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

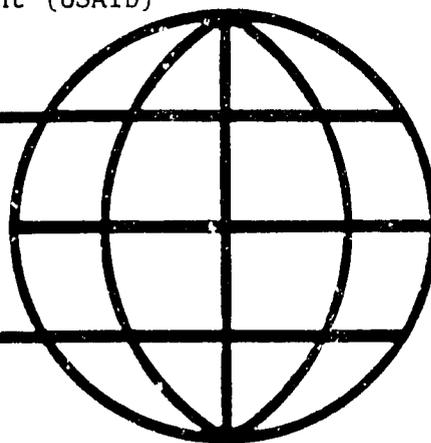
THE CAMEROON URBAN FUNCTIONS IN
RURAL DEVELOPMENT PROJECT:
FINAL REPORT

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)



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INTRODUCTION

This paper reports on the application of the Urban Functions in Rural Development (UFRD) project which was conducted in the Mandara Mountains (see Map 1) by the U.S. Agency for International Development (USAID) in collaboration with the Cameroon Government from 1980 to 1982.

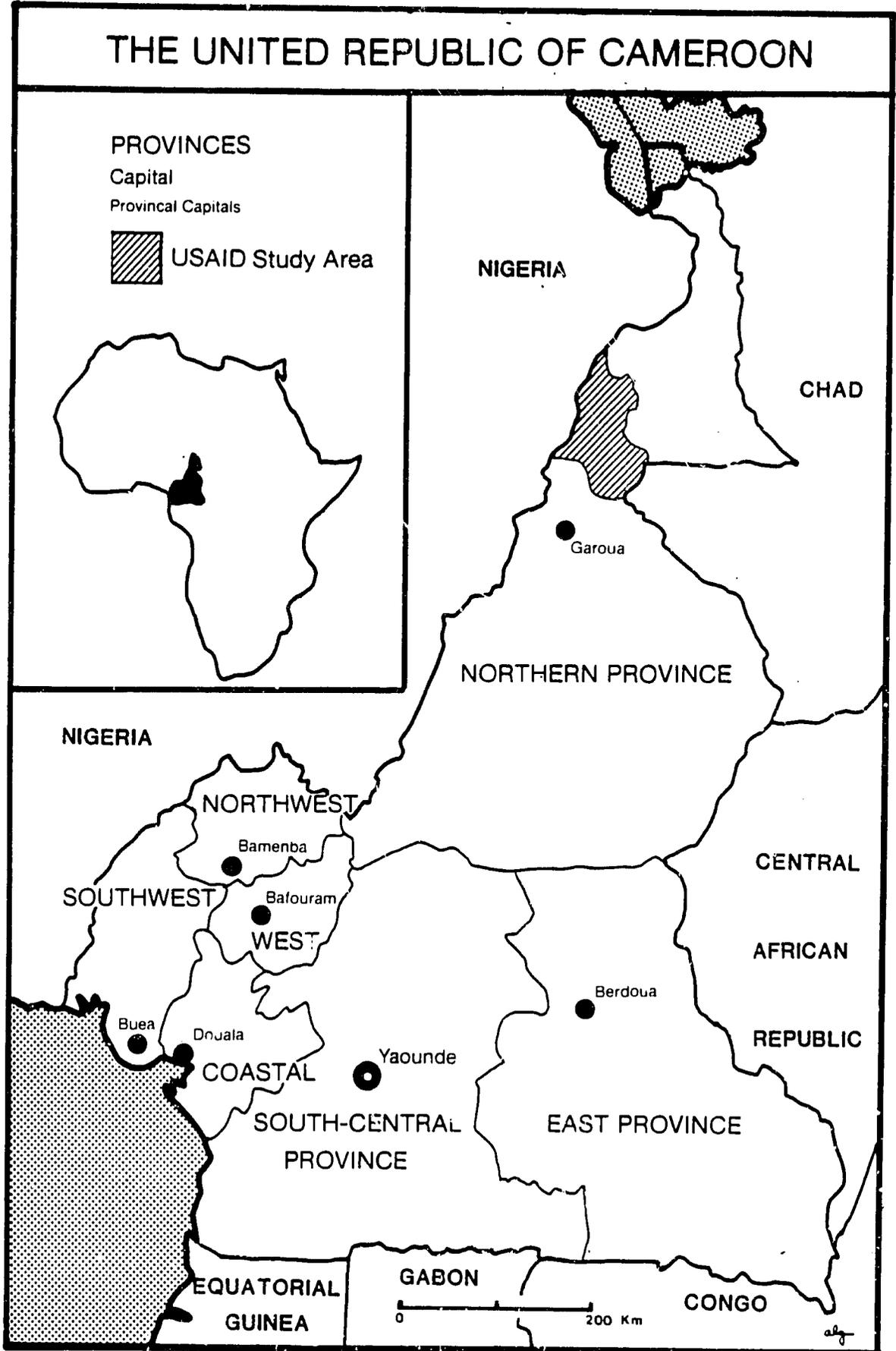
The UFRD Project was developed by the Office of Urban Development, with the Cameroon project representing one of five field applications conducted to date. The Cameroon Mission's decision to collaborate with the Office of Urban Development in the implementation of a UFRD Project was a response to the desire expressed by the Government of the Cameroon to channel growth away from its major centers to secondary towns, permitting the establishment of a more articulated hierarchy of urban centers. The UFRD Project was implemented as part of a broader country development strategy of implementing programs and projects in secondary cities, which both strengthen the cities themselves and support agriculture and rural development.

The UFRD Project

The UFRD Project is well suited to the mission's urbanization strategy because its objective is to develop a strategy and identify projects that will strengthen the capacity of centers at different levels of the city-town-village hierarchy to assist in the development of rural hinterlands. This framework allows consideration of larger secondary cities, such as

2-

MAP 1



Garoua and Maroua, as well as much smaller places possessing important functions and linkages, as potential points of interventions.

The UFRD approach is designed to produce a spatially and sectorally integrated regional plan while addressing local conditions and needs. Spatial integration is accomplished by analyzing and building on the existing settlement pattern to help develop rural areas. As investments cannot be made in all places at the same time, interventions are proposed for centers with strong functional ties to surrounding villages. Thus, the provision of new functions, and improvements to existing ones, contribute not only to the development of the place where the intervention is made, but to the hinterland population as well, since benefits filter down through the hierarchy.

Integration between sectors is accomplished in this approach by applying a spatial model in which development in one sector opens up possibilities for development in another. Such an approach also addresses local conditions by assuming that in any region there is heterogeneity and that social, economic and environmental conditions may vary considerably from one place to another.

The UFRD Project originated from the idea that human settlements have an important role in the development of rural areas. In general, however, this role has been poorly defined and its potential poorly exploited. The project's objective was to describe the role that human settlements can play in the development of rural areas and to apply a regional planning

methodology that could be integrated sectorally and spatially in Cameroon.

Conceptually this study owes much to Johnson (1970) and Rondinelli and Ruddle (1978). Methods and techniques for analysis and planning were drawn from numerous sources, including Rondinelli (1978), Sen, Tripathy, Misra and Thaha (1975) and Pahang Tenggara Development Authority (1978). A general overview of basic concepts, methods and techniques and a listing of additional sources of information is available in Rhoda (1981).

Contents

This paper reports on those aspects of the UFRD Project which constitute the unique contribution of the UFRD approach to more conventional methods of planning. First, the conceptual basis for the UFRD approach is discussed. Following this discussion, the organization of the settlement system in the project region is described, the methods by which the settlement system was analyzed are explained, and the implications of these spatial analyses for planning are discussed. Next, analyses of individual sectors conducted for the project and later integrated with the spatial analyses are summarized. Finally, project findings are enumerated.

This paper is supported by two additional reports which are also products of the project: (i) a profile of Cameroon, and the project region; and (ii) a collection of more detailed sectoral studies that were conducted for the project.

