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SYSTEM FOR RESEARCH
ON THE SOCIAL ASPECTS
OF ROAD USE AND MAINTENANCE

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TABLE OF CONTENTS

Table of Contents		
I	Executive Summary	p 1
II	System for Research on the Social Aspects of Road Use and Maintenance	p 7
III	Findings	p 14
	National Level	p 14
	Regional Level: Ndjamena-Ngoura	p 14
	Village Level: Ndjamena-Ngoura	p 19
	Regional Level: Ndjamena-Guelengdeng	p 22
	Village Level: Ndjamena-Guelengdeng	p 26
	Household Level	p 29
IV	Recommendations	p 32
Annex I	Contents of Tables Tables	
Annex II	Questionnaires	
Annex III	Organization of Report	
Annex IV	Scope of Work (English and French)	
Annex V	List of People Met	

EXECUTIVE SUMMARY

SYSTEM FOR RESEARCH ON THE SOCIAL ASPECTS OF ROAD USE AND MAINTENANCE

The construction, repair or maintenance of a road can have a social impact on people living near the road. But social factors are often neglected even though they, as well as technical considerations, should influence decisions on road work. As part of its Strengthening Road Maintenance Project, USAID/CHAD has financed the development of a system which will allow the Ministry of Public Works, OFNAR, and USAID to make construction and maintenance decisions which take social factors into consideration. They can also track a road's impact through the follow-up data this system can provide.

Most road project designs are based on technical considerations only. Over the years, however, USAID has committed itself to using its funds to improve directly people's lives. It is for this reason that USAID/CHAD asked a consultant anthropologist to study the impact of the Strengthening Road Maintenance Project on the people touched by the roads and to make recommendations on ways to ameliorate the impact on the people without, at the same time, compromising the technical outcome of the project. A project which takes social as well as technical factors into consideration is likely to implement activities which engineers would not, by themselves, have considered in the technical solutions. In the case of this project the recommendation of the consultant anthropologist could increase the economic benefits to rural Chadians.

Purpose of the System:

This methodology can yield baseline and follow-up data for assessing the social impact of a road. The elements of the system have been written in French so that the Ministry of Public Works, OFNAR or any other donor working in Chad can use this tested methodology.

The system consists of:

- 1) sampling procedures
- 2) questionnaires for eliciting information on target areas at the national, regional and local levels
- 3) provisions for ongoing data collection
- 4) guidelines for data analysis
- 5) report format

Methodology:

A consultant sociologist/anthropologist and two sociologists seconded to OFNAR by the Ministry of Public Works developed and tested a series of

questionnaires in over 146 interviews. They gathered and reported on information collected at the national, regional and local levels concerning the social impact of the recently rehabilitated Guelengdeng-Ndjamena-Ngoura road. The two Ministry sociologists are to be commended for their excellent work.

This report:

This report makes recommendations on road construction and maintenance based on information discovered using this methodology along the Guelengdeng-Ndjamena-Ngoura road. These recommendations are based on social considerations only, not technical ones. This report also outlines how to use the system and contains all the elements of the system so that they can be reproduced and used again on other occasions. Finally, it discusses in detail the data gathered during the test trials and the conclusions and recommendations arrived at.

RECOMMENDATIONS

Based on the results of the 1988 USAID/OFNAR social survey along the main road covering Guelengdeng-Ndjamena-Ngoura, the consultant sociologist makes the following recommendations:

1) Road Improvement and Maintenance Standards: At present, although sections of main roads are being or are projected to be rehabilitated, it is likely that some sections of rehabilitated roads and of other parts of the national road network will become nearly or completely impassible during certain periods of the year due to difficult physical conditions and the absence of a system of routine maintenance. The main roads to Sarh, Moundou and Abeche should continue to be rehabilitated to acceptable, not high standards, according to present plans; however those sections of the national road network, whether included in the rehabilitation already funded or not, which are passable only with difficulty or which become impassible at certain times of year should be improved so that traffic can flow year round. Once these improvements have been made these roads should be maintained as they are and not further improved. Any savings which might accrue because the road is not raised to high standard should be used on other parts of the road network leading to important administrative centers and on economically significant secondary roads.

Justification: The survey showed that many users of the national road network would rather get most places year round at a slow but steady pace than get some places fast and other places not at all. In a country like Chad with a relatively low road density, maintaining a larger network to a lower but still adequate standard is more important to rural inhabitants than expensive rehabilitation to a high standard of a smaller network.

2) USAID should discover if any technology or technologies can adapt water points dug for road work to everyday use by villagers or herders. If it is possible to adapt water points USAID should foster joint road/water projects or joint road/water/livestock projects.

Justification: Water for road construction and maintenance is obtained from bore holes dug approximately every twenty km. when surface water is not available. Since one of the local populations' greatest needs is for potable water adapting, rather than simply capping, road work bore holes can help meet this need. Moreover, livestock herders at present cannot use the good pasture which can still be found in many areas, despite decreased rainfall, because these areas lack water points. Access to water from bore holes dug for road work in arid areas would allow herders to use this pasture land. Such access would also avoid one of the serious problems with most livestock projects: overgrazing in the few places water is available. With water sources only twenty km. apart, the cattle are less likely to overgraze. Increased livestock production will not only benefit the herders, an at-risk group, but the national economy.

3) The Ministry of Public Works and OFNAR should do road works, especially routine maintenance but also some aspects of periodic maintenance and rehabilitation and construction, using local hand labor and low-level technology when technical conditions (soil conditions, road use, standard to which road is to be built) and social conditions (sufficient number of people interested in road work and free to carry out road work at the proper time) will allow. This sort of labor-intensive road work would be intermediate between capital/machine-intensive road work and solely labor-based road work. Substituting human labor for machines when possible may mean that on main highways labor-intensive work will be limited to culvert-cleaning and roadside cutting whereas secondary roads, built to lower standards, could use jobs such as pothole filling. Rural roads construction and maintenance are even more appropriately carried out in great part using labor-intensive techniques.

Justification: A number of local people want to be hired in order to increase their income. Many of them are in great economic need of such employment (see annex 2: tables 3,4,17,18). Hiring people for road work when the technical conditions allow will help raise rural incomes and bring direct economic assistance to needy individuals and their families. Although labor-intensive road work means that the Ministry of Public Works and OFNAR will have to adopt some different management methods, by hiring Chadians whenever possible the Ministry of Public Works and OFNAR will save more on foreign currency expenditures than if they did totally capital/machine-intensive road work.

It has also been the case that road maintenance falls in some countries in part because it is based on capital intensive means which require a constant input of foreign exchange. In a country where this is a constraint using more labor-intensive means which require a lower level of foreign exchange may actually lead to better highway maintenance.

4) The Ministry of Public Works and OFNAR should revamp their hiring and bookkeeping procedures to facilitate hiring local laborers. Changes are needed whether or not OFNAR and the Ministry of Public Works adopt a policy of doing labor-intensive road work when appropriate. Changes needed are:

a) reduced and simplified paperwork

b) publicity: Public Works and OFNAR need to publicize their intent to hire local labor

If OFNAR and the Ministry of Public Works intend to use labor-intensive methods they should also consider:

c) flexibility: hiring people to do a specific job or to fill a daily quota or hiring them for odd hours such as late afternoon

Justification:

a) Some Gannett-Fleming personnel feel the paperwork necessary to hire and fire local labor is too cumbersome, inhibits the use of Chadian labor and uses up personnel's time. Another impediment to efficient use of Chadian labor is the requirement that workers be hired for a month at a time. Should Public Works and OFNAR use labor-intensive methods when suitable further simplification of paperwork will be necessary since most local workers cannot read or write and so cannot deal with much paperwork

b) Many villagers are reluctant to take the initiative and ask for a job even though they are eager to be hired. They must be told their labor is desired

c) Most local people are busy doing subsistence farming in the rainy season, precisely the moment when constant minor repairs can prevent a road from deteriorating. Local people could work, however, at odd times such as late afternoon when work in the fields is less pressing. Length-man maintenance or part-time jobs are ideal for this rainy season situation. In the dry season local people are available for full-time employment. All this would require flexible hiring procedures.

There is considerable experience in Africa with the introduction of labor-intensive methods of road construction, rehabilitation and maintenance. The precise mix of labor and equipment depends on many economic, technical and social factors and on the receptivity of aid donors and recipients to these methods which have substantial benefits for developing countries in terms of employment creation, etc. In some countries where labor-intensive methods have worked in pilot projects their expansion has been prevented by the fact that many engineers prefer to deal with equipment than to manage people. Engineers need to be trained in using and managing labor-intensive methods.

5) In the near future the Ministry of Public Works and OFNAR should use Food For Work in areas where a social survey has shown that local workers would like Food For Work payments.

Justification: With decreased rainfall subsistence farming and herding no longer suffice to maintain many families. Some people are in such economic straits that they would prefer Food For Work or Food For Work with a little cash to cash payments for a job. Road work with Food For Work can help alleviate poverty and malnutrition in these areas. Once the economic condition of an area has improved Food For Work should no longer be used. It is improbable in any case that local workers would request Food For Work once they have managed to raise their standard of living to the desirable minimum.

Food For Work would also supplement the resources that the Ministry and OFNAR have at their disposal; since Food For Work is usually subsidized they can use money saved from not paying cash wages for other purposes. Paying with Food For Work or Food For Work and cash will necessitate more flexibility in their bookkeeping procedures (see recommendation 4).

6) The Ministry of Public Works and OFNAR should encourage their employees to purchase food locally in areas where women are interested in selling food in order to increase women's incomes.

Justification: Since both men and women in the areas surveyed agreed that road work is not suitable for women but that selling food is, the condition of women can only be improved by contributing to their incomes through local purchases of food. If the Ministry and OFNAR pay locally hired men with Food For Work, inclusion of a small cash component will allow workers to buy snacks, etc. from the women. Even minimal purchases by road workers can have a substantial and direct positive impact on women's income. What may appear to be an insignificant amount of money, say 200 fCFA/day from four workers each making a 50f purchase, would increase a vendor's average income for the month(s) the road crews are stationed near her village by 240% on the Ndjamen-Ngoura road and 40% on the Ndjamen-Guelengdeng road. Since these vendors usually recirculate their income with the purchase of food, school supplies and clothing for their children, economic, nutritional and educational benefits go directly to women and children, those who suffer most from poverty.

7) A follow-up social survey should be done just after the rainy season, in October or November 1988.

Justification: Road work done during and just after the rainy season gives the best results with a minimum of investment. A follow-up study may show that road work during this period ran into difficulties. It is also important to see if follow-up data show that the social composition and economic condition of the areas surveyed have changed so much during the rainy season that these recommendations should be altered or supplemented. Also the social survey system, although already fairly comprehensive, can be expanded to gather more useful information on overall transport demand, the purpose, mode and

seasonality of villagers' travel and on prevailing rates and opportunities for wage labor in areas surveyed.

II. SYSTEM FOR RESEARCH ON THE SOCIAL ASPECTS OF ROAD USE AND MAINTENANCE

The construction, repair or maintenance of a road will have an impact on the people living near the road, by bringing in new traffic or speeding up its flow through an area, for example, or by offering new economic outlets in places now easily accessible or damaging local markets where people no longer stop. The local population can also have an impact on road construction, repair and maintenance: will the population make enough food available locally to feed work crews, will local people join road gangs or must outside workers be brought in, etc? The answers to these and many other questions depend on social factors in the target area. Social factors, unlike technical ones, are often overlooked or dealt with only ad hoc, as when, for example, OFNAR and Gannett-Fleming found that their road crew was unable to buy food in their camping area. However, with forethought and planning the impact of a road on a given area can be followed or reconnaissance can be undertaken in an area destined for construction or maintenance.

PURPOSE OF THE SYSTEM:

In conjunction with USAID/CHAD's Strengthening Road Maintenance Project an anthropologist hired by USAID/CHAD and two sociologists attached to the Ministry of Public Works have developed and tested a system for considering social factors in road construction, repair and maintenance. Forearmed with this system OFNAR, TP and others can undertake reconnaissance and research in target areas. The system is designed to yield both baseline and follow-up data so that the social impact of a road can be assessed. Likewise reconnaissance of an area can be repeated from time to time to reveal whether a situation has changed e.g. people may have been willing to do road construction for Food For Work before but having had a good harvest they may now prefer cash payments. To decide on road maintenance one needs to know sociological as well as technical information such as the purposes for which the road is used as well as the traffic level and also the human as well as material and financial resources available (p. 5, de Veen, J.J., The Rational Utilization of Available Resources for Road Improvement and Maintenance: Alternative Approaches to Road Maintenance: 4th African Highway Maintenance Conference, Harare, 1987).

THE SYSTEM:

The system (see annex 1) consists of:

- 1) sampling procedures
- 2) questionnaires for eliciting information about a target area at the national, regional and local levels
- 3) provisions for ongoing data collection
- 4) guidelines for data analysis
- 5) report format

HOW THE SYSTEM WAS SET UP:

The USAID anthropologist and the two TP sociologists discussed with OFNAR and TP officials and USAID/CHAD personnel what information on the social situation of an area these officials need to do their jobs well. The team designed questionnaires to evoke the necessary information at the local, regional and national levels. The team then tested these questionnaires in interviews with road users such as the Commercial Director of the National Grain Office (ONG) at the national level, the Chief of the Administrative Post of Massaguet at the regional level, and numerous people living along the Ndjamenan-Ngoura and Ndjamenan-Guelengdeng roads. These two axes were selected first because the inhabitants practice two modes of living widespread in Chad: sedentary agriculture and agropastoralism. The questionnaires developed for these two areas can, therefore, be used throughout much of Chad. Second, the Ndjamenan-Guelengdeng road was chosen because it is a project area for USAID/CHAD's Strengthening Road Maintenance Project. Third, the Ndjamenan-Ngoura road was picked because OFNAR and Gannett-Fleming requested sociological information about this region.

The questionnaires were tested, modified, and retested again. A question does not always lead an informant to answer giving the information desired and the question must, therefore, be reframed or changed entirely. Testing also discloses the need to examine certain additional areas of social life if all the factors influencing a situation are to be understood; questions concerning these areas can be added and tested as well.

Once most of the sample population had been interviewed and all the questionnaires tested the sociologists analyzed their data according to the guidelines they had developed.

USAID'S AND OFNAR'S NEED FOR INFORMATION:

Both OFNAR and USAID/CHAD sought information on the local recruitment of road crews. For each segment of road being maintained they wanted to be able to obtain information on the availability and interest of local workers and the procedures to follow in hiring people for road work. USAID/CHAD desired baseline data and a plan for follow-up studies in order to identify and monitor the consequences of road maintenance at the individual household, community and regional level. OFNAR and TP cited their problems in finding food and water for their work gangs as well as water for use in road work. So they asked for preliminary information which would be useful in deciding where to locate in an area and whether to bring in outside crews.

INFORMATION OBTAINED BY THE QUESTIONNAIRES:

The questionnaires were designed to evoke information on the following:

- population centers in the target area
- demographic and structural characteristics
- regional and community patterns

- economic resources of the region
- production systems
- temporal cycles
- interest and availability for road work of men and women
- kinds of work which interest the local population
- availability of food
- water points
- types of transport used
- problems encountered by road users
- minimal household incomes and expenses
- the condition of women

Follow-up studies will reveal growth and change in the above.

WHO CAN USE THE SYSTEM:

The system was designed with the information needs of both OFNAR and TP as well as USAID in mind. The two Chadian sociologists are attached to the Surveyor's Office in The Ministry of Public Works and Urbanism. For this particular study they were seconded to OFNAR. Both TP and OFNAR have, therefore, access to sociologists who have experience using this research methodology. Using the same sociological system, TP and OFNAR can cooperate on road construction and maintenance and coordinate to avoid road degradation (Gorski, M.M., Maintenance of Gravel/Earth Roads, Workshop II: Road Research and Its Application to Maintenance, ECA, Harare, 1987).

The questionnaires, etc., are written in French so that anyone, whether the GOC, USAID or some other non-English speaking outside donor working in Chad can use the system. The problem of translation of the questionnaires into local languages for interviews with informants is a separate matter. No matter what language the questionnaires use they will in most cases have to be translated into a local language. The three sociologists combined were able to speak with informants in Chadian Arabic, Sara, Ngambaye, Mousseye and Massa; no other language was necessary in this survey area. On other occasions it may be necessary to use a translator.

Because the questionnaires were specifically designed to discover the information desired by OFNAR, TP and USAID/CHAD some of the questions can easily be dropped if such information is not needed by the institution using the system. Another donor may find it wants to modify the questionnaires to put more emphasis on a particular topic. But the tested questionnaires cover the basic social and economic topics most donors consider.

HOW TO USE THE SYSTEM:

Sampling Procedure:

The sampling technique uses maps of the target area which indicate the location and names of villages. Maps of French Equatorial Africa and Cameroon, published in 1958 by the Geographical Service of French Equatorial Africa and Cameroon, on the scale of 1:200,000 have the necessary detail.

Other maps of some areas which are on the same scale can be found at the Surveyor's Office at TP. On the map the road or proposed trajectory is then divided into segments the equivalent of 30 km in length and spreading 5 km on either side of the road. (Henceforth this report will refer to "road segments" meaning not these sampling segments but rather the road lying between two well-known towns, in order to orient the reader.)

Initially the team surveyed a strip 10 km. wide on either side of the road in order to determine how far the road's influence spreads into the interior. Our experience showed that even 5 km. from the road its influence is negligible or none. Other survey teams should pick a few villages beyond 5 km. to see if their sample area needs to be broadened, especially if villages farther than 5 km. are included in development schemes. Such villages may be more dependent on the road.

The villages contained in the segments 30 km. long and 10 km. wide (5 km. on either side of the road) constitute the total population to be sampled. In prefectures, sub-prefectures or cantons where officials have kept census information the team can easily determine population centers for each segment by using this information. Where such data is not available regional officials can give information about the relative importance of different villages and the team can take a rough count in each village with the help of the village chief.

The team then numbers the villages located within a 30x10 km. segment and selects 5% of the villages in that segment by random numbers. If 5% is not a whole number the numeral is rounded to the next highest number; 3.2 villages becomes 4 villages, or if there is only one village in a segment that village is sampled. Because available maps are quite old some villages have moved outside the target area since the maps were drawn. Some places marked as villages are just geographic references. Some villages seem never to have existed, or at least were unknown to people who had lived in the area since before the maps were drawn. In this predicament the team selected by chance another village in the same sector as a substitute (see annex 2 tables 2,3,4).

The 5% figures for the number of villages to be sampled should be modified if the purpose of the study requires. 5% has been taken as the minimum for gathering baseline and follow-up data which is then complemented by information collected at the regional and national levels. A reconnaissance study on water points, markets and availability of food should increase the percentage of villages covered but visit them more rapidly than a study of a road's impact on production systems, which explores in depth the production activities of a more restrained number of informants.

Next in the sample selection procedure the team visits the randomly selected villages. On their arrival they make a rapid sketch of the village layout, then divide the sketch by a grid. Within each square they select one habitation for investigation. The head of the household, spouses and other active adults living there can then be interviewed. The number of squares to the grid a survey team uses depends on two factors. The primary determinant should be the purpose of the study. A study to discover availability of labor

should cover more households than a study about the impact of a road on household economy. The former demands a finer grid yielding more sample households. An impact study needs in-depth information on households from a larger grid.

