizes than has actually been observed. The situation is made all the more unfortunate because over the next few years it is anticipated that additional major investments will serve to accelerate the rate of increase in the disposable income of the region. The Center-North Project has already been noted.

Another major activity near the project area will be the Agrilagdo program. Its sugar production program, slated to begin around 1983, is expected to employ some 300 mill. workers and as many as 3,500 seasonal field laborers. There has been some discussion of the production and transformation of tomatoes as well, which may increase the incomes of perhaps 700 families. Other smaller though significant projects include a soap factory in Garoua, the production of metal and nylon scouring pads in Garoua (SCEMGRIPOR), a fruit concentrate unit in Maroua (SITRAF), and perhaps candy production within the region. Some of the already established firms are planning certain expansions as well.

Under the positive impact of these trends, which one hopes would continue well into the future, there is an opportunity to undertake measures to accelerate the development of smaller productive enterprises in the region. Such acceleration would serve the government's multiple purpose of expanding productive indigenous entrepreneurship and enterprise, of better integrating the Northern province with the rest of the national economy, of providing more productive employment opportunities for the country's poor (e.g., residents of the Mandara mountains), of modernizing traditional sectors of the economy of enhancing intrasectoral and intersectoral linkages, and so on.

Conclusions and recommendations

It should be evident that the productive sector in the region has considerable promise for development. This is true for small enterprises, whatever their current shortcomings may be. It is also true for larger-scale enterprises, including the very largest firms. The efficient development of each scale and type of activity depends, to a greater or lesser degree, on the growth and expansion of other scales and types of activity. A strategy for

promoting growth of productive sector activities should, therefore, be a general one addressing as many different types and sizes of enterprises as is deemed warranted and possible.

The most general of approaches is to create a conducive environment for the operation of the inherent dynamics of private initiative; the productive sector composed almost entirely of private activities. This, of course, is a reference to the current status of national industrial policy in regard to finance, regulations, and fiscal incentives. The question of policy has been briefly touched on earlier, and at present the government of Cameroon is considering the suggestions put forward at its request by the World Bank regarding essential changes. It is not within the scope of the UFRD project to make any direct suggestions in this matter. For present purposes national policy is taken as given.

Nonetheless, if accepted as being absolutely rigid in its application to the North in Cameroon and to the UFRD project area in particular, it would be impossible to make any recommendations that deviate from what is already in place in any significant way. One would be reduced to suggesting that more of the "same thing" be undertaken (such as more activities by CAPME, and more lending through FOGAPE). Since this does not appear to be either a productive or creative, the assumption is made that there is some flexibility allowed in the making of recommendations which are different from what has been implemented thus far. This said, attention can turn to specifics; and in this context there are three project proposals which seem appropriate given the foregoing analysis. They consist of the following:

1. Financial support for small enterprises;
2. Institutional support for small and medium-sized enterprise promotion institutions;
3. Promotion of medium-scale agro-industries.

AGRICULTURAL PRODUCTION

Formerly, the inhabitants of the densely populated mountainous regions practiced intensive agriculture during the rainy season by applying, to a significant degree, the principles of water and soil conservation on the slopes. This terrace cultivation method of agriculture, supplemented by small livestock production, provided some food self-sufficiency in spite of its very poor output. It is important to remember that this agricultural system takes place within an environmental setting that is characterized by extremes. The area of study is largely made up of mountains often ranging above 1000 meters. The rest of the area is covered by plateaus of 800 to 1000 meters in altitude and at the foot of the mountains by a range of slopes, piedmont plains and alluvial plains, the lowest of which is 300 meters in altitude. The average rainfall of the region falls between interannual isohyets of 800 to 100 mm, concentrated between May and September. Thus the plains and plateaus were reserved for extensive cattle rearing, bush fires, food crop cultivation, and intensive end-of-rainy-season and beginning-of-dry-season crops in the easily flooded and alluvial low lands areas suitable for speculative crops, such as muskouari.

Over the past few decades, with the increase in population and the technical and financial difficulties faced in developing a profitable highland agriculture, there has been a disorganization of this traditional method of managing the rural area. This is due to the often justified desire of the mountain population to migrate to the urban regions and plains where they can find a better standard of living by growing speculative crops, particularly cotton. Such a situation has led to:

1. a gradual abandonment (very significant in certain areas) of the mountain regions;
2. a disorderly and increasing drift toward the plains and plateau areas;
3. inappropriate use of land for certain types of crops, (indeed, the best land has been generally used for the cultivation of cotton and foodcrops, and migrants are most often forced to clear and settle on poor land); and,
4. an impoverishment of the soil. Motivated by a legitimate desire to amass immediate wealth, the new arrivals no longer invest in the development of new land with such methods as fertilization, soil improvement, or planting of protective and shady trees. Very soon, they abandon the cleared land after having exhausted it, despite the fallow system they use, and after a few years, move to settle on other land, where the destructive cycle begins again.

As concerns renewable natural resources, such practices have led to the following consequences:

1. Savannas that had trees in good condition are rapidly disappearing. There is a crucial need for trees in North Cameroon. This situation is naturally due to uncontrolled clearing techniques and also to increasing timber needs of developing urban regions. The over-exploited natural forest vegetation no longer has the possibility of regenerating;
2. Land so cleared, exhausted and then abandoned, is subject to intensive erosion even in the plains, all the more as they are left frail and deprived of their plant protection. Violent rains worsen the

situation. Also, the rate at which the soil regenerates is slower than that of vegetation;

3. Highlands which have been carefully developed into terraces are abandoned and within a few years, erosion reduces investments made during several generations to nothing;
4. Rain's effectiveness to build up water reserves in the soil diminishes and in the absence of a good vegetation cover and a superficial horizon of the organic and well structured soil, water infiltrates poorly; rainwash and the contribution of soil evaporation to the actual evapotranspiration increases. Lastly, erosion reduces the water storage in the soil (reduction of useful reserve), which is all the more serious in a region where one of the main factors restricting production is the complete absence of rains during 6 to 7 months, whereas during certain months there is superabundance.

The object of this section is to propose recommendations with a view to a rational development of agriculture, livestock and forest resources, so as to satisfy the needs of the area as much as possible. In order to achieve this objective, the following tasks must be undertaken:

1. Identify physical and human constraints to the development of agriculture, livestock and forest resources;
2. Identify potential agricultural land in four representative test zones;
3. Drawing up a general strategy on the use of soil resources for the development of agriculture, forestry and livestock;
4. Assess the present production levels in agriculture, livestock and forestry application in the four test zones;

5. Drawing up development policies in respect to agriculture, forestry and livestock for the four test zones while considering specific problems and potentials of each zone.

Constraints to agro-sylvo-pastoral development

The rural population of the area under study presently derives most of its revenue from cultivation of food and cash crops, livestock (mainly extensive), and to a lesser degree from the exploitation of forest resources for firewood and construction. In most cases, such revenue is consumed by the farmers, with shortfalls in self-sufficiency during certain bad years, although sometimes they can acquire a surplus. Most of the area's population practice the three options simultaneously. However, farmers generally tend not to specialize, but rather to diversify, even to the detriment of profitability.

The planner must therefore take this determination to diversify into account. It would appear ideal but impractical that the rural areas of North Cameroon can be developed harmoniously without considering the three aspects of rural development, namely agriculture, livestock and forest resources.

The present situation is as follows: as the mountain dwellers have come down to the plains, stock breeding is being pushed back to land of poor quality and to increasingly more restricted areas; a situation which only leads to further reduction in animal production. Such a situation has partly been due to the extensive nature of stock breeding and to an increasing need for arable land. The quality of land around the low regions is degenerating. Some constraints on the development of agriculture, livestock and forestry as observed during our tours of the area follow.

The development and exploitation of land in North Cameroon must take into account the following factors:

1. Because of the aggressiveness of rain, soils are in general sensitive to erosion and degradation;
2. The degradation of soils reduces soil potential and fertility, and a reduction of the effectiveness of rains in building up of water reserves in the soil;
3. The human activities of cultivation, overgrazing and overexploiting forest resources contribute to these processes.

LIVESTOCK PRODUCTION

An overview of livestock production¹

Livestock raising is the principle activity of few persons in the project area. None of the seventy-two villages surveyed by the UFRD project reported that their population was primarily occupied with animal rearing. Stock-breeding is, however, a secondary activity to some extent for all of the populations.

Cattle are raised throughout the zone though to a much lesser extent than are small ruminants. Table 13 situates the livestock populations in the project area and in the North. The North accounts for 79 percent of the national cattle production, though it must be quickly recognized that the heart of this production is in the Adamaoua Division. This single division produces 42 percent of Cameroonian cattle, while all the other five divisions, referred to as "Extreme North" in Tables 14 and 15, account for the remaining 37 percent of bovine production.

Table 16 reveals the relative importance of cattle and of small ruminants to the population of the project zone as compared with other regions. The number of cattle per capita is even less than that of the country as a whole, but the proportion of goats and sheep relative to the human population is more than twice as great as the corresponding national ratio.

1. This section on livestock restricts its discussion to infrastructure necessary for the provision of veterinary services, and covers the entire project area. Livestock management issues are discussed in the preceding section.

TABLE 13.

LIVESTOCK DISTRIBUTION BY GEOGRAPHIC AREA, 1979/80

	Mayo Louti	Mayo Tsanaga ¹	TOTAL UFRD Core Area	Extreme North	Adamoua	TOTAL Northern Province	Cameroon
Cattle	71,994	100,703	172,697	1,312,452	1,467,562	2,780,014	3,535,000
Total SM RUM	181,454	445,964	627,418	1,988,868	100,179	2,134,047	4,659,000
SHEEP	72,243	192,352	264,595	913,907	74,577	1,033,484	
GOATS	109,211	253,612	362,823	1,074,961	25,602	1,100,563	
ASSES	255	347	602	3,022	292	3,314	60,000
HORSES	293	313	606	7,357	1,850	9,207	25,000
PIGS	702	135	937	16,081	43	16,124	1,326,000
CHICKENS	79,615	65,000	144,615	666,023	266,500	932,523	10,221,000

1. These figures include the former District of Koza.

SOURCE: Cameroon, Government of. 1981a; 1981b.

TABLE 14.

NUMBER OF LIVESTOCK PER HUMAN POPULATION BY GEOGRAPHIC AREA, 1979/80

Area Ratio	Mayo Louti	Mayo Tsanaga ¹	UFRD Core Area	Extreme North	Adamoua Division	Northern Province	Cameroon
Head of Cattle Per Capita	0.42	0.33	0.36	0.74	4.35	1.33	0.47
Head of Small Ruminants Per Capita	1.07	1.47	1.33	1.13	0.29	1.02	0.61

1. Both human and animals populations are for the former Subdivision of Mokolo, and therefore include the populations of the former District of Koza.

SOURCE: Cameroon, Government of. 1981b.

TABLE 15.
MINEL INFRASTRUCTURE, UFRD CORE PROJECT AREA, 1979/80

Subdivision Facility	Guider	Figuil	Mayo Oulo	Bourrah	Mokolo	TOTAL CORE PROJECT AREA
Zoo-technical Center	2 ¹	1	1	1	3	8
Vaccination Stations	4	1	0	1	2	8
Livestock Dips	22	13	0	0	13	4
Rural Slaughter- Houses	24	2	2	0	1	8

1. One of the facilities is Louggere-Foulbe which is in fact a specialized station working especially with a single breed.
2. The new dips in Figuil and Mousgoy suffer from a structural error which has never permitted them to function properly.
3. This 1971 facility at Saganare-Mokolo has a defect in the sluice-gate which has rendered it inoperative.
4. The two slaughter shelters in Guider arrondissement are Gatougel and Mousgoy and do not include the slaughterhouses in Guider.