CONCEPTUAL FRAMEWORK

In order to understand the unique contribution which UFRD can make to planning it is first necessary to understand the concepts upon which UFRD rests. Particularly important are the concepts of central place hierarchy: linkages, threshold, range, and economies of scale. These concepts are explained below. By organizing them into a central place "model," the importance of these concepts in understanding settlement patterns and their relationship to development is demonstrated.

The Central Place Hierarchy Concept

Centers may be thought of as comprising a hierarchy in which the position of a center in the hierarchy is determined according to the functions (economic, social and political) which it possesses. The greater the number of different goods and services supplied by a center, the higher its position in the hierarchy.

Higher level places have functions that require support from larger areas of influence and greater population size than do lower level places. Basic to this notion are the concepts of range and threshold. Range determines the geographic extent of the influence of a function. It is defined as the maximum distance which people are willing to travel to obtain certain goods and services (Rhoda 1981). In the case of lower level services, such as a primary school or a low-capacity grain mill, travel of only two or three kilometers might be necessary. For higher order goods and services, such as a hospital or an outlet for the purchase of a moby-lette, it might be necessary to travel more than fifty or a hundred

kilometers. Threshold is the minimum amount of demand needed for an activity to survive (Rhoda 1981). Demand is usually defined in terms of population size. Other measures of demand include an accounting of sales and production. Goods and services of different orders require varying degrees of demand for support. For example, a relatively low level function, such as a dispensary, might require a population of 15,000 for support, whereas a higher order health function could need 100,000 people.

Higher level places have not only unique functions but also offer lower level functions in larger numbers and volume than do lower level places. This is because higher level places are in command of larger areas and customers minimize their travel cost by availing themselves of higher and lower level goods in the same place. Moreover, higher order places have greater economies of scale than lower places because they have more specialized functions and a larger number of institutions providing lower level functions than do lower level places. This acts to attract additional economic activity. Such concentration makes possible "economies of proximity, agglomeration, and specialization and division of labor; opportunities to exploit forward and backward linkages; reductions in transfer and shipping costs; and widening rural market areas" (Rondinelli and Ruddle 1978).

The Linkage Concept

Connecting various levels of the city-town-village hierarchy are a number of functional linkages that can be classified as physical and economic linkages, population movement, and technological, social, service delivery and administrative linkages. Physical linkages consist of transportation networks such as roads, waterways and railroads. Increased linkages of this type may promote growth and diversification in existing settlements or generate new central places by integrating them into the larger national economy (Rondinelli and Ruddle 1978). This would make larger markets for the commercialization of local production accessible and facilitate the flow of inputs to production. In addition to improving economic and technological linkages, transportation networks allow wider opportunities for migration, permit increased access to nonagricultural employment and extend the range of service delivery.

Economic linkages are necessary to integrate settlements into larger production and marketing systems. These linkages include flows of commodities raw material and intermediate goods between the various centers in the hierarchy, income and capital flows, and backward, forward and lateral production linkages. Strong ties of this nature stimulate increased and diversified production and commercialization.

Population movement includes permanent and temporary migration. Strong linkages between low and high level places provide employment and income for migrants, which in turn benefit the place of origin through remittances. Of course, the effects are not always positive, as migration

may drain rural areas of their best talent and overburden public services in major centers where there are few alternative destinations.

Technological linkages are made up of flows of "equipment, procedures and methods of production." These flows might include agricultural inputs, such as improved seeds, fertilizers and insecticides, as well as improved farming techniques. When such ties are weak or absent, the possibility for increased and diversified production is reduced.

Service delivery linkages include education, training, and extension networks and professional, commercial, and technical service networks. These services form a hierarchy with different levels requiring different thresholds and ranges.

Political, administrative and organizational linkages are reflected in government budgetary flows, organizational interdependencies and administrative authority. Through the government structure services, facilities and budgetary resources are distributed throughout the city-town-village hierarchy. Policy decisions made in the capital city flow down the hierarchy to the smallest village in a well articulated spatial system.

The Central Place Model

The following discussion assembles the different concepts already discussed and integrates them into a general model of a hierarchy of centers in Third World nations. According to this model, a nation-wide hierarchy of settlements exist in the Third World countries, consisting of

a primate city, secondary cities, market towns, village centers and dependent villages.

A primate city usually has the largest population concentration and possesses significant economies of scale important for manufacturing and large commercial enterprises. Services and functions found at this level of the hierarchy are of a high order but also include those of a lower order. These higher order functions generally include airports linking the city and the nation to the rest of the country and the world, the headquarters of national and international banking and financial institutions, the headquarters of national ministries and other national governmental organizations, the most specialized technical skills, equipment and repair facilities, and major educational and medical facilities. A primate city usually exerts a powerful influence over all parts of the country and overall levels of the hierarchy of centers.

In this model, the regional or secondary city is defined as:

a regional or provincial economic and administrative center and is the headquarters for specialized government services, such as those concerned with agriculture, health, regional police, and the judicial system. Such cities offer relatively good medical facilities--regional medical offices, hospitals, specialized medical practitioners, large drugstores--as well as public sewer systems, electricity, large post offices, and telegraph and telephone offices. Secondary schools are ubiquitous, and colleges or technical schools have often been established at these locations. Intermediate cities generally function as regional collection and distribution centers, containing large wholesaling and distributing firms in addition to a wide range of general and specialized retail outlets (Rondinelli and Ruddle 1978).

Trade is often channeled through secondary cities to provincial towns and rural areas and from the province to national and international markets. They are usually located on an all-weather road linking them with the primate city and some lower level centers. Secondary cities in Africa have been shown to either attract and hold rural migrants or to serve as a step on the migrant's way to the primate city. Secondary cities are more heterogeneous than lower level settlements. Social linkages exist between secondary cities and higher and lower level centers. At this level of the central place hierarchy there is sufficient population size, service area, and support capability to supply services of a relatively high order. These usually include general hospitals and secondary schools. Politically, administratively, and organizationally, secondary cities form part of a chain that extends from the capital city down to the small villages. Flows work in both directions as in the case of taxes that pass from the rural areas and public budget resources that flow downward from the capital city through the secondary city for the provision of certain services.

The market town or service center characteristically provides some lower level administrative functions: health services, such as well equipped dispensaries; educational services, such as secondary and full cycle primary schools; a small pharmacy; and a post office. Some centers at this level will have domestic electricity and running water. The marketplace begins to replace retail stores at this level of settlement. Retailers provide such goods and services as cement, bicycles, motorbikes, gasoline, radios, repair services for certain consumer durables, improved

seeds, fertilizers, insecticides and plows.

Market towns are often connected to larger centers by a surfaced or all weather road. However, lower level centers are usually not as well linked with the market town. Farm produce moves from the surrounding area, some of which finds its way to larger centers, having been bought and transferred by wholesalers and their agents. Manufactured goods flow to small centers from market towns. Towns at this level of settlement attract migrants when job availability is perceived. Market towns provide different kinds of technical inputs to lower level centers, including physical inputs to agricultural production, methods of production as dispersed by extension agents and the repair of farm equipment. Where these technological linkages are weak or nonexistent, agriculture and rural development will not be maximized. Market towns also furnish a number of social and commercial services to their populations and to those in their area of influence.

Village centers are the smallest central places in the hierarchy in the Third World that still serve a significant hinterland population through the services they offer. These centers often have important market functions which not only act as points of collection and distribution but also attract a wide variety of artisans and repair people. Centers at this level of the hierarchy generally furnish lower level public services such as first cycle primate schools, health centers and agricultural extension posts.

Below this level are dependent villages which possess few, if any, central functions and rely on higher order centers for most or all services and functions.

DESCRIPTION OF THE HIERARCHY IN THE PROJECT AREA

Applying the concepts previously introduced, a hierarchy of functions and centers has been identified, and corresponding hinterlands have been delineated for the project.