The second determinant of sample size is the resources available for the study. More time and/or more surveyors permit a larger sample size. The larger the sample the more accurate the information becomes. The size of the sample to be studied is thus determined by the optimal mix of the purpose of the study and the resources available.

Budgeting: The three person USAID/OFNAR team working from 7:30 to 21 hours covered an average of three villages a day with 4-6 interviews in each village, a wearing pace. A design team can calculate a road survey's costs using these figures. Perhaps canton or village chiefs can say how many households or taxable adults there are in the survey area villages, if not, we found the mean number of adults/ household = 2.9

sample size = 5% of villages
researcher's interviews/day = 9
 $(2.9 \text{ adults/household}) \times 0.5(\text{households}) = \text{number of interviews}$
 $0.5(\text{number of taxable adults}) = \text{number of interviews}$
 $([\text{number of interviews}] / 9) = \text{number of researchers}$
 $(\text{cost of each researcher}) \times (\text{number of researchers}) = \text{cost}$

Questionnaires:

Questionnaires were designed for use at different levels.

a) National Level: for the national offices of various road users. Such officials have an overall view of the country and can put their experiences in target areas in perspective. Also the state of the roads has a direct impact on their institutions qua road users. These institutions are meant to implement national policies and if a road is an impediment to their functioning this should be noted as one of the social factors to be taken into consideration in setting priorities for road construction and maintenance.

b) Regional Level: Prefects, Sub-Prefects, Chiefs of Administrative Posts and Canton Chiefs have a detailed but comprehensive view of the region in their charge. They can give information on such matters as populations centers, regional resources, social structures found in the region, markets, local authorities and their purview, etc.

c) Village Level: for the village chief and notables. This questionnaire gathers information about the community, sets it in historical and geographical perspective, collects intelligence about labor availability, temporal cycles, production systems, land resources, water points, etc. It covers the situation of the village vis a vis the road or proposed road and baseline data for measuring change in the community.

d) Individual Household Level: for adult members of a household. These questionnaires confirm or contradict information gained at other levels.

They give information on production systems, temporal cycles, interest and availability of workers, household budgets, and so forth.

e) Supplementary Questionnaire: for women. Sometimes women are able to give a better picture of the household economy than men. This questionnaire is also intended to uncover information about the condition of women.

Guidelines for Data Analysis

The survey team should distill from the questionnaires:

a) at the national level: the views of the road users, both governmental and private. Interviews about the target road; the difficulties road users encounter on the road, steps they would like to see taken, steps the road users themselves might be able to take to ameliorate the situation.

b) at the regional level: location of government services, markets, road systems in the region, transport services, transport patterns, production systems, industries, cultural patterns, authority systems, availability of food, water points, differences between villages.

c) at the village level: population, men's and women's interest in road work, seasonal availability of labor, mode of payment, production systems, availability of water and food, authority systems and identity of authorities, kinds of transportation used and transportation needs, interrelationship with outside world, access to health facilities, schools, roads, important regional road systems, exports and imports, material resources, development projects and private enterprises.

d) at the household level: characteristics of the households (composition, size, division of labor), production modes, sources of income, amount of income, expenses, kinds of transportation available, transportation needs.

e) Individual level: availability for road work, interest in road work, interest in providing food, experience in road work, interest in helping village, gender differences in income, expenses and transportation needs.

A survey team should not consider getting answers to the questions as posed on the questionnaires as the end of the research process. Rather the questions are keys which we have found unlock people's capacity to discuss various areas of inquiry which can be explored in greater or lesser detail, depending on the purpose of the study. A study on availability of labor can simply use the initial responses to questions on income and expenses as posed in the household questionnaire; a man who claims he earns 1,500 FCFA/day as a mason is unlikely to work on roads for 650 FCFA/day even though he answers that he is willing. A study on the impact of a road on household economy, however, needs to examine his income as a mason more closely. The surveyor can follow up the initial question with inquiries about where he works, how many days/month, what he does with the money, etc.

It is hard to weigh social factors in deciding on road construction and maintenance. It is far easier to observe traffic levels or road conditions than to measure a government's access to the areas it governs or citizens' access to markets, schools and other government services. For this reason social factors have largely been ignored (Per Fossberg, World Bank, personal communication). The weight given to these sociological factors is a policy decision, but this sociological system can at least make these elements, hidden until now, into visible factors about which policy decisions can be made.

Ongoing Data Collection:

In each village where the team found someone able to write French or Arabic they requested him to keep a daily reckoning of his household's income and expenses and some neighbors' budgets as well. He was provided with notebooks and pens. These notebooks will be collected and replaced by new ones each time a follow-up study is done. This ongoing collection should yield a much more accurate picture of household economies in the village.

Report Format:

The format (see Annex 1) is intended to make the conclusions about sociological data available and comprehensible to non-sociologists. The report begins with a list of recommendations for actions to be taken in the target area. It then presents the results of the study and the reasons for the recommendations which were made. The annexes to the report contain, in tabular form, reconnaissance information of interest in road work, such as markets, water, food, etc.

III. FINDINGS:

NATIONAL LEVEL

The organizations interviewed do not find roads to be the primary constraint on their activities--first place is held, rather, by lack of money and lack of materiel--but the state of the roads comes second on their lists of problems. Their costs are driven up because of the bad condition of the roads. The Ministry of Public Health finds it must dispatch pharmaceuticals by air from Ndjamená, thereby increasing costs, since sending these items on internal roads means breakage, which also increases costs; sending them through Cameroon to avoid breakage means the Ministry must pay double customs as the goods pass the Cameroon-Chad border twice, once for Ndjamená, once for Moundou and beyond, which also increases costs.

The National Grain Office finds that once it has managed to get hold of trucks to move its cereals, the roads become a constraint. Accidents mean grain is scattered or stolen. Because bad roads keep the trucks moving at a snail's pace, the Grain Board cannot move as much grain as it wants and preposition it in Board warehouses before the rains. This drives up the cost of the grain. The Grain Board singled out the road from Am Timan to Mongo for comment: the grain production of the Am Timan region could provision most of the cereal-deficit areas, according to the Board's Commercial Director, if after the February harvest of berbere the Board could move the grain out. The roads, however, are cut five months of the year.

The Ministry of Food Security is likewise barred from doing its job when the roads are severed.

Many of the officials interviewed made the same suggestion: OFNAR and TP should initially concentrate their resources on those particular stretches of road which are impassible or very difficult. This would mean that OFNAR and TP would not have enough money to bring other stretches of the road up to high standard. But these officials felt they could manage to cover rehabilitated and unrehabilitated stretches as long as they could get through the now impassible spots. The suggestion that sections of road with chronic soil and drainage problems be given the highest priority was also put forward at the recent transportation conference in Ndjamená (Feb 1988).

REGIONAL LEVEL NDJAMENA-NGOURA ROAD

Various authorities on the Ndjamená-Ngoura road complained about the number of traffic accidents. They attributed the accidents to narrow roads and speeding truckers. They expressed the wish that the road be widened.

Ndjamená- Djermaya

Ethnic Groups: Arab (see annex 2 table 13).

Transport Patterns:

Between Ndjama and Djermaya the population center of Ndjama dominates the economy. Djermaya is a much weaker pole of attraction. Travel on this stretch is two-way. Pickups and trucks from Ndjama go out to buy wood and charcoal. The dairy products company in Ndjama, SONAPA, sends out its pickups to go from village to village buying milk. Pickups go out to make the rounds of villages, taking passengers into Ndjama in the morning and bringing them back at night. For people employed year-round in Ndjama the villages near Ndjama have become bedroom communities and people commute back and forth. Men who are well-off have motorcycles, mopeds or bikes but most traffic on these secondary roads is on foot. The pickups use secondary tracks but the heavy trucks stick to the Ndjama-Djermaya road. Women walk over these tracks several times a week to sell curdled milk and wild jujube fruits and to do their shopping in Ndjama. They rarely take a bush taxi because that eats up their profits. In the dry season farmers seek work in Ndjama or sell vegetables there for extra income. In the rainy season the traffic is reversed and some city dwellers travel daily to villages just outside Ndjama to cultivate their own fields or to earn pay as field hands for the villagers; others stay in the village until the harvest is over. Much of this movement is on foot.

Perhaps due to frequent contact with Ndjama people on this stretch are more progressive than those farther away. People have set up cooperatives or are interested in doing so. They grow dry season vegetables using non-traditional tools and engage in a wide variety of income-producing activities. Perhaps also due to their frequent comings and goings people in the small villages around Ndjama are aware of how important their secondary roads are to them. Some people interviewed in this area said they would work for free on roads leading to their own villages.

Between Ndjama and Djermaya there are roadside vendors of charcoal, wood, etc. and many places to stop for food and drink. It is therefore easy for people on or near the main road to find a stopped vehicle for a lift.

On this stretch the only important secondary road which does not lead to Ndjama is the route from El Amadji to Afrouk, the capital of Canton Afrouk. Afrouk's importance is only administrative. The Prefect of Charl-Baguirmi is trying to settle the nomad, semi-nomad and semi-sedentary populations in his Prefecture, especially those who have lost their cattle, at El Amadji.

The towns in this area have lost population in all demographic categories as a result of civil disorder and the drought, which have forced many people to move south of Ndjama. Nevertheless these villages seem still to sustain themselves as bedroom communities and with the export of dairy products and vegetables from their "truck gardens" (perhaps a more accurate name would be "bicycle gardens") to the city center. Although people sell their livestock, mostly goats and sheep, only when they are in need of cash, with bad harvests so many are in dire straits that this area has turned into a source of small livestock for the tables of Ndjama. These animals are taken to market over the nearest road, often a secondary one.

Production Systems and Temporal Cycles: The major production system on the Ndjamena-Djermaya road used to be semi-sedentary agriculture; in the rainy season a village cultivated millet and berbere (transplanted sorghum) and in the dry season the whole family moved within a limited circumference to take advantage of water and grass. The prolonged drought has split apart these two activities (see annex 2 table 17,18). Large livestock holders have moved permanently south of Ndjamena to find sufficient grazing. They are still able to practice their semi-sedentary life of farming and herding. Those who own only goats, sheep, etc., or a few cows have remained behind to farm in the rainy season and to work in Ndjamena in the dry. Boys graze the few cattle in the neighborhood. The team found a stark testament to this new pattern. The people of Abourdja just north of Ndjamena are family members who remained behind; the people of Mede Arab on the Ndjamena-Guelengeng axis are those who took their cattle and left. Since both these villages were selected at random to be sampled the chances of finding this sort of relationship between villages would be small unless this phenomenon were widespread.

Crops farmed in this region are millet, sorghum and berbere, sesame, okra sorrel, peanuts and cucumbers, all intermingled. No sooner is the harvest of millet and sorghum over in September-October than the work of transplanting berbere begins. Berbere is harvested in January-February. Only then does work slack off, at least for those without cattle. For cattle herders this is the most difficult time to find pasture and water for their animals. People who have lots of cattle are unable to do road work unless they have children old enough to herd the cattle for them (conversely, the father herds and the youngsters do road work). The rest of the people are free from the end of February through most of May or, if the rains regain their earlier rhythm, through April.

Most herders are not only too busy but are also uninterested in road work. Harvests in this region have been so bad that many people must supplement their harvest with cash in order to have enough to eat. Large cattle herders are fortunate enough to be able to sell dairy products or their cattle for this subsidiary income. Others with little livestock devote the dry season to scrounging for cash, selling vegetables cultivated in clay pans, selling wood, hay, curdled goats' milk, making bricks or doing other heavy labor. Most people who have regular jobs in Ndjamena but live in the villages also supplement their income in these ways (see annex 2 table 17,18).

Cultural Patterns: Islam is the dominant religion in this area; this should be taken into account when scheduling road work. Work will slow down during the period of Ramadan. Work will also stop each week on Friday at noon; Sunday is also a day off. Each day sometime between 13:30 and 14:00 hours and 15:00 to 16:00 workers will also want to break for prayers.

In this area the cultural division of labor also affects road work. Women's activities are limited to hearth and home. "A woman's job is to go to market," one man answered when asked if his wife would do road work. In farming, in principle, women only weed, harvest and winnow. With berbere they only pour water into the holes for the seedlings. On this stretch of road, however, this distinction between male and female farm activities has broken down and most

people said men and women work together doing everything in order to speed up work. Nevertheless, the consensus of both men and women is that women should not do road work but that selling food or bringing water to the workers is an acceptable job (see annex 2 table 17,18).

People here displayed the same reticence about asking for a job as people on the other road segments studied. Many individuals expressed a strong desire to increase their income through road work but said they had not enrolled themselves with OFNAR or BCEOM because they had not been asked to work.

Condition of Women: The situation of women living in this sector is better than that of women farther along the road, between Massaguet and Ngoura. In Charl-Baguirmi between Ndjamena and Ngoura because of the drought farmers must purchase millet in the market to make it through the year. For this they need cash, traditionally saved in the form of travelling checks or cash on the hoof, i.e. livestock. Drought and pestilence have wiped out many people's savings. For cash men sell their labor or collect wild bush products to sell. Women also supplement their husband's income by petty trading or selling wild bush products and dairy products. In a number of cases interviews showed that the woman's income which kept the household afloat even though the husband, in his interview, gave no account of his wife's activities or earnings (see annex 2 table 17,18). In households with a low standard of living (household with low income, low expenses and little property) the woman's income, not the man's just about covers her expenses. In households with big expenditures and more property the man's income covers the charges. The women nearer Ndjamena are fortunate to have a ready market fairly full of affluent buyers where they can sell their goods any day of the week. Farther away, between Djermaya and Ngoura, the markets are smaller and more infrequent. To earn money a woman must sell a lot on the market day nearest her or go farther abroad to other markets or find additional ways to make ends meet. Women claimed to earn about 500fCFA/week on average. Along this road women's income often makes a difference. It is harder between Djermaya and Ngoura to scrape up the critical cash than for those who have easy access to Ndjamena.

In this sector, as in all the others studied, women expressed a desire to do any work, whether cooking, selling foods prepared at home or curdled milk, peanuts and other snacks.

Water: Water in this area is said to be found at 16-20 m. and is always sweet. No sources of water outside the villages were mentioned except the river and the abandoned quarry outside Ndjamena (see annex 2 tables 6,7).

Djermaya-Massaguet

Ethnic Groups: Arab (see annex 2 table 13).

Transport and Cultural Patterns: The patterns and systems along this portion of road are almost the same as from Ndjamena to Djermaya (see annex 2 table 2). The economic pull of Ndjamena is lessened by the closeness of Massaguet and Djermaya. Some herders have taken their cattle to Lake Chad or into the

Guera rather than south of Ndjamenana.

Water: Water in this area is often salty (see annex 2 table 7).

Massaguet-Ngoura

Ethnic group: Arab (see annex 2 table 13).

Transport patterns and services: Motor traffic is confined mainly to the main roads and is mostly long-haul. Here, unlike the area around Ndjamenana, few people have mopylettes or bicycles and no 404 pickups make the rounds of villages on the secondary roads. Indeed road traffic rarely stops anywhere except Massaguet, Karme and Ngoura, except in case of a breakdown. This means that people living in other villages along the road are as dependent on animals or their own two feet for transport as people living in the interior. At these three stopping points there are a few restaurants and shops selling cold drinks and necessities. At night the purchase of a meal in a restaurant may give the diner a place to sleep as well. In each town along the road the team tried to inquire about prostitutes as discreetly as possible. They were told in some villages that they are numerous. Some are war widows, other grass widows, still others "old maids" who have little chance of marrying because many men can never get together the high bridewealth necessary. All were said to be in good health. This lookout for the spread of AIDS along transport routes, one of the first places AIDS spreads, should become easier as the survey team becomes better known in the sample villages.

The major secondary roads in this region go from Diourballi to Moyto and from Karme-Dagana-Massakory. These roads are frequented by people coming to Karme, the most important cattle market in Charl-Baguirml.

Except for Djermaya, whose lodestar remains Ndjamenana, the population centers and poles of attraction are Massaguet, followed by Massakory, Karme, Djermaya, Ndjamenana, and then Ngoura, Diourballi and Moyto. Between Djermaya and Ngoura people maintain a more traditional style of sedentary or semi-sedentary living than between Ndjamenana and Djermaya. But some of these villages appear to be dying if, as the team was told, people have been emigrating over the past few years. The emigrants fall into many demographic categories: young unmarried men seeking jobs (their emigration may help in part explain the numbers of prostitutes), older men with lots of cattle who take their families and herds to better grazing areas, male heads of families who move their families to another town where there is more economic opportunity.

The major economic resource of this area is cattle. Their export does not depend on the main road. People bring their cattle over back roads. Animals for export to Ndjamenana or Nigeria are walked following pasture from here to Nigeria or Ndjamenana, not trucked. There is some export of gum arabic from the area between Djermaya and Ngoura. Each producer has always taken it to Ndjamenana to sell to the big buyers but now the producers want to band together in a regional market where the buyers would come, using the main road.

Production Systems:The production system of the Arabs between Djermaya and Karme maintains the traditional features that groups closer to Ndjamena have lost. The division of labor, wherein men clear and do most of the cultivation and women sow, water berbere, and help the men weed and harvest, is more carefully adhered to. Because there are fewer important towns in this area where people can earn money in the dry season, agropastoralism retains its old form; the whole family moves away from the village in search of pasture and water. No one has to stay behind to commute to work in town. As a result some villages, eg Assouala, are deserted in the dry season and OFNAR and TP will find little to interest them there. The harvests in this area have been bad, as elsewhere. People engage in petty commerce or sell off livestock to buy millet. In this sector some people eat "krep", wild finger millet which they have harvested or found in termite hills, in order to augment their food supply.

Cultural Patterns:For the most part the same patterns prevail here as between Ndjamena and Djermaya. At Bisney the Kouka population and at Ngoura the Kouka and Bilala women take on a few more farming tasks. But the women here still say they would prefer selling raw or cooked food to working on the road (see annex 2 tables 3,4,17). One woman made the point that she would like extra earnings from feeding road gangs but did not want her petty commerce at weekly market to be disrupted.

Water:The area between Massaguet and Ngoura is sparsely populated for lack of water. Bigne Klisna is one of six villages which, for example, all get water for drinking and for their animals at the same well. In Karme there are two drinkable wells. The others are too salty even for animals. According to the Canton Chief there are only two other wells in the entire canton. At Bisney the townspeople claimed that water available year round is found at 40-50 m. In this zone agropastoralists dig shallow ponds, called "tarmat", near their fields and houses. As the dry season advances the ponds dry up and they must betake themselves and their cattle to areas with a permanent water supply. At every village sampled between Ndjamena-Ngoura and Ndjamena-Guelengdeng the villagers' first wish was for a well/pump.

In the villages questioned along the Massaguet-Ngoura stretch townspeople repeatedly claimed that when ONHPV came to drill wells they did not seek or listen to the villagers' advice on where to dig. As a result some wells or bore holes are unusable and others unpleasant. The villagers believe that they know from long experience where one is almost certain to find salty water and where one has a better chance of finding good water.