SOURCE: Cameroon, Government of. 1981b.

TABLE 16.

MINEL WORKLOAD MEASURED IN RUMINANTS PER TECHNICAL WORKER¹

Rank ²	Subsector	Personnel ²	Ruminants	Workload Ratio
1	Maroua	115	627,318	5,455
2	Yagoua	47	241,908	5,147
3	Kousseri	40	372,372	9,309
4	N'Gaoundere	39	539,000	13,821
5	Meiganga	37	517,606	13,989
6	Tchollire	34	247,552	7,281
7	Banyo	32	354,900	11,090
8	Tibati	26	146,060	5,618
9	<u>Mokolo</u>	25	546,667	<u>21,867</u>
10	Garoua	23	262,703	<u>11,422</u>
11	Tignere	20	90,215	4,510
12	<u>Guider</u>	16	253,448	<u>15,840</u>
13	<u>Kaele</u>	15	185,887	<u>12,392</u>
14	Bogo	14	116,446	8,318
15	Karhay	10	112,864	11,286
16	<u>Mora</u>	10	152,686	<u>15,269</u>

1. Technical Workers include veterinarians, engineers, techniciens supérieurs, veterinary nurses, assistants, agents veterinaire and agents d'etat.
2. The rank is established in descending order of importance of personnel per subsector.

SOURCE: Cameroon, Government of. 1981b.

The importance of these indications is that, while not neglecting recommendations which will support cattle-raising in the project zone, the orientation of any livestock development strategy for the UFRD zone must take particular care to address the problems of small ruminant breeding. The measures which currently favor the development of small stock in the North are considerably less significant than those for cattle.

The trends of livestock production have been mostly positive though highly erratic throughout Cameroon. The World Bank reported that the rate of growth for cattle from 1973 to 1978 varied from 0 to 10 percent of the total value in constant dollars. Production trends for small ruminants fluctuated more violently. A gain of 6 percent in 1974 was followed by a loss of 6 percent the following year, only to show a 6 percent gain in 1976.

Respondents in the seventy-two villages surveyed in the UFRD project area were asked to typify the trends for cattle production from 1967 to 1981. Half of the villages responded that production had increased and half answered that production had decreased. Cattle production increased in thirty-six of the villages, decreased in thirty-three villages, and remained the same in one village, with no data reported in the remaining two villages. Mayo Louti generally fared better than did the Mayo Tsanaga, with 71 percent versus 44 percent of the villages reporting general upward trends, respectively.

Conditions of livestock rearing

Villagers surveyed by the UFRD project listed a wide range of reasons for the vagaries of cattle production in the project zone. The factor which is cited more often than any other as a determinant of production is rainfall, both as a source of water and of good pasture. Availability of vaccination and

extension services was the second most common reason to which the rise or decline of herds was attributed. The principle afflictions cited are anthrax (charbon symptomatique) and scabies (gale), the latter associated with the more general problem of ticks. Other destructive forces which threaten livestock are fires which destroy grazing land, theft, hyenas, and unintentional poisonings from insecticide.

Sleeping sickness (trypanosomiasis) is the scourge of the southern portion of the Northern Province, but is not a problem in the project area. The Mandara Mountain region has the good fortune of having evolved a variety of cattle (Taurins de Rhumsiki) resistant to the disease. The Mayo Louti has almost no tsetse flies thanks to an eradication campaign launched with the cooperation of Nigeria (Fulton et al., undated).

The livestock management policy of creating a sanitary frontier (cordon sanitaire) has served to confine the sleeping sickness of the south and the cattle plague (peste bovine) and peripneumonia of the north to their respective regions. This in turn has facilitated the campaign against these diseases. Vaccinations against the cattle plague and peripneumonia, for example, had reached 92 percent of the population in 1979/80 in the Garoua subsector of the Ministry of Livestock. (Cameroon, 1981b). There have been no outbreaks of either disease in the project area for some years.

Hoof and mouth disease (fièvre aphteuse) has become only a minor problem in the project zone. Tuberculosis affects relatively small though not negligible portions of the northern herds. Of those tested in Mokolo, 6.9 percent were positive for the disease as compared with 4.2 for the MINEL Maroua subsector.

Various forms of parasites, other than the trypanosomes carried by the tsetse fly, debilitate livestock throughout the North. This problem is the principle affliction of small ruminants, and is the object of medical treatment, however inadequate, in the region.

The availability of capital is a major factor for production trends in a fifth of the seventy-two villages surveyed in the project area. Disposable income from favorable yields of cash crops was cited in six centers as the means of having increased cattle holdings. Credit was never a means of increasing holdings, but its unavailability was considered a hindrance in several areas where production had decreased. It is apparent throughout the region that livestock raising serves the crucial role of a hedge against poor crop production and as a reserve of wealth after a good harvest is reaped.

Livestock services

The Ministry of Livestock Breeding and Industries (MINEL) provides assistance to stock raisers through several standardized facilities. MINEL establishes zootechnical and veterinary centers (CZV), vaccination stations, livestock dips (bains d'étéqueurs), and upgrades the conditions of rural slaughtering through the provision of rural slaughter shelters (aires d'abattage). Table 15 summarizes the distribution of these various facilities for the project zone.

Livestock dips are one of the only effective means currently available to the project area for reducing ticks and the diseases of which they are vectors. Only one of the three facilities is functional at present. The Garoua sub-sector of MINEL foresees the construction of three more: one in Guider, one in Mayo Oulo and one in Djougui near Lam (Cameroon 1980).

As in the case of vaccination infrastructure, slaughtering facilities are predominantly informal traditional structures with little or no control of sanitary conditions. The eight slaughter shelters and the one slaughter house in the zone are insufficient for the majority of the population, since the provision of fresh meat is a function of most of the 130 weekly markets.

Personnel

MINEL employs some forty persons in its CZVs throughout the core project area, twenty-five in the Mokolo subsector (Mayo Tsanaga) and sixteen in the Guider subsector (Mayo Louti).¹ The remaining subsectors which comprise the North have anywhere from over one hundred employees (Maroua) to ten (Mora).

The average number of technical workers per subsector is thirty-one. Thus Mokolo is somewhat under the average while Guider has only half as many personnel as the average subsector. What is however more revealing of the level of services to various areas is the ratio of livestock in the area compared with the number of technicians to treat them. If the comparison is between numbers of cattle per technician, Guider and Mokolo subsectors are a little better served than average.² However, if ruminants are considered as a whole (cattle, sheep, goats) the workload is higher in Mokolo and Guider than in any other subsector in the North. The average work load in the Northern Province is 10,788 ruminants per technical worker. Table 17 underlines the three worst

1. Guider subsector includes Guider, Mayo Oulo and Figuil subdivisions. Mokolo subsector includes Mokolo and Baurrah subdivisions as well as Koza.

2. The 2.8 million head of cattle are served by 503 MINEL employees (5,527 head per worker) in the North. The average figure for Guider is 4,500 and 4,028 for Mokdo.

TABLE 17.

POPULATION SERVED BY VARIOUS LEVELS OF HEALTH CARE SERVICES, 1976

Type of Facility	UFRD Project Area	Northern Province	Cameroon Overall
CSE			
Number of Facilities	13	87	559
Population Served	16,000	12,000	8,000
CSD			
Number of Facilities	14	51	114
Population Served	24,000	22,000	10,000
Dispensaries			
Number of Facilities	3	17	78
Population Served	46,000	47,000	16,000
CDMP			
Number of Facilities	4	8	41
Population Served	75,000	73,000	48,000
Hospitals ¹			
Number of Facilities	4	22	118
Population Served	150,000	100,000	64,000
1976 Population (to nearest 100,000)	600,000	2,200,000	7,600,000

1. Including Provincial, Divisional and Subdivisional hospitals.

SOURCE: Cameroon, Government of. 1981a.

served subsectors in the North, Mokolo, Guider, and Mora, in that order. The two latter serve areas with 50 percent more ruminants per technician than the average. Mokolo must serve an area with twice as many ruminants.

Investment strategy

The recommendations for interventions in the livestock sector as proposed by the government tend to be most applicable to large scale cattle raisings of the sort practiced in the Adamaoua Division. The policies outlined by the President in his February 1981 speech at the Comice Agro-Pastoral at Bertoua, (Cameroon Tribune 2/17/81), in the important policy speech enunciated at Bafoussam the previous year (Ahidjo 1980), and reiterated in the fifth five-year plan for the Northern Province (Cameroon 1980c), emphasize the role of the Société de Développement et d'Exploitation des Productions Animales (SODEPA). The principle approach of SODEPA has been to encourage the development of private cattle ranches. This policy is not likely to have a direct impact on livestock raising in the project area, since ranching on a large scale is not a likely development in the foreseeable future.

The fifth five-year plan does broadly reaffirm the continued need for support to veterinary health programs, zootechnical infrastructure and water and pasture management schemes (Cameroon 1980c).

The propositions made for the livestock sector of the southern part of the project area call for support of these services generally to increase the size and quality of herds, but detail no particular schemes for their reinforcement. The program for the northern part of the project zone is somewhat more specific, emphasizing the development of commercial feeding of small ruminants, pigs and cattle. The sources of feed to be developed in the Mayo Tsanaga,

according to the proposals for the plan, are notably groundnut greens and cotton oilseed cakes.

The need for further research has not been highlighted in these various pronouncements. Milk production research and development has been cited as a goal in the Adamaoua Division, but more specifically in the project zone. Mention is made of continued support to the experimental station in Louggere which has as a principal focus the development of the Arab Choa variety of cattle valued for its milk production, among other attributes.

The specific interventions intended to achieve the goal of increasing livestock herd size and quality focus on basic infrastructural improvements. These facilities address the needs for extension and research, for preventive and curative treatment of animals, for water and for slaughtering. Additionally, it must be noted that this strategy, if implemented, would mean increased numbers of livestock with a parallel decrease in available feed. As the project area presently suffers from lack of fodder, especially during the dry season, it is recommended that measures be considered for simultaneously improving the fodder situation. Such means could include brisk fire control, fodder conservation, controlled grazing, introducing better forage species, and supplementary feeding.

HEALTH

Available health statistics do not provide a basis for comparison between health conditions in the North, let alone in the project area, and conditions throughout the country. Assessment of these conditions must be situated at the national level.

The crude birth rate as of 1976 was 45 per 1,000 persons annually. The crude death rate was 20.4 per thousand (World Bank 1980b). Infant mortality was situated at 167 per thousand in 1960 and had only slightly dropped to 165 by 1979. The death rate of children aged one to four years has dropped more substantially during the same period. The child death rate in 1960 was 40/1,000, whereas in 1979 it was 29/1,000.

Life expectancy has evolved from 37 years in 1960 to a life expectancy of 44 years as of 1979. The World Bank reported that women in 1976 could expect to live 45.6 years on the average and men 43.2 years (World Bank 1980b). The principle diseases threatening the population of Cameroon are gastroenteritis and dysentery, respiratory infections and tuberculosis, malaria, complications of pregnancy and childbirth, intestinal parasites, malnutrition, skin diseases, trauma, leprosy, and goiter. The incidence of diseases and their gravity, based on 1976 morbidity statistics, indicate that the four worst diseases in descending order of importance are malaria (1), intestinal diseases (2), respiratory diseases (3), and skin diseases (4).