Primary data necessary to identify the central place hierarchy were gathered using a questionnaire as survey instrument. Because of the impossibility of surveying all 684 places found in the core project zone, a sample was chosen. Based on the criteria of population size, number of important functions, geographic representativeness, and extraordinary characteristics (such as a large market or an active religious mission), 72 settlements were chosen. For this sample, 75 goods and services were inventoried. An abbreviated list of seventeen functions was established for the approximately 600 remaining villages. In addition, information was collected on the movement of people from their villages to other centers that offer various types and levels of functions. This information made it possible to produce a map of spatial preferences for goods and services at various levels of the hierarchy. In the case of the remaining centers in the core project zone, knowledgeable informants at the level of the canton headquarters were queried regarding the availability of services and

facilities in the villages within their districts. These respondents included those individuals knowledgeable of socioeconomic conditions in the canton, such as the canton chief, the chief's secretary, and respected local elders.

Identification of a Hierarchy of Functions and Centers

The inventory of functions for the 72 centers surveyed was presented in the form of a scalogram. With the help of a scalogram analysis, a ranking and grouping of functions was completed. In some cases, a hierarchy of functions can be identified by using population thresholds. However, population is not always related to the importance of a function in the study area. Therefore, the technique employed for the ranking of functions amounted to the assignment of different weights to different functions on the basis of function ubiquity (Marshall 1969).

Once the weights of each function were calculated, the scores were inspected for natural break points separating levels in the functional hierarchy. Ubiquitous functions that served only the center in which they were located or that were judged to have little development value were excluded from the analysis. Following these calculations, 41 functions were ranked. Three breaks in the ranking became evident and yielded three groups of functions arranged hierarchically. These goods and services are:

Level I

1. Sales point for bicycle parts
2. Sales or distribution point for inorganic fertilizers
3. Sales point for shovels
4. Sales point for shoes

5. Sales or distribution point for insecticides and fungicides
6. Groundnut market
7. Mobylette repair service
8. Cotton market
9. Radio repair service
10. Second cycle primary school
11. Sales point for pousse-pousse
12. CDMP
13. Groundnut sheller
14. Dispensary
15. Extension agent
16. First cycle primary school
17. Sales or distribution point for chemical powder for storage
18. Sales or distribution point for chemical powder for seed protection
19. Midwife
20. Sales or distribution point for improved seeds.

Level II

21. Sales point for mobylette parts
22. Sales point for radios
23. Distribution point fo FONADER credit
24. Agriculture extension post
25. Shop
26. Daily market
27. Sales point for melange
28. Automobile repair service
29. Livestock extension post
30. Soil conservation post
31. Pro-pharmacy
32. Sales point for gasoline

Level III

33. Sales point for cement
34. Hospital
35. Sales point for bicycles
36. Secondary school
37. Telephone/telegraph
38. Sales point for wheelbarrows
39. Sales point for motorbikes
40. Sales point for automobile parts
41. Pharmacy

During the field survey, respondents were asked where the inhabitants of their village went most often for locally unavailable functions. If villagers preferred a center for 35 percent or more of the functions

considered at a particular level, excluding those available locally, an arrow was drawn between the two centers showing the inter-linkage. This exercise was carried out for the 72 selected centers at the second and third levels of the hierarchy and for all project area centers that could be located on existing maps at the first level of the hierarchy. In this way it was possible to identify centers at each level of the region's hierarchy of central places. A series of maps (see appendix) shows actual movement patterns of people seeking functions at different levels of the hierarchy and at the center identified. Hinterlands of designated central places were then determined from patterns of use of functions supplied by that level of the hierarchy and from information on transportation networks and natural barriers.

Based on the methodology of ranking functions as outlined above, a three-level hierarchy of central places has been identified. At a fourth level is Garoua which possesses high level functions influencing not only the core project zone but all of the Northern Province and parts of Nigeria and Chad, as well. This relationship would have become more apparent had still higher level goods and services been included in the inventory. Therefore, four categories of centers will be referred to, indicating a direction from most to least specialization: regional city (Level IV), secondary towns (Level III), service centers (Level II), and village centers (Level I).

Regional city. Garoua is the only center in the project zone which qualifies as a regional city. It not only has high level specialized

functions but also a larger number of lower level functions than are found in all of the less important centers of the region. It can be characterized as a regional economic and administrative center containing most of the higher level economic, administrative and marketing functions in the North. Garoua is well connected to the national network of transportation, as it is located on a national paved road that links North and South Cameroon. However, physical interaction with other urban centers (that is, Maroua and Ngaoundere) is much more significant than with the surrounding rural hinterlands. Additional linkages to the national, and to a lesser extent international transportation system, are provided through its airport. International transportation ties will be significantly strengthened with completion of the international airport.

A relatively well developed infrastructure consisting of social services and facilities that extends beyond the city and its immediate surroundings to serve all of the north can be found in Garoua. Once again, however, it is the inhabitants of other urban centers who are the main beneficiaries of such linkages.

Garoua is the provincial headquarters of the various central ministries based in Yaounde that extend specialized government services to the province through divisional and subdivisional representatives. As a regional distribution center, it possesses a number of large wholesale outlets, including CFAO, CGA, and RW King. These firms are complemented by a range of general and specialized retail outlets, although it must be noted that trade linkages with other centers are sporadic and shortages of

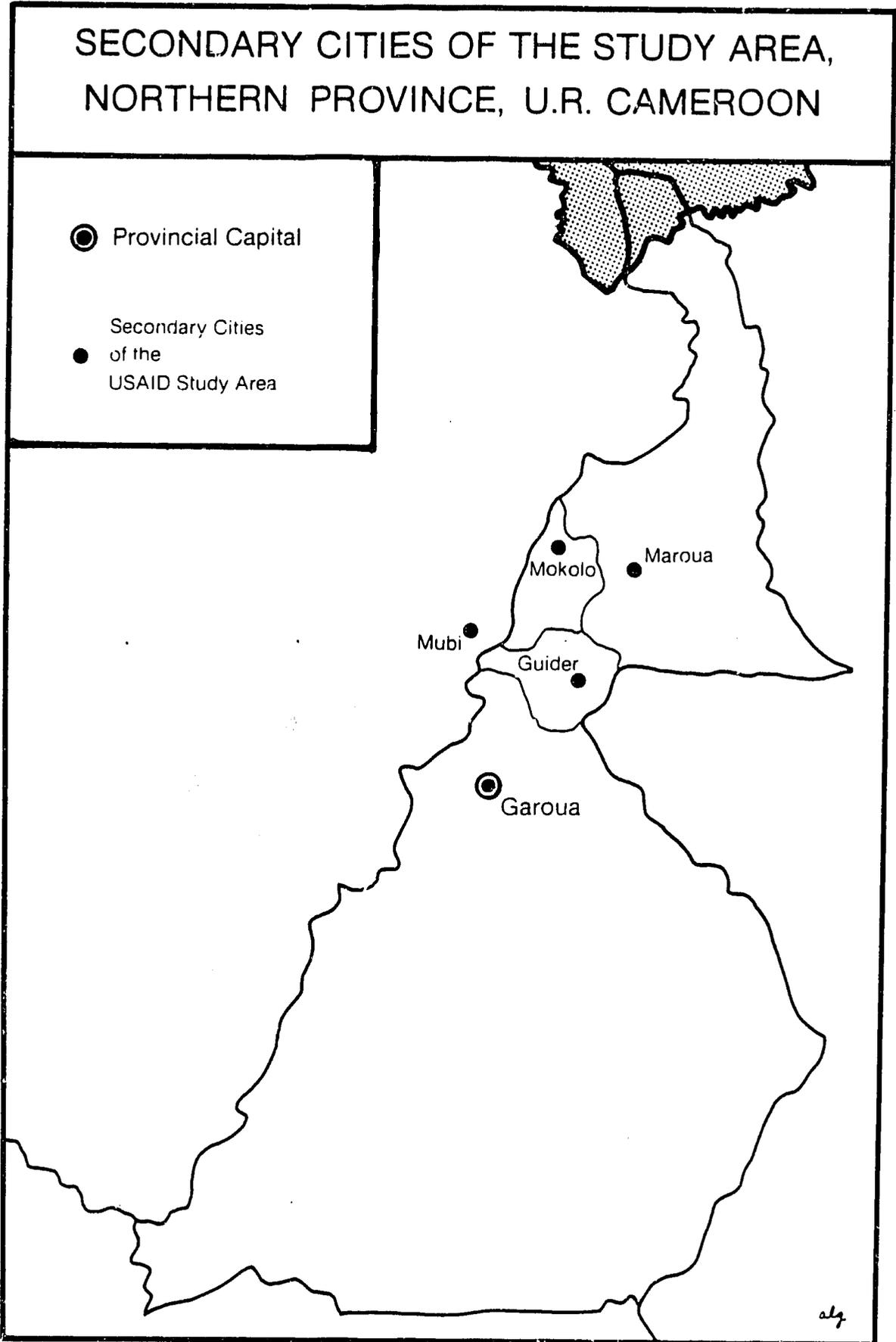
many goods are not uncommon.