VILLAGE LEVEL NDJAMENA-NGOURA ROAD

In some parts of Chad authorities have kept up-to-date head counts for tax purposes, in other places not. No such figures were available for Charl-Baguirmi. Our estimates of village populations are based either on the village chief's declaration of the total population, the village chief's declaration of the number of taxable men and women, or the village chief's computation family by family (see annex 2 table 15). It is important to know the size of the population because it indicates the number of people served by

a road and the maximum size of the labor pool for road work. But one cannot predict labor supply simply by looking for high population density or un- or underemployment. One needs to know if labor is available and capable of working, in what numbers, at what time of year, at what wage rates, and for how long (p.19, Relf, Colin, The World Bank and Labor-Based Techniques in the Roads Sector, ILO, Geneva, May 1984).

VILLAGE LEVEL NDJAMENA-NGOURA ROAD

See tables, Annex 2.

Abourdja: A very small village (pop. 95) about 5 km. from Ndjamena. People have less work from February through May but many are occupied with vegetable farming or jobs in Ndjamena. Men are willing to do road work for either Food For Work (FFW) or money (CFA). Women want money from selling food to workers. People use secondary dirt roads for access to the capital, to which the village economy is tied. Travel is on foot, bicycle or mobyette. Bush taxis and SONAPA reach here. The village exports milk. Water is "not hard to find" but there is only one well 21 m. deep with a slow recharge rate.

Am Djemene: A small village (pop. 140) about 10 km from Ndjamena. People have less work from February through May but few men and women are willing to work. The economy is tied to Ndjamena. They export milk. Travel is on foot, bicycle or mobyette. Bush taxis and SONAPA reach here. Good water is "easy to find" yet there is only one simple well in bad shape.

Djikeme: A medium small village (pop. 206) about 15-20 km. from Ndjamena. People have less work from February through May but few people are available. Men are willing to work for FFW or CFA. The economy is tied to Ndjamena. They export vegetables. Travel is on foot and bicycle. Bush taxis and SONAPA do not reach here.

Nouara Kablire: A small village (pop. 157) about 10 km. from Ndjamena. People have less work from February through May and are interested if they can work for fifteen days or so at a stretch. Men and teenage boys are willing to work for CFA. Women are unwilling to provide food. The economy is tied to Ndjamena. They export vegetables. Water: a plain well.

Djermaya to Massaguet:

Dougul Chikete: A medium small (pop.275) village about 45 km. from Ndjamena. People have less work from February through May but most people are busy or gone with cattle. Men are willing to work for FFW or CFA. Women are willing to sell food or to work with the road crew near the village. The economy is tied to Ndjamena, Djermaya and Massaguet. They export wood, charcoal and vegetables. This village is more self-sufficient than the ones mentioned above. It has its own village health worker, midwife and blacksmiths. Travel is along the main road on foot, animal, or in one of the trucks which stops to buy firewood. Water: one well.

Bligne Klisna: A very small village (pop. 78) about 47 km. from Ndjamena. People have less work from February through May. Men are willing to work for

CFA or FFW. Some women are willing to sell food. The economy is tied to Djermaya and Massaguet. Travel is on foot or on animals; long distance travel is by truck on the main road. Water: six villages use one well for both people and animals.

Madrie: An extremely small (39) village about 60 km. from Ndjamena. People are too busy year round to work except when they really need CFA or FFW. Then they will manage somehow to do road work and get the rest done too. Women are willing to sell food. The economy is not tightly linked to any place. No exports. Water: every one moves in the dry season to Am Sakin because the "tarmat" at Madrie dries up.

Massaguet-Karme:

Adeneou: A very small village (pop. 107) about 85 km. from Ndjamena. People have less work from February through May but they are busy year round with herds and scraping a living. Men would welcome road work for FFW or CFA to meet their family's needs. At present they do so by exporting hay and food. Women's willingness to sell food is unclear. The village would work for FFW or perhaps free on making a road to Diourball. Travel is on foot or on animals. Water: they need a well.

Djekine: A small (pop. 180) village about 88 km. from Ndjamena. They have less work from February through May but few people are available. Men and teenage boys want work for FFW but will take CFA. Women's attitudes are unclear. Travel is on foot or on animals. There are no exports but men work herding others' cattle. Water: Djekine is one of three scattered villages which must go a long distance in the dry season for water. If they had a good well they could all regroup around it.

Assouala: An extremely large village or perhaps the total population attached to nomad chief (two pop. figures given: 2000 and 3050); breaks up into very small groups with cattle in the dry season in order to be near water wells. People are busy year round but would really like work for 2-3 days at a time to earn FFW since they are in great need. Women are willing to sell milk and food. Little travel except foot traffic with cattle. No exports. Administrative center is 25 km away. About 125 km. from Ndjamena.

Karme: A large village (pop. 500; pop. canton 1460) about 55 km from the administrative center of Massaguet and 135 km. from Ndjamena. It is a canton seat with a dispensary. Karme is the most important cattle market in the whole zone; merchants come here from all around and from Ndjamena to buy and sell cattle. The village exports cattle on foot to Ndjamena and Nigeria. There are places where one can get food and drinks here. People are free from February through May. Men are willing to work for FFW, teenage boys to work for CFA. Women are willing to sell food. About 80 displaced persons who have lost their cattle have settled here. No displaced person was included in the sample but given their circumstances they might wish to do road work. Travel is on foot and on trucks when people pay for a place. Most trucks, etc., on the main road take a break here. Water: two wells, one with an unuse. water tower because the water is too salty. There are two other wells in the canton.

Karme-Ngoura:

Bisney: A large village (two figures given: 350 and 600) about 75 km. from the administrative center of Moyto and about 220 km from Ndjamená. People are free from February through May. Men and teenage boys are willing to work for FFW. Women are willing to sell food, preferably for cash since they need cash to carry out their petty commerce. Travel is on foot or animal since trucks do not stop here. They export cattle and some berbere. Even though the harvest was bad some farmers have been forced to sell some grain to cover their financial obligations. Many people have left the village because the economy is so bad. Water is at 40-50 m. and salty. One must know the spots to dig for sweet water. People here urged that a rain barrier be put up at Bisney to stop the degradation of the road in the wet season. The economic condition of the town as well as concern for road conditions may have generated this interest in a barrier since at barriers cars must stop and their occupants are likely to buy snacks and drinks while waiting for the road to be opened.

Ngoura: A very large village (pop. 3,700). People who farm have less work from February through May. Ngoura is at a crossroads and also far enough from Ndjamená that many travellers stop here for a break. There are restaurants and hotels and small shops for cold drinks and various necessities. Many people here make a living from this sort of commerce. Ngoura is second only to Massaguet, which is also at a crossroads, in importance for traffic on the main road but Karme is more important economically than Ngoura for the local inhabitants.

REGIONAL LEVEL NDJAMENA-GUELENGDENG ROAD

See tables, annex 2.

All regional authorities interviewed feel the blacktop remaining on the main road creates more trouble than it is worth and asked that the road either be repaved or the blacktop taken up and the road improved as a dirt road. Given TP/OFNAR's plans for this road this is now a moot problem.

Ndjamená-Mandella

Ethnic Groups: The original inhabitants of Canton Madiagoh were, in principle Kotoko, but the canton is home to many Bornou, Massa, Moulouye, Sara, Ngambaye, and Kabalaye as well. Hadjerai, Bilala, and others from the Guera and Wadday have moved here to escape drought and disorder. The canton has about 3,800 inhabitants.

Transport Patterns and Services: The main road from Guelengdeng is very heavily travelled: 200-300 heavy trucks/day according to the canton Chief at Mandella, the capital of Canton Madiagoh (actual traffic counts were not forthcoming from Gannett-Fleming). Unlike the north side of Ndjamená, where a number of secondary roads radiate out like spokes of a wheel, here most traffic from the interior travels the shortest distance to the main road and then follows the

main route into Ndjamená. The confluence of the Charí and Logone rivers funnels all traffic towards the bridge into Ndjamená at Chagoua. Only people along the river use it for transport. The villages in this zone are also constructed so close to the road that one does not always find a parallel road for foot, animal, bike and pickup traffic as one often does north of Ndjamená. This means that fast and slow moving traffic, heavy vehicles and pedestrians mix more often than on the Ndjamená-Ngoura road. The team was unable to establish if this leads to more accidents.

The villages between Koundoul and Ndjamená serve as bedroom communities and truck gardens just as the villages to the north do. Not only do city folk move out to the country to plant fields in the rainy season but some also buy plots of land. The purchasers are either people too poor to buy a parcel in Ndjamená itself or people rich enough to buy a second house.

Traffic from this area moves in and out of Ndjamená on foot, bicycle and motorcycles, and bush taxis. Not all owners of bush taxis live in Ndjamená; one starts out from Bougouna each day on a circuit of small villages bound for Ndjamená, to return in the evening. However many secondary roads used by bush taxis in this zone are flooded in the rainy season. The economy is centered on Ndjamená, with secondary economic and population centers at Koundoul and Mandella. Large roadside villages such as these have bars and restaurants but Koundoul does not have a place to sleep. Villages in this sector export "secko", woven grass fencing, garden vegetables, dairy products and, illegally since this is a forest reserve, firewood. River villages export fish but the quantity has fallen off with the drought. Most fish are taken to the capital by boat. In smaller towns like Walaya, Koundoul and Mallao women sell peanuts, vegetables and other snacks beside the road. This, rather than milk, is the primary source of income that women in this area earn themselves. In other villages the passing traffic never stops and there are no roadside vendors. One woman claimed that cars stop only in towns where travellers can see they can get a drink, ie with a well or pump by the road. Where traffic goes straight through people get around on cycles, animals and foot, just as villagers in the interior do (see annex 2 table 2).

The major secondary road on this stretch runs from Mallao to Logone Gana; if this road were upgraded, according to the canton chief, it would open up all the area along the Logone River to motor traffic. In the rainy season of 1986 the canton chief requested all the small merchants who owned vehicles to pay 5,000 FCFA each for road repairs. OFNAR provided two dump trucks and fuel and the chief recruited workmen to fill the dump trucks and maintain the road during the rains. They worked for 1 1/2 months and were paid with the merchants' money. This road maintenance worked well but the canton chief does not think he can do it again. The last time merchants were reluctant to contribute the money, so much so that he was forced to confiscate some of their vehicle ownership certificates to get them to pay.

Production Systems: In Canton Madlagoh several production systems can be found side by side. Traditionally in the rainy season people near the river cultivated millet, sorghum, peanuts etc. which they harvested in Sep-Oct., and sometimes berbere, harvested in January-February. As the river level sank

during the dry season the inhabitants along the river became fishermen. People inland farmed the same food crops and cultivated cotton as a cash crop. Both cotton and fishing are no longer the primary source of income. Instead many people have taken up farming irrigated vegetables for export to Ndjamena. In this they have been helped by several non-governmental organizations. Wealthy Chadians also hire farmers to build and farm irrigated perimeters for them. Irrigation has been such a successful source of cash income that the market is being flooded with tomatoes, according to several people who claimed they could not sell all their production. Men whose primary employment is in Ndjamena may also have irrigated plots whose produce they sell each day on their way to work. NGOs have also been supporting reforestation projects in this area as dry season employment, with FFW as wages. Though in principle the slack season begins in November these new activities may compete with road work even though the population in the region is theoretically dense enough to support length-man maintenance. Some villages along this stretch are Muslim and will expect Friday afternoon off and time out for prayers. Other villages are Catholic or Protestant and off the main road some villages are animist.

Along this axis one finds "Anciens Combatants", pensioners who fought in the French Army and their widows, who continue to collect a pension. As a result affluent, modernized and influential people are scattered throughout the area. A.C.s are often very helpful in forming public opinion and in mobilizing villagers to work together.

Condition of Women: More women along this road seem to depend on petty roadside commerce than on selling vegetables or milk in Ndjamena. In Sara, Ngambaye and other villages where southerners have settled the division of labor differs from the Muslim pattern. Women are expected to provide in good part for their children's needs. Women often engage in petty commerce and some make their own fields in order to get the money they need for this, in which case they are used to heavy labor. Even so most women along this stretch said they would prefer to sell food, etc. to workers than to work themselves (see annex 2 table 17,18). They think commerce will be more profitable than wage labor. Female vendors interviewed claimed they earned from 50 to 1,000 FCFA per day, usually about 500FCFA/day They may be more interested in road work if it pays better than this. Women here prefer cash to FFW, as do the men. The harvests here were seemingly no better than to the north but here men seem to engage in a wider variety of money-making activities or get FFW from the many development projects in this area. Women's accounts of their budgets give less indication that household survival depends on the wife's own income. A number of households ran a surplus at the end of every month, mainly because of the men's incomes.

Water: In canton Madlagoh water is found between 10-20 m., usually about 16 m. People along the river use it for water. Inland most wells have not been improved in any way. Along the road there are several Peace Corps wells. Walaya has 1 village well and several lined wells in people's homes (see annex 2 table 6,7).

Mandella-Mogroum

Ethnic Groups. The main road runs through Canton Madlagoh to Canton Mogroum, which has a population of about 5,000 taxable adults. The inhabitants are mainly Massa and Massa Goumaye (Banana). Arabs from Batha and Wadday, as well as Fulbe, Sara, Bornou, Hadjerai, and Baguirmlians have all settled here.

Traffic Patterns and Services. For the villages along this stretch there are two magnets: Ndjamen and Cameroon. But the attraction of Ndjamen lessens as the distance from it increases and more commercial activities take place in local markets. Markets here, as in Canton Madlagoh, draw merchants from Ndjamen. Cameroon is appealing because merchandise is cheaper and the price of some cereals is higher, which makes the "export-import" business very tempting. Heavy trucks for Cameroon pass by Guelengdeng but light pickups and people use secondary roads. In fact the villages near Abou Liman wanted a road leading to Cameroon so they could make their purchase more easily. With the accord of the canton chiefs of Mogroum and Madlagoh they made a road so that pickups and other light traffic could pass. Merchants think the road is a good idea but are somewhat reluctant to use it because the villagers lacked the means to pull up tree stumps and improve the road surface. This is the most important secondary road in this zone.

This area used to cultivate cotton as a cash crop but when heavy fighting broke out people stopped and have not gone back to it, in part because of poor roads. The nearest cotton gin is at Gouna Gaya and Cotonchad's trucks have such trouble reaching this area that many people are unable to sell their cotton. Nor do they find cotton a profitable cash crop. Cotonchad has set limits to the acreage an individual can cultivate. NGOs have irrigation projects in this zone with a heterogeneous assortment of ethnic groups enrolled together. Small villages have sprung up near irrigated perimeters far from the main road to facilitate farming. Daily bicycle traffic is heavy on these feeder roads as men take their produce from the perimeters to the main road.

Production Systems: The Massa way of life associates farming with semi-sedentary cattle keeping. Young men primarily bear the task of caring for the herd. Both men and women traditionally farm so women are used to hard work. The production systems of the other ethnic groups in this area have already been described for Canton Madlagoh.

Cultural Patterns: The point of reference for Massa culture and religion is not Ndjamen but the Mayo-Kebbi and Cameroon. The Massa are either Christians, who will expect Sunday off, or animists.

Condition of Women: The women interviewed farm if they are not ill and also earn a bit of cash through petty commerce. Along the road their clients are mainly travellers. Inland women sell vegetables or fish in the large regional markets or Ndjamen where they then buy items which they can sell in their village at a small profit.

Water: In this region water is found at about 25 m. Most people drink from ponds but water is so difficult that many villages have emigrated, according to the canton chief of Mogroum's representative.

Mogroum-Guelengdeng

The road runs through Canton Mogroum in the Prefecture of Charl-Baguirmi and into the Administrative Post of Guelengdeng in Mayo-Kebi Prefecture.

Ethnic Groups: Massa, Bornou, Sara, Fulbe.

Transport Patterns and Services: Guelengdeng is the point at which two major roads, one from Cameroon via Bongor or Moundou via Bongor, the other from the Central African Republic via Sarh, join and continue on to Ndjamená. Guelengdeng has a busy market, bars and restaurants but no hotels discovered by the team. Most light automobile traffic in the dry season takes the secondary route Guelengdeng-Margaou-Bongor because the main road is in such bad repair. In the dry season the secondary road from Mogroum via Dihao to Bongor is also preferred.

Production Systems: Systems in this area are the same as Mandella-Mogroum. The Massa raise enough livestock that they are able to export cattle to Cameroon. Petty traders also come and go between Cameroon and Chad. World Vision has an irrigated perimeter but the team does not know where the farmers in the scheme sell their produce.

Cultural Patterns: The same as for Mandella-Mogroum. In this zone the political functions of the village chief may be separated from the ritual and agricultural functions of an earth priest (chef de terre). In some cases the same person may hold both positions but conceptually they are disparate. Road authorities wishing to work on a new road should consult with the earth priest and chief before starting work.

Condition of Women: The sample in this stretch included only a traditional village beyond the influence of the road. The women interviewed said, essentially, that they like their life the way it is and do not want change. The team did not have enough time to collect information from some non-sample villages along the road for contrast.

Water: The town of Guelengdeng uses river water. There are a few personal wells in the village. Water is usually found at 20 m. UNICEF is going to dig wells at Mogroum, Dihao II, Malboum Fulbe, Hulthuiti (Oultouiti), Bere and Nangigoto.

VILLAGE LEVEL NDJAMENA-GUELENGDENG

(See annex 2 tables 3,5,6,10,11).

Ndjamená-Mandella:

Walaya Kache: A small village (pop 160) on the main road, which resembles a ward of a larger village. It is about 5 km. from the administrative center of

Ndjamena. People are less busy from November through May but a number work in irrigated vegetable gardens. Eight people in the village own motor pumps. OFNAR has hired people here. Some men said they are interested in road work and would accept either CFA or FFW. Others are already working for a reforestation project for which they receive FFW. Women were divided over whether they would sell food or not. Most travel is by bicycle, moped or car. They export vegetables to Ndjamena. Water is good and found at 13 m.

Toukoura Arabe: A large village (pop 350) just off the main road about 15 km. from the administrative center of Ndjamena. Most villagers have cattle; from May to July they take their herds to pasture. Others are engaged in cultivating irrigated vegetables and are not free in the dry season for road work. Men who were willing to work asked for CFA rather than FFW. Women were uninterested in selling food. Most travel is by car on the main road or by foot in the interior. There is a lined well with a broken crank which provides water for the village and its cattle.

Ras Alfil Ngambaye: A small (pop 75) village on the main road about 17 km. from the administrative center of Ndjamena, with access to a village pharmacy, school and market 3 km. away at Koundoul. The village has no economic resources to export, no harvest from 1987 and few livestock. They get along fine on FFW for reforestation and Anciens Combatants' pensions. Men said they are interested in road work but are already busy with reforestation. Neither can they work on Sundays.