Health services

The levels of health services available in the Northern Province in general and in the project area in particular to combat the poor health conditions

described are very low by national standards. Table 17 describes the average population served for the various levels of the health care facility hierarchy by project area, province and country. Overall the facilities in the project area are called upon to serve a population twice as large as the national average (i.e., in the project zone there is one facility per 16,000 persons whereas in the country overall the ratio is one per 8,000 persons). In general, health care coverage in the North is superior to that found in the project area. However, provincial health facilities must still serve a population 50 percent greater than the national average. It would appear that coverage is thinnest in the project area relative to the situation in the country at the lower levels of the health care facility hierarchy (i.e., CSEs, CSDs and urban dispensaries). However, the service population of the zone's hospitals is still two and one-third times higher than the national average.

The low level of health service to the population of the project area is further reflected by the ratio of population to hospital beds. Table 18 shows that the North must serve a greater population per hospital bed than any other province in Cameroon. The project area has some nine hundred beds for inpatients, including CSD and CSE beds (193) and the recent expansion from 235 to 400 beds in the Garoua Hospital. The ratio of population to hospital beds which the zone must support is twice as great as the national average and three times as great as in some provinces.

Health care personnel

The number of physicians serving the project area is comparable to the average found throughout the country. The number of doctors in the project zone has fluctuated, particularly with the recent departure from Guider of a

TABLE 18.

COMPARISON OF IN-PATIENT HOSPITAL CAPACITY THROUGHOUT CAMEROON

Area Served	Number of Hospital Beds	Population (1976)	Population/Bed Ratio
UFRD Project Area	899 ¹	600,000	667:1
Northern Province	3,485	2,200,000	631:1
Northwestern Province	1,775	988,000	557:1
Southwestern Province	1,542	608,000	394:1
Centre-South Province	5,605	1,444,000	257:1
Eastern Province	1,583	380,000	240:1
Littoral Province	3,952	912,000	231:1
Western Province	4,803	1,064,000	221:1
Cameroon	22,745	7,600,000	334:1

1. This figure represents Garoua Hospital (400), Maroua Hospital (206), Guider and Mokolo Hospitals (100), CSDs (172), and CSEs (21).

SOURCE: Cameroon, Government of. 1981a.

contingent of Chinese doctors. The zone benefits currently from a number of Belgian physicians associated with the major health project in Maroua. Placing the number of doctors 29 for the 0.6 million inhabitants of the zone gives an average population served by each of 21,000 inhabitants. Three-quarters of these are located in Garoua and Maroua. The World Bank reports that Cameroon has an average of one physician per 33,800 inhabitants, and the North has one per 49,000 (World Bank 1980b).

The ratio of nurses to population offers a more accurate picture of the health care personnel affecting the majority of the population. There are 52 nurses (infirmiers brevetées and infirmiers d'Etat) in the major health centers of Maroua and Garoua. Along with the various nurses of the core project area in both public and private facilities these nurses (177 total) must serve the 0.6 million inhabitants. Thus, there are approximately 3,400 persons for every nurse in the region, as compared with only 1,685 persons per nurse in the country as a whole. As in the case of medical doctors, there is high concentration of nurses. Eighty percent of all nurses are found in the major centers of Garoua, Maroua, Guider and Mokolo.

Subareas

There are seven levels of primary health services located in the project area. In ascending order they are: centres de santé élémentaires (CSE), centres de santé développés (CSD), urban dispensaries, centres de médecine préventive (CDMP), hôpitaux d'arrondissement, hôpitaux départementaux, and hôpital provincial.

At the present time the following exist: thirteen CSEs, fourteen CSDs, five urban dispensaries, four CDMPs, one hôpital d'arrondissement, two hôpitaux départementaux, and one hôpital provincial.

In addition, there are four Services de Protection Maternelle et Infantile (PMI) and four Services d'Hygiène et d'Assainissement involved strictly in preventive medicine. These facilities are located in more than thirty different locations (Map 2). CSEs are usually under the charge of an aide soignant while CDS are headed by infirmiers brevetés. Higher order centers, from urban dispensaries to the provincial hospital, usually have the services of a doctor.

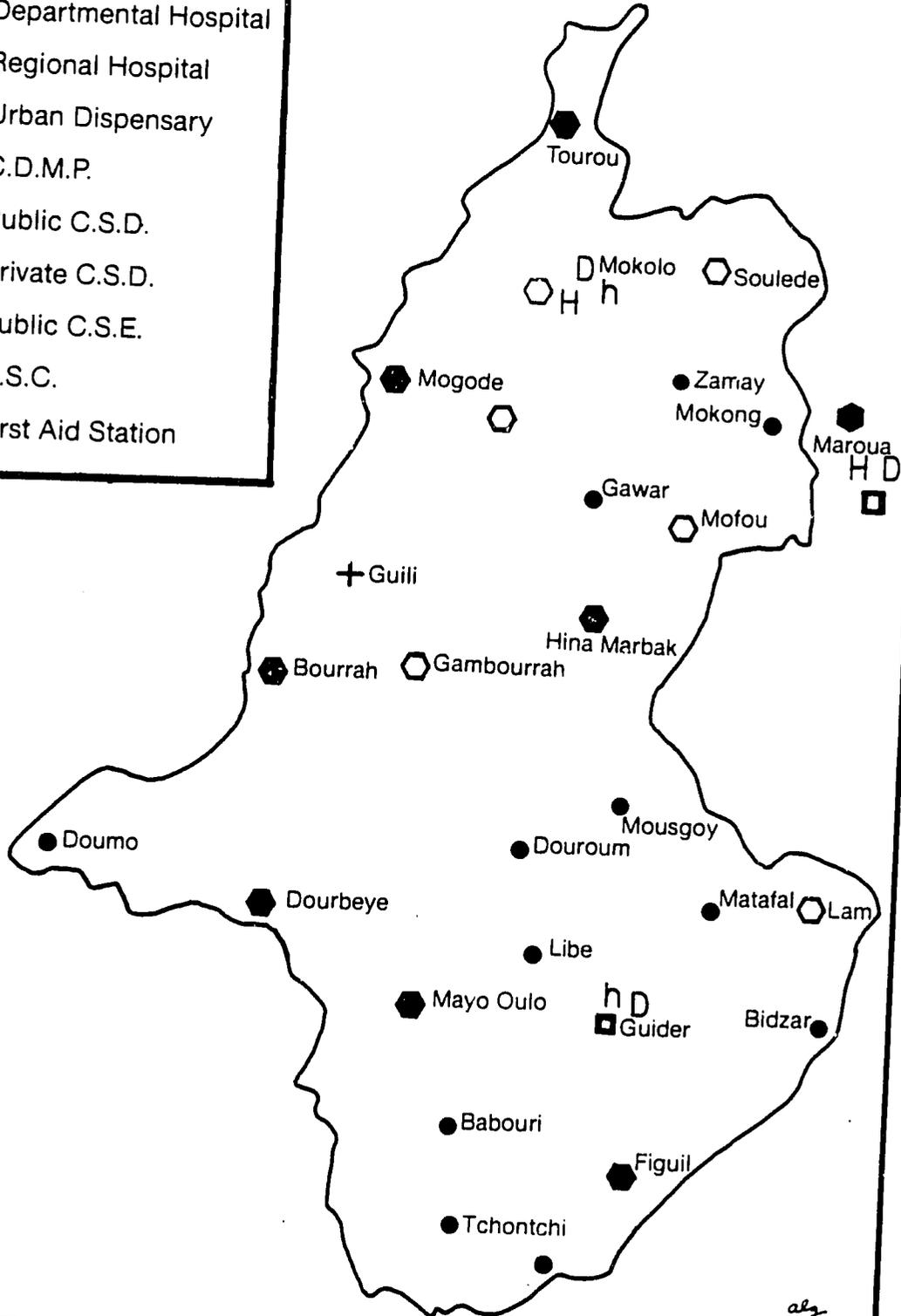
In earlier project exercises, central places have been identified and their areas of influence, or subareas, delineated. This has definite implications for the identification of locations for investment in health facilities. Four hierarchic levels of centers have been established for the project area. As they are places of different sizes with differing magnitudes of area and population served, the various levels indicate the nature of interventions that may be made there. In the planning of lower level health centers (i. e., CSEs and CSDs) village centers and their subareas will be used. In the case of higher level facilities the administrative criteria will be respected. Table 19 shows the current distribution and staffing of CSEs and CSDs by sub-area while Tables 20 to 25 present the same of all higher level facilities.

Personnel averages for each type of health facility in the project area have also been calculated. They are shown in Table 26. In almost all cases these averages are much below the national standards. The one exception is the hôpital d'arrondissement in Guider, which has received much attention in recent years as a demonstration unit. Where CSE or CSD averages approach national norms, it is usually through the influence of privately run facilities, which in some cases attain and even surpass these standards. The personnel averages in Table 26 present a highly generalized picture. There are

MAP 2

HEALTH FACILITIES

- H Provincial Hospital
- H Departmental Hospital
- h Regional Hospital
- D Urban Dispensary
- C.D.M.P.
- Public C.S.D.
- Private C.S.D.
- Public C.S.E.
- C.S.C.
- + First Aid Station



alg

TABLE 19.
DISTRIBUTION AND STAFFING OF CSEs AND CSDs, UFRD PROJECT AREA, 1980

Sub-Area	Pop. 1982	Facility		Doctors	Nurses	Inf. Dip. d'Etat	Inf. / Brevetés	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Decision.
		CSE	CSD								
1. Tourou	15,500	1			1		1		1	1	1
2. Soulede ⁴	30,600		1		1	1			2	2	
3. Zamay ⁴	7,200	1			1	1				1	
4. Mokong ⁴	14,200		1		3	3			1	5	
5. Mofou ⁴	13,300		1		2	1	1		1	4	1
6. Gawar	12,200	1			1			1	1	2	1
7. Wanarou	10,600										
8. Hina Marbak	16,900		1		1		1		1	2	2
9. Mogode ⁴	22,700		2		2	1	1		2	4	1
10. Bourrah	8,300		1		2	1	1		2	2	2
11. Guili ⁴	8,600	1 ²			1	1					
12. Gazawa	10,900		1	NA	NA	NA	NA	NA	NA	NA	NA
13. Gambourrah	5,000		1		2	1	1		1	3	3
14. Boukoula	20,800										
15. Mayo Oulo	16,700		1		4		2	2	1		1
16. Doumo	5,400	1			1			1	1		1
17. Guirviza	4,100										
18. Dourbeye	8,100		3		3		1	2	1		1
19. Guider	41,800										
20. Douroum	32,700	1			1			1	1	2	1
21. Mousgoy	15,800	1							2		
22. Matafal	2,400	1							2		1
23. Figuil	16,400		1		2	1	1		2		
24. Lam ⁴	11,700		1		1	1			3		1
25. Babouri	10,700	1			1				2	1	
26. Tchontchi	17,300	2 ³							1	1	1
27. Libe	5,600	1			1			1	1	1	2
28. Bidzar	6,800	1			3		1	2	1		1
29. Mokolo ⁴	51,400		1		1	1			2	1	
30. Maroua	100,900 ¹									1	
31. Garoua	93,100 ¹										
TOTAL	633,200	13	14	-	34	13	11	10	34	32	22

1. For our purposes the sub-area populations of Maroua and Garoua are considered to be simply their estimated urban populations.
2. Guili possesses a private poste de secours.
3. There are two CSEs in the Tchontchi sub-area, one in Tchontchi itself and the other in Kakala.
4. There are privately financed and managed health services.

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 20.