In a limited sense, Garoua can also be considered an industrial center. Industrial activity is represented by textile (SODECOTON and CICAM) industries, whose activities are linked to resource areas and markets throughout the region. Due to its role as a regional economic center, many higher level financial, insurance and transportation facilities are located in Garoua. Concentration of economic activity in Garoua and social linkages with the surrounding region have resulted in a population of approximately 60,000 (in 1976) making it one of the fastest growing centers in Cameroon. With a 9.4 percent an annual rate of growth, it is estimated that Garoua will become an urban center of 121,110 inhabitants by 1987 and of 149,100 by 1992.

Secondary towns. This group is made up of Maroua, Guider and Mokolo in the United Republic of Cameroon and Mubi in Nigeria (see map 2). All four centers command more or less significant areas of the core project area through socioeconomic relationships carried on with their hinterlands. Centers at this level provide most or all level three functions (such as pharmacy, mobylette auto parts, and wheelbarrow sales, telecommunications, high school, and bicycle, hospital and cement sales) and generally all functions at lower levels of the functional hierarchy. Mubi is of interest only because it demonstrates the Nigerian economy's important role in the core project area.

Maroua, administrative headquarters of the Diamare Division, had a population of 62,000 in 1976 with a growth rate comparable to that of

MAP 2



Garoua (Beauvilain 1981). Within the core project area, it serves a population of about 140,000. It has good transportation linkages as it is located on a paved road that connects it with Garoua and points south, and has an airport of national standing. Physical connections with smaller towns are not nearly as strong. Like Garoua, Maroua contains wholesaling and distributing firms. However, the retail industry appears to play a greater role in the economic life of Maroua where 21.8 percent of the active population is involved in either handicrafts or retailing.

Specialized goods, such as mobylettes, bicycles, and spare parts for automobiles and wheelbarrows, attract buyers who may travel over a hundred kilometers from smaller centers. Manufacturing employs 13.9 percent of the active population. The two principle subsectors are leatherwork (SCTP) and textiles (SODECCTON). With a growth rate of 10.2 percent per annum it is estimated that Maroua will have a population 84,000 in 1987 and 164,760 by 1992.

Guider is the largest settlement found within the limits of the core project area. With 16,066 inhabitants and a growth rate of 8.2 percent, Guider is a small town in full growth despite considerable population loss through emigration (Beauvilain 1981). Its area of influence covers a population of approximately 162,000. Physically, it is well connected to the larger centers of Garoua and Maroua. Its transportation linkages with smaller places will be strengthened upon completion of the Bidzar-Guider-Dourbeye road. Guider is a sub-regional collection center for agricultural commodities, such as cotton, peanuts and tubers, that originate from its

area of influence and a distribution center for manufactured goods flowing down the urban hierarchy. The sector's cotton production is ginned at the SODECOTON factory and then shipped to Garoua and Doula for further processing. In the case of certain cash crops, Guider links the rural economy and national and international markets. Because of the primary product flows associated with Guider, it has become a subregional center for transportation facilities. Guider's population will be an estimated 30,530 by 1987 and 37,110 by 1992.

Mokolo is the smallest of the secondary towns identified (Steck 1972), with an estimated population of 5,700 persons in 1980 (an estimation based on the number of voters participating in the April 5, 1980 legislative elections that includes the center of Mboua). It serves a population of 86,000 in the core zone. Located in an area with no urban tradition, it owes its development to its origins as a divisional administrative center. Situated at an intersection, it links the plains of the Diamare and Madagali (Nigeria) to the east and west and the plains of Mora and piedmont of Gawar to the north and south. It has above average transportation connections such as the all-weather, unpaved roads leading to Maroua, Mora and Garoua Rhumsiki. It is over these and lesser quality roads that Mokolo connects rural areas within its area of influence to one another and to larger regional and national economies. However, the strength of the physical connections provided by these roads weakens considerably with distance from the centers due to the rugged terrain and poor condition of lower class roads and tracks.

Goods are bought and sold in the Mokolo market by those who inhabit the different ecological zones that surround the town. Groups located in the plains area to the east and the plateau to the south commercialize sorghum which is in turn purchased by the mountain population to the north, typically a deficit area for sorghum. Mokolo also acts as a collection and bulking center as groundnuts, sweet potatoes, fruits, vegetables and cowpeas are assembled there and shipped primarily to the larger northern towns. Some products, notably groundnuts, are transported to southern Cameroon and to international markets.

Mokolo is also a distribution center for products originating in other regions or countries. These include commodities such as manufactured goods, dried and smoked fish, and beef. For its supply of manufactured goods, Mokolo depends principally on Maroua, Nigeria and, to a lesser extent, on Garoua. Smoked fish is bought by local merchants in Maroua and resold principally to the surrounding mountain population. Beef cattle are purchased by local butchers primarily from Gazawa to the east and the plateau region to the south. The butchered meat is sold in Mokolo, 40 percent of which is sold to buyers originating in the mountain areas.

As a trade center Mokolo is of regional significance and has a limited zone of influence: 93 percent of market participants originate within 20 kilometers and 61 from within 10 kilometers. For higher order goods the surrounding population must travel to either Maroua or Garoua.

Through the influence of the Fulbe, Mokolo plays an important social role for its hinterland population. Although a minority group, the socially dominant Fulbe subject immigrants from the surrounding areas to strong social pressure to conform to Fulbe customs. To adopt such customs is considered a social promotion. This phenomenon, together with administrative efforts, has helped integrate the mountain population and develop a regional and national sense of identity. In general, social services provided by Mokolo have a limited impact on the zone's population. As an example, 75 percent of the hospital patients originate within a radius of 10 kilometers, with 45 percent from Mokolo itself. In the case of education the level of primary school attendance drops considerably as a function of distance from the center, especially beyond 10 kilometers.

The administrative structure influences a large area and affects the very lowest levels of the center hierarchy in the Margui-Wandala division. Its influence is felt most through tax collection and the village population's construction and maintenance of local roads. As the Margui-Wandala division has been recently divided into the departments of Mayo Tsanaga and Mayo Sana, this influence will be reduced.

Assuming an annual growth rate of 3.5 percent, Mokolo's population will reach an estimated 7,100 inhabitants in 1987; 8,090 by 1992.

Mubi, located in Nigeria, commands a relatively large area in the core project zone. It maintains strong linkages of a physical, social service delivery, economic and social nature. The strength of these connections is

due to the following elements:

- i) the relative capacity of the Nigerian transportation network;
- ii) better equipped social facilities such as hospitals and pharmacies;
- iii) relatively low priced consumer goods;
- iv) relative availability of agricultural inputs and other technologies;
- v) relatively high prices for some Cameroonian agricultural products, and;
- vi) until recently, the relative strength of the CFA franc to the Nigerian naira.

Service centers. In addition to the secondary towns previously discussed, Mayo Oulo, Hina Marbak, Bourrah, Figuil and Mogode comprise level two centers (see maps in appendix). In terms of population they are less important. They are characterized by some or all of the twelve Level II functions. In the case of the secondary towns, which also comprise this group, Level III functions are usually present. Administrative functions predominate in these centers, all of whom have a poste agricole, which also functions as a formal credit outlet for FONADER, and in some cases a poste d'elevage and poste forestier. They provide an important link between administrative authority located in Garoua or Mokolo and the zone's villages.