Bougouna: A large village (pop 400) far from the main road (8 km. or so) and 45 km. from the administrative center of Ndjamena. It is 10 km. from a dispensary and school. The road leading to the main road is flooded during the rainy season. People are free from February through May but both men and women are uninterested in road work. Travel is by car (a pickup is based here) and on foot, or by river. The team did not discover if anyone has a bicycle or motorcycle. For the last year the village has had a millet and peanut cooperative with a common granary. Water is at 20 m.

Mede Arabe: An extremely small (34) village about 50 km. from the administrative center of Ndjamena and way off the road. The village resembles a hamlet of a scattered village, with Mede Sara, Mede Ada and Mede Massa nearby, but each agglomeration has its own chief. Mede Sara participates in an ONDR/SECADEV irrigated perimeter. The other villages either cultivate dry season vegetables, fish or herd cattle so that everyone is busy. They were interested in a road which would make it easier to export their produce. The villages are about 13 km. from a market and dispensary and 8 km. from a school at All Garga. They get their water from the nearby river.

Kolemara Sara: A medium small village (pop 255) about 80 km. from the administrative center of Ndjamena. The village is on the main road and not far from the markets and dispensaries of Mandella and Koundoul. There is a vendor of over-the-counter medicines in Kolemara. Some men leave to find work in the dry season and are interested in road work. There is a spontaneous school here; the teacher said that if the pay were good he would let his older pupils out to work. The only woman interviewed said she would bring water for the

workers but no more. Water is found 2 km. from the village. Farmers own or rent plows and hire farm workers.

La Loumia II- Gonerl: A small village (pop 127) on the main road. It is 95 km. from the administrative center of Ndjamena. There are a market, dispensary and school at Loumia. The village does not export anything. Three years ago they tried an irrigated perimeter with an NGO but the river level dropped too much. There is a grain mill here and the people are interested in a cooperative that would subsidize plows. Some villagers work in the Meskine/ Africare perimeter nearby and so are busy in the dry as well as the rainy season. Other men said they have had previous experience with road work and are interested in working for FFW or CFA. The women interviewed said they were uninterested; one had already tried to sell peanuts to the OFNAR road crew which had recently passed but found they did not buy much. There is one Peace Corps well for water.

Archi: A small village (pop 162) about 2-5 km. from the main road and 100 km. from Ndjamena. The administrative center and market of Gambarou is 2 km away. The school at Gambarou has been closed but this does not disturb the people of Archi. There are three dispensaries, each over 10 km. away, at La Loumia, Guelengdeng and Mandella. There is lots of grass here for good pasture but no water so the young men of the village must keep the cattle 15 km., or one day's march, away. For export they also make the grass into "secko"s which they sell by the roadside to travellers. Outside merchants also come in their pickup trucks specifically to take back loads of "secko"s. People have less work from February through May. Men are interested in road work only if the pay in CFA is good. Many villagers have deserted the village because there has been a problem getting enough water for the last three years. There is not enough water for their cattle or to make bricks for repairing their houses. Both an earth priest and village chief are here with whom road authorities should discuss appropriating land for road construction.

Oban: A very small village (pop 75) about 3 km. from the main road and 9 km. from the market, administrative center and dispensary of Gambarou. No one here goes to school. Since 1985 a number of families have left because there is little water. Herders must keep their cattle about 15 km. away from February through May. People who do not have cattle are free from February through May. Most travel is on foot. The village exports "secko"s and has formed a cooperative for seed storage. Some men have already had experience with road work. Women are willing to sell food. Men and women want FFW or will take CFA. The village chief claims the village is Muslim although he is also the earth priest.

Ouroul: A small village (pop 150) of Massa Moulouye quite far from the main road. The women weave beautiful mats which they sell, along with wild jujube fruits, at Guelengdeng market when they need money. Travel is on foot, horse and bicycle. The villagers are uninterested in earning money or food by doing road work. They are free from November through May but young men usually go to Cameroon for the berbere harvest there in order to earn money for clothes. Though the villagers are animists they spoke only of the village chief and not an earth priest. They get their water from the stream after which the village

is named.

HOUSEHOLD LEVEL NORTH AND SOUTH AXES

Traffic Patterns and Services: On the Ndjamen-Guelengdeng axis most traffic in the interior is on foot, on the Ndjamen-Ngoura axis on animals. About the same numbers of people seem to travel in cars or on bikes and mobylettes in each region. Cars and trucks are used mainly for long distance travel and very infrequently. In the area surveyed more people were interested (61%) in improving and maintaining roads than were not (39%). Had the sociologists restricted the study to villages 5 km. or less from the road, where the impact of the road can more clearly be seen, then the percentage of people interested probably would be higher.

The USAID sociologist hypothesizes that at present the impact of Guelengdeng-Ndjamen-Ngoura road is more indirect than direct. That is to say, few people living near this road utilize it for vehicular traffic. Much of their travel is over secondary roads and on foot or on animal back. Rather they benefit indirectly from the movement of goods to boutiques, markets and commercial centers, dispensaries and other government bureaus where they become available to the local populace. Ongoing data collection should show whether as OFNAR and the Ministry of Public Works upgrade the road, the people near the road benefit more directly and utilize the road more or receive greater indirect benefits.

Household Budgets: The information gathered on households gives an incomplete picture of the household economy. The team attempted in their limited time to establish minimum monthly income and expenses by inquiring about regular income and obligatory expenses and also about income and outlay during the last week and month. People can recall in detail these sorts of financial transactions and so the information is less comprehensive but usually more accurate than if one had asked more inclusive questions. The team also inquired about the 1987-88 millet/berbere harvest and how the grain was used. In calculating income the USAID anthropologist has counted the grain harvest as money. She did so because many people who do not have enough grain to last till the next season must even so sell grain right after the harvest in order to meet their financial obligations. Later they somehow find the cash to buy grain in the market. As a result the "income" of the households surveyed is illusory, sometimes appearing much bigger than it really is since some of it is grain. The cash outlays, on the other hand, represent cold hard cash. Obviously one cannot spend what one does not have so when an informant's income is less than his outlay there must be some explanation: credit, savings or undeclared income. Data collected in ongoing research should show how, when and if people are able to bring their budgets into balance.

From the data gathered it appears that a budget with expenses equal to or more than the income does not predict whether a person will be interested in road work. The chance to earn CFA or FFW is not more tempting to people in seeming difficulties than to others better off. Herding cattle, in principle, keeps a man busy year round and some informants said they would be unable to herd and do road work. Nevertheless, about the same percent of people who own cattle

(83%) say they are interested in road work as those who do not own cattle (79%). This is consistent with the finding that income does not predict interest in road work; cattle owners can easily cover their expenses by the sale of livestock yet are just as interested in road work as small livestock owners. The kind of harvest an informant had in 1987 does not predict interest or lack thereof. The same number of people with bad harvests are interested as are uninterested. People who have had a bad year, however were interested in being paid in FFW rather than CFA. Along the Ndjamena-Ngoura road there is a strong interest in FFW. Women whose commerce is keeping the family afloat are the exception. These women want cash because of difficulties converting FFW into cash to buy more items for sale.

Condition of Women: Only four women out of the 55 for whom we have responses said they would consider working as a laborer; all other women who are interested in road work are interested in the possibility of selling food and drink or carrying water for a male work force. Neither they nor their husbands consider manual labor appropriate. This is contrary to what has happened in labor-based work and length-man road maintenance in Kenya, where many women have signed up. The four who volunteered as laborers are all Muslims from areas where women do not engage in heavy agricultural labor. No women from areas where women's work is important to farming thought of working as laborers. The women who volunteered have families in tight economic circumstances and perhaps wage labor would bring them more money than selling food and drink.

Some women appear to be so close to the point where they and their husbands will not be able to cover the costs of grain and condiments that the opportunity to earn extra money by selling food could make a considerable difference to their situation. Most of these women live along the Ndjamena-Ngoura axis. 40% of the women interviewed here said they wish to sell food to road workers. This is, of course, the same axis where men desire FFW more than money as payment for road work. The economic condition of many people in this area is precarious. On the Ndjamena-Guelengdeng road it appears that more families earn money from the sale of irrigated vegetables and are in a less tenuous position. On this road only 9% of the women interviewed indicated that they are interested in selling food to road gangs. One woman who said yes lives in La Loumia, a town where OFNAR has already discovered it is difficult to get much to eat; the situation can only be worse where no one wants to sell food. Private enterprise seems unlikely to meet the workers' need for meals along this road.

Water: The primary request of almost every village studied was a well or pump. From Massaguet to Ngoura the population density is low not because of lack of fertile soil or pasture but for lack of water. People know where to find water but the wells must be very deep and they crumble each year in the rainy season, the inhabitants report. So they must dig a new well each year. There are very few water points being exploited along this axis because many of them are too salty for human consumption, though they would be fine for road work. Although the local people know from experience where they are likely to find sweet versus salty water, sometimes digging goes awry.

Along the Ndjamen-Guelengdeng axis many people use river water themselves or at least to water their cattle. The wells are less deep than on the northern road and were not reported to crumble in the rain. However some villagers said the water level is dropping and the recharge rate is diminishing. People have moved out of the area because there is not enough water.

IV RECOMMENDATIONS

Use of local labor: OFNAR and the Ministry of Public Works should use local workers for hand labor or low-level technology work when technical and social conditions allow. By technical conditions the sociologist understands: soil conditions, standard to which road is to be built or maintained, amount of road use expected. By social conditions she means: enough people interested in road work with enough free time to make up the road crews necessary for the proposed hand labor/low technology jobs. When OFNAR or the Ministry of Public Works works out the implementation of a project their planners should consider if the use of local labor is technically suitable for some jobs. If technical considerations allow the use of human rather than machine labor for some tasks, the planners should then inquire whether the social conditions would allow the hiring of sufficient local labor. The system of social inquiry established in this study provides OFNAR and the Ministry of Public Works with the tool to establish whether the social conditions are correct for the hiring of local workers. With the appropriate mix of machine and human labor road work would be labor-intensive in the execution of some jobs but not labor-based. The concept of labor-intensive road work recognizes that the ongoing and planned road projects financed by USAID, IBRD, FAC, FED and other donors in Chad is and will be substantially mechanized. It recognizes that some jobs, but not all, are better done by machinery than people given Chad's geography. But it also recognizes a) that many aspects of road works, especially maintenance, can use a higher level of labor input than at present and b) the social needs which prompt interest in road work. Some of the men and women interviewed are living on the edge between poverty and adequate subsistence. They stay at the level necessary for subsistence by consuming their few remaining resources (selling goats or other livestock faster than they are replaced by births) or consuming ecologically damaging resources such as wood and grass (selling firewood, fodder or fencing, all of which bring in very little income) and by hardscrabble work (women make the rounds of markets until they have sold enough for that week's expenses; men migrate to towns for backbreaking dry season jobs like making bricks). The men realize how precarious is their existence and would welcome a few week's earnings or year-long employment as part-time road maintenance workers. Women want a bit of extra cash. Some want it to invest in more items to sell at market in order to realize more weekly income, some to reduce the weekly pressure to earn enough to buy grain to eat that week, some to buy clothes for their children and to pay the voluntary school teacher of their children. If OFNAR, the Ministry of Public Works and USAID institute a policy of using hand labor and low-level technology when it is appropriate the money invested in wages will go directly to the poorest of the poor, be distributed directly in the rural areas and benefit the neediest--the women, children, displaced persons, etc.--directly.

The aid distributed in this way need not be, is indeed unlikely to be, large-scale. The villages which are interested in road work are small; the most frequent size of a village on the Ndjamena-Ngoura road, where the most

Interest was expressed in road work, was between 100-200 people, and not all of those people would be involved in road work. But they would be among the poorest of the poor; the family incomes the sociologist found the most frequent on the Ndjamena-Ngoura road ranged from 750 fCFA to 8000 fCFA/month. On the same stretch if women who earn money to add to the family income could make four sales a day of 50f each to road workers they could raise their own monthly income by 240%. The monetary figures are not large but the impact of small sums of money injected into the local economy by road work could be large indeed.

The need for income evinced in this study is due in part to recent ecological and other perturbations. As the climatical conditions which will prevail in the 1990s become clearer people's need for income should become clearer as well. Either people will reestablish themselves economically and the need for labor-intensive road work will cease, or the income from road work may provide the margin which allows those who supplement their income with road work to continue to live where they are now, or conditions will worsen so that this supplemental income is not enough to keep them going and they will have to shift to another area. In the last case it may be that employment on road works in areas where people settle would provide them with income they can use to resettle themselves. In other words it is at present difficult to predict how long the social need for employment on roads will continue. The system for assessing road impact is designed to gather on-going data which will allow the Ministry of Public Works/OFNAR sociologists and donors to monitor the continuing or diminishing need for such employment.

OFNAR and the Ministry of Public Works should consider paying local workers in certain areas in Food for Work (FFW). The present survey has discovered that people in some areas not only wish for jobs doing road work but they would prefer, at present, to be paid in FFW rather than cash. This preference is due to a combination of circumstances: amount of grain last harvested, distance to markets, amount and price of grain available in local markets, size and composition of the family, etc. The system established in this study has the ability to determine whether potential workers desire FFW payments. FFW has several things to recommend it. First, since FFW is to a greater or lesser extent subsidized by the donors, the workers' wages in FFW would ipso facto be subsidized. As a result OFNAR and the Ministry of Public Works would save on wages and could invest the savings in more road works. Secondly, even though FFW usually has higher administrative costs than wage labor, Chad has a number of institutions able and ready to carry out FFW distributions, indeed, with FFW already in stock. Also there is a well-established procedure in Chad for monetizing FFW; transforming externally subsidized FFW into local currency would reduce the administrative costs of distributing FFW for OFNAR and the Ministry of Public Works. It should not be difficult for either institution to implement payment in FFW. Thirdly, it has been found that FFW can compensate to some extent for low productivity by increasing the caloric intake of workers (Beenhacker, Memo on Labor-based Techniques, 1986). Chad's earlier experience with labor-based construction in the late 1970s showed that workers' productivity was below average for health and other reasons (Coulis, B. Labor-Based Construction Programs: a Practical Guide to Planning and Management, World Bank, Oxford University Press, 1983). FFW would help offset

this. The primary cause for the low productivity, however, was not nutrition but that labor-based techniques were being used on a project more suited to machines. For a number of reasons the machine-intensive work was delayed and hand labor was used as a stop-gap measure (Per Fossberg, World Bank, personal communication). Labor-intensive road work should not face this problem in the future since human labor would be rejected for jobs which are technically inappropriate. Fourthly, the region expressing interest in FFW, from Djermaya to Ngoura, supports a less dense population than the southern axis; the amount of food distributed here, then, would be less than elsewhere and be less likely to distort the economy; such distortion is often a worry with FFW. Lastly, FFW could ease the burden of women who are under pressure to hold the household economy together through commerce and vending. Because the men working on the road would be paid in grain they would be relieved of the constant necessity to earn cash to buy grain in the market.

Availability of labor: One important social factor planners must take into consideration is the time of year for which work is proposed. The availability of labor (see annex 2 table 3,17,18) will vary according to the season and activities that people engage in. Regrettably the rainy season is the time when people are busy planting and weeding their fields. In areas where berbere is grown people are free for road work only from mid-February through May. If the work to be done on the roads does not take too much time and can be organized so that it can be done after most people have finished their daily work in the fields, that is to say, at odd hours or by task, OFNAR and Public Works may find that people are willing to sign up for light maintenance even in the cultivating season. There is one good reason for OFNAR and Public Works to use local help from May/June through September even though most people are cultivators. Since local labor could check on the roads and do jobs such as culvert-cleaning and filling potholes in dirt roads whenever needed the roads would not degrade as rapidly in the rainy season as when these jobs waited for force account crews to pass. Also, if the rains are bad, as soon as people see that their yield is likely to be little or nothing they will probably be eager for jobs. In this case people would be willing to work at the optimal time for road work.

Road maintenance rather than road construction may be more appropriate for hand labor in the dry season, when the local population is the freest. February through April is exactly the time when labor-intensive work is the most difficult. Earlier experience with labor-based road construction in Chad showed that the soil was so hard and the weather so oppressive that productivity was lower than expected (Per Fossberg, World Bank, personal communication). Road maintenance does not require that as much dirt be moved as does construction; road maintenance may therefore be appropriate for a local work force during the slow dry season.

The percentage of semi-sedentary cattle herders in a village interested in road work is less than in sedentary villages; this is because the schedule of cattle herders occupies them throughout the year. Therefore some cattle herders are unlikely to be available for road work at all. Some cattle owners, however, expressed interest in road work because of their poor grain harvest in 1987. They volunteered either their sons or themselves if their sons could

guard the cattle. Semi-sedentary populations need not necessarily be passed over as unavailable for road work. Numbers of semi-sedentary cattle herders are in direr economic straits than the surrounding sedentary populations and are therefore more than eager to be hired for road work.

Hiring Procedures: Anyone wishing to hire laborers should go through the chief of the Administrative Post or Canton of the region and then through the village chief (see annex 2 table 8,9,10,11). The organization of cantons on the Ndjamena-Ngoura road differs from the cantons on the Ndjamena-Guelengdeng road and so one needs to know which chief to address. Because there are more semi-nomads and nomads on the northern axis, people there may be attached to canton chiefs rather than to a particular area. The canton chief Malna Ali Tchiroma is in charge of the sedentary populations of Canton Karme and Abdoulaye Abderahman, canton chief of the Khossam, is in charge of the mobile populations of the same area.

There are differences as well between the size of groups governed by village chiefs. Towards Ngoura sedentary villages are more populous than villages on the other axis. An employer needs to keep in mind approximately how many villages he will have to approach to get the size work force he needs (see annex 2 table 15).

For ease of administration and a large labor pool it is better to deal with the sedentary canton chiefs on the Ndjamena-Ngoura road. If, however, one of the goals of the prospective road work is to alleviate poverty and mitigate the effects of economic changes then, despite the encumbrances, the semi-sedentary populations, who, in fact, have expressed interest in being hired, should be included. Their economic condition is more serious than others' in the area.

On both the north and south roads men claimed that they were interested in road work but had not taken the initiative to ask for a job. If they had been asked to work they would readily have agreed. Therefore, if the personnel office wants to employ more than a handful of men in an area they should publicize that they are hiring and ask people to come sign up.

Wages: The team was told OFNAR pays 650 FCFA/day for unskilled labor. Some jobs, even unskilled jobs such as brick making, pay better daily wages. Public Works and OFNAR cannot expect to hire many people in towns where a preliminary survey has shown that a number of men support their families in the dry season by becoming migrant laborers getting more than these institutions can afford to pay. Their present wages will attract men who are unable to find more than short-term jobs as migrant laborers or who scrape a living in their own villages by selling wood, hay, water, etc. In some regions many men try to earn necessary income this way. Public Works and OFNAR will also attract men who would prefer to stay at home because of family circumstances but who are obliged to leave in order to earn needed income during the dry season.

Condition of Women: Any attempt to improve the condition of women through jobs doing road work seems unlikely to succeed since the women themselves as well as their menfolk feel that road work is not for women. In areas where a

preliminary survey using this system has shown a willingness to sell food, Public Works/OFNAR can, first, avoid competing with the local women who sell raw or prepared food. Secondly, where local labor is hired for FFW the local women can more easily benefit from selling snacks, drinks and food to the work crew if a small portion of the gang's income is paid in cash.