D. DISTRIBUTION AND STAFFING OF URBAN DISPENSARIES, UFRD PROJECT AREA, 1982

Urban Center	Name of Dispensary	Doctors	Nurses	Inf. Dip. d'Etat	Inf. Brevetés ¹	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
1. Guider	Guider		7	1	1	5	1		
2. Garoua	Kolléré Foulbéré	1 1	1 1	1 1	2		4 1	5 7	1
TOTAL		2	9	3	3	5	6	12	1

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 21

DISTRIBUTION AND STAFFING OF PMIs, UFRD PROJECT AREA, 1982

Center	Doctors	Nurses	Inf. Dip. d'Etat	Inf. Brevetés ¹	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
1. Guider		1			1	1		1
2. Garoua	1	3	1	2		5		3
3. Maroua	1					3	5	
4. Mokolo	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL	2	4	1	2	1	9	5	4

1. Includes infirmiers adjoints and infirmiers.

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 22.

DISTRIBUTION AND STAFFING OF CDMPS, UFRD PROJECT AREA, 1982

Center	Doctors	Nurses	Inf. Dip. d'Etat ²	Inf. Brevetés	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
1. Guider ¹		6	2	2	2	5		2
2. Garoua	1	10	6	4		8		3
3. Maroua	4	7	2	5		7	28	2
4. Mokolo ¹	1	3	1	1	1	3	6	1
TOTAL	6	26	11	12	3	23	34	8

1. Information is for 1980.

2. Includes infirmiers assistants.

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 23

DISTRIBUTION AND STAFFING OF HOPITAL D'ARRONDISSEMENT, UFRD PROJECT AREA, 1982

Center	Doctors	Nurses	Inf. Dip. d'Etat	Inf. Brevetés	Inf. Decisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
1. Guider	3	32	3	10	19	11	2	5
TOTAL	3	32	3	10	19	11	2	5

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 24.

DISTRIBUTION AND STAFFING OF HOPITAUX DEPARTEMENTAUX, UFRD PROJECT AREA, 1982.

Center	Doctors	Nurses	Inf. Dip. d'Etat	Inf. Brevetés	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
1. Maroua	6	17	10	7		14	16	2
2. Mokolo ¹	3	21	4	7	10	2	15	10
TOTAL	9	38	14	14	10	16	31	12

1. Information is for 1980.

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 25.

DISTRIBUTION AND STAFFING OF HOPITAL PROVINCIAL, UFRD PROJECT AREA, 1982

Center	Doctors ¹	Nurses ¹	Inf. Dip. d'Etat	Inf. Brevetés	Inf. Décisionnaires	Aides Soignants	Manoeuvres ¹	Matrones Décisionnaires
1. Garoua	7	34	12	NA	NA	28	5	7
TOTAL	7	34	12	NA	NA	28	5	7

1. Information is for 1980.

SOURCE: Cameroon 1980e and UFRD Survey.

TABLE 26
PERSONNEL AVERAGES PER TYPE OF HEALTH FACILITY, UFRD PROJECT AREA, 1982.

Type of Facility	Doctors	Nurses	Inf. Dip. d'Etat	Inf. Brevetés	Inf. Décisionnaires	Aides Soignants	Manoeuvres	Matrones Décisionnaires
CSE	0.0	0.8	0.2	0.2	0.5	1.1	0.6	0.8
CSD	0.0	1.7	0.8	0.6	0.3	1.4	1.7	0.9
Urban Dispensary	0.7	3.0	1.0	1.0	1.7	2.0	4.0	0.3
PMI	0.7	0.8	0.3	0.7	0.3	3.0	1.7	1.3
CDMP	1.5	6.5	2.8	3.0	0.8	5.8	8.5	2.0
Hôpital d'Arrond.	3.0	32.0	3.0	10.0	19.0	11.0	2.0	5.0
Hôpital Depart.	4.5	19.0	7.0	7.0	5.0	8.0	15.5	6.0
Hôpital Provincial	7.0	34.0	12.0	NA	NA	28.0	5.0	7.0

SOURCE: Cameroon 1980e and UFRD Survey.

institutions which fall well below these figures, so that between subareas there are sometimes large differences in the level of access to health facilities.

Strategy to improve access to health services

The foregoing has provided an assessment of actual levels of access to the health services of the project area. It has been seen that CSEs are located in lower level settlements and have total serviced populations of 16,000 persons. CSDs are generally provided in somewhat larger places and have a total serviced population of 24,000 people. Urban dispensaries are found in the regional city of Gambia and in the secondary town of Guider with service populations of 93,000 and 24,000, respectively. On the average there is one for every 77,000 urban dwellers. Higher order facilities (PMI, CDMP, hôpital d'arrondissement, hôpital départementaux, hôpital provincial) are located in the regional city and secondary towns and provide services to populations that vary in size from 46,000 to over 600,000. It should be understood that service populations are arrived at through a kind of double counting. The same group of people are served by a CSE, a CSD, an hôpital d'arrondissement, an hôpital départemental and finally an hôpital provincial. These service populations match up poorly with the fifth five-year development plan objective of one health facility per 5,000 rural population and one facility per 10,000 population in urban areas.

That a facility exists at a location is not a sufficient indication of the level of access to the service, because the quality and adequacy of equipment, supplies and personnel are often lacking. Improving access means not only new facilities but upgrading existing ones, as well.

If national standards were adopted as they currently exist, at least another ninety facilities would be required. Therefore, in order to set realistic planning goals, another approach has been taken. The averages presented above concerning average population served and personnel per facility provide a highly generalized picture. There are many establishments, especially public, that fall below these averages. The existing averages will be used as the standard. By bringing subaverage establishments up to this adapted standard, the average will be raised higher. Hospitals, PMIs and CDMPs will continue to respond to administrative criteria.

Based on these standards, future requirements for health facilities in the project area were determined for two periods, 1982/87 and 1987/92. Tables 27 and 28 outline the kind of program necessary in the UFRD project area for public health facilities up to 1992. As explained, new facilities and personnel are based on current averages in the area. However, recommendation for reconstruction and repairs are as reported by village groups interviewed during the course of the preliminary survey. It is judged that all facilities need to be re-equipped with operational equipment and furnishings. Finally, privately financed and managed health services are not included in the proposals.

By 1987 it is proposed that two new CSEs be constructed, one in Wanarou and one in the Douroum subarea (Map 3). Normally a CSE would be proposed for the Soulede subarea, which has only one CSD to serve a population of over 30,000. However, a CSE is presently being built in the village of Roua, located in the subarea of Soulede. These types of facilities are required to meet the modified planning standards established above. Similarly, by 1987 a new CSD is recommended for Douroum. There is presently a CSE in Douroum.

TABLE 27.

PROGRAM FOR PROVISION OF PUBLIC HEALTH FACILITIES, UFRD PROJECT AREA, 1987

Sub-Area	Village/Town	Sub-Area Popula- tion 1987	Type of Facility	Type of Intervention Proposed				Total Number of Personnel Proposed					
				New	Totally Recon- structed	Struc- tural Repairs	Re-equip- ment	Doctors	Inf.Dip. d'Etat	Inf. Brevetes	Inf. Decision- naires	Aides Soignants	Manoeuvres
1. Tourou	Tourou	16,600	CSE	-	-	X	X	-	-	1	-	1	1
2. Soulede	Soulede	32,800	CSD	-	-	-	-	-	-	-	-	-	-
	Roua		CSE	X	-	-	X	-	-	-	1	1	1
3. Zamay	Zamay	7,800	CSE	-	-	-	-	-	-	-	-	-	-
4. Mokong	Mokong	15,200	CSD	-	-	-	-	-	-	-	-	-	-
5. Mofou	Zidim	14,300	CSD	-	-	-	-	-	-	-	-	-	-
6. Gawar	Gawar	13,100	CSE	-	-	X	X	-	-	-	1	1	2
7. Wanarou	Wanarou	11,400	CSE	X	-	-	X	-	-	-	1	1	1
8. Hina Marbak	Hina Marbak	18,200	CSD	-	X	-	X	-	1	1	-	1	2
9. Mogode	Mogode	24,400	CSD	-	-	X	X	-	1	1	-	2	2
	Sir		CSD	-	-	-	-	-	-	-	-	-	-
10. Bourrah	Bourrah	8,900	CSD	-	-	X	X	-	1	1	-	2	2
11. Guili	Guili	9,200	CSE	-	-	-	-	-	-	-	-	-	-
12. Gazawa	Gazawa	11,700	CSD	-	-	-	X	-	1	1	-	1	2
13. Gambourrah	Gambourrah	5,400	CSD	-	-	-	-	-	-	-	-	-	-
14. Boukoula	Boukoula	22,400	CSD	X	-	-	X	-	1	1	-	1	2
15. Mayo Oulo	Mayo Oulo	18,000	CSD	-	-	-	X	-	1	2	2	1	2
16. Doumo	Doumo	5,700	CSE	-	-	-	X	-	-	-	1	1	1
17. Guirviza	Guiviza	4,400	-	-	-	-	-	-	-	-	-	-	-
18. Dourbeye	Dourbeye	8,600	CSD	-	X	-	X	-	1	1	2	1	2
19. Guider	Guider	45,100	Urb.Disp.	-	-	X	X	1	1	1	5	2	4
	Guider		PMI	-	X	-	X	1	-	1	1	3	2
	Guider		CDMP	-	-	X	X	2	3	3	2	6	9
	Guider		Hôp.d'Arr.	-	-	X	X	3	3	10	19	11	2
20. Douroum	Douroum	34,900	CSD	X	-	-	X	-	1	1	1	1	2
	Mandama		CSE	X	-	-	X	-	-	-	1	1	1
21. Mousgoy	Mousgoy	16,900	CSE	-	-	-	X	-	-	-	1	2	2
22. Matafal	Matafal	2,600	CSE	-	-	X	X	-	-	-	1	2	1
23. Figuill	Figuill	17,600	CSD	-	-	X	X	-	1	1	-	3	1
24. Lam	Lam	12,500	CSD	-	-	-	-	-	-	-	-	-	-

TABLE 27 Continued

PROGRAM FOR PROVISION OF PUBLIC HEALTH FACILITIES, UFRD PROJECT AREA, 1987

Sub-Area	Village/Town	Sub-Area Popula- tion 1987	Type of Facility	Type of Intervention Proposed				Total Number of Personnel Proposed						
				New	Totally Recon- structed	Struc- tural Repairs	Re-equip- ment	Doctors	Inf. Dip d'Etat	Inf. / Brevetes	Inf. Decision- naires	Aides Soignants	Manoeuvres	
25. Babouri	Babouri	11,500	CSE	-	-	-	X	-	-	-	-	1	1	1
26. Tchontchi	Tchontchi	18,600	CSE	-	-	X	X	-	-	-	-	1	2	1
	Kakala		CSE	-	-	-	X	-	-	-	-	1	1	1
27. Libe	Libe	6,000	CSE	-	-	-	X	-	-	-	-	1	1	1
28. Bidzar	Bidzar	7,300	CSE	-	-	-	X	-	-	-	-	1	1	1
29. Mokolo	Mokolo	55,400	PMI	-	-	-	X	1	-	1	-	-	3	2
	Mokolo		CDMP	-	-	X	X	2	3	3	1	6	9	
	Mokolo		Hôp. Dept.	-	-	-	X	5	7	7	10	8	16	
	Mokolo		CSD	-	-	-	-	-	-	-	-	-	-	-
30. Maroua	Maroua	132,800	Urb. Disp.	X	-	-	X	1	1	1	2	2	4	5
	Maroua		PMI	-	-	-	X	1	-	1	-	3	5	
	Maroua		CDMP	-	-	-	X	4	3	5	1	7	28	
	Maroua		Hôp. Dept.	-	-	-	X	5	10	7	5	14	16	
31. Garoua	Garoua	121,100	Kolleré	-	-	-	X	1	1	1	2	4	5	
	Garoua		Urb. Disp.	-	-	-	X	1	1	2	2	2	7	
	Garoua		Foulbéré	-	-	-	X	1	1	2	-	5	2	
	Garoua		PMI	-	-	-	X	1	1	2	-	5	2	
	Garoua		CDMP	-	-	-	X	2	6	4	1	8	9	
	Garoua		Hôp. Prov.	-	-	-	X	10	10	20	-	40	5	
TOTAL		714,200		6	3	11	38	41	59	80	68	153	157	

TABLE 28.