Service centers are trade centers that provide specialized goods and services such as gasoline, melange, radios, spare parts for mobylettes, and automobile repair. These places are all located on paved or all-weather

dirt roads which explains the preponderance of transport functions. Most have shops, and some have daily markets. Goods and services are provided to lower level villages after having been passed downward via the larger centers of the region. Some level two centers act as important collection centers for local produce, Mogode, for instance, in the case of groundnuts and Bourah for sweet potatoes.

Although the level of social services is no higher than in some smaller settlements, those located in service centers are usually better maintained, equipped and staffed. Thus, the surrounding population is prepared to travel the extra distance for a reliable higher quality service.

Village centers. There are 29 village centers. This includes the ten already mentioned (excluding Garoua, Maroua and Mubi, which at this level no longer influence the core area project zone) plus the 22 listed below (see maps in appendix).

- | | |
|--------------|---------------|
| 1. Tchontchi | 12. Guili |
| 2. Babouri | 13. Gambourra |
| 3. Bidzar | 14. Mofou |
| 4. Libe | 15. Gawar |
| 5. Dourbeye | 16. Mokong |
| 6. Doumo | 17. Zamay |
| 7. Guirviza | 18. Soulede |
| 8. Lam | 19. Tourou |
| 9. Matafal | 20. Wanarou |
| 10. Douroum | 21. Boukoula |
| 11. Mousgoy | 22. Gazawa |

The central places that most directly serve rural populations are the Level I centers, with an average area of influence between 10 and 15 kilometers. At this level, most centers owe their importance to their administrative functions as either canton or groupement headquarters. They provide the last administrative link between the central authorities and over 600 villages that are located in the project zone. All possess weekly markets of generally low integration levels with higher level centers for the sale of processed and non-processed agricultural produce and locally produced goods (pottery, hoes, shovels, and so on). Such markets also serve as places where non-locally manufactured consumer goods like bicycle parts, shoes, and fabric and technical inputs to agriculture can be purchased. (The availability of agricultural inputs is generally restricted to SODECOTON areas). Most trade is localized. However, some of the centers act as collection points for agricultural produce, groundnuts, cotton, cowpeas and tubers, for instance, that is shipped to higher level centers for consumption or processing. Manufacturing activities at this level are limited and rudimentary. Output from these activities is locally marketed. Since there is little specialized commercial or industrial activity at this level of the city-town-village hierarchy, interactions will be vertical in nature with few inter-village transfers.

While many of these level one centers provide the services of an agricultural extension agent, their ability to improve production practices

is limited partially because of a lack of physical inputs. Thus, technological linkages remain weak.

Much the same is true of schools, health facilities, and other social services where linkages have been weakened by the lack of personnel and supplies. Less than ten years ago most students residing in Margui-Wandala division who wished to finish their primary school education were obliged to go to Mokolo for the second cycle.

Finally, road connections at this level are generally inadequate and therefore reinforce the localized activities of the vast majority of the rural population. Some village centers become isolated for long periods during the rainy season when roads become impassable.

In conclusion, it has been observed that much of the zone's population does not have adequate access to functions necessary for social and economic development due to physical distance and the low efficiency and quality of existing services. Inadequate staffing, equipment and supplies deprive some of the population access to social infrastructure such as school and health facilities.

Implications for Project Identification

Four hierarchic levels were established for the project area. As they are places of different sizes with differing magnitudes of area and population served, different levels also indicate the nature of potential interventions.

Village centers of the lowest level are best suited for the location of small scale social facilities and agricultural infrastructure. For agricultural input purchase and crop production commercialization or processing, the region's cultivators need travel only relatively short distances. In the case of processing units, the range rarely exceeds five kilometers.

In the case of certain social facilities the area of influence is still more limited. Children attending first cycle primary schools seldom travel more than two or three kilometers, although older children are capable of longer distances. Dispensaries command large areas with patients covering up to ten kilometers and more for medical and health care.

For larger scale interventions higher level centers of the third or fourth order are more appropriate. These centers have larger economies of scale, populations, and areas of influence. In the case of a sizeable industrial unit this level is most appropriate. For economic viability, a large industrial plant requires an extensive hinterland to procure necessary raw materials. In populated areas such measures as crop production or areas under cultivation are used to determine demand.

In many cases services or facilities exist at locations and serve a hinterland population, although the quality of their equipment, supplies and personnel are often inadequate. Recommendations will be made for upgrading these existing functions to strengthen linkages for stimulating development in the area commanded by the center.

All settlements, even the smallest, should benefit from public and private investment. Unfortunately, it is impossible to simultaneously locate interventions at all places, due to the scarcity of resources and to the fact that the smallest villages cannot support large scale industry or a secondary school or hospital. However, centers that have hinterlands made up of other centers can support investments of different sizes.

SECTORAL STUDIES

UFRD spatial analysis identifies a number of critical locations of various population and hinterland sizes for project interventions. The precise locations selected depended on the sector and on the size of investment. In order to provide sectoral information, eleven studies were conducted for the project. Summaries of analyses for these eleven sectors in the Cameroonian economy follow.

Administrative Services

Officially, there are eight administrative units (division, subdivisions and districts) in the central zone of the project, two of which were created in December 1981. Before this reorganization, there was one administrative unit for about 85,000 persons in the zone, which is far from the national average of one administrative unit per 41,000 inhabitants. Recent changes have improved the zone's average which is now one

administrative unit for 64,000 inhabitants. This recent expansion of the administrative cover corresponds to the general strategy of the UFRD project which attempts to improve access of populations to infrastructures and services necessary to the area's development. After the creation of these new administrative units and considering the necessity for improving existing centers before December 1981, this study found that there is a need for three new offices for the chief towns of administrative units, six new residences for administrative authorities, five new vehicles, six new guest houses and three hundred and twenty agents in total. The estimated total cost of these improvements is 1.1 billion CFA Francs for the 1982-1987 period.

Agriculture, Livestock and Forest Resources

Agriculture represents more than 90 percent of human activities within the project area. Due to the great diversity of milieux, there is a great disparity in the levels of practices, operations, production, incomes, and environmental consequences of agriculture. Today, with changes affecting the rural population (significant population increases, rural migration, the desire of the rural population to attain a better standard of living), this agriculture which is little organized and not always adapted is generally oriented towards short-term goals. This leads to a profound impact on the territory: degradation and erosion of soils, overgrazing and overexploitation of forest resources, and so on. The medium-term result is a decrease in production.

Problems related to agriculture, especially those concerning natural resources could not be studied exhaustively. However, using surveys carried out throughout the region and inventory studies made locally in four test-zones representing the main ecological areas, an attempt was made to:

- i) identify the main constraints to agricultural development;
- ii) characterize and quantify the present level of crop production;
- iii) propose agro-sylvo-pastoral development schemes, according to existing conditions and the potential of the test-zones. These aim at:

- a) increasing agricultural production through the expansion of cultivated areas with introduction of animal traction, use of fertilizers, use of pesticides, measures against erosion of water and soil resources, and agricultural extension;
- b) improving animal breeding through range management measures (rotation, constitution of fodder reserves for periods of scarcity, adaptation of stock ingrates, creation of watering points), development of domestic breeding for the production of quality meat and using surpluses of agriculture production; and
- c) managing forest resources through the organization of exploitation (temporary suspension of exploitation, creation of communal woods with sequential cuttings), reforestation where possible and according to the means, development silviculture, and training in forestry and animal breeding.

The estimated cost of these interventions during the 1982-1987 period amounts to 3.712 billion CFA Francs distributed as follows:

- 606 million CFA F. for animal traction
- 3.065 billion CFA F. for chemical fertilizers
- 16 million CFA F. for agricultural product processing
- 25 million CFA F. for chemical powders used during storage.