Priority Roads: People studied along the two axes of Chad's main road do not use the main road very often themselves. They benefit indirectly from the road by selling firewood, charcoal, "secko"s, food and drink along the roadside. They also benefit from the movement of goods for long distances over the main road to Ndjama. Shopkeepers and petty merchants in little villages provision themselves in the major centers. Thus someone from Dougou Chikete will go to Ndjama to buy garlic from Abeche, onions from the Lake, sugar from Sarh, tea from Cameroon and tomatoes from Guelengdeng to take back home for resale. Someone from Bisney will go to Massaguet to buy garlic which has gone from Abeche to Ndjama and then back over the same road to Massaguet. The main road, therefore, has a considerable impact on the local economy. But secondary roads are probably just as important for the inhabitants of a given area. To the north the routes Diourball-Moyto and Massakory-Dagana-Karme are used by people coming and going to markets and to the major cattle markets, by people exporting cattle to Nigeria and by people using government services. To the south the routes Abou Liman-Cameroon, Mallao-Logone Gana, Mogroum-Dihao-Bongor and Guelengdeng-Margao-Bongor and, around Ndjama, a dense network of secondary roads leading to the capital are all frequently utilized by the people interviewed.

Since people along the main road do not directly profit from the road, improving its condition is unlikely to have much impact other than slightly lowering the cost of goods. If ongoing data collection shows that further improvements do not have much effect on the zones through which the road passes perhaps Public Works and OFNAR should follow the suggestion that money be spent, not on bringing the main road up to a higher standard than that foreseen in already-financed reconstruction, rehabilitation and maintenance projects, but on guaranteeing that the bad places are passable, leaving the rest of the road at its present level. The remaining money, if any, can be spent on upgrading important secondary roads. As well as facilitating local travel this would give freer access to important administrative centers and help the economies of areas at present isolated.

The survey system set up in this report will continue to gather information as the planned road works on the main arteries are carried out. Future data compared with the baseline data already gathered will show whether the roads have had little impact on the people living nearby because the present condition of the roads discourages people from using and benefiting from them and whether once these roads are improved their use and their impact on the surrounding populations increases or not. If future data indicates that improved main roads have substantially greater impact on the populace, OFNAR, the Ministry of Public Works and USAID should reconsider the weight to be given to road construction and maintenance to high rather than adequate standards and the amount of effort to be expended on upgrading secondary roads. At present national road network users in the administration and

Inhabitants along the main arteries prefer going everywhere at all times to getting to a few places fast. The views of the CTT on this were not a subject of inquiry in this study.

Voluntary labor: The team inquired whether informants would do road work free to discover their probable reaction to possible government requests that they do voluntary work on the roads. Just north of Ndjamaena villagers are aware of the importance of roads in their everyday lives. Here some people said they would donate their labor for a road to their villages. Perhaps further research will show if this awareness and willingness can be harnessed for the amelioration of secondary or feeder roads in this area. On the Ndjamaena-Guelengdeng axis most people categorically refused to work for free.

Water: Road work requires water and people and animals require water. The first request in every village studied was for a well or pump for water. It seems cruel therefore that when a bore hole is sunk which provides the large amounts of needed for road work that the hole is capped until the next time a road crew passes and local people do not have access to the water. There has been informal discussion about coordination among institutions providing or needing wells but, according to the Administrative Advisor to OFNAR, without any outcome. When the team broached this topic with Gannett-Fleming and the Director of OFNAR the discussion floundered on lack of knowledge about technical problems. The bore holes and pumps road work requires are much bigger than those needed for a village. No one knew if a small pump is available which can be put in for the village to use but which can be removed when the road crew comes around to maintain the roads. USAID should look into possible ways of transforming bore holes for village or livestock use.

CONTENTS OF TABLES

- Table 1: Number of interviews
mean/median/mode of sample population
- Table 2: Traffic: types of transport available to people interviewed,
interest in doing road work as a function of the kind of transport
available
- Table 3: Voluntary labor in each town: number of people interviewed willing to
do free road work to help village
number of people willing to do road work for pay or for Food For Work
- Table 4: Availability of food in towns on Ndjamena-Ngoura axis:
Number of women interviewed willing to sell or prepare food for road
workers
- Table 5: Availability of food in towns on Ndjamena-Guelengdeng axis:
Number of women interviewed willing to sell or prepare food for road
workers
- Table 6: Location of water and government services Ndjamena-Guelengdeng axis:
location of water sources for road crews; location
of administrative, security, medical services and schools
- Table 7a,b: Location of water and government services Ndjamena-Ngoura axis:
location of water sources for road crews; location of
administrative, security, medical services and schools
- Table 8a,b: List of villages surveyed: Ndjamena- Ngoura
Location of villages and officials, people whom Public Works/OFNAR
should contact
number of interviews/ village
- Table 9: Influential people in villages: Ndjamena-Ngoura
- Table 10: List of villages surveyed: Ndjamena-Guelengdeng
Location of villages and officials, people whom Public Works/OFNAR
should contact
- Table 11: Influential people in villages: Ndjamena-Ngoura
- Table 12: Overview of sample populations:
Number of villages surveyed/ total number of villages in sample
mean village and household size
mean number of active adults/ household as an indicator of workers
available
- Table 13: Ethnic groups

- Table 14: Markets and Religion:
Location of markets on each day of the week
religion/ village
- Table 15: Population of sample villages
- Table 16: List of cash value attributed to items or labor
- Table 17/18 Key for Tables 17 and 18
- Table 17a,b,c: Ndjamen-Guelengdeng:
size, social composition, occupation, income, expenses, means of
transport and interest in road work in each household
surveyed/village
- Table 18a,b,c,d:Ndjamen-Ngoura:
size, social composition, occupation, income, expenses, means of
transport and interest in road work in each household
surveyed/ village
- Table 19: 5% sample Ndjamen-Ngoura:
the villages surveyed as 5% of the total villages in each sample
30km x 10km segment
- Table 20: 5% sample Ndjamen-Guelengdeng:
the villages surveyed as 5% of the total villages in each sample
30km x10km segment

Table 1

NUMBER OF INTERVIEWS
Mean/Median/Mode of Sample Populations

LOCAL LEVEL	VILLAGE AUTHORITIES	22
	INDIVIDUALS	111
REGIONAL LEVEL	REGIONAL AUTHORITIES	7
NATIONAL LEVEL	NATIONAL AUTHORITIES	6 +

+ The two Public Works sociologists conducted additional interviews at the national level.

NDJAMENA- GUELENGDENG AXIS	INTERVIEWS IN 10 VILLAGES OUT OF TOTAL SAMPLE OF 186
MEAN POPULATION OF VILLAGES	179
MEDIAN POPULATION OF VILLAGES	150-160
MODE	0-200

NDJAMENA - NGOURA AXIS	INTERVIEWS IN 12 VILLAGES OUT OF TOTAL SAMPLE OF 21
MEAN POPULATION OF VILLAGES	424 *
MEDIAN POPULATION	157-180
MODE	100-200

* or 445 if take Bisney's population as 600 rather than 350.
Mean: Arithmetic average of population of all villages.
Median: 50% of all village populations are greater,
50% smaller than median value.
Mode: The most frequent village sizes fall between these
numbers.

Table 2

TRAFFIC
Type of Transport Available to People Interviewed,
Interest in Doing Road Work as a Function of the Kind of Transport Available

		FOOT	BIKE MOBYLETTE	ANIMAL	CAR	TOTAL
Total Number of Persons		43	20	57	8	128
Interested in roadwork	Number	27	10	37	4	78
	%	63%	50%	65%	50%	61%
Uninterested in roadwork	Number	16	10	20	4	50
	%	37%	50%	35%	50%	39%
Households' Methods of Transport Ndjamena-Ngoura		11	6	36	3	56
Households' Methods of Transport Ndjamena-Guelengdeng		21	10	2	4	37
Total Number Households		32	16	38	7	93

VOLUNTARY LABOR IN EACH TOWN
Number of People Interviewed Willing to Do Free Road Work to Help the Village
Number of People Willing to Do Road Work for Pay or for Food for Work

NDJAMENA - NGOURA

NDJAMENA - GUELENGDENG

TOWN	YES	NO	FOR OWN VILLAGE	TOTAL	TOWN	YES	NO	FOR OWN VILLAGE	TOTAL
BISNEY	2	0	1	3	OUROUL	0	3	0	3
KARME	0	6	0	6	OBAN	0	3	0	3
ASSOUALA	0	2	0	2	ARCHI	0	2	0	2
DJEKINE	0	1	0	1	LOUMIA - GONERI	0	3	0	3
ADENEOU	1	2	1	4	KOLEMARA SARA	0	3	0	3
MADRIE	0	5	0	5	MEDE ARAB	0	1	0	1
BIGNE KLISNA	3	3	0	6	BOUGOUNA	1	2	0	3
DOUGUI CHIKETE	1	5	0	6	RAS ALFIL	0	2	0	2
NOUARA KABIRE	1	2	0	3	TOUKOURA ARABE	0	1	1	2
DJIKEME	2	3	0	5	WALAYA	0	5	0	5
AM DJEMENE	1	2	0	3					
ABOURDJA	1	2	0	3					
TOTAL	12	33	2	47		1	25	1	27

47

Table 4

AVAILABILITY OF FOOD IN TOWNS NDJAMENA - NGOURA AXIS
**Number of Women Interviewed Willing or Not Willing to Sell or
 Prepare Food for Road Workers**

	YES	NO	NA	TOTAL	LIKELY
ABOURDJA	1	2	1	4	NO
AM DJEMENA	2	1	-	3	YES
DJIKEME	2	1	2	5	YES
NOUARA KABIRE	1	-	3	4	YES
DOUGUI CHIKETE	1	3	2	6	NO
BIGNE KLISNA	3	1	1	5	YES
MADRIE	2	3	-	5	NO
ADENEOU	1	1	2	4	NO
DJEKINE	4	0	1	5	YES
KARME	2	1	4	7	YES
BISNEY	1	0	2	3	YES
TOTAL	20	13	18	51	
% OF TOTAL	40%	25%	35%	100%	

8

Table 5

AVAILABILITY OF FOOD IN TOWNS NDJAMENA - GUELENGDENG
**Number of Women Interviewed Willing or Not Willing to Sell or
 Prepare Food for Road Workers**

	YES	NO	NA	TOTAL	LIKELY NO
WALAYA	0	3	2	5	NO
TOUKOURA ARABE	1	0	1	2	YES
RAS ALFIL	0	3	3	6	NO
BOUGOUNA	0	2	1	3	NO
MEDE ARABE ETC	0	1	2	3	NO
KOLEMARA SARA	0	2	1	3	NO
LOUMIA II - GONERI	1	1	1	3	NO
ARCHI	0	0	2	2	NO
OBAN	1	1	1	3	NO
OUROUL	1	2	1	4	NO
TOTAL	3	15	15	33	
% OF TOTAL	10%	45%	45%	100%	

96

Table 6

LOCATION OF WATER AND GOVERNMENT SERVICES
NDJAMENA - NGOURA
 Location of Water Sources for Road Crews,
 Location of Administrative, Security, Medical Services and Schools

TOWN	WATER	SECURITY	ADMINISTRATION	SCHOOLS	SERVICES
PONT BELILE				CM I	
DJERMAYA	Well			CM I	
EL AMADJI					Dispensary
NAALA	Improved well				
MASSAGUET	Pump & Water Tower 3 manual pumps (2 out of service)	Police, Territorial Brigade Documentation and Security	PA Chief Customs Water & Forests UNIR & OFUNIR + Rajeunir Sanitation ONDR ONHPV SONATRA Veterina- rian	1 Primary pilot school CEG 6 private Koranic schools 1 Koranic university	Dispensary
MARGAT (25 km from Massaguet)	Hand pump				
MADA RAHIM (35 km from Massaguet)	Pump but no motor				
KARME	1 well 66 - 78 m, good water 2 salty wells, one with water tower drink standing water in "tarmat"	Military Control Post	Water & Forests 2 veterinarians	CM II 4 Koranic schools	Dispensary
BISNEY	2 wells, bad water		Water & Forests	Spontaneous school	
NGOURA	2 wells, bad water	Military Post		CE II 3 Arab schools 7 Koranic schools	

27

LOCATION OF WATER AND GOVERNMENT SERVICES
NDJAMENA - GUELENGDENG
 Location of Water Sources for Road Crews,
 Location of Administrative, Security, Medical Services and Schools

TOWN	WATER	SECURITY	ADMINISTRATION	SCHOOLS	SERVICES
WALAYA	River 1 well 13 m Several personal wells	Police Documentation security	Water & Forests	School	Dispensary
MANDELIA	Pump & Water Tower Water 16 meters	Military Police	Canton Chief Customs	CM II	Dispensary
KOUNGOUL		Military Training Center		CM I	Dispensary Village Pharmacy
TOUKOURA ARABE	Lined well 38 m River			School	Village Health Agent
LOGONE GANA	River		Customs		
MEDE ARABE	River				
LOUMIA II-GONEREI	Peace Corps Pump 25 m	Military Training Center			Dispensary
MOGROUM			Canton chief	3 Primary Schools complete cycle CEG	Mother & Child Health Center
LITOU	1 well 25 m				
DYMAO II	Wells 25 m				Mother & Child Health Center
MORNOL	Well				
YAO	1 well				
GUELENGDENG	River A few personal wells 20 m	Detachment FANT Documentation & Security Police	Customs Chief PA	CEG 1 pilot school 3 official schools 3 spontaneous schools, Center Training of Agricultural Professionals	Mother & Child Health Center

27

LOCATION OF WATER AND GOVERNMENT SERVICES
NDJAMENA - GUELENGDENG
 Location of Water Sources for Road Crews,
 Location of Administrative, Security, Medical Services and Schools

TOWN	WATER	SECURITY	ADMINISTRATION	SCHOOLS	SERVICES
ARCHI	Well 15 m				
KOLEMARA SARA	No water/another village			Spontaneous school	Retailer of Pills
BOUGOUNA	Well 20 m				First Aid Center
RAS ALFIL	2 wells 15 m		Water & Forests Representative		
MALBOUM FULBE	Well 20 m				Mother & Child Health Center
OUIT OUITI	Well 20 m				Mother & Child Health Center
BERE	Well 20 m				Mother & Child Health Center
NANIGOTO	Well 20 m				Mother & Child Health Center

47

LIST OF VILLAGES SURVEYED: NDJAMENA - NGOURA
Location of Villages and Officials, People Whom
Public Works/OFNAR Should Contact
Number of Interviews/Village

<u>Nom du Village</u>	<u>Canton et SP ou PA/Pref.</u>	<u>Nom du Chef du Village et ses Représentants</u>	<u>Nombre d'Enquêtes</u>
ABOURDJA	Canton Oumar Atim Suburbain Ndjama Chari-Baguirmi	Mahamat Adoum, Assane Mahamat	5
AM DJEMENE	Canton Oumar Atim Suburbain Ndjama Chari-Baguirmi	Saïd Naim, Akoursa Ngare	4
NOUARA KABIRE	Canton Oumar Atim Suburbain Ndjama Chari-Baguirmi	Assan Mahamed, Mahamed Mihimet	5
DJIKEME	Ndjama Rurale Chari-Baguirmi	Badi Addelkader, Adoum Mahamat	6
DOUGUI CHIKETE	Canton Afrouk Ndjama Rurale Chari-Baguirmi	Issa Hisseini, Barke Hisseini	7
BIGNE KLISNA	Canton Mani Ndjama Rurale Chari-Baguirmi	Goudja Rakis	8
TAMRAYA	Canton Mani Ndjama Rurale Chari-Baguirmi	Mahamat Assabal	-
MADRIE	Canton Afrouk Ndjama Rurale Chari-Baguirmi	Haroun Rakis, Doma Daoud	7
ADENEOU	P. A. Massaguet Chari-Baguirmi	Idrissa Issa, Bichara Abderaman	6
DJEKINE	P. A. Massaguet Chari-Baguirmi	El Hadj Ahmet Chabaka, Al Haffa Ahmet	2

LIST OF VILLAGES SURVEYED: NDJAMENA - NGOURA
Location of Villages and Officials, People
Whom Public Works/DFNAR Should Contact
Number of Interviews/Village

<u>Nom du Village</u>	<u>Canton et SP ou PA/Pref.</u>	<u>Nom du Chef du Village et ses Représentants</u>	<u>Nombre d'Enquêtes</u>	
ASSOUALA	P.A. Massaguet Chari-Baguirmi	Abakar Madar	5	
KARME	P.A. Massaguet Chari-Baguirmi	Haroun Hamid, Assane Moussa, Abdoulaye Hisseini	8	
BISNEY	P.A. Moyto Chari-Baguirmi	Ali Gaourang	4	
NGOURA	P.A. Moyto Chari-Baguirmi	Tchiroma Issa	2	
CANTONS/PA	MASSAGUET	P.A. Massaguet Chari-Baguirmi	Abate Abakar	2
	KARME	Canton Karme Ndjamena Rurale Chari-Baguirmi	Maina Ali Tchiroma	2
	MANI	Canton Mani Chari-Baguirmi	Sultan Brahim Mahamat	-
NDJAMENA	Préfecture Chari-Baguirmi	Prefect El Hadji Mahamat Yakouma	1	

INFLUENTIAL PEOPLE IN VILLAGE: NDJAMENA-NGOURA

VILLAGE	CANTON et SP ou PA/Pref.	NAME	POSITION
BISNEY	P.A. Moyto, SP Bokoro, Chari-Baguirmi	Mahamet Ali Forgo Drochna Idriss Komlaiyi	Canton Chief of nomadic Arabs Chief of Arab Nomads of Bisney (2) Ward Chief of Bisney (1)
KARME	P.A. Massaguet, Chari-Baguirmi	Bilama H. Hamid Assane Moussa Abdoulaye Hisseini	Village Chief Notable Notable UNIR Representative, Délégué à la masse Imam
ASSOUALA	P.A. Massaguet, Chari-Baguirmi	Abakar Moudou Akai Moussami Haroun Moussa Toma Nour	Ward Chief, Boudaya Bie Ward Chief, Assouala Ward Chief, Hourel Ward Chief, Am Boudaya
DJEKINE	P.A. Massaguet, Chari-Baguirmi	Abderahmin Seïd	Imam
ADENEOU	P.A. Massaguet, Chari-Baguirmi	Youssouf Adoum Assane Hadjid Idrissa	Ward Chief Ward Chief Ward Chief
MADRIE	P.A. Canton Afrouk, Chari-Baguirmi	Rakis Abou Timaa	Founder of Village
BIGNE KLISNA	Canton Mani, Chari-Baguirmi	-----	
DOUGUI CHIKETE	Canton Afrouk, Chari-Baguirmi	Malloum Chaïbou Mahamat Dagoï	Imam Mechanic & Aide to Village Chief
DJIKEME	Canton Oumar Atim, Suburbain Ndjamenà	Malloum Abdoulaye	Imam
NOUARA KABIRE	C. Oumar Atim, Suburbain Ndjamenà, Chari-Baguirmi	Malloum Adoum	Faki, Religious Leader
ABOURDJA	Suburbain Ndjamenà, Chari-Baguirmi	Yousouf Haroun Abakar Yousouf, son of Yousouf Haroun Mahamet Ahmed	Imam Faki Youth Leader, Works at Sonabut Délégué Politique UNIR Délégué Politique OFUNIR
AM DJEMENE	Suburbain Ndjamenà, Chari-Baguirmi	Adjid Ramat Malloum Mbodou Kourou Ngare Falmata Kourou	Imam, Religious Leader, Ecole Coranique Imam, Religious Leader Délégué Politique UNIR Délégué Politique OFUNIR

