

PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-227

1. PROJECT TITLE North Cameroon Livestock and Agricultural Development Project			2. PROJECT NUMBER 631-0004	3. MISSION/AID/W OFFICE USAID/Cameroon
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	
A. First PRC-AGI or Equivalent FY 78	B. First Obligation Expected FY 85	C. First Input Delivery FY	A. Total \$	B. U.S. \$ 6,200,000
7. PERIOD COVERED BY EVALUATION			Date of Evaluation Review	
From (month/yr.) 12/78			To (month/yr.) 12/83	
Date of Evaluation Review			2/84	

REGULAR EVALUATION SPECIAL EVALUATION

E. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should list by type of document, e.g., diagram, draft, PIC, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Project Officer should draft a list of recommendations for the further direction of the project, based on his experience and the evaluation recommendations.	Phelps	5/15/84
2. Decision should be made as to whether to extend the project as recommended in evaluation, to terminate it, or to let it phase out.	Phelps Litwiller Scott	5/25/84

F. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS

- | | | |
|--|---|--|
| <input type="checkbox"/> Project Paper | <input type="checkbox"/> Implementation Plan w/ CPI Network | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Financial Plan | <input type="checkbox"/> PIC/T | _____ |
| <input type="checkbox"/> Logical Framework | <input type="checkbox"/> PIC/C | <input type="checkbox"/> Other (Specify) |
| <input type="checkbox"/> Project Agreement | <input type="checkbox"/> PIC/P | _____ |

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. Continue Project Without Changes
- B. Change Project Design and/or
- Change Implementation Plan
- C. Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title)

Chris Phelps, Project Officer
 John Ericksen, Consultant
 Vincent Barret, Consultant
 Angelo Bonfiglioli, Consultant
 Ayong Engilla, GRC
 William Jones, GRC

12. Mission/AID/W Office Director Approval

Signature: *Ronald D. Levin*

Type Name: Ronald D. Levin

Date: 5/4/84

AID 12010 (2-78)

**MID-TERM EVALUATION OF THE
NORTH CAMEROON LIVESTOCK AND
AGRICULTURE DEVELOPMENT PROJECT**

Project No. 631-0004



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JANUARY 1984

TABLE OF CONTENTS

<u>INTRODUCTION</u>	<u>PAGE</u>
1. TITLE PAGE	i
2. TABLE OF CONTENTS	ii
3. LIST OF ACRONYMS AND TITLES	iii
4. PREFACE	iv
<u>MAIN REPORT</u>	
1. SUMMARY AND RECOMMENDATIONS	1
2. STRATEGIC OPTIONS	7
3. EXTERNAL FACTORS	10
4. PROJECT GOAL	17
5. PROJECT PURPOSE	18
6. PROJECT DESCRIPTION	19
7. PROJECT BENEFICIARIES	30
8. PROJECT ACTIVITIES	48
9. PROJECT INPUTS	111
10. PROJECT OUTPUTS	128
11. PROJECT EFFECTS: PLANNED AND UNPLANNED	131
12. LESSONS LEARNED	133
13. SPECIAL COMMENTS	135
14. PROJECT CHRONOLOGY	144
15. EVALUATION METHODOLOGY	168
<u>REPORT ANNEXES</u>	
I. EVALUATION TEAM SCOPE OF WORK	
II. LIST OF PERSONS CONTACTED	
III. REPORT BIBLIOGRAPHY	

LIST OF ACRONYMS AND TITLES/LISTE DES SIGLES ET DES TITRES

CPLS	Comite Provincial pour la Lutte contre la Secheresse/Provincial Committee for the Fight Against the Drought
CRF	Centre de Recherche Forestiere/Center for Forestry Research
DGRST	Delegation Generale a la Recherche Scientifique et Technique/General Delegation for Scientific and Technical Research
FONADER	Fonds National de Developpement Rural/National Fund for Rural Development
FSAR	Fonds Special d'Actions Rurales/Special Fund for Rural Action
GURC	Government of the United Republic of Cameroon/Gouvernement de la Repubilique Unie de Cameroun
IRA	Institut de Recherche Agronomique/Institute for Agronomic Research
ISH	Institut des Sciences Humaines/Institute for Social Sciences
IRZ	Institut de Recherche Zootechnique/Institute for Livestock Research
LCBC	Lake Chad Basin Commission/Commission pour la Bassin du Lac Tchad
MINAGRI	Ministry of Agriculture/Ministere de l'Agriculture
MINEPI	Ministry of Plan and Industry/Ministere du Plan et de l'Industrie
MINEPIA	Ministere de l'Elevage, des Peches et des Industries Animales/Ministry of Livestock, Fisheries and Animal Industries
North Cameroon Livestock and Agriculture Development Project	Projet de Developpement de l'Elevage et de l'Agriculture du Nord Cameroun

PIL	Project Implementation Letter/Document de mise en oeuvre du projet
SAFGRAD	Semi-Arid Foodgrain Research and Development Project
SEMRY	Société d'Expansion et de Modernisation des Rizicultures de Yagoua/Society for the Expansion and Modernization of Rice Production in Yagoua
SODECOTON	Société de Développement du Coton/Society for the Development of Cotton
UBT	Unité Bovine Tropicale/Tropical Bovine Unit
USAID	United States Agency For International Development/Agence pour le Développement International des Etats Unis

PREFACE

The report of the evaluation of the North Cameroon Livestock and Agriculture Development Project which follows this Preface was written in Maroua, Cameroon during the period from 17 November 1983 to 12 December 1983. Report revisions were made in Ithaca, New York during the period from 2 January to 20 January 1984.

The project evaluation team was composed of the following specialists from The United States Agency for International Development Mission in Yaounde, Cameroon, The Government of The United Republic of Cameroon: and Ithaca International Limited of Ithaca, New York:

Mr. John H. Eriksen	Agricultural Economist and Team Leader, Ithaca International Limited, Ithaca, New York.
Mr. Vincent Barrett	Range Management/Animal Science Specialist, Ithaca International Limited, Ithaca, New York.
Mr. Angelo Bonfiglioli	Social Anthropologist, Ithaca International Limited, Ithaca, New York.
Mr. Christopher Phelps	Project Officer/North Cameroon Livestock and Agriculture Development Project, USAID/Yaounde, Cameroon.
Mr. Ayong Engille	Ingenieur Agronome, Chef de la Division d'Amenagement des Paturages et de l'Hydraulique Pastorale du Diamare, MINEPIA, Yaounde, Cameroon.
Mr. Wakam Jean	Economiste, Direction de Plannification, MINPI, Yaounde, Cameroon.

The evaluation team wishes to express its appreciation to representatives of the Government of the United Republic of Cameroon and the United States Agency For International Development who assisted in so many constructive ways with our evaluation effort. In addition, we wish to express special appreciation to our typist par excellence in Maroua, Mrs. Lori Foucalt, without whose valiant efforts at deciphering several different handwriting styles and retyping our numerous report drafts the evaluation team could never have met its assigned deadlines or, more

While we trust that there are relatively few errors and/or misinterpretations of fact in this report, the evaluation team regretfully realizes that some distortions and omissions inevitably plague reports such as this one which are produced under tight deadlines and do not always allow for the extensive rechecking of all information amassed in the field. For such errors, distortions and omissions as do exist in the following pages, we take full responsibility as a team and request the understanding of the readers.

1. SUMMARY AND RECOMMENDATIONS

1.1. Summary

1. A Project Without an Overall Program Context?

Our most lasting and general impression of the North Cameroon Livestock and Agricultural Development Project is that of a group of dedicated and competent individuals working on significant and complex livestock and agricultural problems. However, many project activities seem to be implemented in isolation because the Government of the United Republic of Cameroon (GURC) has not clearly defined and implemented an overall program for natural resources evaluation and land use planning in Extreme North Province. Since there is no overall GURC program in the area of resource management, coordination and cooperation between line ministries; development agencies like SODECOTON, SEMRY, IRA, IRZ, OPV and LCBC; and the project are often difficult to achieve. While no single agency has a clear mandate in resource management and land use planning, many have overlapping, and/or conflicting responsibilities in the same geographic and/or subject matter areas. This is not to say that there have not been numerous attempts by the Project to establish necessary linkages between agencies but only that the attempts that have been made do not appear to have borne much fruit.

2. A Project with Limited Geographic Scope?

We believe that, since the reorganization, the Project has been forced to confine its activities to a portion of one transhumant livestock system within one of five major ecosystems known to exist in northern Cameroon. That is, the Project is currently dealing only with the rainy season portion of the transhumant livestock system that extends seasonally between the Diamaré Plain Eco-system and the South Yaeres Eco-System. In addition, it is concentrating on this portion of the range system from the geographic perspective of a relatively privileged rangeland situation on the Diamaré Plain.

3. A Project with a Timing Problem?

The original design and the subsequent reorganization plan for the Project were flawed by misjudgements about the time needed to "prove" and then demonstrate the planned livestock and agricultural interventions. Even in the United States, with highly trained technical staffs, well-organized programs, excellent support infrastructure, and full use of prior research results, few people would expect a project, starting essentially from ground zero, to develop and demonstrate a fully articulated range management system or a new crop rotation scheme in the period of five years - much less do both jobs!! In northern Cameroon, with a trained but generally inexperienced staff; a project rather than a program, approach to development; weak supporting infrastructure; a very limited prior research base; and erratic weather conditions, one is almost certainly talking about a minimum 15 to 20 year period of continuous hard work to make a creditable start on either major development problem.

4. Are the Interventions Relevant or Replicable?

The current Project, since it is working in isolation and with only a small portion of one of the existing livestock systems in the area, has always run the distinct risk of developing a series of interventions with, at best, partial applicability to the whole Province. At worst, these interventions could be proven simply irrelevant to the larger system because, in their development, no consideration was given to the existence of this larger system.

5. A Project in an Area Buffeted by External Changes?

Project interventions, such as they are at present, are taking place during a period of rapid change in northern Cameroon. Factors external to the Project, as enumerated in Section 3 of this report, are forcing major changes in land use patterns in the Extreme North Province. At the same time, there seems to be little by way of systematic and programmatic approaches to management of these factors and trends in exploitation of resources, both human and natural.

6. Output Targets Achievable but to What End?

Although, in the course of this evaluation, the evaluation team has been careful to follow its Scope of Work with respect to evaluating specific Project interventions and has represented its analyses and specific recommendations for these interventions in Section 11 of the report, the strict confines of the Scope of Work do not, in our opinion, address the key issue of the Project's relevance to the environment around it or its prospects for "success". In this sense, our evaluation could easily have been reduced to a mere enumeration of the Project's "achievements" as weighed against the strict interpretations of the output targets established in the reorganization document. From that narrow perspective, it would have been easy to declare "success" because the Project, in fact, has already, or will by its scheduled completion date, have achieved the strict targets set forth for implementation. However, if one reads the reorganization documents carefully, one soon sees that it is entirely possible for the Project to fulfill all of the stated output targets to the letter and still be no closer to having a valid and replicable approach to the problems of improving livestock, and associated agricultural, production in the Extreme North Province. In a very real sense, then, the reorganized project could conceivably win the battle but lose the real war.

1.2. Recommendations

This subsection of the evaluation report presents our overall recommendations for the consideration of the GURC and USAID/Yaounde. Section 8 of the report contains an additional series of specific recommendations linked directly to our analyses of specific Project interventions and activities.

1.2.1. Overall Recommendations

1. A Phase II Project may be Premature

The evaluation team does not believe that the development of a Phase II Project is warranted at this time because we are not convinced that sufficient information and experience with the technical interventions of the

present Project have been amassed to date. Furthermore, we do not believe that a Phase II Project should be developed outside the context of an overall program for resource evaluation and land use planning in the Extreme North Province. And, finally, due to problems with the scope and execution of the participant training component of the present Project, we do not believe that a well-balanced and critical mass of Cameroonian expertise has been developed to the point where Phase II activities could be successfully carried out basically by Cameroon specialists.

2. An Extension of the Present Project may be Necessary

We recommend that the present Project be extended until December 1987. This extension is necessary in our opinion to complete work on the activities and interventions of the Phase I Project and to prepare the way for a Phase II Project. We believe, however, that the reinstatement of a functional socio-economic unit for research, monitoring and internal evaluation of project activities, with the active collaboration of DGRST's Institut des Sciences Humaines, should be a condition precedent for any extension of the Project. It is evident to us that the most critical problems facing the Project cannot and should not be defined strictly as technical issues to be solved by technicians. Rather, they must be viewed as problems to be dealt with by a well-balanced multidisciplinary team in an interdisciplinary manner.

3. If No Extension is Possible, We Recommend Project Termination as Soon as Practicable

If, USAID and the GURC should decide that no extension of the Project is feasible or desirable beyond April 1985, we recommend that the present Project be terminated as soon as is practicable.

1.2.2. Specific Recommendations with an Extension of the Project

If an extension of the current Project is granted by the GURC and USAID/Yaounde, then we recommend the following:

1. The present Project be reoriented to proceed from a more regional perspective and consider one livestock production system in its entirety - i.e. the system involving both the Diamare Plain and the South Yaeres Eco-systems as described in Sections 7 and 8 of this report.
2. The reorientation of Project activities be based on a more balanced appraisal of the value of animal production interventions vis-a-vis range management activities in the entire livestock system.
3. The present communication system of the Project be revised to foster more two-way communication between the Project and its client groups and these groups must in the future include all users of the range resources in the general Project area.
4. We recommend that the new "grazing block" system, as described in Section 8.1., be installed in, at least, one of the current Project Grazing Blocks by the end of 1984 and in all three Blocks by the end of 1987.
5. The current Grazing Blocks should be used primarily for demonstrations in controlled burning, control and brush encroachment, soil and water conservation techniques, and water point development.
6. We recommend that, at least, three Livestock Herder Associations, as discussed and detailed in Section 13 of this report, be organized with the assistance of the Project by December

1987 for livestock producers using the transhumant system in the Diamare Plain and South Yaeres Eco-systems.

7. We recommend that the American contract team, together with their Cameroonian counterparts, be required to produce a joint project synthesis report detailing the conduct and results from all Project activities during the period the Experience, Inc. contract. This should be completed by January 1, 1985 or before any member of the present American contract team leaves Cameroon, whichever is earlier.
8. We further recommend that the current Project staff produce a coherent overall Project strategy statement and a detailed plan of work to cover the balance of the existing Experience, Inc. contract by March 1, 1984.
9. We suggest that it will be necessary for the GURC and USAID/Yaounde to rewrite the Project logical framework for the period of the extension, particularly with regard to the objectively verifiable indicators needed for evaluation purposes at the end of the Project.
10. We recommend that the specific agronomic activity directed at finding a suitable perennial legume forage for insertion in appropriate crop rotations for the Extreme North Province be continued until the end of the Experience, Inc. agronomist's contract and then passed over to a collaborative IRA/IRZ research effort.
11. When water points are developed by the Project, we believe that they should be based on a seasonal grazing strategy involving consideration of both the Diamaré Plain and South Yaeres Eco-systems. That is, these water points should be smaller in capacity, subject to drying out by December each year, more widely distributed, and planned in accordance with the observed grazing patterns in the Project area.

2. STRATEGIC OPTIONS

The evaluation team believes there are a number of options open to USAID/Yaounde and the GURC with regard to the present Project. We have enumerated several of these options below with a brief assessment of the advantages and disadvantages of each option.

2.1. Terminate the Project on or before the present termination date in 1985

Advantages

1. Eliminates a problematic project from the USAID Mission's program.
2. Saves development resources for potential reallocation in Cameroon.
3. Permits reallocation of USAID and GURC personnel to other projects and programs.

Disadvantages

1. Fails to achieve original goal and purpose of the Project.
2. Results in loss a considerable amount of experience in livestock development.
3. Has negative impacts on the local population in Mindif/Moulvoudaye area.
4. Causes possible difficulties in the working relationships between USAID and the GURC.

2.2. Continue the Project through the present termination date and begin design of a Phase II Project

Advantages

1. Conforms to normal project design cycle and expectations.
2. Allows comprehensive discussion of the present issues and problems between USAID and GURC.
3. Permits formulation of a future strategy for the Project at an early date.