This amount does not include training costs, creation of a loan fund, and exploitation costs of forests (reforestation and silviculture).

Livestock raising is not a primary activity for most people within the project zone. However, the proportion of goats and sheep to the human population is more than double the national average. In terms of a ruminants/technical agents ratio, the sub-sectors of Mokolo and Guider are the poorest in the Northern Province. Within the project zone, there were disparities from one sub-region to another. In order to eliminate these inequalities in the levels of services and to improve the livestock in quantity and quality, the following recommendations have been made:

- 2 new zootechnical and veterinary centres;
- 135 vaccination stations to build or rebuild;
- 6 new livestock dips;
- 3 new slaughter shelters;
- 1 research center for the study of problems related to small ruminant breeding.

The total cost of these interventions, not including zootechnical and veterinary centers and the research center, is estimated at 580.2 million CFA Francs.

Productive Sector

In the central zone of the project, industry is dominated by rudimentary individual enterprises using traditional techniques. The main exceptions to this are the lime quarry and the cementry in Figuil, on one hand, and the cotton ginning unit in Guider, on the other. The other important modern industries are located in Garoua and Maroua. The region

depends greatly on industries concentrated in Douala and abroad for industrial products. Local industry's growth problems appear to center on lack of funds, on investment policy which tend to favor large industries, and on lack of necessary inputs and services in the project zone. In order to create an environment which is more favorable to the growth of the productive sector in the project zone three types of interventions are recommended: the creation of a private fund of about 30 million CFA Francs to allow loans and promote small enterprises; the provision of technical assistance to CAPME so as to extend this support directly to the small enterprises of the project zone (the cost of this intervention would amount to 152 million CFA Francs for 3 years, including the salaries of two experts); and the creation of an office for identification and promotion of agro-industrial projects in the Northern Province (at an estimated cost of 108.3 million CFA Francs for 3 years, including the salary of an expert).

Tourism

The project zone attracts increasing numbers of tourists because of the beauty of its landscape and its proximity to the national parks. The public and private hotel infrastructure has generally kept pace with demand, subject to some seasonal pressures. A plan aimed at continuous geographical expansion of tourism in the region takes into account the improvement of the road network and recommends the creation of a cooperative for handicraft. The construction cost of the 264 hotel rooms and camps which the study found to be necessary to further meet the increasing

demand during the 1982-1987 period amounts to about 4 billion CFA Francs. The restoration of 22 rooms will cost 33 million CFA Francs.

Transports

At the time of the project there were 964 kilometers of roads in the project zone; 53 percent of them were passable only during the dry season. This situation should improve greatly with the completion of the Bidzar-Guider-Mayo, Oulo-Dourbeye and Mokolo-Maroua roads. However, despite this improvement, this study found that significant parts of the highlands in the project zone will remain isolated because all-season secondary roads are insufficient. Such inaccessibility is an obstacle to the region's development. In order to overcome the deficiencies of the present transport system, 9 new road sections with a total length of 162 kilometers were proposed for the region between 1982 and 1987. The cost of the works is estimated at 993 million CFA Francs.

Communications

At the time of the project there were four post offices and four telephone exchange centers in the project zone. Compared to national norms, postal services in the zone were inadequate. Considering the extension of present systems, telephone services appeared adequate, at least for the next five years. In order to remedy the insufficient access to post and telecommunication services in the project zone, it was proposed that an existing post office be rebuilt and a new one created. In order to

increase the efficiency of these services, it was recommended that thirty-nine extra post and telecommunication agents be transferred into the zone. Finally it was proposed that two rural mobile post offices be created for better postal coverage of the zone. The total estimated cost of these measures amounts to 310 million CFA Francs for the 1982-1987 period.

Electricity

The electrification rate in the project zone is largely insufficient compared to national norms. In 1976, only 0.4 percent of all the houses in the zone had electricity, compared to 8 percent for the whole country. The National Electricity Company of Cameroon (SONEL) is now tackling this problem by setting up a network that would link the main towns of the extreme north with thermal power stations, and eventually with the hydro-electric complex of Lagdo. This study found that this network should be extended so as to reach a greater portion of the rural population in order to support the development of small industries and to improve services in schools and health centers. The electrification cost for the eight centers amounted to 710 million CFA Francs between 1982 and 1987. The electrification cost for 18 extra villages from 1987 to 1992 is estimated at 1.5 billion CFA Francs.

Water Supply

According to local citizens, lack of water is one of the most serious problems in the project zone. In villages which are not served by SNEC, wells had an average output of 1.2 liter per inhabitant per day between November and December 1981. For water supply improvement in the thirty-one villages, the following interventions were recommended to take place between 1982 and 1987:

- thirty-nine new wells
- thirty wells redug
- one small water supply system
- one small dam
- one livestock watering point.

The total cost of these interventions, including personnel and necessary extra materials was estimated at 170.4 million CFA Francs. Another amount of 264.4 million CFA Francs would be necessary for the installation of 3,833 domestic connections and 51 foundations by SNEC.

Health

Health infrastructure in the project zone must now serve a greater number of people than those of other areas in the Northern Province. There are also disparities within the project zone among various sub-regions and existing health centers. The Elementary Health Centers (CSE) care for three times as many persons as the official norm. The Developed Health Centres (CSD) of the project zone serve twice as many persons as the Ministry of Health's norms. However, improvement of health services requires both the improvement of care in existing infrastructures and the

construction of new infrastructures. The UFRD project plan for health services recommended construction of two CSEs, one CSD and one urban dispensary. It was recommended that two other CSDs should also be entirely rebuilt and a Mother and Child Care Center renovated. Eleven units of various types needed structural repair, and 38 public infrastructures must be re-equipped. However, the most important costs concerning health services were personnel costs. It was recommended that the number of doctors be raised from 29 to 41 between now and 1987 and to 47 in 1992. It was also recommended that the number of nurses, assistant nurses and other agents reach 537 in 1987. The total cost of the recommended interventions is approximately 1.8 billion CFA Francs for the 1982-1987 period, and to 1.9 billion CFA Francs between 1987 and 1992, calculated on the basis of 1982 prices.

Education

The primary education rate in the central area of the project is one of the lowest in the country; about 13 percent, against 65 percent for the whole country. The factors contributing to this situation are among others, the zone's isolation, the reticence of the local population toward education and the lack of school infrastructure and teachers. The proposed strategy is aimed at the construction or reconstruction of classrooms within the 1982-1987 period and at eliminating disparities by bringing each sub-region of the central zone of the project up to the project zone's general average. This implies the complete construction or reconstruction of 398 primary school classrooms and 144 secondary school classrooms at a

cost of 1.5 billion CFA Francs. The cost of the teaching personnel during the same period would amount to 3.1 billion CFA Francs for the five-year period from 1982 to 1987.

Institutions

In the past, investments in the UFRD project zone have essentially been punctual, sectorial actions, ignoring the complementarity which can exist among the different sectors. In order to make the best use of the recommended interventions, the creation of an implementation body was proposed. This new institution would be in charge of coordinating project activities and collaborating with other regional projects (for example, the Center-North project) and in bordering regions (for example, the North-East Benoue project) in order to ensure greater levels of cooperation among projects.

Two possibilities were advanced to organize and manage the projects identified in the UFRD project zone: i) delegate responsibilities to a governmental unit composed of the Mayo-Tsanaga and Mayo-Louti divisions; or ii) create an independent and temporary development mission, on the North-East Benoue model. It is proposed that advantages and disadvantages of both approaches be discussed with the MINER delegate in the North and other local authorities, before any final decision is taken.