LIST OF VILLAGES SURVEYED: NDJAMENA - GUELENDENG
Location of Villages and Officials, People Whom
Public Work/DFNR Should Contact

<u>Nom du Village</u>	<u>Canton et SP ou PA/Pref.</u>	<u>Nom du Chef du Village et ses Représentants</u>	<u>Nombre d'Enquêtes</u>	
1. WALAYA	Madiagoh/Ndjamena/Chari-Bag	Mohamed Kadu/Mbaicdoum Alphonse Kadré Tchalkoutou/Issa Seïd	06	
2. TOUKOURA ARABE	Madiagoh/Ndjamena/Chari-Bag	Al Hadji Oumar Mahamat Delop/ Hissein Hamid	03	
3. RAS-AL-FIL I	Madiagoh/Ndjamena/Chari-Bag	Djedouboum Victor	06	
4. BOUGOUNA	Madiagoh/Ndjamena/Chari-Bag	Abba Adam/Kam Souloum Oumar	04	
5. MEDE ARABE, MASSA et SARA	Madiagoh/Ndjamena/Chari-Bag	Abdelkader Ramadan/Abdoulaye Goudja	05	
6. KOLEMARA SARA	Madiagoh/Ndjamena/Chari-Bag	Ngarleiba Jacques	05	
7. LOUMIA II ou GONERI	Madiagoh/Ndjamena/Chari-Bag	Abba Moustapha/Moustapha Malloum	05	
8. ARCHI	Madiagoh/Ndjamena/Chari-Bag	Mahamat Djikle/Ouzman Affaka	03	
9. OBAN	Madiagoh/Ndjamena/Chari-Bag	Mahamat Matendenia/Baïena Raka	04	
10. OIROUL	Mogroum/Nguelendeng/Mayo Kebbi	Paidi Bagdara	05	
CANTONS	NGUELENDENG	Nguelendeng/Mayo Kebbi	Koudjoudoum Yorossal Justin Chef de PA	1
	MANDELIA	Madiagoh/Ndjamena/Chari-Bag	Mahamat Mounine Chef de Canton	1
	MOGROUM	Mogroum/Boujou/Mayo-Kebbi	Gangan Ndouba Kreme Darkadaï, Représentant Chef de Canton Baskar Padjà, Chef de Village Mogroum	1 1

53

INFLUENTIAL PEOPLE IN VILLAGE: NDJAMENA-GUELENDENG

Table 11

VILLAGE	CANTON et SP ou PA/Pref.	NAME	POSITION
WALAYA	Madiagoh, Chari-Bag	Imam Abakar Goni Djibrine Paul - - - Malloum Boukar, Addallah Kalifa, Abana, Natebe Djibrine Paul Lotassou	Imam, Religious Leader Islamic Community Protestant Leader Teachers Anciens Combattants Police, Sûreté, Eaux & Forêts Evolué, trend setter ■ ■ ■ ■ ■ ■ ■ ■
TOUKOURA ARABE	Madiagoh, Chari-Bag	Kaï Kama Ramat	Religious leader Islamic community
RAS AL FIL I	Madiagoh, Chari-Bag	-----	Very old initiation "ndo" leader; most people Catholic
BOUGOUNA	Madiagoh, Chari-Bag	Imam Al Hadji-Modou	Imam, religious leader Islamic Community
MEDE ARAB	Madiagoh, Chari-Bag	Faki Ali	Faki, religious leader Islamic Community
KOLEMARA SARA	Madiagoh, Chari-Bag	----- Michel Djimornadji Mathieu Maikade	Healers, Counsellor Catholic Mission Counsellor Protestant Mission
LOUMIA II - GONERI	Madiagoh, Chari-Bag	Imam Goni Mamadou	Imam, religious leader Islamic Community
ARCHI	Madiagoh, Chari-Bag		
OBAN	Madiagoh, Chari-Bag	Faki Yaya	Faki in neighboring village, Ras Alfil
OUROUL	Mogroum, Mayo Kebbi		

OVERVIEW OF SAMPLE POPULATION
Villages Surveyed/Total Number of Villages in Sample
Mean Village and Household Size
Mean Number of Active Adults/Household as an Indicator
of Workers Available

Sample Size:

Villages studied/villages in area		22/209
Number of interviews:		
village level	111	
regional level	7	
national level	6	

NDJAMENA - NGOURA

Villages studied/villages in area		12/21
Village level interviews	66	
Mean village size *	424 ^{1/}	
Median village size	157-180	
Mean household size	6.7	
Mean active adults/household	2.7	

NDJAMENA - GUELENGDENG

Villages studied/villages in area		10/186
Village level interviews	45	
Mean village size *	179	
Median village size	150-160	
Mean household size	6.3	
Mean active adults/household	3.1	

* Some figures give total village population, others only the number of taxable citizens; the true mean will therefore be higher.

1/ If Bisney's population is 350; if its population is 600 the mean size is 445.

NDJAMENA - NGOURAEthnic Groups (predominant groups only):

Abourdja	:	Arab Salamat
Am Djemene	:	Arab Assala, Beni Saïd, Salamat
Nouara Kabire	:	Arab Salamat
Dougui Chikété	:	Arab Beni Saïd
Bigne Klisna	:	Arab Khossam, Abou Isse
Madrié	:	Arab Khossam, Abou Isse
Adenou	:	Arab Beni Saïd
Djekiné	:	Arab Beni Waïd
Assouala	:	Arab Khossam
Karmé	:	Bilala, Arab Khossam, Arab Ouled Ali Gorane, Kanembou, Sara
Bisney	:	Kouka

NDJAMENA - GUELENDENGEthnic Groups (predominant groups only):

Walaya	:	Bornou, Sara, Massa Goumay
Toukoura Arabe	:	Arab Salamat
Bougouna	:	Bornou, Sara, Mousseye
Kolemara Sara	:	Sara, Ngambaye (Mouroum, Doba)
Loumia II-Goneri	:	Bornou, Massa, Kotoko, Mousseye, Sara
Archi	:	Massa, Mousgoum
Oban	:	Massa
Ouroul	:	Massa

MARKETS AND RELIGIONS
Location of Markets on Each Day of the Week
Religion/Village

It is important to know the regional market days and religions in each locality, people are unwilling to work on holy days and on market days. Moreover, if there are a number of markets on successive days close to the village where a road crew is staying, the willingness of the women of the village to provide cooked food is less important.

NDJAMENA - GUELENGDENG

The principal markets Ndjamen - Guelengdeng Road:

Sunday:	Koundoul, Mailao, Mogroum, Yao I
Monday:	Kolemara, Guelengdeng, Dihao
Tuesday:	Mandelia, Gambarou, Holom
Wednesday:	Audio, Kalambare, Morneu
Thursday:	Logon Gana, Abu Liman
Friday:	Mabouloum, Kalgona, Medegué, Lourtou
Saturday:	La Loumia

The principal religions Ndjamen - Guelengdeng Road:

Islam:	Toukoura Arab, La Loumia, Ohan
Catholic/Protestant:	Kolemara Sara
Animism:	Ouroul
Mixed:	Walaya, Bougouna

NDJAMENA - NGOURA

Ndjamen - Ngoura Markets:

Sunday:	Angodi, Karme (important cattle market)
Monday:	Ngoura, Naala (important cattle market)
Tuesday:	Djermaya
Wednesday:	Bisney
Thursday:	Massaguet (important cattle market), small Karmé market
Friday:	Moyto
Saturday:	Ndjamen Bilala

Religions: every village visited was Muslim.

POPULATION OF SAMPLE VILLAGESNDJAMENA - NGOURASub-Urbaine Ndjamenas: Population

Abourdja	95
Am Djemene	140
Nouara Kabire	157

Ndjamenas RuraleCanton Mani

Bigné Kalisna	75
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Canton Oumar Atim

Djikémé	206
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Canton Afrouk

Madrié	39
Dougui Chikété	275

P. A. Massaguet

Djekiné	180
Adeneou	107
Assouala	2000
Karmé	1460

P. A. Moyto

Bisney	600 or 350
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NDJAMENA - GUELENGDENG

<u>Canton Madiago</u>	Population	Villages
	38,000	380
Loumia II - Goniri	127	
Archí	162	
Oban	75	
Kolemara Sara	255	
Mede Arab	34	
Toukoura Arabe	350	
Ras Alfil I	75	
Bougouna	400	
Walaya	160	Taxable
<u>Canton Mogroum</u>		
Ouroul	150	

Table 16

CASH VALUES
List of Cash Values Attributed to Items of Labor

1 coro (2.5 kg) millet	=	175
1 sack millet (40 coro)	=	9,000 or 7,000 in south
1 l oil	=	350
1 bar soap	=	150
1 length cloth	=	3,750
1/2 length cloth	=	1,900
1 pack cigarettes + matches	=	225 - 520
Profit on 1 coro (2.5 kg) hot pepper	=	100
Box Omo	=	200
Mat	=	200 (1 person can make 1 mat/week)
1 coro (2.5 kg) gumbo	=	400
Weekly wage roadwork	=	1,500
Daily wage roadwork	=	650
Annual required war contribution for chief	=	5,000
Annual required war contribution for citizen	=	500
War veteran's pension	=	89,000/trimester
Annual required party contribution to Unir	=	500 - 1,500
Fee for plowing/field	=	7,500
Annual tax	=	1,000/person
1 steer	=	60,000 minimum (at Adeneou say 50,000)
1 goat	=	4,500 - 5,000 = 4,750
1 chicken	=	500 - 750 = 625
Daily wage weeding field	=	500
Daily wage brickmaker	=	1,000
1 donkey	=	5,000
Daily wage field hand 7 - 12h Afternoon	=	750 f
Daily wage mason	=	500 f
Daily wage mason	=	1,500 f
Monthly wage Food for Work	=	9,350
<u>Food for Work:</u>		
FFW= 2 sacks millet @ 50kg	=	7,000
1 liter container oil = 4 X 350	=	1,400
1 kg container milk	=	950
		9,350

Key for Tables 17 and 18

- Type: Sole - unmarried, widow(er), divorcé(e)
 Nuclear - man and wife, perhaps children
 Polygynous - man and more than one wife, perhaps children
 Extended - nuclear or polygynous family and other relatives
 Compound - contains people unrelated to any other member of
 household
- Sex: Sex of household head
- Income/Month: Based on total household income declared for previous
 month.
- Expenses/Month: Based on total household expenses declared for previous
 month.
- On-going data collection should reveal how income and
 expenses are brought into balance.
- N.A.: No answer.

Table 17A

NDJAMENA - GUELENDENG
Size, Social Composition, Occupation, Income, Expenses,
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ NO.	EXPENSES	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
WALAYA	7	EXTENDED	F	48,500	25,125	FARMS, EAUX ET FORETS	HOUSEWIFE PETTY COMMERCE	-	FOOT CAR	NA	NO
	2	POLYGYNOUS	F	5,300	1,575	NO FARMING	FARMER HOUSEWIFE	-	FOOT CAR	NA	NO
	5	EXTENDED	M	8,800	1,042	MECHANIC REFORESTATION	NA	-	FOOT CAR	YES	NA
	17	EXTENDED	M	?	4,750	MEUNISIER MACON	NA	-	BICYCLE	YES	NO
	?	?	M	DEPENDENT ON FAMILY	1,500	TAILOR	NA	-	BICYCLE FOOT	YES	NA
TOUKOURA ARABE	8	NUCLEAR	F	15,167	3,750	FARMER AND IRRIGATION	HOUSEWIFE, FARM PETTY COMMERCE MILK & GUMBO	-	BICYCLE	NO	NA
	17	EXTENDED	M	1,500 not incl. income from garden	4,916	VILLAGE CHIEF, HERDER, FARMER IRRIGATION FARMER	NA	YES	MOBYLETTE	NO	YES
RAS ALFIL	8	EXTENDED	M	9,642	542	VILLAGE CHIEF FARMER	WIDOW	-	FOOT	EXPERI- ENCE	NA
	8	EXTENDED	F	8,167	NA		HOUSEWIFE	-	FOOT	YES	NO
	1	SOLE	M	29,667	125	ANCIEN COMBATTANT	-	-	FOOT	YES	NA
	2	NUCLEAR	M	7,050	333	REFORESTER	-	-	FOOT	YES	NO
	9	COMPOUND	M	7,138	200	REFORESTER	-	-	FOOT	NO	NA

61

NDJAMENA - GUELENDENG
Size, Social Composition, Occupation, Income, Expenses,
Means of Transport and Interest in Road Work in Each Household surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ MO.	EXPENSES MO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
BOUGOUNA	3	COMPOUND	F	6,883	6,500	-	FARMER HOUSEWIFE	NA	BICYCLE CAR	NO	NO
	3	NUCLEAR	M	2,250	1,273	FARMER	NA	-	FOOT	YES	NO
	6	EXTENDED	M	3,500	542	MARABOUT FARMER	NA	-	FOOT	YES	NA
MEDE ARABE ETC	3	EXTENDED	M	750	83	FARMER	NA	-	FOOT	YES	NA
	3	POLYGYNOUS	M	2,367	1,208	FARMER IRRIGATED VEGS.	HOUSEWIFE MAT MAKER	-	FOOT	NO	NO
	6	EXTENDED	M	NA	NA	VILLAGE CHIEF FARMER	NA	NA	NA	NO	NO
KOLEMARA SARA	8	NUCLEAR	M	2,250	333	VILLAGE CHIEF FARMER WOODSMAN	HOUSEWIFE CALEBASH MAKER	-	MOBYLETTE	NO	YES
	9	EXTENDED	M	4,383	2,448	VILLAGE CHIEF FARMER, WOODSMAN	HOUSEWIFE CALABASH MAKER	-	FOOT	NO	NO
	8	EXTENDED	M	6,000	1,850	FARMER, SCHOOL TEACHER, SELLS MEDICINE	NA	-	BICYCLE	YES	NA
LOUMIA II GONERI	9	EXTENDED	M	12,000	1,000	FARMER PETTY MERCHANT	NA	YES	BICYCLE	EXPERIENCE	NA
	4	EXTENDED	M	9,146	5,552	FARMER VILLAGE CHIEF	HOUSEWIFE PETTY MERCHANT	-	FOOT	YES	YES
	3	POLYGYNOUS	M	250	1,125	FARMER PETTY MERCHANT	NA	-	FOOT	NO	NO

Table 17C

NOJAMENA - GUELENDENG
Size, Social Composition, Occupation, Income, Expenses,
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ MO.	EXPENSES MO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
ARCHI	1	SOLE	M	NA	958	FARMER EX-CHAUFFEUR	ENGAGED, NOT MARRIED	YES	BICYCLE	YES	NA
	5	EXTENDED	M	NA	375	FARMER FISHERMAN	NA	YES	FOOT	YES	NA
OBAN	6	COMPOUND	M	13,929	15,442	FARMER	HOUSEWIFE FARMER, MAT MAKER	-	FOOT	EXPERIENC- ED, YES	YES
	3	NUCLEAR	M	1,883	958	FARMER	NA	-	DONKEY	YES	NO
	7	EXTENDED	M	NA	625	FARMER SECKO MAKER	NA	YES	FOOT	YES	NA
OUROUL	16	COMPOUND	M	13,883	12,167	FARMER	FARMER, MAT MAKER, HOUSEWIFE	-	BICYCLE	NO	NO
	4	EXTENDED	M	NA	NA	VILLAGE CHIEF	FARMER, MAT MAKER, HOUSEWIFE	YES	FOOT	YES	YES
	4	POLYGYNOUS	M	875	25	FARMER	NA	YES	HORSE	NO	NO
	8	POLYGYNOUS	M	NA	458	FARMER	NA	YES	FOOT	YES	NA

NDJAMENA - NGOURA
Size, Social Composition, Occupation, Income, Expenses
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ MO.	EXPENSES MO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
ABOURDJA	4	EXTENDED	M	SALARIED	1,842	MECHANIC AT SONASUT, DRY SEASON VEGS. FARMER	HOUSEWIFE	-	BICYCLE	NO	NO
	6	EXTENDED	M	6,398	18,589	SALARIED	HOUSEWIFE	-	FOOT CAR	YES	YES
	10	EXTENDED	M	750	30,250	FARMER, HANDYMAN VEGS. FARMER	NA	-	FOOT	YES	NO
	2	NUCLEAR	M	DEPENDENT ON FAMILY	-	FARMER	NA	-	BICYCLE	NA	NA
AM DJEMENE	4	EXTENDED	M	6,750	1,842	MARABOUT FARMER	NA	-	DONKEY MOBYLETTE	YES	YES
	15	EXTENDED	M	27,250	63,625	BLIND	HOUSEWIFE, MILK VENDOR, FARMER	-	DONKEY CAR	NO	YES
	4	EXTENDED	M	2,250 NOT INCL. CARPENTER	2,625	CARPENTER	NA	-	FOOT	NO EXPER- IENCED	NO
DJEKEME	2	NUCLEAR	M	750	333	FARMER, HERDER HAY VENDOR	MILK VENDOR HOUSEWIFE	-	DONKEY	YES EXPER- IENCED	NO
	8	EXTENDED	M	3,000	2,208	FARMER, HERDER	HOUSEWIFE	YES	BICYCLE	YES	NA
	6	NUCLEAR	M	6,900	21,550	FARMER, HERDER	HOUSEWIFE	YES	BICYCLE	YES	YES EXPER- IENCED
	1	SOLE	M	4,500	167	FARMER DEPENDENT ON FAMILY	-	-	FOOT	YES	NA
	8	EXTENDED	M	15,417	31,228	FARMER	HOUSEWIFE MILK VENDOR	YES	HORSE DONKEY	YES	YES EXPER- IENCED