Disadvantages

1. Lacks concrete results from the present Project which would permit design of the Phase II Project.
 2. Has high cost of a design effort which may prove to be premature.
 3. Causes potential disruption of present Project activities by a design effort.
- 2.3. Extend the Project through December 1987 with the possible future design of a Phase II Project

Advantages

1. Permits further field experimentation plus correction of problems identified in this evaluation.
2. Permits any design of a Phase II Project to benefit from a better and more extensive scientific data base.
3. Permits any design of a Phase II Project to be contingent upon the phased development of appropriate conditions for its successful implementation.
4. Permits Cameroonian trainees to return from long-term training and gain experience with a Project staff already in place.
5. Permits reinstitution of a viable socio-economic unit in the present Project and the collections and analyses of the data needed for a Phase II Project.

Disadvantages

1. A project extension through December 1987 may be very difficult to secure from AID/Washington given that the present Project has already been extended for one year.
2. A Project extension will require additional funding to be effective.
3. A Project extension will require additional recruitment of both expatriate and Cameroonian personnel.
4. A Project extension may require a redesign effort to plan and implement the interventions suggested in the evaluation and redo the Logical Framework.

2.4. Extend the Project through December 1987 with a definite commitment to a Phase II Project

Advantages

1. Permits further field experimentation plus correction of problems identified in this evaluation.
2. Permits the design of a Phase II Project to benefit from a better and more extensive scientific data base.
3. Permits Cameroonian trainees to return from a long-term training and gain experience with a Project staff already in place.
4. Permits reinstitution of a viable socio-economic unit in the present Project and the collections and analyses of the data needed for a Phase II Project.
5. Permits early discussion of a long-term strategy for area development and determination of mutual commitments of USAID and the GURC for both the extension period and the Phase II Project.
6. Ensures a high degree of continuity between the Phase I and Phase II Projects.

Disadvantages

1. Commitment to a Phase II Project is contingent upon USAID success in obtaining an extension of the current Project.
2. A Project extension and the subsequent design of a Phase II Project will require the early commitment of a considerable amount of funding by both USAID and the GURC.
3. A Project extension will require additional recruitment of both expatriate and Cameroonian personnel.
4. This course of action will require redesign of the present Project and subsequent design of the Phase II Project.
5. Early USAID commitment to a Phase II Project may negate the opportunity to have a Phase II contingent upon the implementation of certain changes in the present Project and in the general area of GURC livestock sector policies and natural resources evaluation and planning.

3. EXTERNAL FACTORS

3.1. Introduction

In the course of its study of the project and the project area, the evaluation team has endeavored to isolate and describe certain factors and trends which now impact on the prospects for success of project activities - or have the potential to do so in the near future. We have divided these factors and trends into those which are essentially beyond human control in the near-term and those which are amenable to change through concerted action. The first category includes those factors and trends which must be recognized by the project and taken into serious consideration when project staff establish project objectives, revise objectively verifiable indicators, and/or plan project interventions. The second category includes factors and trends which may require both consideration and actions aimed at their modification if the project is to proceed with any extension and expansion of its activities.

3.2. Factors and Trends Not Amenable to Significant Change in the Near-Term

1. Highly variable weather conditions within the context of a generally harsh climate

The project zone is characterized by a Sudanosahelian climate which means that there are likely to be large variations in almost all the commonly measured weather variables. Of particular interest to the project in this regard are the variables: total annual precipitation and the timing of annual precipitation. In addition, the spatial distribution of precipitation, as distinct from its temporal distribution, is a major problem in Sahelian areas for both livestock and crop research.

Over the course of the project to date, the project area has seen total annual precipitation vary from greater than 800 millimeters per year to less than 500 millimeters. Worse yet, certain areas of the project zone have experienced near drought conditions while the whole project zone was experiencing a more or less "normal" rainy season. Finally, the temporal distributions of precipitation have been highly variable with mid-season dry spells, late onsets of the rains, and early terminations of the rains. These phenomena

have very serious implications for the length of time needed by researchers to effectively "prove" any crop or livestock grazing intervention in that production strategies of farmers and herders are tied to their experiences in dealing with these variable weather conditions over a long period of time. A major element in these production strategies is risk avoidance through actions like field dispersion, use of different varieties of the same crop in different situations, staggered planting dates for crops, and extensive use of grazing land in transhumance. To "prove" the superiority of any particular crop or livestock intervention, the new strategy must be tested over this full range of conditions and be shown to be more productive than the "traditional" strategies over this range. This implies much more time in research and intervention testing under actual farm or range conditions than is commonly allocated in development projects.

2. High demographic pressure from a growing population coupled with historical patterns of internal migration of agricultural peoples and displacement of certain agropastoral groups

It is obvious to even the most casual observer that demographic pressure in the Extreme North Province is intense when compared to the quantity and quality of the available natural resources. Furthermore, the regional situation appears to be highly fluid with internal migration of people to urban centers, local migration of farmers from the mountains to the plain areas and between agricultural zones on the plain, and the displacements of livestock producers within the zone as a result of long-standing transhumance patterns and more recent changes in land use patterns. These factors and trends imply that the project interventions must be initiated and evaluated in the context of what is happening in the region and as an integral component in a broader strategy for land use. It is highly unlikely that project interventions can be successful and can be replicable if they are evaluated only from a technical viewpoint. Technical "solutions" to problems that, at best, are only partially technical in nature are likely to be only partly successful and

certainly run the ultimate risk of simply being irrelevant to the local situation.

3. Instability in Chad

Since the Extreme North Province is a transition zone par excellence and is subject to constant movements of people, goods and services within and between Nigeria, Niger, Chad and Cameroon in reaction to changing local conditions, any serious conflict situations are likely to impact on project activities. The present situation in Chad is but a present example of the problem. The conflicts between rival groups in that country have affected the project in two ways. First, there has been an increase in the influx of Chadian livestock herds into northern Cameroon and, since veterinary services in Chad seem to have broken down as a result of the war, these herds have carried animal diseases with them into Cameroon. This has led to necessary increases in expenditures and personnel allocation to fighting epidemics in animal diseases which were previously under control in the area and this obviously drains resources away from other livestock activities such as those being promoted by the project. Second, and perhaps more important, the war has cut off the option of relieving some of the livestock pressure on Cameroonian rangelands by diverting these herds over the Logone River and onto available Chadian rangelands, which had been a growing practice before the present hostilities.

4. The dynamism and magnetic effect of the Nigerian economy on neighboring countries

Nigeria is the predominant economy in West Africa. What happens in the economy affects economic activities in countries as far away as Upper Volta and Mali. It is, therefore, obvious that the Extreme North Province is an economic arena in which any positive or negative changes in the Nigerian economy are immediately felt and generate responses among local producers. The most immediate problem for the project in this situation is in livestock marketing. The prospects for livestock prices and flows of live animals in the Extreme North Province are directly linked to general demand conditions in Nigeria and to

exchange rate fluctuations. In addition, there are more subtle influences which are more difficult to measure but certainly are present. Among these influences are impacts on the opportunity costs for labor in the Province, availabilities of goods and services in the area, and flows of information which affect how local producers and commercial agents devise and implement their production and marketing strategies.

3.3. Factors and Trends Amenable to Change in the Near-Term

1. Expansion of rice cultivation in the Extreme North Province and its impacts on the dry-season grazing areas in the Yaeres

The development of rice cultivation along the Logone River has already diverted large tracts of land out of dry-season grazing for livestock and into irrigated agriculture. This has distorted the previous pattern of seasonal transhumance for livestock herders coming from Mindif-Moulvoudaye project area and, worse yet, for "nomadic" herds in the general area. It has shifted grazing pressures to a shrinking area of available range in the Province and increased the problems involved in establishment of any controlled grazing schemes. Even more direct impacts can be expected from the recent decision to develop the SEMRY IV irrigation project in areas adjacent to and within the project zone, particularly since there is no evidence that the impacts of this development on livestock production in the area have been seriously evaluated and weighed by the SEMRY project planners or any GURC agency concerned with regional land use planning.

2. Activities of SODECOTON and the Projet Centre-Nord in the Province and their impacts on the agricultural economy

These agencies have major impacts on crop production patterns and land use allocation in the Extreme North Province. They apparently have considerable influence over the crop rotations which are promoted in the area and on the flow of agricultural inputs for the local economy. There is presently a considerable difference between the five-year rotation

being tested by the project and that which is advocated by SODECOTON. Increased collaboration and coordination between the project and these agencies is badly needed.

3. Uncontrolled expansion of crop cultivation in general and muskwari cultivation on lowlands in particular

There has been a considerable and apparently uncontrolled expansion of crop cultivation in the Extreme North Province in response to increasing demographic pressure and commercial opportunities. This expansion is particularly serious in the localized lowlands in the project zone because these areas - like the much larger Yaeres area along the Logone River - formerly provided dry grazing areas for the livestock herds. The continued shrinking of these dry season pastures will have serious and possibly irreversible impacts on the region's livestock industry and hence on any plans for controlled grazing schemes unless an improved system of land use planning and allocation is instituted.

4. Lack of an effective coordinating mechanism for land use evaluation and planning in Extreme North Province

The previous three factors mentioned as items of concern for the project are illustrative of the lack of land use planning in the Province: The evaluation team searched for an agency - or group of cooperating agencies - in the Province which were technically capable of evaluating the land resources of the area and taking the necessary planning steps to allocate these resources to their highest and best use. It is perhaps the case that the development that is proceeding apace in the Extreme North Province is compatible with some larger governmental plan which was unavailable to us but, if so, the changes in land use are not particularly supportive of the present project efforts in range management and livestock production.

5. Lack of effective infrastructure for general development and implementation of the project technical interventions

In general, the infrastructure for development in Extreme North Province is equal to or better than that available in the adjacent areas of Chad, Nigeria or Niger. However, there are certain areas of concern for project activities in this generally good situation. First, the agricultural agencies in the area seem to function as advocates of single crops and most production inputs are geared to either cotton or rice. Extension services, to the extent they exist at all, seem to give only lip-service to raising the production of essential food crops and/or the introduction of alternative crops for farmers. Second, agencies concerned with livestock production and associated resource management seem to be understaffed and underfinanced in proportion to their program responsibilities. These problems would seem to limit the extent to which the project can fulfill its stated goal of bringing about development interventions with local organizations.

6. The hierarchical nature of the local organizations in the project zone and the potential for conflict with objectives of equitable sharing of responsibilities and benefits in development

This factor is raised here more as an item of concern for future project interventions than as a clear and present danger. The evaluation team was impressed with the growing sense of conflict in use of resources in the Extreme North Province and the potential of certain groups and individuals to take advantage of the situation for personal gain. As rising demographic pressure and other factors force critical decisions on resource allocation in the area, it would seem to be extremely important that these decisions be taken in an atmosphere which encourages full participation of all concerned groups and that equitable solutions to these problems not only yield benefits to certain groups but supply just compensation to those groups whose interests may be diminished by the same decisions. In this regard, there is always the suspicion as

to whether local organizations based on hierarchical relationships can make necessary accommodations to include all concerned groups and individuals in developmental deliberations, share the fruits resulting from such deliberations in an equitable manner, or allocate just compensation to the losers. There is also always an intuitive appeal in development efforts for the premise that interventions should be implemented through local organizations but one must be careful to assure that such organizations are both competent and equitable before they are given program responsibilities.

4. PROJECT GOAL

4.1. Original Goal

In Annex I of the original Project Grant Agreement, dated 3 April 1978, the overall goal of the North Cameroon Livestock and Agricultural Development Project-AID Project Number 6310004 - was:

"To intensify and integrate livestock and agricultural production in the central plains of the North while at the same time halting and eventually reversing the current degradation of range and agricultural lands" (58, Annex I, p.1).

4.2. Present Goal

In Annex I of Amendment No. 5 to the original Project Grant Agreement, dated 15 July 1982, this goal was modified to read:

"The goal of this Project is to intensify and integrate livestock and associated agricultural production in the central plains of the North Province and reverse the current degradation of the land resource base as a necessary foundation for improving the socioeconomic standards of the rural population" (58, Annex I, p.1).

5. PROJECT PURPOSE

5.1. Original Purpose

In Annex I of the original Project Grant Agreement, purpose of the Project was:

"To demonstrate in the Mindif-Moulvouday pilot area, using improved technology and managerial techniques, that livestock and agricultural production can be intensified and integrated, and that the process of natural resource degradation can be arrested" (58, Annex I, p.1).

5.2. Present Purpose

In Annex I of Amendment No. 5 to the original Project Grant Agreement, the purpose of this Project is:

"To demonstrate, in a pilot zone, the feasibility of implementing through local organizations a series of technical practices for integrating and intensifying livestock and agricultural production while reversing the natural resource degradation process and improving the resource base" (58, Annex I, p.1).

6. PROJECT DESCRIPTION

6.1. Original Description

In Annex I of the original Project Grant Agreement, the North Cameroon Livestock and Agriculture Development Project is described in the following manner:

"This project has its origins in the work of a joint AID-FAC project identification and design team during 1974-75. Consultations among FAC, AID and the Government of the United Republic of Cameroon (GURC) led to a decision that AID would assist in the detailed design and implementation of this project which operates in a pilot area. Attempts will be made to incorporate, on a limited scale, most of the technical interventions found by the FAC/AID design team to hold promise for wider application in the livestock growing areas of Northern Cameroon above the Adamaoua Plateau. The area in which the project will operate is on of approximately 2,490 square kilometers around Mindif and Moulvoudaye, in the Departments of Diamaré and Mayo-Danai. This area, with a human population of some 55,000, was chosen because it is typical of much of the central plains country of Northern Cameroon and represents a sufficiently significant and diversified area as to have an important impact on the livestock and agricultural production of the North.

Overall management by the GURC will be provided through the Provincial Committee for the Struggle Against the Drought (CPLS). CPLS will coordinate the activities of other GURC organizations and USAID technical assistance through a project leader appointed under the CPLS executive secretariat.

1. Project operations in the pilot area will consist of, but not be limited, to the following:
 - A. A plan will be made for the allocation of land resources in accordance with its capability for range and agricultural purposes.
 - B. A detailed study of range and livestock resources will be made in order to identify suitable production units through which improved practices may be applied.

- C. A detailed study will be made of existing governmental and traditional range management structures in order to assure their effective support of improved local management and discipline.
 - D. A project consultative committee will be set up to consist of representatives of cooperating GURC services, traditional bodies and private livestock and agricultural producers.
 - E. The demonstration of appropriate managerial and operational practices such as the following:
 - i. Rotational grazing;
 - ii. Creation of water points as necessary to make their distribution more even in order to promote uniform grazing;
 - iii. Control of bush and forest species which compete with grasses;
 - iv. On-site water control and establishment of water spreading structures to reduce water run-off and erosion;
 - v. Complementing farm crop residues with agricultural by-product concentrates and other product concentrates and other supplements for more efficient feeding of draft animals and other livestock.
 - F. The augmentation of traditional animal health services.
 - G. The development of trials and demonstrations of leguminous plant species in rotation with other crops.
 - H. A detailed study of agriculture production and the development of a program for improvement of production purposes.
2. The following targets are illustrative of the results the project will seek to achieve in the project area:

- A. Establishment of a system of management of range lands based upon a self-disciplining local organization and based upon technically sound practices which will optimize productivity of the range while conserving its natural potential.
- B. Demonstration of a system of livestock production involving supplementing range feeding with agriculture by-products and cultivated forages.
- C. Demonstration of the utility of producing legume forages in rotation with food and fiber crops as a soil-improving measure.
- D. Extension of the use of animal power to more generalized applications (other than plowing) for food crop production. Improved crop production practices, including use of improved varieties and seeds, water conserving techniques, pest control, crop rotation, etc. will be more generally used.
- E. Establishment of a mechanism for coordinating the activities of several government services and entities in an integrated effort for the solution of complex problems will have been established.
- F. Training of Cameroonians in sufficient strength to expand the project activities beyond the confines of the pilot zones.
- G. An increase by some 25 percent in the effectiveness of utilization of forage on 195,000 hectares of now improperly or underutilized range lands.
- H. A reduction of livestock losses from disease and parasites by 30 percent.
- I. A reduction of calf mortality and, through better feeding, better early development.
- J. The establishment of an extension and information service for livestock (currently veterinary services are the only services available in the livestock sector).