PROGRAM FOR PROVISION OF PUBLIC HEALTH FACILITIES, UFRD PROJECT AREA, 1992

Sub-Area	Village/Town	Sub-Area Popula- tion 1992	Type of Facility	Type of Intervention Proposed				Total Number of Personnel Proposed					
				New	Totally Recon- structed	Struc- tural Repairs	Re-equip- ment	Doctors	Inf.Dip d'Etat	Inf. / Brevetes	Inf. Décision- naires	Aides Soignants	Manoeuvres
1. Tourou	Tourou	17,700	CSE	-	-	-	-	-	-	1	-	1	1
2. Soulede	Soulede	35,000	CSD	-	-	-	-	-	-	-	-	-	-
	Roua		CSE	-	-	-	-	-	-	-	1	1	1
3. Zamay	Zamay	8,400	CSE	-	-	-	-	-	-	-	-	-	-
4. Mokong	Mokong	16,200	CSD	-	-	-	-	-	-	-	-	-	-
5. Mofou	Zidim	15,300	CSD	-	-	-	-	-	-	-	-	-	-
6. Gawar	Gawar	14,100	CSE	-	-	-	-	-	-	-	1	1	2
7. Wanarou	Wanarou	12,200	CSE	-	-	-	-	-	-	-	1	1	1
8. Hina Marbak	Hina Marbak	19,400	CSD	-	-	-	-	-	1	1	-	1	2
9. Mogode	Mogode	26,200	CSD	-	-	-	-	-	1	1	-	2	2
	Sir		CSD	-	-	-	-	-	-	-	-	-	-
10. Bourrah	Bourrah	9,600	Hôp.d'Arr.	X	-	-	X	1	1	5	-	10	12
11. Guili	Guili	9,900	CSE	-	-	-	-	-	-	-	-	-	-
12. Gazawa	Gazawa	12,400	CSD	-	-	-	-	-	1	1	-	1	2
13. Gambourrah	Gambourrah	5,700	CSD	-	-	-	-	-	-	-	-	-	-
14. Boukoula	Boukoula	24,100	CSD	-	-	-	-	-	1	1	-	1	2
15. Mayo Oulo	Mayo Oulo	19,300	Hôp.d'Arr.	X	-	-	X	1	1	5	2	10	12
16. Doumo	Doumo	6,100	CSE	-	-	-	-	-	-	-	1	1	1
17. Guirviza	Guiviza	4,700	-	-	-	-	-	-	-	-	-	-	-
18. Dourbeye	Dourbeye	9,200	CSD	-	-	-	-	-	1	1	2	1	2
19. Guider	Guider	48,300	Urb.Disp.	-	-	-	-	1	1	1	5	2	4
	Guider		PMI	-	-	-	-	1	-	1	1	3	2
	Guider		CDMP	-	-	-	-	2	3	3	2	6	9
	Guider		Hop.Dept.	-	-	-	-	5	7	10	19	11	16
20. Douroum	Douroum	37,100	CSD	-	-	-	-	1	1	1	1	1	2
	Mandama		CSE	-	-	-	-	-	-	-	1	1	1
21. Mousgoy	Mousgoy	18,000	CSE	-	-	-	-	-	-	-	1	2	2
22. Matafal	Matafal	2,700	CSE	-	-	-	-	-	-	-	1	2	1
23. Figuïl	Figuïl	18,900	Hôp.d'Arr.	X	-	-	X	1	1	5	-	10	12
24. Lam	Lam	13,300	CSD	-	-	-	-	-	-	-	-	-	-

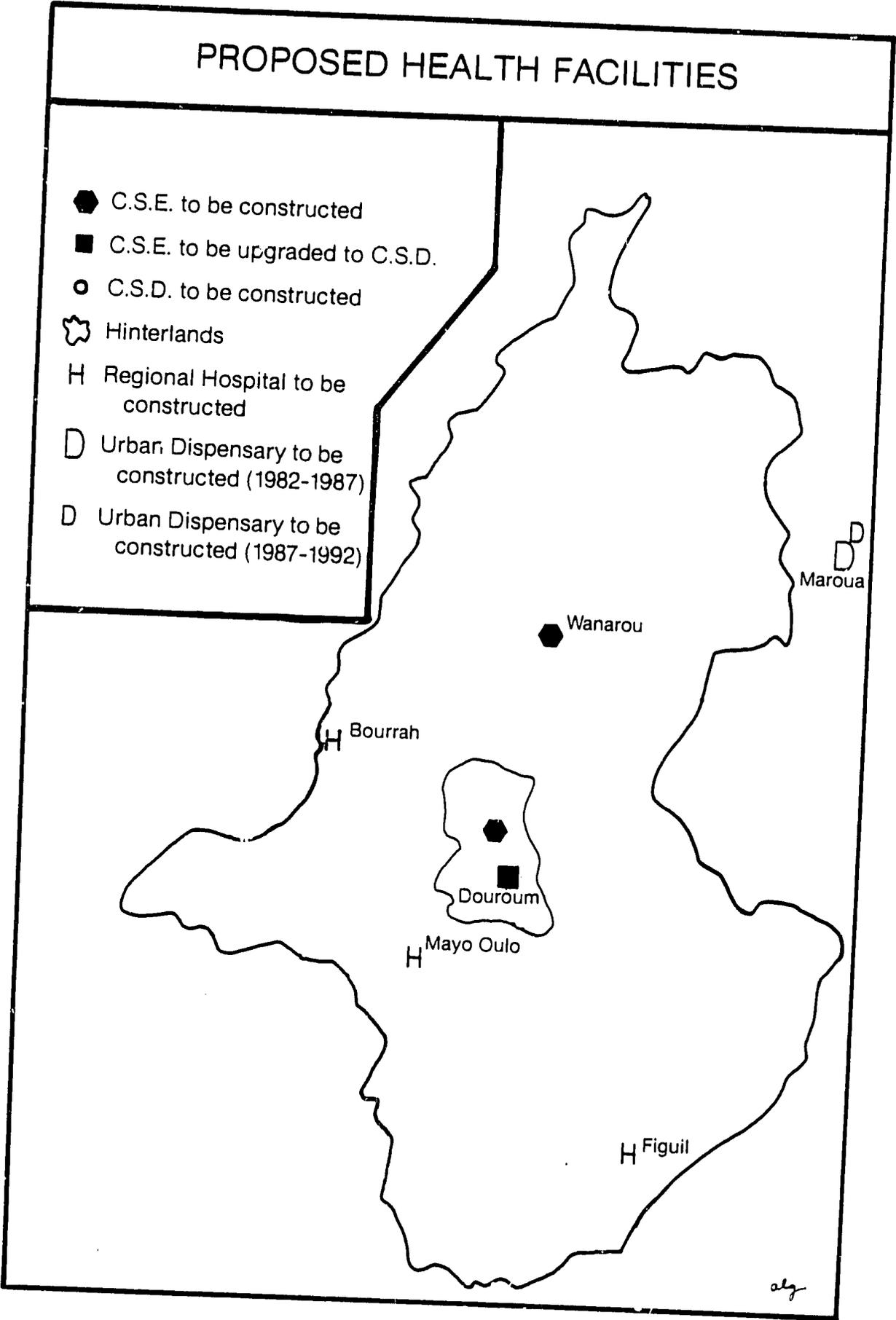
TABLE 28. Continued

PROGRAM FOR PROVISION OF PUBLIC HEALTH FACILITIES, UFRD PROJECT AREA, 1992

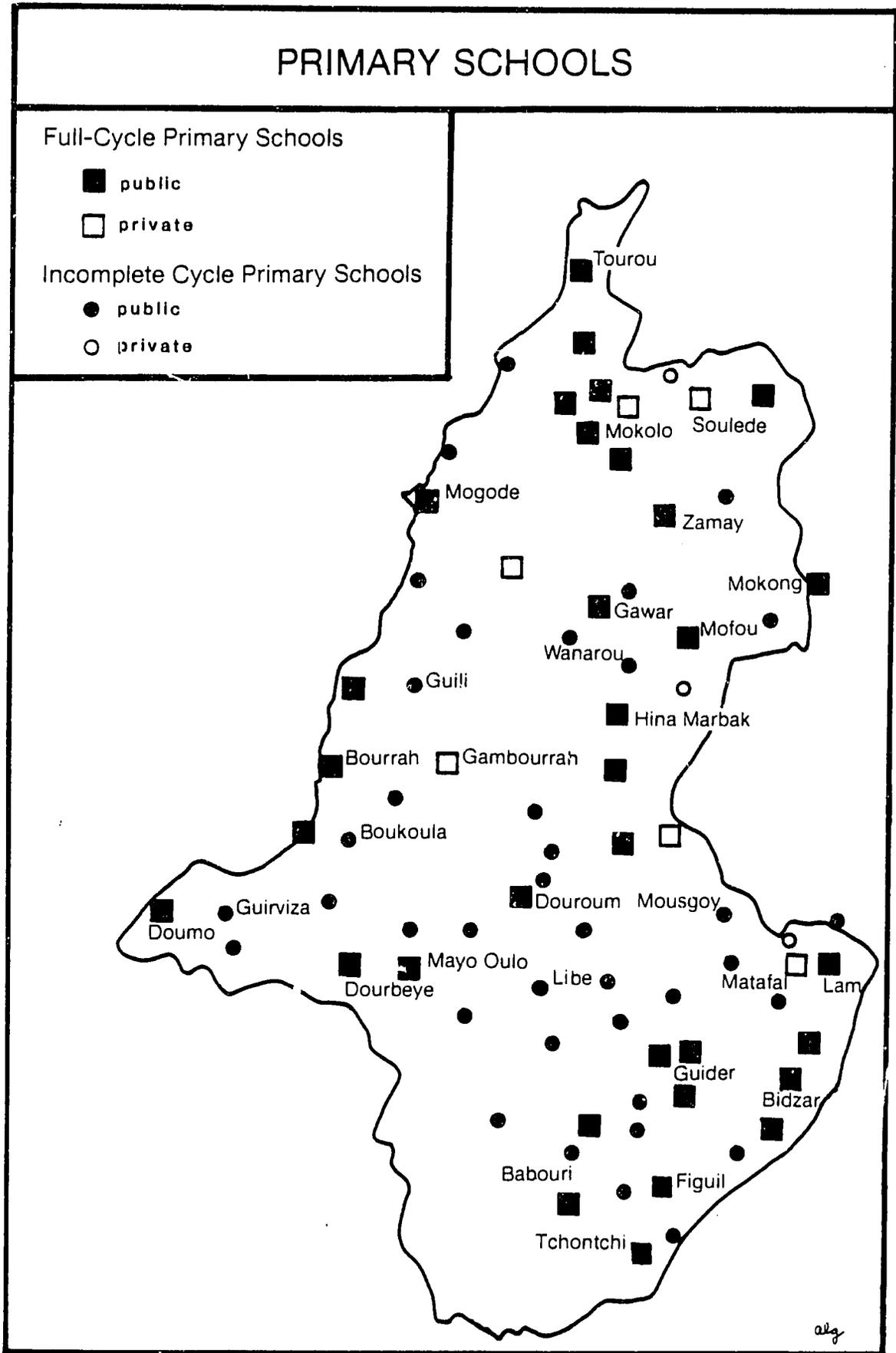
Sub-Area	Village/Town	Sub-Area Popula- tion 1992	Type of Facility	Type of Intervention Proposed				Total Number of Personnel Proposed					
				New	Totally Recon- structed	Struc- tural Repairs	Re-equip- ment	Doctors	Inf.Dip d'Etat	Inf. Brevetés	Inf. Decision- naires	Aides Soignants	Manoeuvres
25. Babouri	Babouri	12,200	CSE	-	-	-	-	-	-	-	1	1	1
26. Tchontchi	Tchontchi	19,800	CSE	-	-	-	-	-	-	-	1	2	1
	Kakala		CSE	-	-	-	-	-	-	-	1	1	1
27. Libe	Libe	6,300	CSE	-	-	-	-	-	-	-	1	1	1
28. Bidzar	Bidzar	7,800	CSE	-	-	-	-	-	-	-	1	1	1
29. Mokolo	Mokolo	59,400	PMI	-	-	-	-	1	-	1	-	3	2
	Mokolo		CDMP	-	-	-	-	2	3	3	1	6	9
	Mokolo		Hôp. Dépt.	-	-	-	-	5	7	7	10	8	16
	Mokolo		CSD	-	-	-	-	-	-	-	-	-	-
30. Maroua	Maroua	164,600	Urb. Disp.	X	-	-	X	1	1	1	2	2	4
	Maroua		Urb. Disp.	-	-	-	-	1	1	1	2	2	4
	Maroua		PMI	-	-	-	-	1	-	1	-	3	5
	Maroua		CDMP	-	-	-	-	4	3	5	1	7	28
	Maroua		Hôp. Dépt.	-	-	-	-	5	10	7	5	14	16
31. Garoua	Garoua	148,900	Urb. Disp.	-	-	-	-	-	-	-	-	-	-
	Garoua		Kolléré	-	-	-	-	1	1	1	2	4	5
	Garoua		Urb. Disp.	-	-	-	-	-	-	-	-	-	-
	Garoua		Foulbéré	-	-	-	-	1	1	2	2	2	7
	Garoua		PMI	-	-	-	-	1	1	2	-	5	2
	Garoua		CDMP	-	-	-	-	2	6	4	1	8	9
	Garoua		Hôp. Prov.	-	-	-	-	10	10	20	-	40	5
TOTAL		822,800		4	-	-	4	47	64	92	80	179	206