NDJAMENA - NGOURA
Size, Social Composition, Occupation, Income, Expenses,
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ NO.	EXPENSES NO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
NOURA KABIRE	2	NUCLEAR	M	DEPENDENT ON FATHER	-	FARMER	NA	-	DONKEY	YES	NA
	9	EXTENDED	M	39,500	20,712	VILLAGE CHIEF	FARMER HOUSEWIFE MILK VENDOR	-	HORSE DONKEY	EXPER- IENCED NA	YES
	8	EXTENDED	M	4,340	3,275		HOUSEWIFE FARMER, VENDOR	-	DONKEY	EXPER- IENCED YES	YES WORK AS MANOEUVRE
	10	EXTENDED	M	750	667	FARMER	HOUSEWIFE FARMER, VENDOR	-	DONKEY	EXPER- IENCED YES	YES WORK AS MANOEUVRE
DOUGIA CHICKETE	8	EXTENDED	M	7,107	10,333	FARMER BRICK MAKER CHARCOAL MAKER	FARMER WOODCUTTER	-	FOOT	EXPER- IENCED YES	YES COM- MERCE OR MANOEUVRE
	8	EXTENDED	M	1,500	375	FARMER BRICK MAKER CHARCOAL MAKER	FARMER WOODCUTTER	-	FOOT	EXPER- IENCED YES	EXPER- IENCED YES
	1	SOLE	M	750	250	FARMER WOODCUTTER HANDYMAN	-	-	FOOT	EXPER- IENCED YES	NA
	13	EXTENDED	M	4,125	875	VILLAGE CHIEF FARMER	FARMER HOUSEWIFE WOODCUTTER MILK VENDOR	YES	DONKEY HORSE	YES	NO
	7	POLYGYNOUS	M	7,400	5,250	VILLAGE CHIEF FARMER	FARMER HOUSEWIFE WOODCUTTER MILK VENDOR	YES	HORSE DONKEY	YES	YES WATER
	6	NUCLEAR	M	7,917	667	FARMER	NA	-	DONKEY	YES EXPER- IENCED	NO WATER

NDJAMENA - NGOURA
Size, Social Composition, Occupation, Income, Expenses,
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ MO.	EXPENSES MO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
BIGNE KLISNA	8	NUCLEAR	M	8,750	8,750	NA	FARMER WOODCUTTER MILK VENDOR	-	DONKEY	YES	YES
	9	COMPOUND	M	7,500	1,200	FARMER HERDER	NA	-	DONKEY HORSE	EXPER- IENCED, YES	YES
	1	SOLE	M	22,500	667	FARMER HERDER MASON CARPENTER	AFFIANCED	-	DONKEY	YES	NA
	9	EXTENDED	M	3,750	333	FARMER	FARMER HOUSEWIFE	YES	DONKEY	YES	NO
	7	NUCLEAR	M	2,200	10,003	FARMER	FARMER HOUSEWIFE	YES	DONKEY	YES	YES
MADRIE	6	EXTENDED	M	898	208	FARMER CONSTRUC- TION WORKER	NA	-	DONKEY	YES	YES
	9	NUCLEAR	M	6,750	7,524	FARMER	HOUSEWIFE	-	DONKEY	NO	YES
	4	EXTENDED	M	4,250	7,433	FARMER	FARMER WOODCUTTER HOUSEWIFE	YES	DONKEY	NA	YES
	5	EXTENDED	M	NA	708	FARMER	FARMER WOODCUTTER HOUSEWIFE	YES	HORSE CAMEL DONKEY	NO	NO
	2	NUCLEAR	M	3,000	1,125	CATTLE MERCHANT	NA	YES	DONKEY	YES	NO

6/6

NDJAMENA - NGOURA
Size, Social Composition, Occupation, Income, Expenses
Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	INCOME/ MO.	EXPENSES MO.	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
ADENEOU	5	NUCLEAR	M	NA	250	FARMER WOOD CUTTER SELLS HAY	NA	-	DONKEY	NO	NO
	4	EXTENDED	M	1,000	2,483	OLD	FARMER HOUSEWIFE	YES	DONKEY	NO	YES MANOEUVRE
	9	NUCLEAR	M	6,000	3,188	VILLAGE CHIEF FARMER, HERDER	NA	YES	DONKEY	YES	NA
	6	EXTENDED	M	750	1,375	FARMER	UNMARRIED	-	DONKEY	YES	NO
DJEKINE	6	NUCLEAR	M	35,000	2,867	HERDER FARMER	FARMER HOUSEWIFE	YES	DONKEY	NO	YES
	12	COMPOUND	M	2,750	833	VILLAGE CHIEF FARMER, HERDER	NA	YES	HORSE DONKEY	NO	NA
	8	EXTENDED	M	292	-	FARMER HERDER	HOUSEWIFE FARMER, VENDOR	-	HORSE DONKEY	BLIND	YES
	4	NUCLEAR	M	325	775	FARMER HERDER	HOUSEWIFE, FARMER SELLS BUSH PROD.	YES	HORSE DONKEY	BLIND	YES
	6	POLYGYNOUS	M	1,000	1,908	FARMER HERDER VILLAGE CHIEF	FARMER HOUSEWIFE	YES	HORSE CAMEL DONKEY	YES	YES
KARME	12	NUCLEAR	M	1,500	34,333	FARMER	FARMER PETTY COMMERCE HOUSEWIFE	-	BICYCLE DONKEY	NO	YES
	3	EXTENDED	M	750	24,200	FARMER	PETTY COMMERCE HOUSEWIFE	-	FOOT	YES, EXPER IENCE	NO
	15	POLYGYNOUS	M	68,500	958	SALARIED HERSDMAN FARMER, HERDER	NA	YES	HORSE CAMEL DONKEY	NO	NA

NDJAMENA - NGOURA
 Size, Social Composition, Occupation, Income, Expenses,
 Means of Transport and Interest in Road Work in Each Household Surveyed/Village

VILLAGE	SIZE	TYPE	SEX	MINIMUM MONTHLY INCOME	MINIMUM MONTHLY EXPENSES	TASKS (MEN)	TASKS (WOMEN)	HERDING LARGE LIVESTOCK	TRANSPORT MODE	MEN INTERESTED IN ROAD WORK	WOMEN INTERESTED IN COMMERCE
KARME	1	SOLE	M	NA	167	FARMER HANDYMAN	UNMARRIED	-	FOOT	YES	NA
	2	NUCLEAR	M	3,750	125	FARMER, MAKER, SELLS HAY	JUST MARRIED	-	DONKEY	YES	NA
	8	EXTENDED	M	22,933	27,385	ABSENT, TAILOR FARMER	PETTY COMMERCE FARMER, HOUSEWIFE	-	DONKEY	NA	YES
	12	EXTENDED	M	1,500	333	FARMER, MASON WOOD, HAY VENDOR	NA	-	DONKEY	YES	NA
BISNEY	2	NUCLEAR	M	2,250	2,433	FARMER	NA	-	FOOT	YES	NA
	11	EXTENDED	M	3,000	333	FARMER	NA	YES	DONKEY	YES, EXPERIENCED	NA
	15	EXTENDED	M	46,000	3,180	TAILOR FARMER	HOUSEWIFE PETTY COMMERCE	YES	FOOT CAR	NA	YES

29

5% SAMPLE NDJAMENA - NGOURA
 Villages Surveyed At 5% of The Total Villages
 in Each Sample 30 km X 10 km Segment

Etape 1	Ndjamena - Djarmaya <u>Echantillon</u> Am Djémene Abourdja Noura Kabire Djikemé	<u>Villages</u> Am Djemena Zaraf Abourdja Am Serere Nouara Kabire Djikemé Mahadjiré Am Koroundro Hamam Hassaballah Khadidja	11 villages
Etape 2	Djermaya - Am Gifel Bigné Klisna Dougui Chikété Madrié	Charbon Bigne Klisna Khibeche Dougui Chikuté Hidjelidje Madrié	6 villages
Etape 3	Am Gifel - Ladalan Adeneou Djekiné	Adeneou Djekiné	2 villages
Etape 4	Ladalan - Karmé Douna Assouala	Assouala	1 village
Etape 5	Karmé Douna - Bisney Karmé	Karmé Dereboya (à 30 km de la route, pas comme marqué sur la carte)	0 village
Etape 6	Bisney - Ngoura Bisney	Bisney	1 village
Etape 7	Ngoura -----	Ablibed (pas un village mais un ouadi)	0 village
Total of 12 villages studied out of 21			
Total of 66 interviews			
+ Chef P.A. Massaguet + Pref. Chari-Bag.			

Table 20

5% SAMPLE NDJAMENA - GUELENGDENG
 Villages Surveyed at 5% of the Total Villages
 In Each Sample 30 km x 10 km Segment

Etape 1	Ndjamena - Kalam Kalam	52 villages
	Tawakal - not found, replaced by Walaya Toukoura Arabe Ras Alfil I	
Etape 2	Kalam Kalam - Mailao I et II	
	Bougouna Médé	52 villages
Etape 3	Mailao - Tarangal	
	Kolémara Sara Loumia I	28 villages
Etape 4	Tarangal - Mogroum	
	Marendenia - not found Archi Limani - not found, replaced by Oban	46 villages
Etape 5	Mogroum - Guelengdeng	
	Ouroul	8 villages
Total of 10 villages studied		
Total of 46 interviews		

FICHE D'ENQUETE

DATE :

ENQUETEUR (Nom et Prénom)

ENQUETE :

Ministère de la Santé Publique,
Direction de la Santé Publique

1.) Comment distinguez et organisez-vous les hopitaux, les dispensaires, les centres médicaux, les centres de soins maternels et infantiles et autres?

2.) Quels sont les critères de localisation des centres de santé?

3.) Combien y a t-il des centres de santé sur l'axe
et indiquez leur nature, leur nombre et le lieu d'implantation

<u>Nature</u>	<u>lieu</u>	<u>Nbre</u>
1		
2		
3		
4		
5		

4.) Sont-ils bien pourvus en :

a) médicaments oui

 non

Pourquoi _____

b) Personnel oui

 non

Pourquoi _____

5.) Une autre institution que votre Direction intervient-elle auprès de la masse pour les soins curatifs et préventifs?

oui

non

Si oui, indiquez leur nature et leur zone d'intervention suivant l'axe indiqué.

6.) Quel est le degré de collaboration entre ces institutions et votre Direction?

7.) La population située sur l'axe _____
bénéficie-t-elle des soins de santé primaire

Oui non

Pourquoi _____

Sinon, à quoi est dû la difficulté?

8.) Quel est votre degré de mobilité sur cet axe?

Très bien Bien Passable Médiocre

Inexistant

Autres réponses _____

9.) Quelles sont, par ordre de grandeur, vos difficultés dans la mobilité?

10.) L'information circule-t-elle bien entre votre Direction et vos services provinciaux et vice-versa

oui

non

Pourquoi? _____

11.) Quels sont les moyens usités? :

-
-
-
-
-

12.) Est-ce que le réseau routier dans son état actuel vous satisfait-il?

oui

non

Pourquoi _____

13.) Que suggerez-vous aux services routiers pour la bonne amélioration de vos prestations.

FICHE D'ENQUETE

ENQUETEUR (Nom et Prénom)

DATE:

ENQUETE

Ministère de la Santé Publique

1.) Quelle différence faites vous entre la Direction Nationale des Pharmacies et la PHARMAT (Pharmacie d'Approvisionnement du Tchad).

2.) Quelle est l'avantage de l'une par rapport à l'autre et l'étendue de leur couverture sur le territoire national

3.) Combien y a t-il au Tchad :

- des Hopitaux
- des Dispensaires
- des centres de soins Maternels et Infantiles
- des centres médicaux
- des Maternités
- Autres

FICHE D'ENQUETE

ENQUETEUR (Nom et Prénom)

Date :

ENQUETE

Ministère de la Sécurité Alimentaire
et des Populations

- 1.) Quels sont, selon vous, le degré du rapport qui existe entre la distribution des vivres et la circulation routière; et comment faites-vous votre planification suivant ce rapport.
- 2.) Le réseau routier vous satisfait-il ?
oui
non
- 3.) Sinon, que suggerez-vous pour son amélioration
- 4.) Contribuez-vous à l'entretien des routes ou pistes: oui
non
- 5.) Ou faites-vous vous même des refections des pistes ? oui
non
- 6.) Sur l'axe _____ quelles sont les activités entreprises par vous et des ONG.
- 7.) Ya-t-il des centres de stockage dans la zone.
- 8.) Y accédez-vous facilement à tout moment de l'année?
- 9.) Accédez-vous facilement à tout moment de l'année aux marchés pour l'achat des céréals?
- 10.) Quelles sont les difficultés
- 11.) Commentaire libre

FICHE D'ENQUETE

ENQUETEUR (Nom et Prénom)

DATE :

ENQUETE

Ministère du Plan et de la Coopération
Secrétariat Permanent des ONG

1.) A combien chiffrez-vous le nombre des ONG actuellement présentes au Tchad

2.) Pourriez-vous brièvement nous préciser leurs zones d'intervention suivant l'axe _____

3.) Comment les répartissez-vous sur le terrain :

- | | | |
|---|-----|--------------------------|
| a) à leur demande | oui | <input type="checkbox"/> |
| | non | <input type="checkbox"/> |
| b) suivant voeu d'une institution gouvernementale | oui | <input type="checkbox"/> |
| | non | <input type="checkbox"/> |
| c) suivant vos propres critères | oui | <input type="checkbox"/> |
| | non | <input type="checkbox"/> |
| d) Autres | | |

4.) Quels sont les éléments qui entrent en ligne de compte dans l'appréciation du dossier de fixation d'une ONG.

5.) Commentaire libre

FICHE D'ENQUETE

DATE :

ENQUETEUR (Nom et Prénom)

ENQUETE

Ministère de la Santé Publique
(Service des Grandes Endemies)

1.) Qu'est-ce qu'est le Programme Elargie de vaccination

2.) Quelles sont vos expériences en campagne vaccinale sur
l'axe: _____

3.) Quelle est la difficulté majeure?

4.) Pensez-vous que la route contribue-t-elle pour une bonne part au
retard de vos réalisations?

5.) Que suggerez-vous?

6.) Que pensez-vous du réseau routier suivant l'axe _____

7.) Souhaiteriez-vous d'autres tracés?

8.) Estimez-vous que le niveau d'entretien du tracé actuel est suffisant?

oui

non

Pourquoi? _____

9.) Que suggerez ou proposez-vous aux techniciens routiers pour l'amélioration de vos prestations.

10.) Commentaire libre

FICHE D'ENQUETE

ENQUETEUR (Nom et Prénom)

DATE :

ENQUETE

Ministère du Plan et de la Coopération
Direction de la Coordination des Aides
et Fonds des Projets Ruraux

- 1.) Quels sont les projets de developement qui sont en cours de réalisation dans les zônes suivant l'axe _____
- 2.) Quelles sont les sources de Financement
- 3.) Comment sont-ils exécutés
Par qui et où
- 4.) Quels sont les critères d'implantation
- 5.) Comment définissez-vous votre service
- 6.) Quels projets et quels dossiers acceptez-vous
- 7.) Commentaire libre

FICHE D'ENQUETE

ENQUETEUR (Nom et Prénom)

DATE :

ENQUETE

Ministère de la Santé Publique
(Services Pharmaceutiques)

1.) Qu'est que la (Direction Nationale des Pharmacies ou PHARMAT
suivant interlocuteur)?

2.) Quels sont vos critères d'Approvisionnement?

3.) Avez vous des points d'Approvisionnement sur les axes: _____

oui

non

4.) Citez-les et donnez leur nombre

5.) Connaissez-vous des problèmes d'expéditions sur l'axe _____

oui

non

6.) De quel ordre : _____

7.) Connaissez-vous des difficultés de communication entre votre Direction et vos services situés sur l'axe _____ et vice-versa

oui

non

8.) De quel ordre : _____

9.) A quoi cela est dû _____

10.) Quelles sont vos périodes d'affluence :

a) des commandes

b) des expéditions

11.) Sont-elles liées à un problème climatique

oui

non

Pourquoi _____

12.) Donnez-nous quelques détails

13.) Etes-vous satisfait du réseau routier nationale?

oui

Autres réponses _____

14.) En faites vous souvent usage

oui non

15.) Vous venez de dire que vous n'êtes pas satisfait du réseau routier, que leur reprochez-vous?

16.) Quelles sont vos propositions pour leur amélioration

Fiche d'Enquête ouverte aux Prefets, Sous-Prefets,
Chefs de P.A., Chefs de Canton

Préfecture, S/Prefecture, P.A. Canton Date Enquêteur

Nom et titre de l'Enquêté:

Limites des régions :

Nombre de population :

Nombre de S/Préfectures /P.A./Cantons/Villages dans votre région (1)

Groupes ethniques et leurs caractéristiques principales :

Activités économiques de la région

Autres ressources économiques de la région susceptibles d'être exploités :

Les institutions religieuses

Les institutions scolaires, leurs degrés et sites :

Au Prefet, S/Prefet, Chef de P.A. :

Le système politique traditionnel :

(1) rayer les mentions inutiles

Quelles sont les routes secondaires et pistes de la région ?

Quel est leur importance ?

Quand sont-elles praticables ?

Quels sont les points d'eau dans la région ?

puits

rivières

fleuves

marigots

autres _____

A quel profondeur peut-on trouver de l'eau ?

Est-ce qu'il y a du latérite ou des matières rocheuses dans votre zone ?

oui non où ?

Quelles sont les principales activités industrielles de la région ?

Où se trouve le siège régional de ces industries ou sociétés ?

Comment font-ils parvenir leurs matières de base ?

Comment exportent-ils leurs produits ?

Quelles sont les activités artisanales pratiquées dans la région ?

Par qui ?

Quels sont les marchés de la région ?

<u>Jours</u>	<u>Importance</u>
Dimanche	_____
Lundi	_____
Mardi	_____
Mercredi	_____
Jeudi	_____
Vendredi	_____
Samedi	_____

Quelles sont les activités commerciales de la région ?

Quel est le rythme d'écoulement des produits ?

Existe-il chez-vous un bureau de douanes ? oui non

Le trafic des marchandises est-il intense ? oui non

par quelles voies est-il pratiqué ?

l'échange est-il réciproque ? oui non

en quoi consiste l'échange ?

Y a-t-il des postes militaires ? oui non

où ?

Y a-t-il d'autres services administratifs ? oui non

Lesquels où

56

Est-ce qu'il y a des projets de développement dans la région ?

oui non

Dé:ails :

Est-ce que des gens viennent d'ailleurs pour faire des achats dans cette région ? oui non

Qu'achetent-ils ?

Comment en font-ils l'exportation ?

Etes-vous satisfait de la prestation industrielle et commerciale de la région ? oui non

Pourquoi ?

Sinon, quels sont les obstacles ?

Etes-vous satisfait du niveau actuel de l'entretien des routes dans votre zone ? oui non

Pourquoi ?

Ce travail peut-il être graduit ou payé

Nous allons enquêter dans _____ villages

Avez-vous des commentaires ou appréciations à nous dire ?

Est-ce que votre collaborateur tel _____ est assez respecté pour faire travailler les gens ?

oui non

QUESTIONNAIRE VILLAGEOIS

Nom du village

date

Enquêteur

Dépendance administrative (Canton, P.A., S/Préfecture, Préfecture):

Nom et titre de l'Autorité Supérieure Directe :

Nom de l'Enquêté :

Nom du Chef de village :

Qui remplace le Chef à son absence ?

Quelles sont les ethnies les plus importants du village ?

Quels sont les villages voisins ?

Le village est-il proche ou loin du centre administratif ?
où _____ km _____

Le village est-il proche ou loin du marché ?
où _____ km _____

Le village est-il proche ou loin du dispensaire ?
où _____ km _____

Le village est-il proche ou loin de l'école ?
où _____ km _____

Le village est-il proche ou loin de la grande route ?
où _____ km _____

A votre avis quels sont les besoins réels du village ?