- K. A training program for integrating training in both crop and animal production at the project level.
- L. Strengthened livestock and agriculture extension services and veterinary services through addition of personnel and training of existing and new personnel and by improving facilities available to these services" (58, Annex 1, pp.1-5).

6.2. Present Description

In Annex I of Amendment No. 5 to the original Project Grant Agreement, dated 15 July 1982, the project description for the present Project is described as follows:

"The pilot zone in the Mindif-Moulvoudaye area has been chosen because it is typical of the central plains of the North Province. Most of the rural population are both livestock and agriculture producers, and village grazing lands are inter-meshed with agriculture producing lands. Large areas of grazing lands are overgrazed while others are underutilized. Increases in pressure for more land caused by a growing population, poor agricultural practices, and the increasing degradation of existing land have caused a continuing encroachment of the limited grazing lands.

The Project will therefore undertake a series of demonstration actions in a defined pilot zone to develop a viable, self-disciplined system managed by local village livestock producers' organizations. These organizations will, within their own socio-cultural environment, intensify and associate livestock and agriculture production and prevent the continued degradation of the limited natural resource base. These actions are divided into four main groups of activities.

1. Grazing Land Management and Conservation

A. Objectives

The key to improving range conditions within the Project area and the entire North Province is controlled grazing which will be compatible with the physiological requirements of forage species. Such controlled grazing will result in improved vigor and health of the natural plants and

provide increased root growth, tillering and seed production needed to reestablish the more desirable perennial grasses. The improved vegetative cover and root growth will result in increased moisture infiltration and retention in the soil, reduce erosive run-off and accelerate production of natural forage available to livestock. The objectives of the Grazing Land Management and Conservation component of the Project are:

- i. To determine the applicability, in the pilot zone, of livestock/range management practices proven successful in other areas of the world;
- ii. To identify any modifications necessary to adapt these practices to the socio-cultural environment of the pilot zone;
- iii. To demonstrate the effectiveness of these practices in improving natural forage production and conserving grazing lands;
- iv. To develop specified watering points in conformity with the estimated stocking rate capacity of pilot grazing blocks to assure rational use of the rangeland;
- v. To enhance existing organizational structures among village livestock producers which will assure discipline in the cooperative management of livestock and grazing and water resources;
- vi. To investigate the feasibility of establishing a marketing and purchasing association in conjunction with grazing blocks. Legal, social, and financial aspects will be studied. Impact of government pricing policy and other constraints on off-take will also be studied. One association will be established in the fifth year of the project.

B. Activities

Activities which the Project will carry out to achieve the above objectives are as follows:

- i. Three demonstration grazing blocks of approximately 5,000 hectares each will be developed in the pilot zone. These grazing blocks will be managed under a pilot system of controlled rotational grazing that will allow desirable forage species on approximately 25 percent of the pasture area (or 3,750 hectares) to reach maturity each year before being grazed;
- ii. Approximately nine local village or village cluster livestock producer groups operating through the existing traditional leadership system will be provided technical assistance to assume responsibility for management of controlled grazing systems based on the concept of self-discipline. Assistance to these groups will be the responsibility of the Project staff and the Diamaré Livestock Sector;
- iii. The Project will demonstrate pilot water and soil conservation practices on selected areas within the three grazing blocks to control and reduce water runoff and soil erosion on the 15,000 hectares of pasture land. These practices will consist of natural reestablishment of ground cover, artificial reseeding, establishing natural water barriers for gully control, dikes, diversions, and subsoil penetration;
- iv. Artificial reseeding demonstrations (approximately 30 hectares per grazing block) will be undertaken in those areas where improvement through natural conservation practices cannot be expected to restore productivity within a reasonable time;
- v. A minimum of nine livestock water points will be constructed within the three grazing blocks or in sufficient

numbers to facilitate livestock access within the limit of the normal five kilometer grazing range of cattle. Water points will be placed in locations which will ensure efficient utilization of available forage under a rotational system of grazing; and

- vi. The perimeters and interior boundaries of the three pilot grazing blocks will be cleared of brush and grass on a one-time basis in order to provide access trails for livestock and Project-related personnel to and from rotational pastures, water points and villages. The cleared trails (approximately 40 kilometers/block) will also serve as pasture section demarkation and as breaks to control the spread of fire and to facilitate controlled burning.

2. Animal Health

A. Objectives

Improvements in animal health will be a function of improved management and the increased forage available to livestock in the controlled grazing areas. Controlled stocking rates on the pilot areas should result in a 20 percent increase in the growth rate of young animals. Emphasis will be on improved nutrition which will result in the increased conception rate of cows by 10 percent and reduce the loss of calves by at least 5 percent. Objectives of this component of the Project are:

- i. To strengthen and support existing veterinary service posts in the pilot zone;
- ii. To provide systematic control of internal parasites in both large and small animals; and
- iii. To provide systematic control of other animal diseases endemic to the area.

B. Activities

The major activities will be to establish livestock feeding demonstrations, provide vaccines, medicines and refrigeration facilities for existing veterinary posts and to investigate the desirability and feasibility of operating local pharmaceutical outlets where vaccines and medicines may be stored and sold.

3. Increased Association of Agriculture and Livestock Production

A. Objectives

To reduce the need for farmers to continually encroach on limited grazing land in order to increase agricultural production, a system is needed to conserve the existing agricultural land and increase its fertility. A proven method of accomplishing this is to establish a permanent system of crop rotation with a period of leguminous fallow. This system includes the planting of traditional food and fiber crops rotated with improved forage legumes. This will result in increased nitrogen fixation in the soil, increased availability of forage crops, improved structure and retention capacity of the soil, reduced water/wind erosion, and a decreased need to leave agriculture land in unproductive fallow for long periods of time while putting additional amounts of limited grazing land under cultivation. Recycling of plant residues and animal fertilizers is integrated into this system. The objectives of this Project component will be:

- i. To promote intensive use of crop residues and agricultural by-product concentrates as supplementary livestock feed to balance livestock nutritional requirements;
- ii. To promote production of leguminous forage in a permanent rotation with other crops as a substitute for idle fallow to improve soil fertility, conserve land resources, and increase

production of food/fiber crops as well as associated fodder and forage available for livestock; and

- iii. To provide support to the agriculture service personnel operating in the area in order to reinforce their livestock associated activities by improving the agriculture techniques and practices utilized by the focal farmers.

B. Activities

The Ministry of Agriculture will provide personnel and the Grant will provide technical assistance and one time commodity and material support, including seeds and fertilizer and initial land preparation for establishment of legume fallow, for specific activities as follows:

- i. Up to 30 rotation trials will be established in association with the three pilot grazing blocks. Each trial will involve a minimum of 1.25 hectares, divided proportionately into two quarters for legume forage fallow and three quarters for traditional food and fiber crops.
- ii. Through pilot demonstrations and technical assistance, farmer/livestock producers will be assisted in managing this permanent rotation system in association with livestock production.

4. Training

The training objective is to form a nucleus of expertise that can continue development of grazing land and livestock management systems in the area after termination of the Project. Training activities outside Cameroon will be funded as follows:

- A. Long-term academic training (96 person months). Four Government civil servants will be sent to the United States for advanced degree academic training in (i.)

range management and water soil conservation, (ii.) animal husbandry, with emphasis on animal nutrition, (iii.) extension, with emphasis on livestock and agricultural production, and (iv.) agricultural engineering with a specialization in conservation and water management.

- B. U.S. short-term training will be financed where appropriate (up to 9 person months).
- C. Short-term observation tours. The Project will provide funding for 30-day observation tours for up to eight people to observe range management and livestock production projects in neighboring African countries such as Senegal, Mali, and Niger.

5. Extension

In accordance with the overall training objective stated in Sub-section 4. above, the Project will provide financial and technical assistance for in-country training activities as follows:

- A. The project will provide extension support to agencies and organizations serving the Project zone. It will plan and execute, in coordination with official and local leadership, training programs, tours, demonstrations, seminars, and field days designed to establish an information and skills delivery system from the Project to the livestock and agriculture producers.
- B. The Project will also provide training and material requirements necessary to establish, execute, and evaluate controlled grazing and integrated livestock/agriculture demonstrations. Coordination will be affected with concerned agencies (MINEPIA, MINAGRI), organizations (SODECOTON), local leaders, and and producers through methods noted in Section 4.A. above to realize maximum adoption of the demonstrated improved practices.

- C. An extension information sub-activity will be supported by the Project to maximize coordination and dissemination of applicable research originating from the Project and other agencies. This will facilitate training of agents and leaders and further understanding and adoption of improved livestock and agricultural production practices by producers.

- D. Training at the Mindif facility will be provided for local leaders and extension agents" (58, Annex I, pp.1-5).

7. PROJECT BENEFICIARIES

7.1. Introduction

The objective of this section of the evaluation report is to present the evaluation team's appraisal of who the real beneficiaries of the Project are presently and are likely to be in the future. In this discussion, our objective is to review the present status of beneficiaries and to assess the potential for such beneficiaries as a consequence of the positive and negative aspects of project interventions and the likely replicability of these interventions on a larger scale in the Extreme North Province. For this reason, all reflections on the actual beneficiaries to date are inextricably linked with the prospects for potential beneficiaries. At the same time, the review and assessment of beneficiaries from project activities leads us directly to the equally important assessment of the non-beneficiaries (i.e. those people in the project zone and elsewhere who will not gain benefits from project activities and those people who will have to pay a high price in social, cultural and economic terms as a consequence of project activities). Both the winners and the losers in this development process will be detailed under three general groupings: beneficiaries by Geographic Space, Socio-economic Group, and Local Organization.

7.2. Beneficiaries by Geographic Space

The North Cameroon Livestock and Agricultural Development Project is the result of an initial request by the GURC for assistance with development actions aimed at improving the livestock sector in the Extreme North Province. The pilot zone in the Mindif area was chosen because it was considered typical of the central plains of Northern Cameroon. In this area, the Project has undertaken a series of demonstrations and other actions for the purpose of developing viable agricultural and livestock systems replicable in other areas of the Extreme North Province.

In fact, however, the evaluation team has determined that the choice of the Mindif area for project activities was dictated fundamentally by logistic and practical considerations, such as the importance of the urban center of Mindif as a Sous-Prefecture and a Lamidat, its relative ease of access due to a reasonably good road infrastructure, and the presence of a network of veterinary posts in the project zone. While concern for these factors is certainly understandable from the viewpoint of supporting structure for the project staff, the same factors tend to make the project zone unrepresentative of the ecological realities in the Extreme North Province. In the rest of the Province, conditions

under which livestock systems must operate are considerably more precarious, with greater isolation, more problems with communication, longer distances between administrative centers, and a general lack of veterinary infrastructure. Even more importantly, there are many reasons for suspecting that rangelands of the project zone are considerably better than those outside the zone and have lower animal and different human population densities on them than is true elsewhere. For example, the Livestock Service in the Province estimates that the average stocking rate for the general area is approximately 0.9 hectares per tropical livestock unit (UBT) whereas the average stocking rate in the project zone is approximately 2.0 hectares per UBT. The situation with respect to the sedentary and semi-sedentary human populations in the area also tends not to be representative in that there is a higher percentage of sedentary vis-a-vis semi-sedentary and nomadic peoples in the project zone as compared with the general area.

For these reasons, the zone benefitting from Project activities is seen by the evaluation team to have been rather more advantaged than the surrounding areas at the start of the Project and this advantaged position has probably been increased over the life of the Project. This conclusion has serious implications for the prospects that results of the project's activities can be readily transferable and replicable in less advantaged zones outside the Project.

A further conclusion of the evaluation term is that the design and subsequent implementation of Project activities took place in an atmosphere which was deficient in its basic understanding of the variety of livestock production sub-systems which exist in northern Cameroon and, more particularly, in the specific project zone. This lack of understanding has resulted in the Project's attempting to institute several livestock interventions which, by their very nature, are not sufficiently flexible or realistic to have any real chance of being applicable over larger areas of the Province.

As a result of the evaluation team's field work and interviews with herders and technical personnel of the government, we have identified five different eco-systems in the context of which livestock production sub-systems are practiced in northern Cameroon. These eco-systems are:

1. The Northern Yaeres Eco-system

This is the region north of the parallel 11° 30' and is essentially inhabited and utilized by herders only during the dry season, being flooded during the rainy

season. Before the rainy season, certain groups of Shuwa Arab and FulBe herders travel eastward out of this zone into Chad to find pastures for animals and other groups, specifically FulBe Uda'en and WoDaaBe, travel westward into Nigeria.

2. The Southern Yaeres Eco-system

This region lies between the 10° 50' and 11° 30' parallels and is inhabited by groups of both crop farmers and herders. The herding groups are specifically the Moussougoum, Shuwa Arabs and FulBe. The eco-system has been profoundly affected in recent years by the installation of the SEMRY II rice project and the associated Lake Maga water impoundment for irrigation purposes. This lake was formed by impoundment of waters coming from the Mandara Mountains in the western part of the Province and, to a lesser extent, of waters from the seasonal flooding of the Logone River. The total expanse of land taken out of traditional dry-season grazing as a result of the lake development and the SEMRY II project is in excess of 50,000 hectares. The area development has also resulted in a considerable population increase as farm families were moved into the zone for rice production. Finally, livestock production activities have been severely affected by this project both because of the decline in available grazing areas and the parallel decline in the availability of water to flood the remaining Yaeres pastures and sustain forage production. Other problems encountered in the area include heightened risks of animal diseases because of an increased cattle tick population, an unexplained increase in the incidence of blackleg and anthrax in the herds, and a much higher incidence of cattle thefts.

3. The Mora Plain Eco-system

This area comprises the large plain directly east of Mora and is populated by a mixture of Mandara farmers, semi-sedentary FulBe and Shuwa Arabs and, more recently, large groups of "Kirdis" from

the mountains to the west. The Mandara farmers in this area are owners of large numbers of cattle which are herded by the FulBe and the Shuwa Arabs. During the dry season, the herds from this area frequent the Northern Yaeres Eco-system and during the rainy season the area is a major transit zone for cattle herds returning to Nigeria.

4. The Kapsiki Eco-System

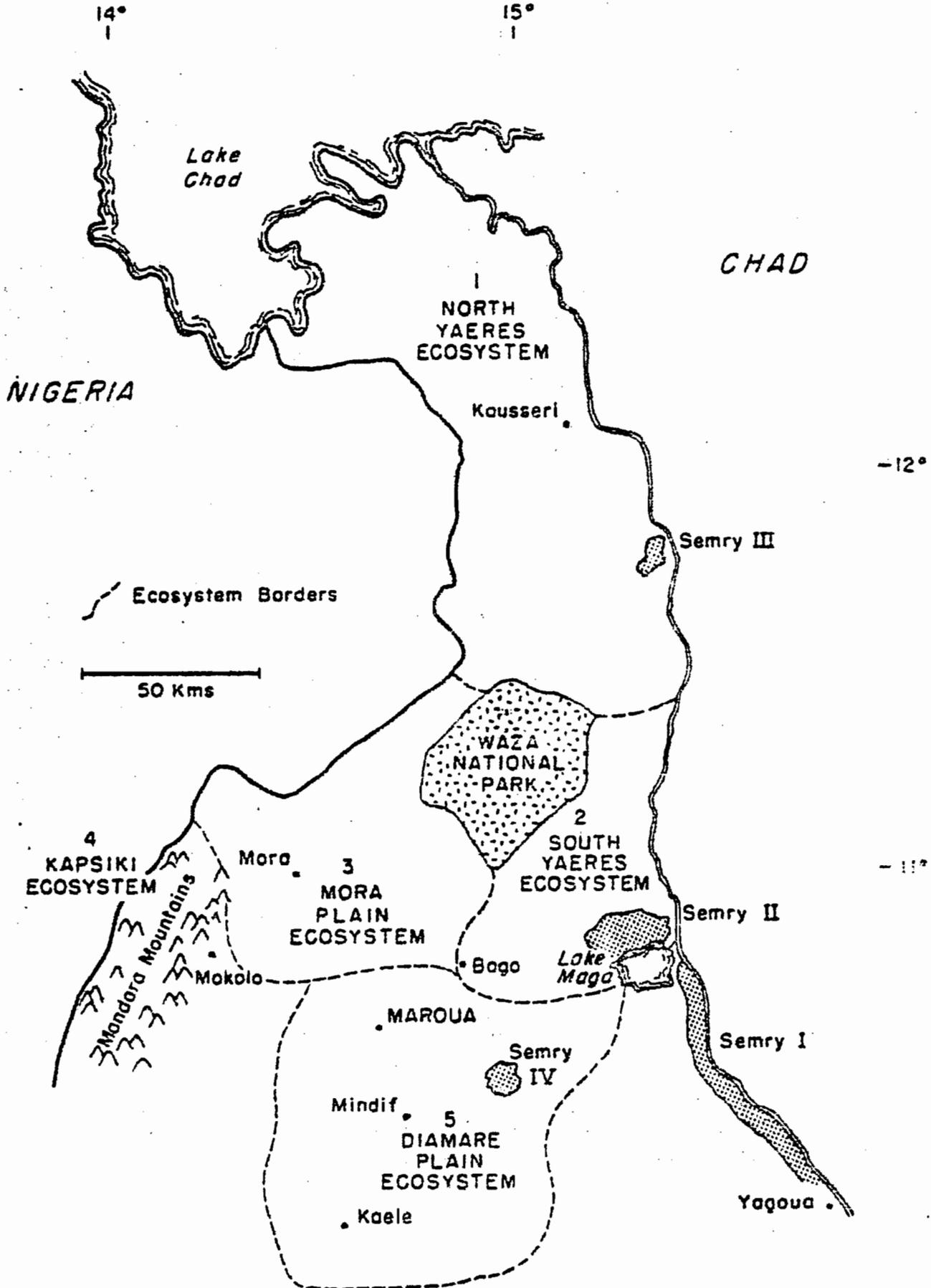
This region is situated south of Mokolo near the border with Nigeria. This area has traditionally had a unique form of livestock production practiced by sedentary farmers. However, the internal equilibrium of this system has started to break down as a reflection of the crises being experienced in the neighboring eco-systems, particularly with the arrival during the dry season of groups formerly pasturing their animals on the Diamare plain.