72'

MAP 3



MAP 4



However, it is in poor condition and requires major repairs. Therefore, it is suggested that a new, upgraded physical plant be built in its place.

Based on the regional average of one urban dispensary for 77,000 people, it is proposed that one be built in Maroua by 1987 and a second one by 1992. Interventions of this type will improve considerably access of the urban population of Maroua to health services. At the present time, there is no health facility located in Boukoula to serve its population of almost 21,000, a situation soon to be remedied with the completed construction of a CSD in Boukoula itself.

In the subareas of Bourrah, Mayo Oulo and Figuil it is recommended that CSD's be upgraded to the level of hôpital d'arrondissement by 1992. This proposal is entirely in accordance with national planning standards. Service areas correspond approximately to the subdivision boundaries.

Based on discussions with village groups and health personnel, reconstruction and repair needs have been determined. Complete reconstruction is suggested for CSDs in Hina Marbak and Dourbeye. In the case of the PMI in Guider, it is proposed that the building formerly occupied by the Chinese medical personnel be restored to its intended use as a PMI. Light structural repairs and refurbishing are recommended for another eleven health facilities by 1987. This would include repair and replacement of doors and windows, replastering and repainting and repair of roofs and ceilings.

A recurrent issue in interviews with health care staff is the inadequacy of technical and operational equipment. Technical equipment includes such items as syringes, microscopes, examining tables and hypodermic needles while operational equipment consists of cabinets, benches for patients and desks. It

is proposed that all public health facilities be outfitted with the appropriate equipment.

Marginal increases in personnel have been recommended using the regional average as our standard. This proposal would decrease disparities between health centers and subareas and at the same time improve the quality and quantity of health staff in the project area. It is felt that the demands for additional personnel are realistic and can be met by the Government of Cameroon in the time frame allotted. It is recommended that the total number of doctors be increased from 29 to 41 by 1987 and to 47 by 1992. The total number of nurses (infirmiers diplômés d'état, infirmiers brevetés and infirmiers décisionnaires) should be increased from 29 to 41 by 1987 and to 47 by 1992. Finally, it is proposed that 153 aides-soignants, 157 manoeuvres and 70 matrones décisionnaires be posted to the project area by 1987.

The estimated cost of the interventions identified total CFAF 1,839.7 million for the period from 1982 to 1987 and CFAF 1,943.7 million for the period from 1987 to 1992. These figures are for 1982 and have not been escalated in the future.

EDUCATION

School attendance

The average level of formal school attendance amongst children in the 6 to 14 year age range is 64.8 percent nationwide. The geographic pattern of the attendance is, following the language of the Census Bureau, a marked juxtaposition of a "central zone" surrounded by "peripheral zones." Yaounde is the epicenter of the pattern with a primary school attendance of over 90 percent of the children in the 6-14 bracket (Cameroon 1976).

The hub of high levels of school attendance (80 to 90 percent) includes all of the Center-South and Littoral and the adjacent portions of the Western Province. The zones officially referred to as "peripheral" (50 to 80 percent) surround this hub and are comprised of nearly the entirety of the Eastern Province, and portions of the Southwest, Northwest and Western Provinces.

Beyond the peripheral ring of low school attendance lies the entirety of the Northern Province with less than half of the school aged children enrolled. The center-periphery pattern holds true to the point that the extreme North as several pockets and remote areas with an attendance rate ranging from zero to twenty percent. The Mayo Louti had only 14 percent of its children in primary school in 1976 and the Mayo Tsanaga shows the lowest rate of all, along with the Mayo Sava, with only 12 percent (Cameroon 1976).

The very low enrollment of Northern children in school is due in part to the province's remoteness. Another factor is the competition between formal institutions and Koranic schools. The greatest following of these Moslem schools is found in the regions south and east of the project area, where as many as 20 to 25 percent of the school aged children are enrolled in such

schools (Cameroon 1976). Two such zones border the core project area in the Benoue and Diamare Divisions.

For those who do attend school in the North, 83.2 percent must rely on public schools. In Cameroon as a whole, 40.5 percent of the population is educated by private schools at the primary school level.

School facilities and personnel

A major reason for the low levels of school attendance in the North appears to be the lack of infrastructure and personnel. The country had 23,534 classrooms for its 7.6 million persons in 1976. This represents a ratio of one classroom for every 323 persons. The Northern schools must serve an average of 889 persons per classroom. The project area had only 376 classrooms for its 601 thousand inhabitants at the time, thus serving an average population of 1596 (Table 29). By 1981 the number of classrooms in the project area had increased to 581 improving the ratio to one classroom for 1218 inhabitants.

The North approaches the national ratio of population served per teacher somewhat more closely than the ratio for classrooms. Teachers in the project zone, on the other hand, are extremely scarce by national standards. In 1976 each teacher supported an average population of 5366 persons, more than seven times greater than the national average at the time. Since then the number of teachers has increased sixfold to 642 and the ratio has improved significantly to one teacher per 1102 persons.

The ratios of classrooms and teachers to students are reported in Table 30. These averages compare favorably with those found in the North and in the country as a whole. In the case of teacher/student ratios the project

TABLE 29.

77.

COMPARISON OF PRIMARY SCHOOL FACILITIES AND PERSONNEL, 1976/77

Area Served and Population Ratio	UFRD Project Area (0.6 million persons)	Northern Province (2.2 million persons)	Cameroon (7.6 million persons)
Average Population Served per Classroom	1596	889	323
Average Population Served per Teacher	5366	959	703

SOURCE: Cameroon, Government of. 1977.

TABLE 30.

RATIO OF PRIMARY SCHOOL CLASSROOMS AND TEACHERS TO STUDENTS, 1976/77

Area	Classroom/Student Ratio	Teacher/Student Ratio
Mayo Louti	1:51	1:54
Mokolo and Bourrah Subdivisions (Mayo Tsanga Division)	1:47	1:51
UFRD Project Area (including Maroua and Garoua)	1:49	1:48
Northern Province	1:48	1:52
Cameroon	1:49	1:51

SOURCE: Cameroon, Government of. 1977.

area fared better in 1976 than both the province and the country. However, this situation had worsened by the 1981/81 school year, discussed below.

Subareas

In 1980/81 there were 59 full-cycle primary, 65 incomplete cycle and 8 secondary schools. In addition, there are three secondary technical institutions, of which two are in Garoua and one in Maroua, and four rural artisan and three domestic science centers. These education facilities are dispersed throughout the region with concentrations occurring in the larger urban centers (Map 4). One quarter of all primary school classrooms are found in Maroua and Garoua.

In order to assess the extent of education in the project area, the number of children in different age groups in 1980 was estimated. As the agewise composition of the UNDP project area was not available, it was assumed that the proportion of children under different age groups corresponds to that of the North as a whole. The estimated population for each subarea during 1980 and the number of children in the age group 6-14 and 15-24 are shown in Table 31. In the same table these populations have been projected forward to 1987 and 1992.

Enrollment ratios were determined by calculating the proportion of children actually enrolled in schools to total population in school-going age groups. This is shown in Table 32.

The percentage of attendance in primary schools is above what it was for the North in 1976 while only one-half of the country's average for the same year. The corresponding figure for secondary school attendance is 5.5 percent

TABLE 31.

ESTIMATED SCHOOL AGE POPULATION, UFRD PROJECT AREA, 1980, 1987, 1992

Sub-Area	Total Population (1980)	1 9 8 0		Total Population (1987)	1 9 8 7		Total Population (1992)	1 9 9 2	
		(6-14)	(15-24)		(6-14)	(15-24)		(6-14)	(15-24)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Tourou	15,100	3,140	2,460	16,600	3,450	2,710	17,700	3,680	2,890
2. Soulede	29,700	6,180	4,840	32,800	6,820	5,350	35,000	7,280	5,710
3. Zamay	7,000	1,460	1,140	7,800	1,620	1,270	8,400	1,750	1,370
4. Mokong	14,200	2,950	2,310	15,200	3,160	2,480	16,200	3,370	
5. Mofou	13,000	2,700	2,120	14,300	2,970	2,330	15,300	3,180	2,490
6. Gawar	11,800	2,450	1,920	13,100	2,720	2,140	14,100	2,930	2,300
7. Wanarou	10,200	2,120	1,660	11,400	2,370	1,860	12,200	2,540	1,990
8. Hina Marbak	16,400	3,410	2,670	18,200	3,790	2,970	19,400	4,040	3,160
9. Mogode	22,000	4,580	3,590	24,400	5,080	3,980	26,200	5,450	4,270
10. Bourrah	8,000	1,660	1,300	8,900	1,850	1,450	9,600	2,000	1,570
11. Guili	8,300	1,730	1,350	9,200	1,910	1,500	9,900	2,060	1,610
12. Gazawa	10,600	2,209	1,730	11,700	2,430	1,910	12,400	2,580	2,020
13. Gambourrah	4,900	1,020	800	5,400	1,120	880	5,700	1,190	930
14. Boukoula	20,200	4,200	3,290	22,400	4,660	3,650	24,100	5,010	3,930
15. Mayo Oulo	16,200	3,370	2,640	18,000	3,740	2,930	19,300	4,010	3,150
16. Doumo	5,200	1,080	850	5,700	1,190	930	6,100	1,270	990
17. Guirviza	4,000	830	650	4,400	920	720	4,700	980	770
18. Dourbeye	7,900	1,640	1,290	8,600	1,790	1,400	9,200	1,910	1,500
19. Guider	40,500	8,420	6,600	45,100	9,380	7,350	48,300	10,050	7,870
20. Douroum	31,800	6,610	5,180	34,900	7,260	5,690	37,100	7,720	6,050
21. Mousgoy	15,400	3,200	2,510	16,900	3,520	2,750	18,000	3,740	2,930
22. Matafal	2,300	480	370	2,600	540	420	2,700	560	440
23. Figuil	15,800	3,290	2,580	17,600	3,660	2,870	18,900	3,930	3,080
24. Lam	11,400	2,370	1,860	12,500	2,600	2,040	13,300	2,770	2,170
25. Babouri	10,400	2,160	1,700	11,500	2,390	1,870	12,200	2,540	1,990
26. Tchontchi	16,800	3,490	2,740	18,600	3,870	3,030	19,800	4,120	3,230
27. Libe	5,400	1,120	880	6,000	1,250	980	6,300	1,310	1,030
28. Bidzar	6,600	1,370	1,080	7,300	1,520	1,190	7,800	1,620	1,270
29. Mokolo	49,800	10,360	8,120	55,400	11,520	9,030	59,400	12,360	9,680
30. Maroua	88,100	18,320	14,360	132,800	27,620	21,650	164,800	34,010	24,300
31. Garoua	81,900	17,040	13,350	121,100	25,190	19,740	149,100	31,010	24,300