APERCU SUR LE VILLAGE

Que signifie le nom du village ?

Qui a fondé le village et quel est son ethnique ?

Pourquoi a-t-il préféré ce site ?

Y a-t-il combien de concessions dans le village ?

Quel est la population du village ? Nombre total :

 Combien d'hommes de femmes

 de garçons de filles

Où est-ce que les villageois prennent de l'eau ? Nombre

puits aménagés ^{pour les hommes} ^{pour les animaux}

puits à pompe

puits simple

chateau d'eau

rivière

fleuve

mare ou marigot

lac

autres sources, citez-les :

L'eau est-elle bonne ? oui Non

Commentaire :

- A quelle profondeur peut-on trouver l'eau (en ce qui concerne les nappes souterraines) ?

- Pourrait-on facilement détecter les nappes d'eau douces ? oui
non

Comment ?

- A qui faut-il s'adresser pour cela

Connaissez-vous d'autres points d'eau dans la zone ? oui non

à combien de km et quelle direction ?

Quelles sont les principales religions du village ?

Islam

Catholicisme

Protestantisme

Animisme

Autres

Y a-t-il des chefs religieux dans le village ? oui non

qui ?

Y a-t-il des lieux sacrés au village ? oui non

Mosquée Eglise endroit sacré

Autre :

Sinon, où allez-vous, avec quelle fréquence, et comment ?

LES DEPARTS DU VILLAGE

A certains moments de l'année, certains villageois vont-ils ailleurs chercher du travail ? oui non

Qui sont-ils ?

Quand vont-ils ?

Où vont-ils ?

Quand est-ce qu'ils reviennent ?

Voyagent-ils à pied , en camion , ou autre _____ ?

Est-ce qu'il y a certains gens qui vont à la transhumance ?

oui non

Que cherchent-ils : eau
pâturage
autres _____

qui sont-ils

quand vont-ils

où vont-ils

quand reviennent-ils

Y a-t-il des gens qui sont partis pour l'école ? oui non

Quel genre d'école : moderne
coranique
études secondaires
autres

Y a-t-ils des gens qui sont partis définitivement du village ?

oui non

Pourquoi ?

LES ETRANGERS DANS LE VILLAGE

Y a-t-il des gens qui sont venus solliciter du travail dans le village ?

oui non

sont-ils nombreux ? oui non combien ?

Quel genre de travail viennent-ils solliciter ?

Y restent-ils longtemps ? oui non

A quels groupes ethniques appartiennent-ils ?

voyagents-ils d'habitude à pied , en camion , ou autre _____?

Y a-t-il des gens qui sont venus au village pour solliciter des champs à labourer ? oui non

sont-ils nombreux ? oui non combien

restent-ils toute l'année ? oui non

Sinon, où vont-ils ?

Sinon, reviennent-ils avec la pluie ? oui non

voyagent-ils d'habitude à pied , en camion , où autre _____?

Y a-t-il des gens qui sont venus pour l'élevage ? oui non

Cherchent-ils : eau

pâturage

autres _____

Restent-ils toute l'année ? oui non

Sinon, à quel moment de l'année viennent-ils ?

à quel moment repartent-ils ?

LE POUVOIR AU VILLAGE

Qui a le pouvoir au village :

Le Chef de village aidé par : un Adjoint

Naib Padja Kaigama etc

Conseil de notables

Conseil des sages

Chefs de quartier

Chefs de lignage

Le Chef de village seul

Autres, [] citez-les :

Y a-t-il d'autres personnes influentes dans le village, tels que :

Délégué politique

Chef de terre

Chef religieux

des Missionnaires ou Catéchistes

des Instituteurs

des Infirmiers

des grands commerçants

des anciens combattants

Déléguée féminine

Chef des jeunes

Militaire

Agents de Gouvernement

citez-les :

Autres

citez-les :

Comment est choisi le Chef du village :

elu par la population
de père en fils
de frère à frère
intrônisé par le Supérieur

ACTIVITES ECONOMIQUES

Comment accède-t-on à la terre si on est :

Originaire du village

femme mariée du village

femme sans homme au village

étranger

Y a-t-il des gens qui ont achetés des parcelles au village ? oui

non

Qui sont-ils ?

D'où viennent-ils ?

Qui vend la parcelle ?

Est-ce qu'il y a eu un projet de développement/groupement/coopératif dans le village ? oui non

dans la zone ? oui non

Décrivez-les :

Y a-t-il quelqu'un du village qui possède :

Une bicyclette une charue une charette

une motopompe un camion une voiture

une mobylette un groupe électrogène

Qui est (sont)-il(s) ?

Que fait-il avec ?

Y a-t-il des taxis-brousse qui passent ici ? oui non
avec quelle fréquence ?
quel est leur circuit ?

coût ?

CALENDRIER AGRICOLE

Quelles sont les différentes cultures pratiquées dans le village ?

Quelles sont les cultures de vente ?

Quelles sont les cultures pratiquées par :

des hommes

des femmes

Quels travaux agricoles sont effectués par :

des hommes

des femmes

des enfants

Quels sont les différents moyens de production utilisés dans le village ?

Les villageois pratiquent-ils de l'élevage ? oui non

Quels animaux sont élevés par les hommes ?

Quels animaux sont élevés par les femmes ?

Quels sont les animaux que les villageois utilisent pour :

le transport

le puisage d'eau

la nourriture familiale

la vente

l'élevage contemplatif

autres usages

Est-ce que les villageois vendent les produits d'élevage ? oui
non

Si oui, qu'est-ce qu'ils vendent

Sinon, qu'en font-ils ?

Quelles sont les principales fêtes du village et leurs périodes ?

Pratique-t-on la pêche dans le village ? oui non

Y a-t-il des moments de l'année quand les paysans sont moins occupés ?

oui non Quand ?

Pendant cette période d'inactivité, pensez-vous qu'il y aurait des gens du village qui accepteraient de travailler ?

oui non

Gratuitement ? oui non
Sinon, que demanderaient-ils ? argent vivres autres

Quels types de travail feraient-

apporter l'eau

vendre la nourriture

travailler comme manoeuvre

comme manoeuvre si ce n'est pas loin du village

Est-ce que des gens du village ont déjà travaillé sur la route ?

oui non

10

- travaillé déjà sur la route -

qui ?

quels travaux ?

pendant combien de temps ?

Comment ont-ils été embauché ?

Propre demande

Demande du gouvernement

Demande de l'employeur

Comment etaient-ils payés ?

Argent

Vivres

Autres _____

Est-ce qu'ils se sont déplacés du village pendant leur travail ?

oui non

LE COMMERCE

Y a-t-il un marché au village ? oui non

Sinon, où vont les villageois le plus ?

Si oui, quel jour de la semaine ?

Est-ce que le marché est grand ou petit

Des gens viennent-ils au marché à pied à dos
d'âne/cheval/chameau, etc , en voiture
autres _____

Est-ce que des commerçants ou Sociétés viennent au village pour acheter
du bétail ? oui non

Comment exportent-ils leurs achats ?

Où les exportent-ils ?

Est-ce que des commerçants ou Sociétés viennent au village pour acheter
autres choses ? oui non

Qu'est ce qu'ils achètent ?

Comment exportent-ils leurs achats ?

Où les exportent-ils ?

Y a-t-il les commerçants installés dans le village ?

Oui Non

Sont-ils grands ou petits commerçants ?

Si le village est sur la route, est-ce que des gens s'y arrêtent ?

Oui Non

Pourquoi s'arrêtent-ils ici ?

Passent-ils la nuit ici ? Oui non

Trouve-t-on des filles libres dans le village ? Oui Non

Est-ce qu'elles sont saines ? Oui Non

Renseignements :

QUESTIONNAIRE VILLAGEOIS

- A quelle profondeur peut-on trouver l'eau (en ce qui concerne les nappes souterraines) ?

- Pourrait-on facilement détecter les nappes d'eau douces ? oui
non

Comment ?

- A qui faut-il s'adresser pour cela

- Quelles sont les principales fêtes du village et leur période.

Est-ce que quelqu'un dans l'unité de production a voyagé depuis un mois ? oui non

Qui ?

Où ?

Pour quel motif ?

Comment est-il parti ? à pied en voiture
à dos d'un animal autres _____

Est-ce qu'il y a des étrangers qui sont venus chez vous depuis un mois ?

oui non

pour quel motif ?

comment sont-ils venus ? à pied

en voiture à dos d'un animal autres

Est-ce que quelqu'un est venu rester avec vous depuis un an ?

oui non

Qui ?

Pour quel motif ?

Combien avez-vous payé comme impôt et effort de guerre ?

Comment arrivez-vous à payer l'impôt, etc...?

Quelles sont les cotisations (dépenses pour décès, mariage, etc que vous avez versées depuis un mois ?

Lesquelles en quoi combien

combien avez-vous dépensé pour ces fêtes ?

Comment avez-vous trouvé cet argent ?

Avez-vous comme transport un(e) :

Bicyclette, cheval, chameau, âne autre _____

(si la réponse du Chef de village a été positive)

Avez-vous fait parti d'un groupement/coopératif/projet

oui non

détails :

Avez-vous un(e) :

brouette pelle pioche rateau

charue charette motoculture motopompe

Mobylette camion voiture groupe electrogène

Si vous n'êtes pas propriétaire de ces choses, en louez-vous ?

oui lesquelles non moyennant?

Vous les utilisez à quoi faire ?

Est-ce que la récolte a été bonne ? oui non

pourquoi si mauvaise :

Avez-vous semé du _____ combien de sacs récoltés pas donné

petit mil _____

sorgho rouge _____

sorgho blanc _____

berbéré _____

arachides _____

produits du jardin _____

Autres _____

100

Si vous cultivez du coton, combien de kilos ?

Est-ce que _____ sacs vont suffirent pour votre famille pour
tout l'année ? oui non déjà terminé

Comment-allez-vous faire pour subvenir aux besoins de la famille ?

Comment allez-vous faire pour gagner de l'argent pour vos besoins ?

Etes-vous eleveur ? oui non

Qu'elevez-vous et à peu près combien de :

poulets chevres moutons porcs chevaux chameaux ânes boeufs

boeufs (ou autre) d'atelage volaille

Est-ce que vous gardez ces animaux ici avec vous ? oui non

sinon, quels animaux sont partis ?

avec qui ?

où ?

pour combien de temps ?

pour quel motif ?

est-ce que quelqu'un vous a confié des animaux ? oui non

lesquels

combien

Que faites-vous avec votre

lait
beurre
oeufs
viande
peaux

Combien avez-vous dépensé depuis un mois pour les habits de la famille ?
D'où vient cet argent ?

Est-ce quelqu'un dans l'unité de production a été malade depuis l'an passé ?

oui non

Qui

La gravité :

où est-il allé pour le traitement :

comment est-il allé ?

Y a-t-il un centre de soins proche du village ?

oui non

sinon, où ?

Y a-t-il des détaillants de médicaments au village ?

oui non

sinon, où

Etes-vous contents avec ce traitement ? oui non

Auriez-vous voulu faire autres choses ? oui non

Quoi ?

Dépenses médicales ?

Avez-vous, vous et autres membres de la famille, travaillé sur la route ?

oui non

si oui, qui ?

Quel travail ?

Comment est-ce que ce travail a été organisé?

Combien de fois par mois vendez-vous les choses au marché ?

Combien gagnez-vous d'habitude

(si elle est mariée)

Est-ce que votre mari va au marché ? oui non

Combien de fois par mois ? où ?

Qu'est ce qu'il vend à combien

Qu'est-ce qu'il achète à combien

Est-ce que vous aidez votre mari dans ses champs ? oui non

Qui est le propriétaire de ce que vous cultivez ensemble ?

Mari Femme Deux ensembles

Est-ce que vous avez vos propres champs ? oui non

Si oui, que faites-vous avec la récolte ?

Avez-vous votre propre bétail ? oui non

Quels animaux à peu près combien

Est-ce que vous avez des autres sources de revenus que nous n'avons pas encore citées ? oui non

Quelles sources combien

Si les manoeuvres font l'entretien de la route dans le voisinage,
accepteriez-vous de travailler en :

apportant de l'eau

vendant de la nourriture cuite

vendant de la nourriture crue

travaillant comme manoeuvre

travaillant comme manoeuvre
si pas loin du village

Feriez-vous sa tâche gratuitement ? oui non

sinon, comment voulez-vous être payé ?

en nourriture

en espèce

encondements
sel, thé, sucré

RAPPORT

1) Resume sommaire (ecrit pour non-sociologues) de 1-3 pages:

- a) recommandations dans la region impliquee
- b) ce que l'equipe a fait en bref et pourquoi
- c) resultats en bref

2) Rapport:

- a) region enquete, echantillon
- b) resultats du depouillement des donnees
- c) conclusions tirees des resultats du depouillement
- d) recommandations

3) Annexes:

- a) Chiffres indicatifs de l'echantillon
- b) Population des villages enquetes
- c) Villages enquetes par etape
- d) Circulation dans les villages temoins
- e) Disponibilite du main d'oeuvre dans les villages temoins
- f) Ethnies dans l'echantillon
- g) Lieux et jours du marche
- h) Religions dans les villages temoins
- i) Autorites dans les villages temoins
- j) Pointes d'eau
- k) Services gouvernementaux dans les villages temoins
- l) Disponibilite de la nourriture dans les villages temoins
- m) Unites de production (taille, composition, revenus, modes de transport, etc.)

IMPLEMENTATION OF THE SCOPE OF WORK:

This paper designs a sociological study of road maintenance and describes the methodology to be used in carrying out the tasks described in the statement of work (PIO/T no. 677-0050-3-70016). The system set up to conduct this study will be developed with the aid of two sociologists attached to T.P.

The contractor and T.P. sociologists will first discuss with OFNAR's planning engineer what matters OFNAR considers in deciding on priorities in road maintenance and the form in which OFNAR needs information in order to use it to prioritize roads for maintenance. Then, keeping in the forefront the needs of OFNAR which this study should serve, the three sociologists will discuss what factors should be studied in order to discover the information OFNAR needs. Over several days the three sociologists will develop a series of questions which they will seek to answer during their study. These questions should yield information on the problems posed in the PIO/T, inter alia, the size of populations served by the road, demographic characteristics, regional resource bases, major production systems, and the social characteristics of local communities and individual households.

Once the study questions have been elaborated the contractor and the T.P. sociologists will test them in 2 areas. These areas have been chosen to represent two broadly different ways of life in Chad, agriculture and agropastoralism in two major ecological zones. Using their experiences in answering these questions in the field, the contractor and T.P. sociologists will modify their research questions to yield better data. This modified system will again be tested in the field. Then the contractor and T.P. sociologists will analyse the results and the contractor will write a sample report summarizing their findings. This report, including a description of the sociological system set up within OFNAR, will be submitted to USAID in fulfillment of the contractor's obligation. This report will serve as a model for future analyses by the two T.P. sociologists. The report should provide information in a form useful to the planning engineers of OFNAR and Gannett-Fleming.

The system set up during this study period can be used in several ways. During phase I of USAID's road maintenance project execution it will any serve as a baseline data study against which the social impact of USAID project can be measured when ^{the} system collects data in future. As secondary roads are constructed, reconstructed or rehabilitated and then maintained, the system set up within OFNAR can be turned to the task of prioritizing road maintenance. Because the system's analyses will reflect the social changes in the areas served by the secondary roads, OFNAR planners can include sociological considerations in deciding which roads need frequent routine maintenance, which can be left for heavier periodic maintenance, or left without maintenance for sometime.

In principle the system can also be used to prioritize feeder roads, once the GOC begins to develop them. It is probable, however, that the OFNAR sociologists will have to modify the system somewhat to put less emphasis on regional change and more on the small areas served by the feeder roads. Nevertheless, the principles of the system practiced by the sociologists over the years will be sound and their years of continuing data collection and analysis will have trained them to work well enough to "shift gears" down to the local level. Because they will have participated in discussions discovering OFNAR's information needs and in the process of determining how to develop questions to find the answers needed, they should know how to modify their research to get the information needed about the local level.

ETUDE SOCIOLOGIQUE

Ce document résume en premier lieu l'esquisse d'une étude sociologique pour la collecte des informations sur l'impact de l'entretien des routes et en deuxième lieu la méthode d'analyser ces informations ; ce système de collecte et d'analyse sera élaboré par le Sociologue USAID et les deux Sociologues des T.P. ensemble.

Le Sociologue USAID et les Sociologues T.P. se concentreront avec l'Ingénieur de programmation de l'OFNAR pour définir les besoins en information. Afin d'aider les fonctionnaires concernés par les décisions sur la priorité de l'entretien des routes, les Sociologues tiendront compte desdits besoins tout au long de leurs études.

Les Sociologues USAID et T.P. se chargent d'élaborer une série de questions afin de faire ressortir des informations utiles à l'OFNAR. Ces informations doivent traiter, par exemple : le nombre de la population desservie par la route, les caractéristiques démographiques de cette population, les ressources à exploiter dans la région, la nature des agglomérations de population aussi bien que la nature de l'industrie, du commerce et de l'agriculture de cette zone.

Une fois les questions établies, les Sociologues les mettront à l'essai. Deux régions ont été sélectionnées comme représentant deux zones écologiques et, en même temps, deux modes de vie : l'agriculture pure et l'agriculture associée au pastoralisme. Les zones vouées au pastoralisme même seront desservies dans l'immédiat par un réseau aérien et donc ne seront pas traitées dans cette étude. Ayant testé leur liste, les Sociologues connaîtront les modifications à y apporter pour obtenir de meilleurs résultats et des réponses plus précises. Ce système modifié sera testé encore sur le terrain. A leur retour à N'Djaména, les Sociologues dépouilleront leurs données. Le Sociologue USAID établira un rapport à soumettre à l'USAID, basé sur ces données et cette analyse. Le rapport doit servir aussi comme modèle à des futurs rapports établis par les Sociologues T.P.

Le système de collecte, d'analyse et de reportage ainsi établi servira à plusieurs fins. Pendant la première phase du projet USAID, le système mesurera l'impact de la réhabilitation et l'entretien du réseau prioritaire d'urgence. Au fur et à mesure que des routes secondaires sont construites, reconstruites ou réhabilitées puis maintenues, l'OFNAR peut soumettre ce système à l'analyse des changements sociaux apportés par ces routes secondaires. Donc l'OFNAR peut se servir des informations sociologiques aussi bien que des déterminantes techniques pour choisir le type d'entretien. Cet entretien peut être soit léger, soit périodique, soit d'urgence, soit après la saison des pluies, soit avec équipement lourd, etc...

Ce système peut être en principe également utilisé pour établir la priorité d'entretien des pistes. Il est possible que les Sociologues T.P. auront à modifier le système pour insister particulièrement sur les villages et les villageois desservis par les pistes. Mais, ayant déjà dialogué avec l'ingénieur de programmation de l'OFNAR et ayant pris l'habitude de faire la collecte et l'analyse de ces informations, ils seront capables d'apporter les modifications nécessaires afin que ce système réponde toujours aux besoins de l'OFNAR.

LIST OF PEOPLE MET

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