5. Diamaré Plain Eco-system

This is the eco-system in which the Project zone is located. The zone extends between the 10° 00' and 10° 30' parallels north and is populated by groups of Guiziga, Moundang, Toupouri and Massa, who are basically crop farmers with occasional livestock enterprises and constitute approximately 70 percent of the total population, and by groups of semi-sedentary FulBe and Shuwa Arabs. The former group is composed of livestock producers who also farm during the rainy season; whereas the latter group is made up of livestock producers who have no crop activities. This eco-system is characterized by a reduction in available grazing lands caused principally by demographic pressure and expansion of crop cultivation in response to commercial opportunities in rice, cotton and muskwari sorghum.

Each of the geographically-distinct eco-systems described above constitutes an area which encompasses pastoral and agropastoral production sub-systems with

FIGURE 7.1. PASTORAL ECO-SYSTEMS OF THE EXTREME NORTH PROVINCE



specific characteristics and problems. These characteristics and problems vary considerably between eco-systems. Furthermore, the eco-systems themselves are not mutually independent but are more or less interdependent. For example, there are deep and long-lasting interdependences between eco-systems like the South Yaeres area and the Diamaré Plain, which hinge upon a delicate system of seasonally balanced pasture areas and transhumance patterns between the two areas; whereas an eco-system like that of the Kapiki has been relatively isolated and independent of the others until recently.

In summary, the evaluation team seriously questions the ability of the Project to deal with the full range of livestock sub-systems present in the Extreme North Province. From the geographic viewpoint, the Mindif region certainly has benefitted from having the project operation centered there but, independent of technical considerations and results specific to that area, the evaluation team does not foresee the Project producing many results that will be generally applicable to or replicable outside of the pilot zone.

7.3. Beneficiaries by Socio-economic Groups

The population of the Mindif-Moulvoudaye region itself is populated by human groups living under different residential systems, depending on their orientation to pastoral and/or agro-pastoral production. The evaluation team has observed in the course of its field work that the Project in its design and subsequent implementation displays a distinct lack of basic knowledge of these different socio-economic groups and their systems of production. This lack of knowledge will certainly vitiate the effectiveness of the interventions proposed and executed by the Project and has often led to unfortunate decisions being taken which result in aggravating and disrupting the internal social and economic equilibrium in the project zone.

The population of the project zone, like the population of northern Cameroon in general, is extremely diverse. Often in the past, this variety has been described in terms of ethnic, religious and ethno-religious groupings. The Project Paper itself reflects this tendency with its general assumption that the local social system is based on a dominant class, the FulBe, and several lesser groups, who together form a subservient class. It stated that the FulBe make up approximately 50 percent of the population in the project zone and control both the administrative and traditional political structures. The evaluation team's general feeling is that

this basic assumption about the social structure is, in fact, not accurate and should be reviewed if a true understanding of the complexity of the area is to be obtained.

As a result of the mixing of the populations during the last two centuries and socio-political events, such fusion and fission of populations, internal and external migrations, integration of former slaves, and inter-marriage between groups, these previously employed categories no longer seem to encompass the present complexities of a sociological situation in flux. Nowadays, socio-economic criteria which emphasize the various methods for appropriation and use of the means of production may be more helpful in understanding the socio-economic framework of the area and in reflecting upon the conflicts and problems peculiar to the project milieu. With regard to pastoral production, we can say without equivocation that in northern Cameroon there is no single pastoral system which covers the whole area but a multiplicity of sub-systems. Furthermore, differences between these sub-systems are not solely the result of technical and ecological factors but must also be interpreted in the context of social, economic, political and religious influences.

If, within this general framework, one considers only those sub-systems where animals play a role, then a general classification of pastoral systems can be drawn by using two criteria: enterprise concentration and residential style.

Table 7.1 A Classification of Pastoral Systems

<u>Enterprise Concentration</u>	<u>Residential Style</u>	<u>Representative Ethnic Groups</u>
Crop Farming with Limited Animal Enterprises	Settled and Semi-Settled "farmer-herders"	Toupouri, Guiziga and Mundang
Livestock Production with Casual Crop Farming	Semi-nomadic "herder-farmers"	FulBe Illaga, FulBe Baguirmi and Bornuans
Livestock Production with No Crop Farming	Nomadic herders	FulBe Alijam, FulBe Maare, WoDaaBe and Shuwa Arabs.

This classification does not imply that these categories are mutually exclusive but only that they represent parts of a continuum. Indeed, within the same eco-system, all three pastoral sub-systems can and do co-exist. There is also mobility between the three categories. For example, herders may have to farm more seriously during crisis periods and consequently more or less alter their residential style. Herder-farmers may revert to being only livestock producers once they reach a certain level of economic security. Finally, cattle ownership may spread among farmers, bringing significant changes in residential style and/or family division of labor responsibilities.

The relationship linking these different categories run deep and involve mechanisms for cooperation, interdependence and specialization between groups. Each group needs the others. Herders need the cereals produced by the farmers. Farmers need the livestock products and the animals of the herders. Herder-farmers often entrust their cattle of full-time herders for the extended dry season transhumance. On the other hand, farmer-herders entrust herder-farmers with their cattle during the rainy season. Moreover, herder-farmers need local farmers to plow and cultivate their fields. Thus, it is clear that the agro-pastoral system must be viewed as a shifting and complex web of relationships in which certain families or groups will inevitably be more or less successful in achieving their goal of self-reliance and in which each sub-system is interdependent with each of the other sub-systems.

The farmer-herders in the project zone include a fairly large number of Toupouri, Guiziga, Mundang and Massa peoples. To them, livestock production is more or less a newly-adopted activity and in a way is reflective of their success in their agricultural activities. Cattle ownership brings new social stratification into their traditional societies. In general, poorer farmers own small numbers of animals, mainly sheep and goats. The number and type of cattle owned by them depends upon the quantity of crop residues and by-products they have available for feeding during the dry season.

On the other hand, wealthy farmers can afford to manage their herds more like the full-time herders by sending their cattle away on transhumance once or twice each year. These herds are often entrusted to one or more family members to take advantage of grazing available in the South Yaeres Eco-System during the dry season and to avoid both the heavy concentrations of ticks and flies and the possibility of crop damage in inhabited areas

during the rainy season. As far as some groups of farmers are concerned, livestock have a social value since the dowry is defined in terms of cattle. For others, to the contrary, livestock production is simply a traditional activity as, for example, with the Kapsiki people. In general, however, cattle still remain a store of capital to be used in times of need or as a ready source of investment when there is an agricultural surplus as long as there is sufficient family herding labor or contract herding services available in the area.

Crop production systems also take on a variety of forms, differing in terms of the intensity of cultivation, the range of crops grown, the tools and techniques employed, the size of land holdings, the types of livestock raised and the uses to which they are put, and ways of balancing crop and livestock enterprises within the farmer's available resources. Agricultural production is often constrained by seasonal bottlenecks in labor supply while at other times of the year available family labor is in excess of that needed for agricultural tasks.

The herder-farmer groups in the project zone are composed of FulBe Illaga, FulBe Baguirmi and Bornuans. The orientation of production activities in these groups is on livestock production. Cattle are a capital asset, a symbol of wealth and security, and are useful in every phase of group social life. Crop farming is a secondary activity viewed as a necessary way to obtain needed cereals without having to sell cattle. However, this mixing of crop and livestock enterprises presupposes the availability of sufficient family labor within the basic production unit and results in a complex division of labor involving family members of different ages and sex.

Cattle owned by these herder-farmers fall into three main classes:

1. The boDeeji or Bororo cattle which are raised primarily for beef and regularly marketed.
2. The daneeji or white Fulani cattle which are retained in herds primarily because of their superior reproductive traits.
3. The nyawi which are primarily valued for their superior milk production.

The herder-farmers practice a seven-month-long dry season transhumance (i.e. December to June) in the South Yaeres eco-system. During that time, both herder family units and their cattle herds are split in two parts. The majority of the herds go north with one or more family members, both male and female. Meanwhile, the rest of the family retains some cows to provide milk for family consumption. In the Yaeres, these herder-farmers and their herds frequently camp near the WoDaaBe, FulBe Jafun or Shuwa Arab herders of the area to take advantage of their superior knowledge of the area and the available pasture resources. During the rainy season, these herders return with their herds to pastures near the family compounds and fields. There, tended by herdsmen, they move back and forth between grazing areas and the fields, where they graze stubble and weeds. In crop farming, the herder-farmers generally use the same methods as their traditional farmer-herder neighbors and subsequently rely on these farmers for techniques and tools. They have also adopted dry season muskwari farming with the help of hired labor (i.e. the Mofu, Oho and Banana ethnic groups). Their fields are often plowed with the help of their neighbors, the Toupouri or the Guiziga, who generally are more likely to have animal traction equipment and either oxen or donkeys available for this purpose.

Herders who do not farm at all are also numerous in the project area. And, as a result of historically-based processes of eastward migrations, the lasting effects of the 1969-1974 drought and, most recently, the political events in Chad, their number has increased in recent years. In addition, regional migrations have occurred in recent years between the Departments of Logone-Chari and Diamaré, as best exemplified by the large number of Shuwa Arab pastoralists currently utilizing the general project area. Their particular society is divided into lineage groups, which are also migratory groups under the leadership of an arDo. Their life is centered on their livestock. Cattle are their sole source of subsistence, either through consumption of milk products - but very rarely meat - or through market sales of herd resources to obtain cereals and other basic foodstuffs.

During the dry season, Shuwa Arabs and the FulBe groups, Alijam, Maare'en and Addanko'en, living in the Yaeres area, move their camps only three or four times and then only for relatively short distances. At the beginning of the rainy season as the Yaeres plain floods and grazing becomes impossible, the majority of these specific groups move southward toward the Diamare Plain eco-system, following traditional transhumant patterns in

regularly planned steps. These herds, although managed by the above groups, in fact are composed of animals actually owned by many different people, including many farmers, commercial agents, and government employees from the urban centers of Diamare, Mayo-Danai and Margui-Wandala Arrondissements. Therefore, the herd, which visually appears to the outsider as a single unit (tokkere) managed under a single system, is in fact made up by jokkere, which in Fulfulde literally means the groups of animals "pasted" or "glued" onto the herd, and the herder family's own animals.

As with every other system in northern Cameroon, the various pastoral sub-systems sketched out briefly above are shaped and changed by their socio-economic and technical environments. Indeed, within the same general production system, marked differences can be found depending on which eco-system is being exploited and the number of different geo-morphological units within it. Thus, for example, herder-farmer systems are quite different from each other in the Diamaré, Mandara and Kapsiki eco-systems. And, on the other hand, FulBe Uda'en herding differs widely from WoDaaBe or Shuwa Arabs herding within the South Yaeres/Diamaré Plain eco-systems. Consequently, when all the socio-economic factors of northern Cameroon livestock husbandry are taken into consideration, one does not observe a single stereotypic and unchanging system but a large variety of sub-systems resulting from different objectives and strategies for exploiting the available natural and human resources. These variations are the result of many factors such as the size of production units, the level of cooperation between those units, the size and composition of herds when full-time crop activities are adopted or when herders change their livestock production system from one based upon dairy production - i.e. producing milk and other dairy products for family consumption and sale - to one which stresses beef production. It is our judgement that radical change is not likely to occur among herder-farmer groups in the near-term and, in resisting change, these groups will lose out to the farmer-herder groups, at least, in the short-run. Nor is there evidence that such changes would be desirable, since they would both reduce the diversity of production systems in the region and lead to underutilization of specific niches in the ecology. What happens in the longer term really depends upon the degree of enlightenment shown by both the Project and the GURC in reevaluated and redesigning the present Project interventions.

In this regard, it is the opinion of the evaluation team that the Project in its design and in its implementation has never had more than the most tenuous grasp on the realities of the environment in which it is working and that most of the understanding that has been accumulated was the result of the work of the project's sociologist and economist, both of whom have long since departed and were not replaced. None of the strictly technical interventions of the Project, to our mind, have taken into account the diversity of socio-economic groups in the project zone but have been directed almost exclusively at one particular group, the farmer-herders.

The actual beneficiaries of the Project's interventions in agriculture to date have been the twenty-eight collaborating farmer-herders and the one collaborating herder-farmer. The latter person, incidentally, told the evaluation team that his strategy for agricultural production is to feed his family and use the rest of the revenues generated to buy more cattle. When he accumulates what he considers to be a sufficient number of animals to guarantee his economic security, he intends to quit farming altogether and live as a true herder, using available family labor resources.

The real beneficiaries of the range management and pasture improvement interventions to date have been the owners and managers of cattle and small ruminants who live in the villages in and around the Grazing Blocks. According to the available statistics, which are somewhat dubious quality, about 25 percent of resident village population actually owns cattle and these people are almost always the richest inhabitants. In this situation, one finds a very ironic and ambiguous outcome from Project interventions for, by promoting agricultural interventions, the Project is indirectly stimulating investment by farmer-herders in cattle from their agricultural revenues. On the other hand, the Project is discouraging the participation of local herders with no crop enterprises and putting the herder-farmers in the area at a distinct economic disadvantage relative to the farmer-herders. Above and beyond the specific technical problems of these interventions, which are discussed elsewhere in the report, the evaluation team wishes to stress here the ethical consequences of the Project's actions in this environment.

What is presently happening in the Project is clearly not what was intended in the original design effort where the goal of achieving an equilibrium between the different interests using the area and with the natural resource base was clearly spelled out. The ultimate

end-point of the Project was to have been the discovery through long-term effort of a system for sharing what natural resource productivity was available and could be sustained among all interested groups. What has happened is the favoring of one group - the farmer-herders - to the disadvantage of the herder-farmers and the total exclusion of the true holders.