FINDINGS

The project's special, sectoral and spatial analyses made it possible to identify critical conditions in the region and thus to establish a framework for development interventions. Most of these conditions have been referred to in the foregoing. Further description and analysis will be provided in the individual sectoral analyses. All conditions outlined in this section are addressed by the strategy and the projects identified. In summary form these consist of:

- i) a general inadequacy of services, facilities and infrastructure necessary for serving basic human needs and generating economic development for the rural population.
- ii) a concentration of those services, facilities and infrastructure that exist in a few major centers and leave many areas poorly served, if at all. The general pattern is one of small dispersed settlements possessing few if any central functions. Most functions important for rural development are concentrated in Garoua and Maroua and to a much lesser extent in some twenty centers of less importance.
- iii) inadequate distribution of functions is worsened by the weak economic, service and physical link between settlements and between settlements and rural areas. For example, on the average, settlements in the zone are nine kilometers from an all-weather road. Many inhabitants of mountain villages must travel significantly further.
- iv) a lack of specialization between settlements strengthening the core region's dependence on larger centers like Douala, Yaounde and Garoua.
- v) an unequal distribution of the region's population that does not correspond to its productive potential. Twenty-five percent of the core zone population is located in the low potential mountainous canton of Matakam-Sud on only 14 percent of the total surface area.

- vi) important population movements. Generally the zone is losing population through emigration with significant numbers going to Nigeria.
- vii) environmental problems caused by deforestation, over-grazing and destructive cultural practices.
- viii) generally low levels of commercialization and monetarization which limit investment in productive sector activities.

The strategy adopted by UFRD to deal with these conditions consists of the following:

- i) decentralization of investments to village centers and in so doing:
 - a) improve access of the rural population to services, facilities and infrastructure;
 - b) strengthen linkages between settlements and the rural population;
 - c) improve the development of the settlement hierarchy of the zone;
 - d) reduce the intra- and inter-regional disparities.
- ii) creation of a better distribution of the region's population by:
 - a) facilitating emigration through such interventions as education and road infrastructure;
 - b) preparing the population for emigration by teaching them better agricultural techniques.
- iii) introduction of more intensive cultural methods and soil conservation measures.
- iv) public interventions in support of private enterprise.

By using the strategies summarized above, an integrated regional development plan for the departments of Mayo Tsanaga and Mayo Louti and the urban centers of Maroua and Garoua was developed. Twelve sectors were

examined: administrative services, agriculture, forestry, livestock, productive sector, tourism, transport, communications, electricity, water supply, health and education.

The plan is integrated both functionally and spatially. Functional integration of the twelve sectors was made possible by using a framework whereby interventions in one sector complement those in another.

The application of this framework is made vividly clear in the case of agricultural development. Proposals were made for increasing agricultural production through the increased application of agricultural inputs. However, in order to make such inputs available better roads and a reliable system of supply and increased credit are required. Furthermore, these same improved roads as well as increased processing units and storage chemicals are necessary to handle projected expanded production.

Spatial integration was made possible by the use of the existing urban centers (regional city, secondary towns, service centers and village centers) in planning for the development of rural areas. Thus, interventions were proposed for selected settlements in response to the development needs of their rural hinterland population.

Conclusion

The project area is a veritable prototype of an economically backward area suffering from years of neglect. It is typified by a general inadequacy of services, facilities and infrastructure when compared with

provincial and national averages; a geographic concentration of existing services; weak economic, physical and service linkages that reinforce the region's physical isolation. The region also suffers from generally low agricultural potential with potential scope for expansion and intensification; diminishing agricultural potential due to deforestation and overgrazing; population distribution that does not correspond to the area's potential; and levels of monetarization and limited access to capital.

Broadly, the strategy elaborated by UFRD proposes greater decentralization of investment, a better distribution of the region's population, expansion and intensification of agricultural production and public support of private enterprise. This general approach has been adapted to the region's sub-areas taking into account the differences in micro-level conditions.

APPENDIX

POPULATION MOVEMENTS BY SETTLEMENT LEVEL

A. Settlement Level III	43
B. Settlement Level II	44
C. Settlement Level I	45

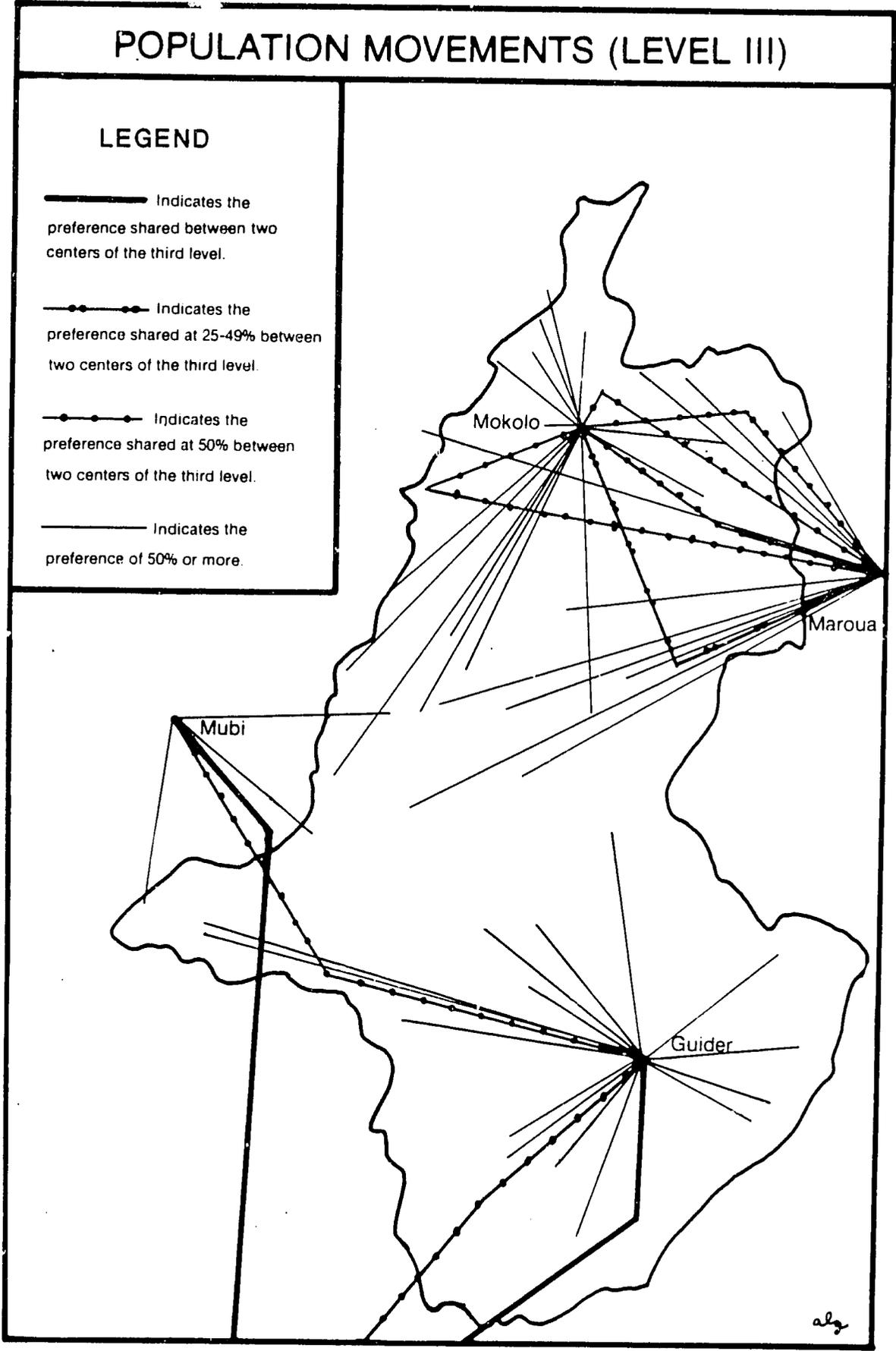
-43-

MAP A

POPULATION MOVEMENTS (LEVEL III)

LEGEND

- Indicates the preference shared between two centers of the third level.
- Indicates the preference shared at 25-49% between two centers of the third level.
- Indicates the preference shared at 50% between two centers of the third level.
- Indicates the preference of 50% or more.



alg

MAP B

POPULATION MOVEMENTS (LEVEL II)