TABLE 32.
ENROLLMENT RATIOS, UFRD PROJECT AREA, 1980/81

Type of Facility	School Age Population	Actual Enrollment	Percent
Primary School	124,950	37,114	29.7
Secondary School	97,940	5,368	5.5

SOURCE: Delegation de l'Education Nationale. Unpublished Statistics for 1980/81 Academic School Year, Garoua.

is considerably higher than the 1976 provincial average of 0.9 percent. The majority of those enrolled are in Garoua and Maroua.

Within the project area there is much variation from one subarea to another. For example, only 2.7 percent of children 6-14 years old attend school in the Wanarou subarea while 50 percent in the Mokolo subarea are enrolled (Table 33).

It is more difficult to determine intraregional variation as concerns secondary school enrollment. However, it can generally be assumed in the case of the core project area that students come from the hinterlands of the centers where lycées and CESs are located. Thus, there are many subareas that are virtually unaffected by opportunities for secondary education. Table 34 presents secondary school enrollment by subarea.

The quality of educational facilities can be analyzed based on the number of students per teacher and the number of students per classroom. These ratios for the project area are given in Table 35. It appears that these averages have worsened since 1976 in the case of primary schools, as teachers and classrooms have not kept pace with increased enrollment. Once again, as in the case of enrollment ratios, there are large disparities between subareas. For example, the subarea of Doumo has one primary school classroom for 26 students while Maroua has classrooms that hold on the average 75 students. Similarly, for secondary schools ratios vary from one classroom per 23 students in Mokolo to one per 49 in Guider.

Strategy to improve access to education services

As discussed above, it is apparent that educational facilities in the project area are inadequate in terms of quantity, quality and spatial

TABLE 33.

RÉPARTITION ET ÉTAT DES ÉCOLES PRIMAIRES
DANS LA ZONE DU PROJET DES UFRD, 1980/81

Sous-région	Enfants de 6 - 14	Inscriptions dans le primaire	N° de salles de classe				N° de maîtres
			Total	Dur	Semi- dur	Provi- soire	
1. Tourou	3,140	212	4	4	-	-	2
2. Soulede	6,180	1,098	14	5	5	4	10
3. Zamay	1,460	381	6	1	2	3	4
4. Mokong	2,950	455	6	6	-	-	7
5. Mofou	2,700	759	9	2	1	7	9
6. Gawar	2,450	439	6	2	-	4	5
7. Wanarou	2,120	59	1	-	1	-	1
8. Hina Marbak	3,410	339	6	5	4	-	3
9. Mogode	4,580	1,103	18	8	5	5	17
10. Bourrah	1,660	352	7	7	-	-	6
11. Guili	1,730	323	4	3	-	1	4
12. Gazawa	2,200	747	12	7	-	5	10
13. Gambourrah	1,020	273	4	4	-	-	4
14. Boukoula	4,200	406	7	6	-	1	5
15. Mayo Oulo	3,370	640	14	6	3	5	12
16. Doumo	1,080	184	7	3	3	4	2
17. Guirviza	830	98	2	-	2	-	1
18. Bourbeye	1,640	425	14	10	2	2	8
19. Guider	8,420	2,832	65	33	19	13	44
20. Douroum	6,610	431	13	3	4	3	7
21. Mousgoy	3,200	359	7	1	1	5	11
22. Matafal	480	150	2	-	1	1	3
23. Figuil	3,290	1,039	14	8	2	4	17
24. Lam	2,370	741	19	12	-	-	17
25. Babouri	2,160	28	2	2	-	-	1
26. Tchontchi	3,490	443	8	3	1	4	8
27. Libe	1,120	221	6	1	1	4	7
28. Bidzar	1,370	579	13	6	-	7	11
29. Mokolo	10,360	5,784	77	43	13	21	72
30. Maroua	18,320	6,933	92	86	3	3	120
31. Garoua	17,040	10,181	137	128	3	6	495
Total	124,950	37,114	596	405	79	118	646

SOURCE: Délégation de l'Education Nationale. Unpublished Statistics for
1980/81 Academic School Year, Garoua.

TABLE 34.

RÉPARTITION ET ÉTAT DES ÉTABLISSEMENTS SECONDAIRES
DANS LA ZONE DU PROJET DES UFRD, 1980/81

Sous-région	Adolescents 15-24 ans	Inscriptions dans le secondaire	Nº total de salles	Nº de professeurs
1. Tourou	2,330	-	-	-
2. Soulede	4,570	-	-	-
3. Zamay	1,070	-	-	-
4. Mokong	2,180	-	-	-
5. Mofou	2,000	-	-	-
6. Gawar	1,800	-	-	-
7. Wanarou	1,560	-	-	-
8. Hina Arabak	2,510	-	-	-
9. Mogoue	3,370	-	-	-
10. Bourrah	1,220	-	-	-
11. Guili	1,270	-	-	-
12. Gazawa	1,630	-	-	-
13. Gambourrah	760	-	-	-
14. Boukoula	3,100	-	-	-
15. Mayo Oulo	2,480	77	NA	NA
16. Doumo	800	-	-	-
17. Guirviza	620	-	-	-
18. Bourbeye	1,220	-	-	-
19. Guider	6,200	568	10	35
20. Douroum	4,910	-	-	-
21. Mousgoy	2,380	-	-	-
22. Matafal	350	-	-	-
23. Figuil	2,420	-	-	-
24. Lam	1,760	-	-	-
25. Babouri	1,610	-	-	-
26. Tchontchi	2,580	-	-	-
27. Libe	830	-	-	-
28. Bidzar	1,020	-	-	-
29. Mokolo	7,630	811	22	39
30. Maroua	10,200	1,544	26	43
31. Garoua	9,700	2,445	442	154
Total	86,080	5,368	102	301

SOURCE: Délégation de l'Education Nationale. Unpublished statistics for 1980/81 Academic School Year, Garoua.

TABLE 35.
EDUCATIONAL AVERAGES
UFRD PROJECT AREA, 1980/81

Type of Facility	Teacher/Student Ratio	Classroom/Student Ratio
Primary School	1:57	1:62
Secondary School	1:18	1:28 ¹

1. Data is for 1976.

distribution. This calls for appropriate location of additional facilities and for the improvement of the existing ones.

If national averages were adopted as a means of setting enrollment goals, an additional 62,000 primary school students, more than twice the present number, would be required. It is not felt that this would be a realistic planning goal, given the reticence on the part of the local population to enrolling their children in school. Neither might it be prudent based on the uncertainty of employment opportunities in the area. Therefore, a less ambitious approach has been applied in making proposals for additional facilities meant to fill existing gaps and for future increase in the size of the school age population and their expected enrollment.

This method consists of accepting the existing averages for the project area as standards and applying these to each of the subareas identified. Thus, in each subarea at least 29.7 percent of the primary school age population should be attending school by 1987. In subareas which presently have averages above 29.7 percent, no new goals should be set. However, the ratio should be maintained at that above average level. Project zone averages are also used in determining the number of classrooms and teachers. By bringing below average areas and facilities up to this adapted standard, the overall average will be raised. This method is used in the development of a program to provide primary and secondary education facilities. Secondary schools are proposed for a group of subareas corresponding more or less to their higher level areas of influence. They are recommended only for divisional and subdivisonal headquarters and are thus consistent with the Ministry of Education's standards.

Based on these modified norms, future requirements for the project areas primary and secondary education facilities have been determined for the period

1982-1987. Tables 36 and 37 outline by subarea the type of program necessary for improving access to education services. All existing primary school classrooms of a semi-permanent or temporary nature have been proposed for total reconstruction. By 1987 a total of 760 primary school classrooms and 790 teachers will be required. By the same date 246 secondary school classrooms and 383 teachers will be needed. The latter includes 27 classrooms and 42 teachers in Bourrah and Figuil where none exist at the present time.

The estimated cost of the interventions identified total CFAF 4907.4 million for the period from 1982 to 1987 (Table 38). These figures are for 1981 and have not been escalated in the future.

TABLE 36.

**PROGRAMME DE FOURNITURE DES INFRASTRUCTURES
SCOLAIRES DU PRIMAIRE DANS LA ZONE DU PROJET DES UFRD, 1987.**

Sous-région	Estimation Enfants de 6 - 14	Estimation Inscriptions	N° de salles de classe			N° de maîtres
			Total	Nov.	Entièrement reconstruites	
1. Tourou	3,450	1,025	17	13	-	18
2. Soulede	6,820	2,026	33	19	9	36
3. Zamay	1,620	481	8	2	2	8
4. Mokong	3,160	959	15	9	-	16
5. Mofou	2,970	882	14	5	8	15
6. Gawar	2,720	808	13	7	4	14
7. Wanarou	2,370	704	11	10	1	12
8. Hina Marbak	3,790	1,126	18	12	1	20
9. Mogode	5,080	1,509	24	6	10	18
10. Bourrah	1,850	549	9	2	-	6
11. Guili	1,910	567	9	5	1	10
12. Gazawa	2,430	750	12	-	5	13
13. Gambourrah	1,120	333	5	1	-	6
14. Boukoula	4,660	1,384	22	15	1	24
15. Mayo Oulo	3,740	118	18	4	8	19
16. Doumo	1,190	353	7	-	4	6
17. Guirviza	920	273	4	2	4	5
18. Dourbeye	1,790	532	14	-	4	9
19. Guider	9,380	2,786	45	-	32	49
20. Douroum	7,260	2,156	35	22	7	38
21. Mousgoy	3,520	1,045	17	10	6	18
22. Matafal	540	160	3	1	2	3
23. Figuil	3,660	1,087	18	4	4	19
24. Lam	2,600	772	12	-	7	14
25. Babouri	2,390	710	11	9	1	12
26. Tchontchi	3,870	1,849	19	11	5	20
27. Libe	1,250	371	6	-	5	7
28. Bidzar	1,520	580	9	-	7	8
29. Mokolo	11,520	4,890	79	2	34	60
30. Maroua	27,620	8,203	132	40	6	144
31. Garoua	25,190	7,481	121	-	9	131
Total	151,910	46,742	760	211	187	790

TABLE 37.