7.4. Planning benefit spread through local organizations

The Project's purpose is to demonstrate the feasibility of implementing a series of technical interventions through local organizations. Projects elsewhere in the Sahel have attempted to build organizations of herders at the local level through which to implement a variety of project activities. This project has had no such conception of producers' associations. Instead, throughout its design and implementation phases, the Project worked with a simplistic understanding of how local societies are constituted and hence of the ways to relate to what it took to be "local organizations." This image is one of a monolithic and rigid society organized as a vertical and asymmetric hierarchy. Hence, the image continues that orders are simply transmitted from the laamido or canton chief to the lawan or village chief to the Jawro or village section chief. Under this concept of local organizations, the Project implements all its actions effectively through the local traditional political structure while, at the same time, making great protestations about implementing strictly technical and non-political interventions. It is evident to the evaluation team, however, that if the Project retains this essentially false image of Cameroonian society as rigidly authoritarian, composed of a dominant class and a series of subservient groups - as initially portrayed in the Project Paper (pp. 62-63), it runs the serious risk of having all benefits coopted and monopolized by the same small group of individuals who are believed to be the leaders. In this situation, the actual and potential beneficiaries of the Project become simply those people who already held positions of power, influences and prestige in the local society before the Project started.

We have the impression that the current project, given its image of the local society, is incapable of recognizing the real complexity of local social organization. The evaluation team suggests two general issues which seem not to have come to the attention of any of the project technicians: that of the nature of social relations within the actual systems of production, and

that of the land tenure system. For the first of these, we offer some remarks in Section 13-3 of this report, noting some of the elementary structures of social life of the populations in the project area and of some of the social aspects of the system of production of these groups (e.g., cooperation, solidarity, sharing of responsibilities, and the existence of recognized local technical specialists).

It is perhaps trite to reiterate that the image of the local society upon which the Project seems to be basing all its implementation is, at best, partial and does not correspond with either the realities of modern Cameroon or the aspirations of the GURC for future development. The evaluation team believes that the Project must re-evaluate its present image of the local society and attempt to develop a more realistic and pragmatic view of how things actually work. If it were to do so, we believe that it could begin, within the life of the present project, to construct local associations as has been attempted with real promise elsewhere. Toward such a possibility, we offer suggestions in Section 13 as to the principles on which such organizations should be based.

The second problem is that of land tenure and of the system of land use, which have been constant sources of tension and conflict. In this regard, one of the most important features of present project interventions is what can be called control of access to natural resources by all persons involved in animal production. Basically, this concerns the range management component as an attempt to solve an existing problem in a technically precise manner.

In the present Project framework, there is a clear and present danger in isolating space as an independent factor and simply identifying it as the vegetative cover or the complex of natural resources in a defined area. This way of thinking is too limited in scope since human social groups and animals inhabiting the space tend to be disregarded. To the contrary, space should not be considered an independent factor but should be viewed in relation to the other components of the system. In this space, human and animal groups are the dynamic and determinant factors. Thus space planning deals with relationships between these three inextricably intertwined components: men, animals and nature. Inevitably this means that use of space and access to natural resources are always subject to a system of constraints depending upon ecological factors, the techniques used, the social structures of the groups involved, the

organization of the production systems in place, internal and external political factors, religious beliefs, and many other similar factors. Only when all these various factors are in equilibrium do we have effective natural resource planning. Technical problems cannot be isolated from all the other factors and solved in a vacuum. Specific technical interventions can only be feasible when organized and implemented within a comprehensive view of the realities in an area. Furthermore, pastoral planning must take into consideration the notion of territoriality. According to the various sub-systems, territory includes management of livestock trails, patterns of transhumance, grazing areas and forage reserves for difficult years, and other similar planning factors.

In Cameroon, the two principal pieces of legislation dealing with land rights date from 1959 and 1963. In attempting to strengthen ownership rights of local or ethnic communities on all non-cultivated lands, the 1959 law gives to chiefs the right to decide allocation or use of non-cultivated areas for cropping. The 1963 law takes the additional step of decreeing that lands belong to communities, even if they are not yet cultivated.

Land rights began to be a very important issue in Cameroon when large numbers of FulBe became sedentarized. During the nineteenth century, with the Jihad movement, lands were allocated to FulBe according to the Kharajj system - i.e. people were allowed to cultivate but had to pay taxes or tribute. Other parcels of land were set apart for religious purposes as waqf - i.e. land dedicated or reserved. From this point on and throughout this century, the land tenure system has been an extremely complex and delicate issue, linked as it is to both economic influences and political considerations.

Today, the most difficult land problem is the control and use of vertisols or kare, which are located on the seasonally flooded plains or yaeres. These vertisols are flooded during the rainy season and therefore cannot be utilized. However, at the end of the rainy season, they form a micro-system highly prized by both herders for dry season grazing areas and farmers for the cultivation of dry season sorghum - i.e. muskwari. Vertisols have always played an important role in pastoral strategies for herders but they have also become more and more interesting to farmers as muskwari cultivation has spread. And now the development of commercial rice production has added a third actor to the scene in the form of the SEMRY development project, which is supported by the World Bank and FAC.

As a general rule, there are no laws in Cameroon banning herders from access to grazing areas. But neither are there any laws which protect traditional grazing areas against encroachment by farmers. Indeed, the law aside, the present trend is toward increasing exclusion of herders from the areas traditionally used for dry season transhumance. Population pressures in the south, expansion of farming areas near villages for both cash and food crop production, and population movements seriously reduce the rainy season pasture areas for that end of the transhumance pattern. The Project interventions are therefore taking place in a dramatic framework and they risk exacerbating the general conflict over land use without being able to adequately assess or control the socio-economic factors at play in northern Cameroon society.

Nomadic herders have always reimbursed the laamiBe for grazing rights on rainy season pastures in the project zone. At the same time, they contribute to local economic activities by selling their cattle and dairy products in local markets. In addition, they fertilize local fields with manure and buy local cereals from farmers. The Project interventions, however, risk reducing or even prohibiting the access of these herds to rainy season grazing grounds in the area, as well as their passing by villages and markets on their way to the south. This might drastically disrupt the entire economic symbiosis in the project area, with serious consequences for both herders and farmers.

In the future, Project interventions should rely more on obtaining an overall consensus from all users of the Diamare Plain Eco-system. Continued herder interest and cooperation in Project activities can only be assured if the practices being introduced are proven to be economically and socially viable and compatible with existing ecological realities.

At present, two basic trends are profoundly altering land use relationships between pastoralists and agriculturalists in Extreme North Province:

1. The considerable reduction in available grazing land, due mainly to the rapid growth of the rural population which, in turn, leads to expansion of cultivated areas into the better grazing lands. The annual rural population growth rate is somewhere between 2.5 to 3 percent. At this rate, the number of cultivating family units will double approximately every twenty years.

2. The increasing individualization of land tenure. This rarely means that rural land is individually owned but the traditional "free range" philosophy whereby livestock have free access to water and forage resources on rangelands, fallow land and harvested fields is increasingly being challenged by farmers who want to control access to their holdings.

These two trends could have a "snowball" effect in the medium- and long-term. The reduction of grazing lands will force larger and larger numbers of herders to settle and cultivate their own crops. In this situation, we must expect an accelerating trend in disappearance of open range, increasing difficulty in practicing any type of animal production involving grazing, and a rising rural population growth rate since settled populations almost always have higher growth rates than those of transhumant herding groups.

7.5. General Conclusions

One of the principal implicit assumptions of the Project as currently structured is that pastoral practices in northern Cameroon are not rational and that they are the principal cause of environmental deterioration. Human beings are viewed as the main factors in this situation in areas where animal populations exceed the carrying capacity of the land and where the vegetative cover is reduced by overgrazing, fire and soil/water erosion. What is required, according to this assumption, is a radical change in land use patterns through demonstration of the feasibility of implementing a series of technical practices... to reverse the natural resource degradation process and improve the resource base. Following this way of thinking, the focus of activities is primarily on land or grasses and how people can be organized and directed in their activities so as not to destroy the land. The land is the principal beneficiary of all the interventions and the land is to be saved, even if local socio-economic and cultural systems must bear the consequences.

The evaluation team feels that this assumption is quite simplistic and that the root causes for resource degradation must be searched for in a wider context and that the degradation itself cannot be viewed as a technical problem to be solved by technical means. Resource degradation and deterioration of the natural resource base are clearly caused by many factors working cumulatively: droughts, erratic rainfall, unwise political decisions, increased crop production, unrestrained

economic opportunism, mounting demographic pressure of both man and animals, and many other things. Under the pressure of both internal and external factors, the rationality and the internal equilibrium of northern Cameroonian pastoral and agro-pastoral societies is rapidly breaking down. More and more herders have been forced to exploit more and more marginal land resources as urban areas expand and more and more good land is put under the plow. What is required at this juncture is a serious reappraisal of all traditional pastoral systems in the area to determine their chances for survival in a radically changed environment and then multidisciplinary approaches to put together some programs, not individual projects, to reintegrate what systems can be saved with the rest of the economy in the north. The present Project could be of some assistance in this search of different approaches to the critical issue of natural resource management but only if it readjusts its own thinking away from reliance on external monitoring and coercion of people and toward an approach - albeit a slower and more difficult course - based upon the consensus of all user groups in the area and their cooperation in equitable allocation of the benefits from rational land use.

8. PROJECT ACTIVITIES

8.1. GRAZING LAND MANAGEMENT AND CONSERVATION

1. Activities

The stated key to improving range conditions within the Project area and the entire Extreme North Province is controlled grazing which will be compatible with the physiological requirements of forage species. Such controlled grazing will result in improved vigor and health of the natural plants and provide the increased root growth, tillering and seed production needed to reestablish the more desirable perennial grasses. The improved vegetative cover and root growth will increase moisture infiltration and retention in the soil, reduce erosive runoff and accelerate production of natural forage available to livestock.

The objectives of the Grazing Land Management and Conservation component of the Project are:

- A. To determine the applicability, in the pilot zone, of livestock/range management practices proven successful in other areas of the world.
- B. To identify any modifications necessary to adapt these practices to the socio-cultural environment of the pilot zone.
- C. To demonstrate the effectiveness of these practices in improving natural forage production and conserving grazing lands.
- D. To develop specified watering points in conformity with the estimated stocking rate capacity of pilot grazing blocks to assure rational use of the rangeland.
- E. To enhance existing organizational structures among village livestock producers which will assure discipline in the cooperative

management of livestock and grazing and water resources.

- F. To investigate the feasibility of establishing a marketing and purchasing association in conjunction with grazing blocks. Legal, social, and financial aspects will be studied. Impact of government pricing policy and other constraints on off-take will also be studied. One association will be established in the fifth year of the project.

Activities which the Project will carry out to achieve the above objectives are as follows:

- A. Three demonstration grazing blocks of approximately 5,000 hectares each will be managed under a pilot system of controlled rotational grazing that will allow desirable forage species on approximately 25 percent of the pasture area (i.e. 3,750 hectares) to reach maturity each year before being grazed.
- B. Approximately nine local village or village cluster livestock producer groups operating through the existing traditional leadership system will be provided technical assistance to assume responsibility for management of the controlled grazing systems based on the concept of self-discipline. Assistance to these groups will be the responsibility of the Project staff and the Diamaré Livestock Sector.
- C. The Project will demonstrate pilot water and soil conservation practices on selected areas within the three grazing blocks to control and reduce water runoff and soil erosion on the 15,000 hectares of pasture land. These practices will consist of natural

reestablishment of ground cover, artificial reseeding, establishing natural water barriers for gully control, dikes, diversions, and subsoil penetration.

- D. Artificial reseeding demonstrations (approximately 30 hectares per grazing block) will be undertaken in areas where improvement through natural conservation practices cannot be expected to restore productivity within a reasonable time.
- E. A minimum of nine livestock watering points will be constructed within the three grazing blocks or in sufficient numbers to facilitate livestock access within the limit of the normal five kilometer grazing range of cattle. Water points will be placed in locations which will ensure efficient utilization of available forage under a rotational system of grazing.
- F. The perimeters and interior boundaries of the three pilot grazing blocks will be cleared of brush and grass on a one-time basis in order to provide access trails for livestock and Project-related personnel to and from rotational pastures, watering points and villages. The cleared trails (approximately 40 kilometers per grazing block) will also serve as pasture section demarkation and as breaks to control the spread of fire and to facilitate controlled burning.

Within the narrow confines of the Project strategy for dealing with the problems of range management and natural resource degradation within the project area and in the entire Extreme North Province and when viewed strictly in terms of the targets for

the activities as defined above, the Project has achieved to date the following:

- A. Three demonstration grazing blocks of at least 5,000 hectares each have been established in the project area.
- B. Within these grazing blocks, Project staff have installed a system of deferred grazing and adequate pasture resting to allow maturing of certain desirable forage species.
- C. The Project is working through the traditional leadership system, as defined by Project staff, in more than nine villages to impart technical instructions to farmer-herders, as defined by the evaluation team, on how to manage grazing areas, according to the Project's system of controlled and deferred grazing. In this regard, the evaluation team observed that all groups which are classified by us as full-time herders without associated agricultural activities have been effectively excluded from the grazing blocks. Furthermore, the livestock producers involved in the plan to rationally exploit the grazing blocks appear to us to be simply the inhabitants of the concerned villages, under the direction of the Project's range monitors and the traditional administrative leaders - i.e. the lammiDo, lawan and the Jawro.
- D. The Project has started to demon-pilot water and soil conservation practices on selected areas within the three grazing blocks. These activities have included the natural reestablishment of ground cover through the deferring of grazing and the resting of certain areas of pasture, the artificial reseedling of limited areas of pasture, and the installation of

selected watering points for livestock. Work has not yet started on establishing natural water barriers for gully control, dikes, diversions and subsoil penetration to the evaluation team's knowledge.

- E. Artificial reseeding demonstrations have started in the grazing blocks but have not yet reached the level of 30 hectares per grazing block.
- F. Two livestock watering points have been installed to date within the grazing blocks and a third one is to start in December 1983.
- G. The perimeters and interior boundaries of the three grazing blocks have been cleared of brush and grass. The total number of kilometers of trails cleared in the grazing blocks was estimated by the American Chief of Party/Extension Specialist as 114 kilometers.

In addition to the accomplishments enumerated above, the Project staff has assured the evaluation team that it has detailed plans for completion of all specified activities listed above within the period between now and the completion of the Project on April 30, 1985. Barring extraordinary events, we have no reason for doubting this claim.

2. Issues

The evaluation team, in its scope of work, was specifically requested by USAID/Yaounde to address itself to the following issues in relation to the range management program.

- A. Whether the Project's range management interventions are appropriate for the project area and the whole of Extreme North Province and whether they

adequately address the issue of natural resource degradation.

- B. What are the environmental implications of development of stock water reservoirs, both within the Project zone and on a wider scale in the Extreme North Province? What should be the capacity of the water points in relation to the carrying capacity of the surrounding rangeland? And, is the Project determining water point placements and access with reference to appropriate livestock management considerations?
- C. Is the technical design of the installed grazing blocks appropriate with respect to carrying capacities, animal distribution within the blocks, pasture divisions, firebreaks, access trails and other technical factors?
- D. Is the range reseeding program appropriate and technically sound?
- E. Are the soil and water conservation techniques being implemented technically sound and appropriate?
- F. Is the methodology for monitoring range production, cover, density and species composition technically sound, statistically valid and appropriate to local conditions?
- G. Is the range management program economically viable with respect to general conditions in the project area and the Extreme North Province?
- H. Is the range management program socially appropriate to conditions in the Project area and the Extreme North Province?

In addition to these specific issues, the evaluation team has isolated the following items for consideration.

- A. The lack of agreement within the Project staff on exactly what constitutes the Project's overall strategy for range management.
- B. The adequate time horizon for the Project with respect to the development of a range management system and the need to collect and analyze technical and socio-economic data for this system.
- C. The basic controversy as to whether the pastures in the Project zone should be managed as annual grass pastures or whether they should be managed in such a way as to encourage the growth of perennial grasses.
- D. Should the Project begin to organize a herder marketing and purchasing association at this point in the Project?

3. Recommendations

After review and extensive discussions on the issues raised above, the evaluation team has the following recommendations to make:

- A. We feel that the question of whether or not the deferred grazing system and other range management interventions of the Project are approximate to the Project zone and to the whole of Extreme North Province must be answered at two levels. We believe that the principles upon which the proposed range interventions are based are probably universally true. However, the problem of adapting those principles and techniques, which have been developed and "proved" elsewhere, to the local

ecological and socio-economic conditions in northern Cameroon is a very long-term process which is guaranteed to be no easy task and which has no sure outcome. Whatever range management techniques are introduced must be adapted to the local pre-existing production systems of herders in the Extreme North Province. It is here that we believe the Project runs serious risk of faltering through lack of sufficient knowledge and perspective.