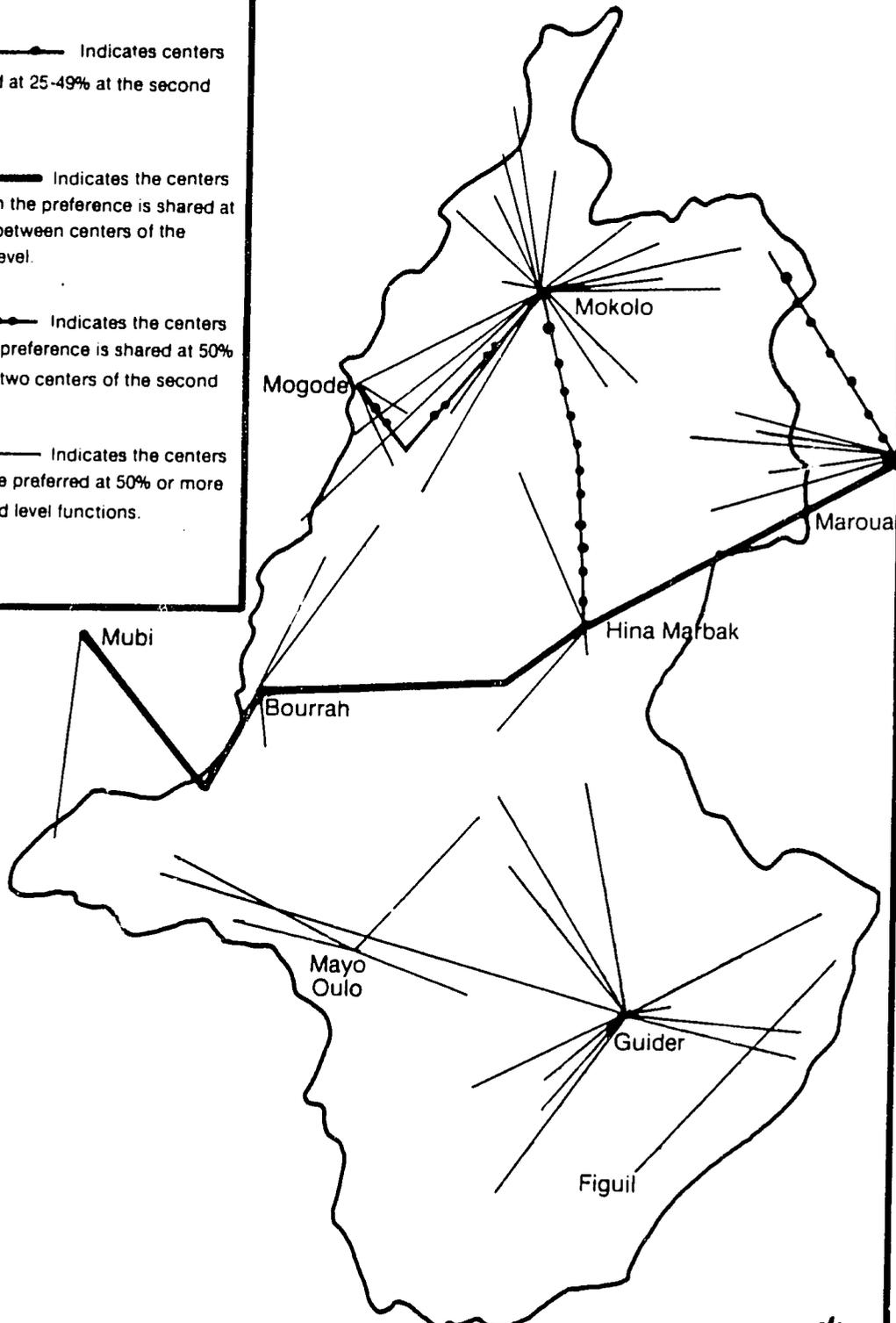
LEGEND

—●—●—●— Indicates centers preferred at 25-49% at the second level

———— Indicates the centers for which the preference is shared at 25-49% between centers of the second level.

—●—●—●— Indicates the centers of which preference is shared at 50% between two centers of the second level.

———— Indicates the centers which are preferred at 50% or more of second level functions.



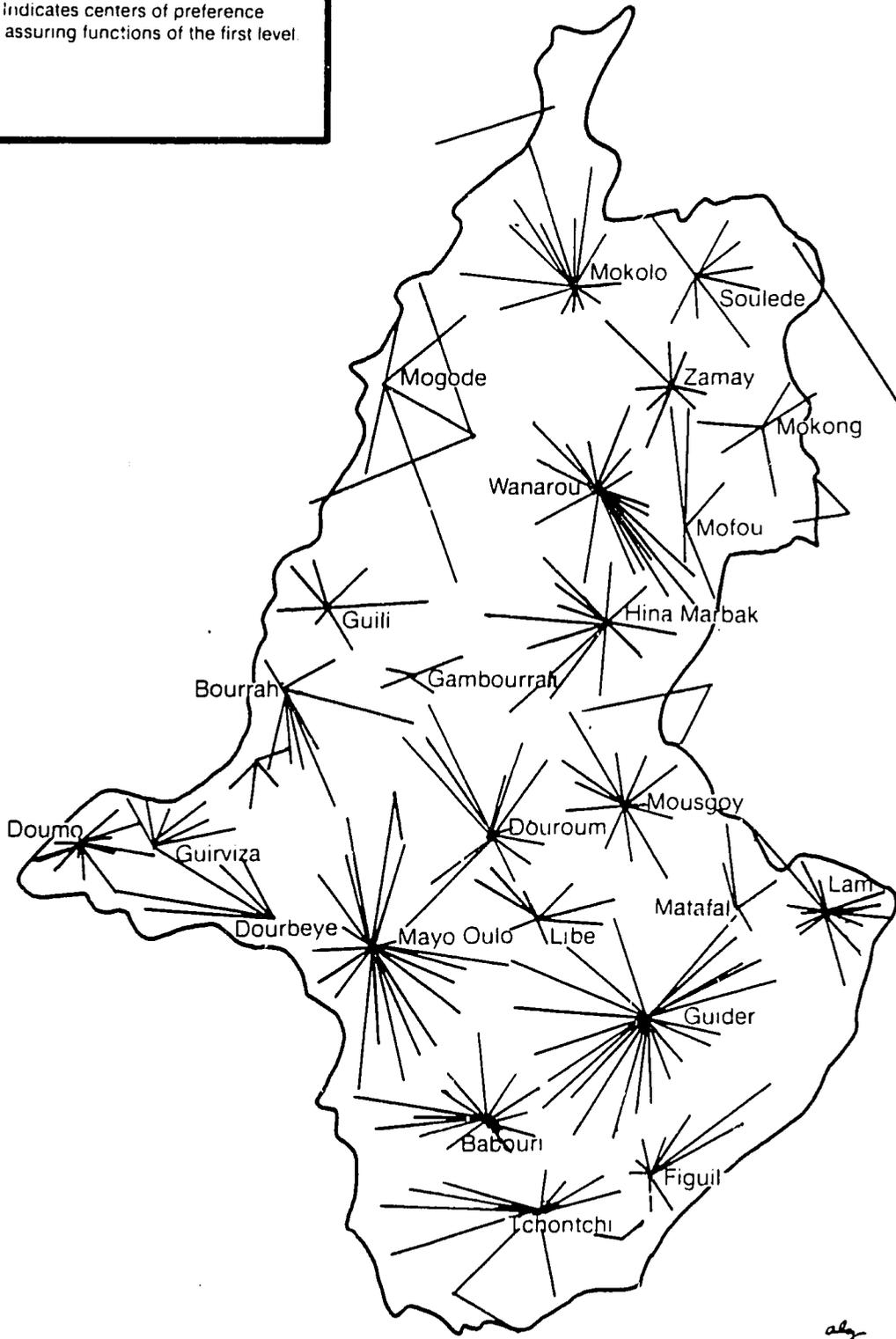
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MAP C

POPULATION MOVEMENTS (LEVEL I)

LEGEND

— Indicates centers of preference assuring functions of the first level.



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