**PROGRAMME DE FOURNITURE DES INFRASTRUCTURES
SCOLAIRES DU SECONDAIRE DANS LA ZONE DU PROJET DES UFRD, 1987**

Sous-région	Estimation des adoles- cents de 15-24 ans	Estimation des Inscrip- tions dans le secondaire	N° de salles		N° de professeurs
			Total	Nouvelles	
1. Tourou	2,710	-	-	-	-
2. Soulede	5,350	-	-	-	-
3. Zamay	1,270	-	-	-	-
4. Mokong	2,480	-	-	-	-
5. Mofou	2,330	-	-	-	-
6. Gawar	2,140	-	-	-	-
7. Wanarou	1,860	-	-	-	-
8. Hina Marbak	2,970	-	-	-	-
9. Mogode	3,980	-	-	-	-
10. Bourrah	1,450	413	15	15	23
11. Guili	1,500	-	-	-	-
12. Gazawa	1,910	-	-	-	-
13. Gambourrah	880	-	-	-	-
14. Boukoula	3,650	-	-	-	-
15. Mayo Oulo	2,930	336	12	12 ¹	19
16. Doumo	930	-	-	-	-
17. Guirviza	720	-	-	-	-
18. Dourheye	1,400	-	-	-	-
19. Guider	7,350	1,222	44	34	68
20. Douroum	5,690	-	-	-	-
21. Mousgoy	2,750	-	-	-	-
22. Matafal	420	-	-	-	-
23. Figuil	2,870	336	12	12	19
24. Babouri	1,870	-	-	-	-
25. Tchontchi	3,030	-	-	-	-
26. Libe	980	-	-	-	-
27. Bidzar	1,190	-	-	-	-
28. Mokolo	9,030	1,604	57	35	89
29. Maroua	21,650	1,558	56	30	87
30. Garoua	19,740	1,410	50	6	78
TOTAL	119,070	6,879	246	144	383

1. Il n'ya pas de données sur le nombre de salles de classe existant actuellement au CES de Mayo Oulo. Il est donc supposé que douze nouvelles salles seront nécessaires d'ici 1987.

TABLE 38

ESTIMATED COSTS FOR PROPOSED EDUCATION FACILITIES, UFRD PROJECT AREA.

Period	Type of School	No. of New or Totally Reconstructed Classrooms	Construction Cost per Classroom (CFAF 000,000) ¹	Total Construction Cost (CFAF 000,000)	No. Classrooms Requiring Equipping or Re-equipping ²	Equipment Cost per Classroom (CFAF 000,000)
1982/ 1987	Primary Classes	398	2.8	1114.4	760	0.3
	Secondary Classes	144	2.8	403.2	246	0.3
	Total	542	-	1517.6	1006	-

1. This is the 1981 cost of an ordinary classroom at the primary school level. It is assumed that an ordinary secondary school classroom will cost the same.
2. It is recommended that all existing classrooms be re-equipped.

Type of School	Total Re-equipment Cost (CFAF 000,000)	Number of Teachers Required	Average Annual Cost per Teacher (CFAF 000,000)	Total 5-Year Teacher Cost (CFAF 000,000)	Total Cost (CFAF 000,000) ³
Primary Classes	228.0	790	0.2	790.0	2132.4
Secondary Classes	73.8	383	1.2	2298.0	2775.0
Total	301.8	1173	-	3088.0	4907.4

3. All costs are for 1981 and do not include escalation in the future.

REFERENCES

- Ahidjo, A. 1980. Letemps de la maitrise et du developpement. Boufoussam.
- Barbier, J.C., n.d. Zone de Bobouri (Nord Cameroon). Carte des sols 1/100,000 SSC. ORSTOM, Bondy.
- Beauvilain, A. 1980. Les migrations au Nord Cameroon. Revue de geographie du Cameroon 1(1): 1-3.
- _____. 1981. Notes sur les villes de la Province du Nord. Revue de Geographie du Cameroon 2(1): 25-36.
- Boulet, J. 1975. Magoumoz-Pays Mafa (Nord Cameroon). Atlas des structures agraires au Sud du Sahara. II. Paris: ORSTOM.
- Boutrais, J. 1973. La colinisation des polaiches pour les montagnards du Nord Cameroon (Mouts Mandara). Paris: ORSTOM.
- Brabart, P. 1978. Carte pedologique du Cameroun feuille de bere 1/1,000,000. Carte des contraintes edaphiques 1/1,000,000. Paris: ORSTOM; Yaounde: IRAF/ONAREST.
- Cameroon, Government of. 1975. Carte routiere du Cameroun. Yaounde: Centre Geographique National.
- _____. 1976. Recensement general de la population et de l'habitat. Yaounde: Ministere de l'Economie et du Plan.
- _____. 1977. Recensement solaire du Cameroun, 1976/77. Yaounde: Ministere de l'Education.
- _____. 1980a. Bilan diagnostic 1976/80. Mokolo: Service Departemental de l'Agriculture.
- _____. 1980b. Rapport annuel de 1978/79. Garoua: Ministere de L'Elevage, Sous-secteur de Garoua.
- _____. 1980c. Rapport annuel de 1979/80. Garoua: Delegation du Tourisme.
- _____. 1980d. Propositions pour l'elaboration du plan provincial de la Province du Nord, 1981/86. Garoua: Ministere de l'Economie et du Plan.
- _____. 1980e. Survey of health facilities. Yaounde: Ministry of Health.
- _____. 1981a. Encyclopedie du Cameroun. vols. 1-4.
- _____. 1981b. Rapport annuel de 1979/80. Garoua: Ministere de l'Elevage, Sous-Secteur de Garoua.

- _____. 1982. Rapport annuel de 1980/81. Garoua: Delegation du Tourisme.
- Cameroun Tribune. 1981. No. 1997, February 17.
- Campbell, D.J. 1980. Soil and water resource and land use. Yaounde: United States Agency for International Development.
- Campbell, D., L. Berry, and J. Holtzman. 1980. Preliminary report of a socio-economic survey of the Department of Merqui-Wandale and the Arrondissement of Meri, North Cameroon, April-May 1980.
- Centre Technique. 1979. Conservation des sols au sud du Sahara. Paris: Ministere de la Cooperation.
- Connele, J., D. Biflad, R. Laishley, and M. Lipton. 1976. Migration from rural areas. New York: Oxford University Press.
- Dizain, R. 1954. Densite de la population, demographique, economie rurale dans les sub-divisions de Guider, Kaele, et Yagoua (Nord-Cameroun). Yaounde: ORSTOM/IRCAM.
- Food and Agriculture Organization of the United Nations. 1977. Agriculture census of Cameroon. Rome: FAO.
- France, Government of. Memento a l'agronomie. Paris: Ministere de la Cooperation.
- Fulton, D., et al. n.d. Resource inventory of North Cameroon. Washington, D.C.: United States Agency for International Development.
- Gauthier, J.G. 1973. Les falis du Cameroun septentrional. Paris.
- Johnson, E.A.J. 1970. The organization of space in developing countries. Cambridge, MA: Harvard University Press.
- Jeune Afrique Economie. 1981. December.
- Laclavere, G. 1979. Atlas de la Republique Unie du Cameroun. Paris: Edition Jeune Afrique.
- Lambert, B. 1950. Les populations paiennes du Nord Cameroun. Paris: PUF.
- Lestringant, J. 1964. Les pays de Guider au Cameroun. Essai d'histoire regionale.
- Letouzay, R. 1968. Etude physiographique du Cameroun. edit Paul Lechevalier. Paris.
- Lev, L. 1980. Farming systems. Mokolo: USAID/MSU.
- Marshall, J.V. 1969. The location of service towns. Toronto: University of Toronto Press.

- Martin, J.Y. 1970. Les Matakou du Nord Cameroun. Essai sur le dynamique d'une societe pre-industrielle. Paris: ORSTOM.
- Moukoury, K.H., and R. Pontanier. 1981. Propositions d'actions de recherches pedologiques dans le Nord Cameroun. Nkolbisson: IRA.
- Naah, E. 1977. Etude du Mayo Tsanaga a Minglia. Yaounde: ONAREST/IGRM.
- Pahang Tenggara Development Authority. 1978. A proposed general hierarchy of towns in Pahang Tenggara and implications for the distribution of commercial activities and basic institutional services.
- Podlewski, A.M. 1966. Le dynamique des principales populations du Nord Cameroun. Paris: ORSTOM.
- Pontanier, R. 1981. Rapport de la mission d'expertise autres des projets de developpement integre. Sud-Ouest Benoue (SEB) et Centre-Nord (CN). Nkolbisson: IRA.
- Pontanier, R., and Vieillefon. 1977. Carte des ressources en sol de la Tunisie au 1/200,000. Feuille Gabes St. Chemmokh. Tunis: DRES/ORSTOM.
- Pontie, G. 1973. Les Guiziga du Cameroun Septentrional. L'organisation traditionnelle et se mise en emtestation. Memoires no. 65. Paris: ORSTOM.
- Rhoda, R. 1979. Rural-urban migration. Washington, D.C.: USAID.
- _____. 1981. Guidelines for urban and regional analysis. Washington, D.C.: USAID.
- Rondinelli, D. 1978. Bicol River Basin Urban Functions in Rural Development Project: Summary and evaluation. Washington, D.C.: USAID, Office of Urban Development.
- Rondinelli, D., and K. Ruddle. 1978. Urbanization and rural development: A policy for equitable growth. New York: Praeger.
- Roose, E. 1981. Dynamique actuelle des sols ferrollitiques et ferrugineux tropicaux d'Afrique Occidentale. Traveaux et Documents de l'ORSTOM no. 130. Paris: ORSTOM.
- Segaler, P., and M. Vallerie. n.d. Carte pedologique du Nord Cameroun au 1/100,000. Feuille Mokolo. Paris: ORSTOM; Yaounde: IRCAM.
- Sen, L., R.N. Tripathy, G. Mira, and A. Taka. 1975. Growth centres in Raichur. In An intrepreted area development plan for a district in Karnataka.
- Sieffermann, G., and D. Martin. n.d. Carte pedologique du Nord Cameroun au 1/100,000. Feuille Mousgay. Paris: ORSTOM; Yaounde: IRCAM.

- SODECOTON. 1980. Compte-rendu annuel/Campagne 1979/80.
- Steck, B. 1972. Mokolo dans ses relations avec le milieu rural environment. Cahiers de l'ORSTOM, Serie Science Humaines 9(3).
- Steele, W. 1979. Development of the urban artisinal sector. Journal of Modern African Studies.
- Suchel, J.B. 1972. Le repartition des fluies et les reegimes pluviometriques au Cameroun. CEGET, CNRS.
- Tillemeut, B. 1970. Hydrogeology du Nord Cameroun. Bulletin de la Direction des Mines et de la Geologie (6).
- UNIDO. 1981. Bilou diagnostic du CAPME.
- Vallerie, M. 1964a. Etudes pedologiques dans le Marque-Wendielie/Peimetre Metakam. Paris: ORSTOM; Yaounde: IRCAM.
- _____. 1964b. Carte pedologique du Nord Cameroun au 1/50,000. Feuilles Biotzar et Guider. Paris: ORSTOM; Yaounde: IRCAM.
- _____. 1967. Etude pedologique du Piedmont sud du Peske-Bori au 1/20,000. Paris: ORSTOM; Yaounde: IRCAM.
- Wickman, C. 1981. A study on Cameroonian agro-industries. Yaounde: USAID/Cameroon.
- World Bank. 1980a. Cameroon staff appraisal report: Artisans, small and medium scale enterprise. Washington, D.C.: World Bank.
- _____. 1980b. United Republic of Cameroon: Economic memorandum. Washington, D.C.: World Bank.
- _____. 1981c. World Bank news release. No. 81/26, November 20.
- Zalla, T. D. Campbell, J. Holtzman, L. Lev, and D. Trechter. 1981. Agricultural production potential in the Mandere Mountains in Northern Cameroon. Working paper no. 18.