Essentially, the evaluation team sees four basic strategic alternatives by which the resource base of northern Cameroon can be improved and used for livestock production - and, of course, other productive activities. Those alternatives are:

1. Sedentarization of Livestock Herds on Year-round Grazing Blocks

This strategy involves complete sedentarization of all livestock herds in grazing blocks with year-round watering points and at stocking rates commensurate with the carrying-capacity of the natural range. In this alternative, the maximum carrying capacity of the range would be the number of animal units which could be supported when the range was in its worst annual condition - i.e. at the end of the dry season. Under this strategy, all animals in excess of the number that could be supported on a year-round basis would have to be removed from the range and slaughtered since there would no longer be any other available pastures. Given the present condition of the range

in northern Cameroon, it is obvious that truly massive cuts in the existing livestock populations would be necessary, although the exact magnitude of these cuts is not known at present.

The evaluation team views the implementation of any such strategy at this point in the Extreme North Province as a political and economic impossibility and as a sub-optimal technical solution to the problems of livestock production and resource degradation. It is clear to us that such a strategy could only be implemented in the short or medium-term by resort to force, which we do not believe is a viable solution for the GURC or something USAID should sponsor. We say this on the basis of our field interviews with herder-farmers in which we found no evidence that these people were willing to accept having their herds cut in the interest of improved rangeland - or any other larger community objective. To the contrary, we found, when we asked what they would do if they had any extra money, that the first response in virtually every case was that they would buy more cattle. And, these interviews were conducted with the herder-farmers, who have now participated in Project activities for up to three years.

2. Sedentarization of Livestock Herds on Year-Round Grazing Blocks with Supplemental Feeding of Agro-Industrial By-products and Crop Residues

This second alternative would sedentarize the livestock herds by having year-round water in grazing blocks and an organized program of range supplementation with crop residues and agro-industrial by-products - i.e. cottonseed cake and rice bran. Essentially, animals would be grazed from June until the natural pastures were grazed to the lowest acceptable level and then put into some sort of feeding system in organized feedlots. Assuming that all cottonseed cake produced in Maroua and all rice bran produced in the SEMRY I and II projects - i.e. about 25,000 metric tons in the aggregate at present - was shipped to the Mindif-Moulvoudaye area for mixing with locally-available crop residues and feeding, we calculate that this program could carry perhaps 70,000 cattle through the season, providing that the carrying capacity of the grazing blocks during the rainy season was not a binding constraint on this figure. However, it is extremely difficult for us to envision any development agency in northern Cameroon having either the financial or logistical capacity to organize and implement such a massive exercise in bulk transport of essentially low-value livestock feeds on an annual basis. We, therefore, cannot truly believe that this is likely to be a

viable livestock system in the foreseeable future in Province.

3. Maintenance and Improvement upon the Current Livestock System Utilizing the Diamare Plain Eco-system for Rainy Season Grazing and the South Yaeres Eco-system for Dry Season Grazing

This third alternative is essentially to maintain the current system of seasonal transhumance between the rainy season pastures of the Diamare Plain eco-system and the dry season pastures of the South Yaeres eco-system install appropriate range management interventions in both areas so as to develop a management system for the entire geographic area actually used by the herders and herder-farmers.

4. Maintenance and Improvement upon the Current Livestock System as in Alternative C with Addition of Supplemental Dry Season Feeding of Livestock with Agro-industrial By-products from the SEMRY Projects

This fourth alternative is essentially an extension of the third one based on the hypothesis that, if feeding of agro-industrial by-products is to take place on any scale in northern Cameroon, it makes infinitely more economic and technical sense to move animals on the hoof to the areas producing those by-products than the contrary. In this particular case, since the South Yaeres eco-system is directly adjacent to the SEMRY II rice project and since the feed supplements are most

needed by the animals during the time they would normally be in this area anyway, we appear to have a possible matchup of convenience to all parties.

This classification of strategies is obviously an oversimplification of the production system in that it does not deal with that portion of the herds which currently remain in the Mindif-Moulvoudaye region through the dry season primarily to provide milk. In the opinion of the evaluation, these animals do not constitute a large portion of the total herds which use the area during the rainy season. A separate strategy must be developed to deal with these animals.

While there is currently no apparent agreement within the Project staff as to exactly what constitutes their proposed strategy for the entire grazing year, the evaluation team wishes to assert the third alternative above offers the most reasonable and least disruptive possibility for maximizing use of the available natural resources in the two eco-systems without excess degradation. Both rainy season pastures in the project zone and dry season pastures in the South Yaeres would be utilized at their peak periods of production and the overall grazing system could maintain a maximum number of animals of participating herding groups within the confines of the appropriate carrying-capacities in the two complementary areas.

In effect, the Project to date has not been able to deal effectively with any one of these strategic alternatives because it has, since the reorganization, been limited

to a specific geographic area and only one-half of one existing livestock production system in the Extreme North Province. The Project was originally mandated to work in the whole Extreme North Province, but Project personnel soon realized that financial and personal resources were insufficient to permit operation on such a vast scale. During the course of the Project reorganization the technical assistance team wished to maintain the focus on the South Damaré Plain Eco-systems. However, GURC decided that since LCBC was already working in the South Yaeres, the Project should concentrate their resources elsewhere. Essentially, this relegated the Project to the Mindif-Moulvoudaye region which only comprises one part of the grazing system. To compound this problem, the LCBC project in the Yaeres has been suspended due to a lack of funds. Furthermore, LCBC interventions have been limited to water point development without any attempt to control grazing on the Yaeres. In effect, therefore, only one-half of the grazing system is being developed. In attempting to deal with this truncated range management system, project staff have had to set up their current system which effectively operates only in the period June to November as a controlled grazing scheme and hence does not deal with the most critical factor in livestock production in the area, which is the lack of adequate nutrition for the animals during the dry season. During the period from November to June, the assumption of the present range management specialist is that the bulk of the cattle in the Project zone will depart on seasonal transhumance. This relieves the Project staff of having to deal with the herds during the dry season but results in a

mere transfer of the nutrition problem outside the Project zone and into a presently unmanaged environment.

Within the Grazing Blocks themselves, the Project has effectively lowered stocking rates by excluding the "nomads". However, the stocking rates still exceed the carrying capacity of these Blocks by the Project's own preliminary estimations. The implicit hope of the Project is that, with deferred grazing and reseeding of the forage species, there will be enough evidence of improved pasture conditions to induce herders to cooperate with the range management program. There is also the hope that there will be enough scientific data collected and analyzed to establish carrying capacities for the various Grazing Blocks and show range trends which demonstrate the benefits of the new system.

However, the evaluation team has two major criticisms of this approach. First, since the interventions only affect one-half of the production system, they are not appropriate to finding a permanent solution to the entire problem. Secondly, the interventions are not receiving valid tests to determine their validity for the Project area. To receive a valid test, the carrying capacities of the test sites must be determined scientifically and then the stocking rate must be revised to a concomitant level. If the Project actually succeeds in its current design, it will be because it has found a low enough stocking rate by luck through the exclusion of the "nomads". Even if the Project technicians found it necessary to further reduce the stocking rate (a likely occurrence since they

already feel that the stocking rates exceed the carrying capacities), the Cameroonian Project Director has said that this would be politically impossible in the short-term. The Project, then, is left having to test the grazing system under conditions which, from the very beginning, have not been favorable for a successful outcome. We believe there is an alternative approach.

One of the key underlying assumptions of the Project is that it is only through observing the deferred grazing system fully articulated and in action that herders will be convinced of its value and actively support it. This appears to be a valid working hypothesis in our opinion. However, we feel that there is no need to establish the necessary demonstration on 15,000 to 20,000 hectares of relatively privileged range as a pilot effort. We see two major problems with this approach. First, the area included in the demonstrations has turned out to be too large and often inaccessible for the relatively small Project staff to manage effectively and, at the same time, control and monitor in a manner so that they can obtain valid scientific data for necessary analyses of carrying capacities, species composition changes, and the like. Without this accumulation of scientific data over time from well-controlled grazing situations, the Project range management system can never be proven to work in any acceptable sense. Second, by virtue of the very size of the grazing blocks, the Project staff has found it necessary to be in a confrontational position vis-a-vis some of the herder groups that previously used the

used the areas but now have to be excluded if the Project is to have any hope of controlling its demonstrations. Since the results of the necessary trials and their associated demonstration effects are not contingent on any particular size of parcels, putting the Project in this awkward position vis-a-vis the herders in the area at this early point is both unnecessary and destructive of the demonstration effects the Project is trying to achieve.

Another assumption is that the Project's current range management system gives people the experience of managing their own rangeland which is a necessary step towards creation of a self-sustaining system. The evaluation team feels that while there is some participation of herders in the decision making process, the system is actually being imposed in much the same manner as SODECOTON imposes its agronomic techniques on farmers. We feel that this produces short-term compliance with rules but that it is not a long-term educational process. The people will basically learn to rely on the Project to establish the rules and make sure they are obeyed rather than learning how to manage their rangeland on their own.

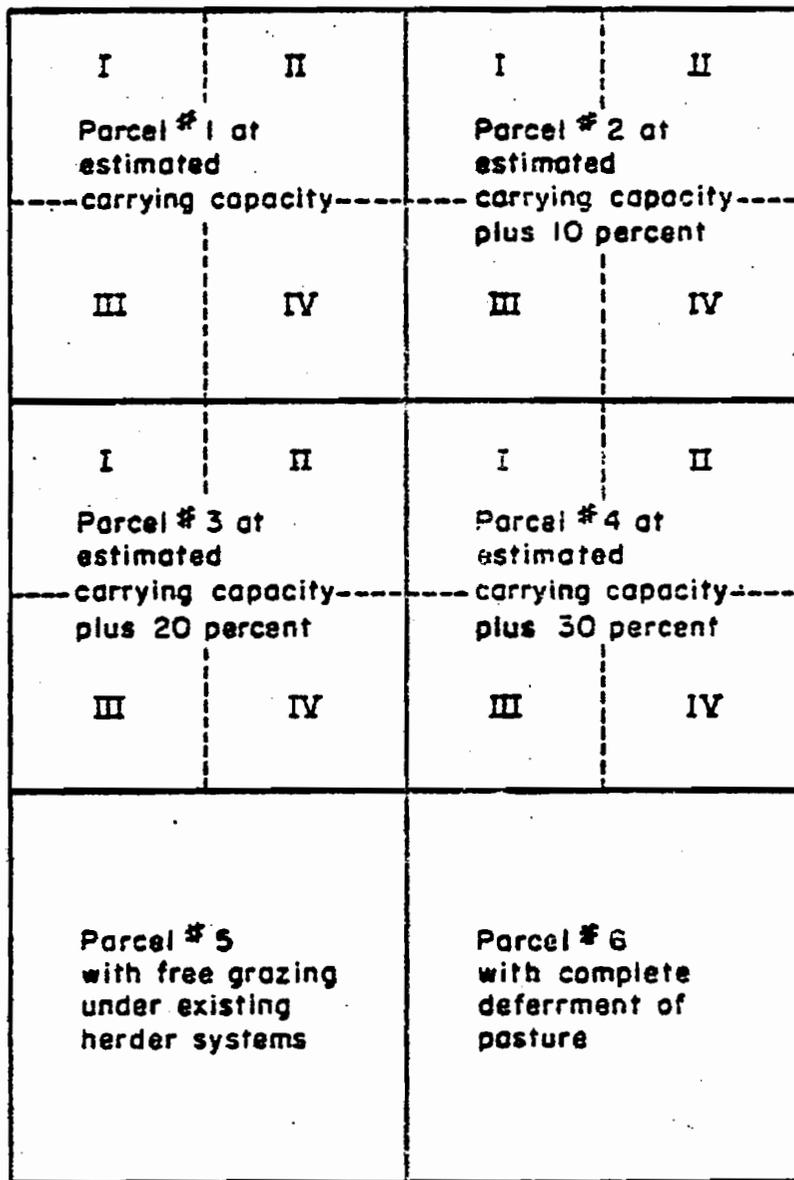
We propose, therefore, a much smaller grazing trial/demonstration program to be conducted in a much more vigorous scientific manner with fixed protocols, timely and comprehensive data collections, and prompt analyses and write-ups of the research results. Essentially, this new "block" plan would consist of 600 fully fenced hectares which are divided into

six sub-blocks of 100 hectares each. An attempt would have to be made to find a truly representative area of six square kilometers within one of the Grazing Blocks - and eventually in all three of them - in which the vegetative cover was fairly homogeneous. A diagram of our preliminary system is presented in Figure 8-1 below.

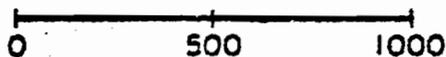
Since each sub-block in this system would be completely fenced, the stocking rate on it could be vigorously controlled so that the rate would be known exactly at all times during the year. Different sub-blocks would have different stocking rates varying from total exclusion to free grazing under the system currently being practiced by herders in the area. In the four intermediate blocks, steady stocking rates or patterns would be maintained over time at different levels so as to observe a continuum of effects or range conditions. In addition, each of these sub-blocks could be further divided into four quarters, one of which could be rested each year under a regular, pre-determined pattern. Finally, if the Project was authorized to extend its operations into the South Yaeres ecosystem, a second series of grazing trial/demonstrations could be set up there for experimenting and monitoring range conditions during the dry season portion of the annual transhumance.

In a related issue, the evaluation team views the current relative isolation of the Project range management specialist from other specialists in her field - both within Cameroon and elsewhere - as highly unfortunate. We have given

FIGURE 8-1: SCHEMA FOR PROPOSED RANGE MANAGEMENT TRIAL / DEMONSTRATIONS



meters



her several suggestions for increasing her contacts and we reiterate here our feeling that, if a more vigorous range management trial/demonstration program is to be put into place, the Project must see to it that more experienced agronomists and range scientists are available to the range management specialist for consultation, particularly in establishing the necessary trial protocols and in analyzing the resulting data.

One other issue is related to the appropriateness of the technology in the Project. Brush encroachment in the past has been prevented by burning and by what amounts to mob stocking of livestock. This was not done in any controlled way but, nevertheless, was quite effective. However, by cutting back on stocking rates and by controlling burning, the Project runs the risk of having a severe problem with brush encroachment in the Grazing Blocks. The Project's current response to this problem is to encourage cutting of those bushes and trees which have no forage value for firewood. This may be an adequate policy as long as it is closely coordinated with local representatives of the Service of Forestry and Waters. Additionally, we suggest that the Project might deliberately fence off a seventh block as an enclosure in which trials could be conducted with controlled burning and/or mob grazing to control brush and improve general range conditions.

- B. Before dealing with the quality and methodology of data collection on range management questions, it is perhaps useful to see how the Project has proceeded to date in data gathering activities.

Basically, the data gathering activities have not occurred in the Project because there has been no consistent range management presence since the beginning of the Project. The effort which has been put into data gathering has been disjointed, discontinuous and highly uneven in quality. Mr. D. Gipe, the first resident range management specialist, spent one year on the project and left in June 1981. The short-term consultant, Mr. L. Rasmussen, spent three months at the Project in early 1982. The present range management specialist, Ms. L. Cleboski, has only been resident in Mindif since November 1982.

According to the original Project Paper, data gathering and analysis were to have started with the initial arrival of the contract team and data were to have been built up on range conditions and carrying capacities before any important decisions were made as to interventions like watering point design and placements. However, neither Mr. Gipe nor Mr. Rasmussen were in place long enough to collect any significant data. Indeed, their efforts were limited to establishing the boundaries of the grazing blocks and to defining the range management system.

The actual data gathering process for range management interventions has only essentially begun under the direction of the present range management specialist. The information necessary to evaluate the effectiveness of the technical intervention, therefore, will not be available before the end of the Project in April 1985 and then will only comprise two years of data at the very best. Therefore, we feel that, if continued USAID/

GURC support for this Project is envisaged, one of the first things needed is a better and more consistent data gathering and analysis capacity over several more years - i.e. the pilot phase activities in this regard should be extended at least through three rainy seasons 1987. Given the large variation in climatic conditions from year to year, and the large number of biological factors which must be measured over time to come up with a viable range management system, an extension of this length should be considered a bare minimum.

The evaluation team feels that the techniques and methodologies proposed by the present range management specialist in her ambitious program of monitoring vegetative cover, density, production and trends on the range are adequate for Project purposes. There, however, is a major problem of controlling the present environment sufficiently to obtain valid results from the interventions put in place. Therefore, we feel that the research strategy proposed for range management in the preceding sub-section, coupled with her data collection methodology, would permit a much more valid evaluation of the possible scope for range management interventions than the present rather ad hoc and unscientific system in which the range management specialist is forced to work.

- C. On the issue of water points, there is no coherent strategy being advocated by the Project team. This is partially due to the different pressures under which different team members work and partially due to varying professional approaches. The water

points are clearly what interests the Cameroonians most about the whole project. Since 1974, when initial discussions on this Project began, the GURC has consistently pushed for water point development. Pressure to build them has been intense from all levels of the government and from the traditional leadership structure.

The water points have been used as an incentive to obtain cooperation from local farmers and herders on the other interventions. Farmers and herders who were interviewed by the evaluation team generally felt that the water points would be a definite benefit to them because they would no longer have to move their animals to the Yaeres during the dry season. Not only is this an arduous trek but cattle theft has become an increasing danger during transhumance. This attitude has very serious implications for dry season stocking rates.

The contractor's Chief of Party is faced with the pressures for the water points from the GURC and the local population and, in addition, he represents a contractor with a written obligation to dig at least nine water points in the three Grazing Blocks. Because of the delayed arrival of the heavy equipment and the short time remaining in the Project, the American technical assistance team is devoting fully half of its collective work time to water point development. The Chief of Party is working twelve to eighteen hour days and the heavy equipment is being run on two shifts for a total of sixteen hours per day in order to speed up the excavation of these water points.

The Project Director, meanwhile, has some serious reservations about the cost of the water points as they are currently being designed by the Project. He estimated the cost to average about 8,000,000 FCFA per water point (i.e. \$20,000 per water point) and he is concerned about the ability of the GURC to replicate these water points on a wider scale after the end of the Project. He sees this as especially difficult given the estimated fifteen year life of a water point as currently designed.

The range management specialist has a third and completely different point of view about water points. Her major concern is that the water points be established as a function of the range carrying capacity and that they be distributed in such a way as to promote uniform grazing. However, she is severely handicapped in presenting this argument because she presently has data upon which to base her estimations of the carrying capacities of different sections of the Grazing Blocks. At the same time she is trying to collect the necessary data to make even preliminary estimates, the work on the water points is proceeding apace due to the severe pressures of time and politics. Water point capacities are currently being arrived at by everyone's best guesses and those guesses vary widely.

The water point problem is, of course, reflective of a much larger problem which is the fundamental differences of opinion among Project staff on exactly what should be the overall range management strategy for the area. If the Mindif-Moulvoudaye ranges are to be used for year-round grazing,

then the capacity of the water points must be determined by the number of animals the range can carry in the dry season. If as the evaluation team recommends, these rangelands are only used for rainy season grazing, then the water point capacities must be determined as a function of available water from natural rainfed ponds in the area, the best dispersion of water points to promote uniform grazing of the rainy season pastures, and the range carrying capacities for a much shorter grazing season. In this case, it would actually be better if most of the water points in the Grazing Blocks dried up after the rainy season in November or December so that most of the animals in the area would be forced to go on seasonal transhumance and the stocking rates would thus be cut to almost zero during the dry season.

The evaluation team recommends that the whole question of water points be reassessed within the context of an overall grazing strategy which takes into consideration the complementarities between the Diamaré Plain and South Yaeres eco-systems and the likelihood that the seasonal transhumance will continue for many herders regardless of the Project's predispositions or hopes in either direction. This being the case, we believe that consideration should be given to digging a large number of shallower water points which would be clearly seasonal in nature and would dry up at approximately the end of each calendar year when grazing in the area is just about exhausted anyway. In addition to the advantages mentioned above, water points of this type would not attract as heavy a burden of

livestock traffic as the larger ones currently being built by the Project and they would be more consistent with the financial ability of the GURC to continue the program after the Project per se is over.

For the small portion of the herd which remains in the Mindif-Moulvoudaye region through the dry season, there must be an assured water supply. The evaluation team feels that a water point development strategy for these animals must be carefully developed taking into consideration the number and type of animals involved. Since individual owners generally only keep a few cows to provide milk, shallow wells dug in the low lands which are flooded during the dry season would suffice. Essentially this is the system which has been used traditionally. We recommend improvement of the system by making these wells permanent to avoid re-excavating them each year. The labor involved in raising water would not be too onerous for the few animals each owner must handle. On the other hand, the labor required to water large herds from these wells would be prohibitive, thus forcing them to leave the region if the wells are the only water source.

D. It has been very difficult to assess the design of the Grazing Blocks in terms of the actual stocking rate in relation to their estimated carrying capacities since the Project has not as yet come up with credible estimates of either figure. It seems likely that overgrazing is occurring despite the reductions in stocking rates in the Blocks due to the exclusion of "nomadic" herds. This will become a more serious problem if year-round watering

points are developed without any concurrent effort to cut stocking rates. With decreased forage availability in the dry season, animals will be forced to concentrate more heavily on the more nutritive and palatable species with the result that these will effectively disappear.

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While the design of firebreaks and access trails seem of benefit from the Project zone, the evaluation team questions the means used to clear these areas and whether these will prove too expensive for replication elsewhere when the GURC is forced to pay the full cost of such development. The cost of clearing the firebreaks and trails by road graders, which is the current practice, should be carefully compared with the cost of doing them by hand, as practiced before the arrival of the heavy equipment. Furthermore, the costs of doing these firebreaks and trails should be compared with the estimated benefits accruing from reduction in fire damage, increased access to the area, and the like. Finally, if the decisions are taken to continue building firebreaks and trails, then some method should be devised so that the major beneficiaries of these construction activities either share in them by devoting some of their own labor - or pay for the costs of hired manual laborers.

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E. While the range reseeding program has had some recent success on about 10 to 15 hectares of range, this also was done with the Project's heavy equipment, which makes it questionable whether the techniques can be replicated elsewhere even if successful. The evaluation team fully supports the range management specialist's

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plans to attempt reseeding with the participation of the farmers and herders in the area.

We also support the range management specialist's efforts to find another forage species to associate with Andropogon gayanus in the range reseeding program in order to take advantage of differential maturity dates and other factors which produce more nutrients over a longer period of time. Andropogon is often associated with Hypparhenia species and local expertise should be sought to determine the best association to reintroduce into the area.

The Project range management strategy is directed towards the regeneration of a particular climax perennial grass species, Andropogon gayanus. Reseeding this species on all pastures would obviously be prohibitively expensive, therefore, the Project's objective is regeneration through proper management of the range. The evaluation team feels that, while regeneration of Andropogon gayanus is a desirable goal, it may be that this perennial grass is present in the project range in such small quantities that the regeneration process will take an exceedingly long period of time - perhaps a minimum of thirty years - to begin to show real results.

In the meantime, we believe the Project has no choice but to base range management planning on the forage production from annual grasses which currently dominate the range.

To date, the Project's soil and water conservation activities have been limited to the reseeding of grass mentioned above, a reforestation effort on severely eroded

land, and a few diversion channels to prevent gully erosion along Project roads. The reforestation effort, using Neem trees, was a valiant effort which failed due to a lack of rainfall this year. The evaluation team feels that such efforts should continue - but perhaps with more inputs from knowledgeable forestry specialists - and that the planned water spreading demonstrations should be tried as soon as possible.

G. The evaluation team's position on the economic and social viability and applicability of the Project to its environment has been dealt with in detail in the Project Beneficiaries section of this report. Basically, we feel that the Project is not reacting well to the economic and social realities of the environment around it. It has been handicapped in the overall perception of its role and the situation it is supposedly dealing with by the absence of the Project socio-economic unit. We strongly recommend that, if any consideration is given to an extension of the Project, the reinstatement of such a unit be a condition precedent to such an extension.

H. The evaluation team's position on livestock marketing in the Extreme North Province, as it relates to Project activities, is essentially that we do not feel that livestock marketing practices constitute a binding constraint on Project activities. Herders who wish to sell their animals seem to be able to do so quite easily and at reasonable prices in local markets. Many studies, both in Cameroon and in the surrounding Sahelian countries, have shown that the Nigerian market demand for red meat effectively deter-

mines the general price levels for cattle on the hoof for export in the region and that the local markets seem adequate for the other grade of cattle. Marketing margins are generally found to be quite modest and the "traditional" marketing system appears to be characterized by free market conditions of adequate communications and competition among buyers for the animals available.

Given the problems existing in the Project at the moment, the evaluation team's overall recommendation is that the Project refrain from using scarce resources - both human and financial - in attempting to delve into the complexities of livestock marketing. Furthermore, we feel that any marketing interventions in the future would be much better handled in the context of options for consideration by the proposed Livestock Herders' Associations, which would be a broadly-based cooperative producer group through which herders could mount a whole series of mutually-beneficial activities.

8.2. ANIMAL HEALTH

1. Activities

Under the reorganization of the project, improvements in animal health are described as a function of improved management and the increased forage available to livestock in the controlled grazing areas. The objectives of this component of the Project are stated to be:

- A. To strengthen and support existing veterinary service posts in the pilot zone;
- B. To provide systematic control of internal parasites in both large and small animals; and

- C. To provide systematic control of other animal diseases endemic to the area.

To date the Project has made two interventions in animal health:

- A. USAID provided a small amount of veterinary supplies to the three veterinary posts at Mindif, Moulvoudaye and Kolora; and
- B. The GURC provided antihelmintics (i.e. Thibenzole) to the Project for a planned endoparasite campaign and the Project provided the Animal Health Service with transportation to carry out the campaign.

2. Issues

The evaluation team was requested by USAID/Yaounde to investigate two issues with regard to animal health:

- A. The costs versus benefits of livestock producers purchasing vaccines for their animals; and
- B. The desirability and feasibility of operating local pharmaceutical outlets at which livestock medicines and vaccines could be properly stored and be readily available to livestock herders on a cost reimbursable basis.

In addition, the evaluation team isolated the issue of the appropriateness of the veterinary supplies provided by USAID for the Project.

With regard to the issue of herders purchasing vaccines for their animals, the evaluation team discussed the GURC policy on vaccines with the Project Director, who is himself a veterinarian. The present GURC policy is to provide vaccines against endemic diseases free of charge to herders. The rationale behind this policy is that the national herd must be protected against certain endemic diseases like

rinderpest, blackleg and anthrax and that providing treatments for animals on a cost-free basis to herders encourages maximum compliance with the requirement for universal herd coverage. The evaluation team believes that there is considerable merit in this argument specifically for the diseases mentioned above and that this limited cost-free coverage represents one of the few real benefits the herders in Cameroon receive for their tax monies.

If viewed from another perspective, it would appear to be almost impossible to institute a livestock policy for coverage against these specific endemic diseases which would simultaneously achieve the two objectives of universal preventative vaccination of the national herd and payment for this service at full economic cost by herders. In order to institute such a policy, the GURC would have to be able to force herders to vaccinate their animals on a routine basis and obtain full economic payment from them for the services rendered. Under such a policy, it seems highly likely that some herders would attempt to avoid having their herds vaccinated because they either choose not to pay for the services or, for any number of reasons, do not have the cash payments available when the vaccination campaign is conducted in their area. The result of this herder avoidance would be that disease reservoirs for the endemic diseases would build up in the unvaccinated animals and remain there as a constant menace to all animals in the area. Therefore, weighing the possible costs of attempting to institute a policy of payment for vaccines against endemic diseases (i.e. increased incidences of animal mortality and morbidity due to constant problems of disease outbreaks and possible losses of herder revenues in international trade of live animals due to quarantines imposed on Cameroonian animals) against the relatively modest increments to the national treasury that would be amassed, we do not feel such a policy would be either prudent or cost-effective at this time. On the other hand, we do feel that herders should be made to

pay the full economic costs for all other types of veterinary supplies and services available to them through the government services and/or the private markets. Such products would include all endo- and ectoparasite treatments, all curative treatments to animals rendered by veterinarians, and such other services as castration of bulls.

The second issue above is directly related to the first and second objectives of the project component as stated in the Project Grant Agreement Amendment No. 5. The Project has provided some relatively minor amounts of veterinary supplies to the veterinary posts in the project zone and is apparently committed to repair the buildings at these posts in the near future. The costs will be borne by USAID and the actions seem to conform well with the stated objective of strengthening the existing veterinary service. At the same time, the GURC has plans to provide the veterinary posts with freezers and ice chests to allow personnel to maintain a "cold chain" for vaccination campaigns against endemic diseases.

We believe it would be a mistake to go to the further expense of attempting to set up a separate pharmaceutical service to be run by the Project, the GURC directly, or some parastatal agency at the local level because:

- A. The existing infrastructure of veterinary posts seems to us adequate - or potentially adequate if present GURC plans are carried out - to keep frozen vaccines for the limited time they are required;
- B. It would be far better to encourage the private sector to get involved in supply of all other veterinary supplies to herders as actual demand warrants. Government or, worse yet, Project intervention in this area would

mean the creation of an unnecessary parallel service which would almost certainly be plagued by the problems of high fixed administrative costs, limited distribution networks, and low demand from herders for supplies.

- C. The GURC has already set up the Office Pharmaceutique Veterinaire (OPV) as a parastatal organization which is charged with delivering veterinary medicines and supplies to the region. It would appear to us that the appropriate linkage between the project zone and the suppliers of veterinary supplies - by they private traders or OPV - is through direct contacts with herder organized and managed associations. Such associations could be organized to pool herder demands for veterinary supplies and arrange payment for these items through their appointed local representatives as one of many options for communal action open to them. We believe the Project should attempt to stimulate the development of such indigenous associations, rather than impose yet another administrative structure on the herders from the outside.

The third issue isolated by the evaluation team is a rather minor one that has already been partially corrected. The issue arose when a former project administrator, who was not a specialist in either veterinary medicine or animal science, was allowed to choose the types and quantities of veterinary supplies to be ordered by the Project and supplied to the local veterinary posts. Some of these supplies were later found to be either inappropriate or useless to the local veterinarians and/or their aides. For example, many of the syringes ordered had only a 3 cc. capacity and were too small to be used in cattle or small ruminant vaccination campaigns and were of limited use for poultry. Other

supplies were quietly disposed of through local hospitals since the TDY American veterinarian, Dr. A. Antroinen, found them inappropriate for the veterinary posts. The remaining supplies have been divided up between the three veterinary posts in the project zone but most remain at the Mindif Project Center awaiting delivery to the posts as the need arises.

The initial issue will be mitigated to some extent by the Project's ordering another batch of veterinary supplies which are more appropriate. These supplies include laboratory equipment to improve diagnostic services at the veterinary posts and better equipment for the vaccination campaigns. Supplies will be ordered by the Project Director, who is a veterinarian.

3. Recommendations

The following recommendations are presented by the evaluation team on the basis of the above comments and the discussion in the preceding sub-section on range management and controlled grazing.

A. It appears from the available documents and the discussions with project staff that the major improvements in animal health in the project zone are envisaged to come from improvements in animal nutrition under the controlled grazing schemes. However, as discussed in the preceding sub-section on range management and controlled grazing, we do not believe that the current system of controlled grazing effectively addresses the critical period of animal malnutrition during the grazing year (i.e. the dry season from November to July). Under the current system of grazing in the Grazing Blocks, the majority of the cattle are expected to leave the project zone precisely at the time when they are entering the period of maximum nutritional stress in the year. Therefore, it appears to us a rather tenuous

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argument that major improvements in animal health are to be expected from the system of controlled grazing instituted by the Project. We recommend, therefore, that the Project staff seriously reevaluate the proposed animal health interventions in the context of the deficiencies in the controlled grazing plans being implemented at present since the argument of linkages between animal health and controlled grazing schemes is valid only if those schemes result in improved animal nutrition throughout the entire year in the project zone or are implemented by a system of geographically-dispersed rainy season and dry season pastures with livestock trails between them.

B. We recommend that the Project seek to encourage the formation of multi-purpose Livestock Herders Associations in the project zone which could be the focus of herder-managed schemes for pooling orders for veterinary supplies and medicines and arranging the necessary payments for the goods and services provided by either the private market or the OPV and the veterinary posts.

C. Following on the above recommendation, we do not believe that the Project should attempt to set up and manage local pharmaceutical outlets for herders. We recommend that vaccines against the major endemic diseases continue to be distributed through the existing veterinary post system on a cost-free basis and that all other veterinary medicines and supplies be offered to the Livestock Producer Associations on a full-economic cost basis.

D. The Project should investigate the possibility of arranging training for members of the Livestock Producer Associations as para-veterinary aides. These members could then serve their respective Associations by providing services in rudimentary animal health interventions such as endoparasite control, castration, treatment of minor wounds and infections, and other similar practices. Such a system would greatly reduce in need for daily interventions by veterinarians and veterinary nurses from the Livestock Service which are now either relatively expensive to the GURC or generally unavailable to most herders because the Livestock Service lacks both the medicines and the means of transportation to get its agents into the field on a routine basis.

If this recommendation is to be adopted, however, it is crucial that the Association members selected for training be respected members of the herder community with recognized abilities in traditional means of handling animal health problems. Furthermore, these members should not receive any sort of government or Project payments for their services and must not be considered as mere extensions of the Livestock Service to be used and directed by veterinarians. If any payments for their services are to be given, they should come from the other members of the Associations by mutual agreement. Finally, the tasks to be undertaken by these para-veterinary aides should be limited to a few simple and noncontroversial interventions and should never involve detailed diagnostic work and prescription of dosages and types

of veterinary medicines beyond their competence.

- E. It appears to the evaluation team that the present water points being installed by the Project leave much to be desired in terms of preventative animal health measures. We recommend that Project staff investigate with the Livestock Service means of reducing pollution effects from uncontrolled animal access to the water points and/or actual treatment of the polluted water to reduce animal health risks, particularly from liver fluke infestations generated through existing snail hosts in the water.

8.3. INCREASED ASSOCIATION OF AGRICULTURE AND LIVESTOCK PRODUCTION

1. Activities

The goal of this project intervention is to reduce the need of farmers to continually encroach on limited grazing land in order to increase agricultural production through a system of crop rotation which will conserve the existing agricultural land and increase its fertility. The Project contends that a proven method of accomplishing this goal is to establish a permanent system of crop rotation with a period of leguminous fallow. This system is envisaged to include the planting of traditional food and fiber crops rotated with improved forage legumes. The benefits of this system are seen as increased nitrogen fixation in the soil, increased availability of forage crops, improved structure and water retention capacity of the soil, reduced water/wind erosion, and a decreased need to leave agricultural land in unproductive fallow for long periods of time while putting additional amounts of limited grazing land under cultivation. The recycling of plant residues and animal manures is to be integrated into this system.

The stated objectives of this intervention are:

- A. To promote more intensive use of crop residues and agricultural by-product concentrates as supplementary livestock feed to balance livestock nutritional requirements.
- B. To promote production of leguminous forage in a permanent rotation with other crops as a substitute for idle fallow to improve soil fertility, conserve land resources, and increase production of food and fiber crops as well as associated fodder and forage available for livestock.
- C. To provide support to the agricultural service personnel operating in the area in order to reinforce their livestock associated activities by improving the agriculture techniques and practices utilized by the local farmers.

The Ministry of Agriculture is to provide the personnel for this intervention and the Project is to provide technical assistance and a one-time commodity and material grant, including seeds, fertilizer and initial land preparation for establishment of the legume fallow. Specific activities under the Project are the following:

- A. The establishment of up to thirty rotation trials in association with farmers in the three pilot Grazing Blocks with each trial involving a minimum of 1.25 hectares divided into two 0.25 hectare sections in legume forage fallow and three 0.25 hectare sections for traditional food and fiber crops.
- B. To assist farmer/livestock producers to manage this permanent rotation system in association

with livestock production through Project provision of technical assistance in setting up pilot demonstration.

The Project has succeeded to date in working with thirty farmers in establishing rotation systems involving 1.25 hectares of land each. The task of finding a forage legume has proven to be insurmountable in the time allotted despite an admirable effort by project staff. The evaluation team, however, is not aware of other experiences in similar ecosystems in West Africa where a perennial forage legume has been found which fits easily into the traditional farming systems so the failure of the Project to produce such a discovery in two or three years cannot be said to be unexpected. This is particularly so given the relatively low level of resources and scientific expertise devoted to the search during the Project. The Project effectively tested over 100 varieties of forage legumes and grasses. The ideal forage legume was to have been a perennial legume because:

- A. Such a forage legume would have eliminated the necessity to replant the fallow every year; and
- B. Such a forage legume could be pastured further into the dry season after harvesting some hay from it at the end of the rainy season.

Stylosanthes gayanensis was initially regarded as the legume of choice based on the recommendations received from development organizations like FAO and IRZ. Unfortunately, Stylosanthes has proven impossible to establish on farmer fields and the Mindif Center plots. Seed for this legume must be placed in hot water for twelve hours prior to planting in order to increase the rate of germination to acceptable levels. Further, initial seeding requires good rainfall on a regular basis to establish a uniform stand. Most important, however, is that Stylosanthes

must be carefully protected from overgrazing during the first two years after stand establishment in order to achieve good permanent stands. This type of protection is especially difficult in a village setting where small ruminants are allowed to wander freely and graze upon any grasses and forbs they can find in the area.

Emphasis in the Project has now switched to testing Stylosanthes hamata, variety "Verrano". This variety produces large amounts of seed if allowed to head out and hopefully will produce successful stands under the conditions in the project zone. However, with the lack of a proven perennial forage legume, the Project has now fallen back on the use of a forage grass, Andropogon gayanus, for the rotation system. This has the advantage of being a perennial and only having to be established once in the rotation cycle and, compared to Stylosanthes, it is relatively easy to establish in uniform stands. Equally important is the fact that it is relatively resistant to overgrazing by comparison with Stylosanthes. Legume crops now included in the rotation system are peanuts and cowpeas, which are both annuals but which have the advantage that their grain or pulse produce can be used for human consumption or sale as a commercial cash crop and their forage residues can be used for feed for livestock.

In addition to the activities discussed above which relate to the crop rotation intervention specifically, the Project has used livestock feeding trials or demonstrations in order to promote use of crop residues and by-products as supplementary feeds.

2. Issues

The following issues were isolated by the evaluation team:

- A. The time framework within which the project must work is clearly too short to achieve the goal of adapting a rotational crop system to the local farming systems and

the larger eco-system in which Project interventions are carried out. The theory behind crop rotation systems has been "proven" as is correctly stated in the Project Reorganization Document. It is likely that all of the benefits commonly attributed to such rotation systems could be realized if the system could be adapted to local conditions. However, this adaptive research task has proven much more difficult than the original project planning envisioned. In the haste to single out a suitable perennial legume, the Project had to evaluate a large number of plant species in a very short time using screening trials and observations from very small test plots. Given this small area, the short duration of the trials and the greater than normal variation in the weather during the last few years, it was inevitable that some rather arbitrary decisions were made in selections. The Project had to move forward with its demonstration program based on too little experience in the area. It was clearly unrealistic to expect that the Project could sort through over 100 species and varieties of forage legumes, find one or more appropriate species, develop a workable crop rotation scheme, and adapt this scheme to the complex farming systems in the project area in a period of five years, even if the Project had experienced a perfect implementation schedule which it clearly did not have. This is especially true given the fact that many other projects in similar eco-systems in West Africa have tried to come up with similar schemes for insertion of forage legumes in crop rotations over a much longer period of time with little or no success.

B. The "proven" method of achieving the benefits of a crop rotation system is entirely dependent on finding a suitable perennial legume. The Project has not been able to come up with this legume yet. It seems that, given the constraints on the system, it is unlikely that a perennial legume can be found which is suitable for local conditions before the end of the Project. The major constraints are:

- i. Lack of labor time available to farmers to prepare seed beds and plant a forage crop without conflict with the field operations necessary for traditional food and fiber crops.
- ii. Difficulties in establishing a uniform stand of forage legumes.
- iii. Protecting the forage crop from grazing pressure in the absence of any effective fencing system.

The Project's present attempt to use a perennial grass - i.e. Andropogon gayanus - as the forage crop in the rotation is only a partial solution to the problem. While this grass does have beneficial attributes it will not rejuvenate the soil fertility to any significant degree. In effect, it becomes simply another crop to drain the soil of nutrients and this will do nothing to prevent the continuance of the trend of decline in soil fertility.

This grass then does not present a solution to the central problem of trying to reduce the need for farmers to leave land in unproductive fallow for long periods of

time while practicing a system of shifting cultivation on the available rangelands.

The Project is also trying less conventional approaches to this problem, which may prove to be more effective in the future. One of these is growing Lucaena leucocephala, a tree legume, which produces large quantities of leaf dry matter and has the following advantages:

- i. As a tree crop, once it is established, the only labor requirement is in harvesting the leaves which is a relatively easy job compared to harvesting traditional forage crops by hand.
- ii. As a tree, it cannot be grazed easily once it attains a reasonable height.
- iii. As a legume, it produces high quality forage.

Lucaena has one minor disadvantage as a feed in that, when fed to sheep in large quantities, it causes depilation and reproductive problems.

The tree is unfortunately difficult to establish and its use will be limited to areas around the family compound where it can be watered during the first dry season and protected from competition with weeds and browsing by free-roving animals. It also requires deep soils which may further limit its usefulness in certain areas of the project zone.

In the final analysis, the evaluation team feels that no perfect solution is likely to be found by Project staff for the

problem of the forage legume and hence the concept of a five year crop rotation is likely to remain just a concept. What the project is left with is a possible crop rotation system which includes an annual legume (cowpeas or peanuts), cereals (sorghum or millet) and a fiber crop (cotton). This is in fact the same array of crops which is being recommended and promoted by SODECOTON in its crop rotation scheme and by IRA.

- C. SODECOTON actively promotes a crop rotation system of peanuts-cotton-sorghum. However, it is encountering strong farmer resistance to adoption of even this relatively short and simple rotation. The project staff maintains that the varieties recommended by SODECOTON are not appropriate for the Mindif/Moulvoudaye region. The Project through its relationship with IRA has a three year rotation system which is better adapted to the area. The peanut variety, for example, is a shorter duration variety and fits in with the seasonal rainfall pattern of the region. Even though this does not address the issue that the Project was asked to deal with (that of finding a perennial legume forage crop for a fallow system), the Project should attempt to work through SODECOTON to have their varieties adopted. The fact that the Project does not have an effective working relationship with SODECOTON despite some Project initiatives in this regard bodes ill for any real progress on crop rotation schemes before the end of the Project.
- D. The evaluation team was specifically asked to assess the receptivity of local farmers to the Project's crop rotation scheme. This has proven a difficult task

given the fact that the Project does not yet have a specific system which is fully adapted to local conditions. However, certain things are already clear about the crop rotation system. First, while farmers and farmer-herders may adopt the system, it has nothing to offer the herder-farmers in the project zone who cultivate just enough land to supply their families with low-cost cereals for their own consumption. Secondly, farmer and farmer-herders may accept the package in order to get free agricultural inputs from the Project in the first year (fertilizer and improved seed), an impressive sign in front of their compound, and free technical advice. They seem happy with the new seed varieties and the fertilizers provided by the Project but there is no particular evidence that farmers are impressed by the prospects of the five-year crop rotation cycle or that they are now willing to adopt it on their own farms as more than a limited demonstration. Thirdly, only one-fifth of the crop rotation is devoted to cereal production which is considerably less than the normal proportion observed by the evaluation team on local farms. At the very least, farmers plant 50 percent of their cropland to cereals in an average rainy season and the percentage of rainy season sorghums in the total cropping schemes of farmers was generally above 60 percent in the Maroua area according to a DGRST/USAID study by a Tufts University graduate student, Lynn Salinger.

3. Because of small sample sizes, the results of the animal feeding trials cannot be said to have any scientific validity. Furthermore, the nutritive value of the feeds were determined using Morrison's

"Feeds and Feeding" which are based on proximate analysis of temperate region forages. These values are not valid for use with tropical forage which have much higher silica contents. Some of the earlier trials also used methods of estimating cattle weight by using external body measurements. The systems used were designed for European cattle not for Zebu cattle in Africa.

Concerning the milk production "trials", the evaluation team felt that these were carried out over too short a period and no attempt was made to relate where the cows were in their lactation cycle. This is highly important as milk production is definitely correlated with the stage of lactation.

In sum, we feel that these activities did have validity as feeding demonstrations and they were perhaps useful extension tools, but they cannot be called "trials".

- F. Given the fact that only about 25 percent of residents in the region own cattle whereas 70 to 75 percent own small ruminants, feeding demonstrations with sheep and goats would appear to be of interest and relevance to a much larger group of livestock owners.

3. Recommendations

- A. We believe that the task of finding a suitable forage legume and inserting it in a well-adapted crop rotation system was too much to ask of the Project with its limited, five year lifespan. We, therefore, recommend that the mandate for this task be withdrawn from the Project and that USAID and GURC investigate the possibility of a collaborative effort between IRA and IRZ in this area. These organizations clearly have the long-term mandates to work on these

problems in Cameroon, and, more importantly, have the research capability to carry out the necessary adaptive research. The Project, on the other hand, has a very short-term lease on life and essentially no continuing flow of inputs and technical expertise guaranteed into this effort. Even with the most creative use of available resources, this ad hoc approach to a serious research problem is essentially an isolated exercise which is not likely to bear fruit.

- B. Since the crop rotation scheme as it now exists is basically the same legume/cotton/cereal system of rotation being promoted by SODECOTON and IRA, the extension of this package should be left to SODECOTON which obviously has the means of spreading it on a much wider scale than the Project. The Project should seek to have SODECOTON adopt its crop varieties which have proven to be better adapted to the local ecological conditions than the ones which SODECOTON recommends.
- C. The project should have laboratory analyses run on the nutritive value of crop by-products in order to be able to formulate valid rations from local feeds.
- D. The project should undertake feeding trials for small ruminants, and in order for these trials to have some scientific validity, the subsample lot size should be at least 30 animals.
- E. The Project should continue its feeding demonstrations with cattle.

8.4. TRAINING

1. Activities

Under the reorganized project description, the training objective is to form a nucleus of expertise that can continue development of grazing land and livestock management systems in the area after termination of the Project. Training activities outside Cameroon are envisaged to be:

- A. Long-term academic training (96 person months) for four Cameroonian government civil servants in:
- i. Range management and water/soil conservation;
 - ii. Animal husbandry, with an emphasis in animal nutrition;
 - iii. Agricultural extension, with an emphasis on livestock and agricultural production; and
 - iv. Agricultural engineering, with a specialization in conservation and water management techniques.
- B. Short-term training in the United States, to be financed as appropriate, for up to nine person months.
- C. Short-term observation tours to be financed for up to thirty days each for up to eight people to study range management and livestock production projects, in neighboring African countries such as Senegal, Mali and Niger.

2. Issues

The evaluation team in reviewing the training activities in progress or planned for the project isolated the following issues for consideration:

- A. Long-term academic training is being provided for three Cameroonians at American universities as can be seen in the Project Chronology. However, a suitable candidate for the fourth training slot in agricultural engineering has never been nominated by the GURC. Since the completion date for the Project is April 30, 1985, it is not too late to provide training in agricul-

tural engineering for a suitable candidate and have that person return to Cameroon before the end of the Project. The issue, then, is can the Project activities in the future proceed without expertise in agricultural engineering.

- B. The Cameroonian students returning from long-term training in the United States will, for the most part, return after the American technicians will have departed from the Project. There will, therefore, be no opportunity for further on-the-job training for these trained but generally inexperienced Cameroonian technicians with their American counterparts. Moreover, there will be no opportunity for discussions between these people on activities and events which have taken place in the Project during their absence in long-term training. The issue, then, is one of discontinuities in the project implementation and the lack of an orderly transition in responsibilities between the American technicians and their newly trained Cameroonian colleagues.
- C. There is only one Cameroonian student who will return from long-term training before the end of the Project. Mr. T. E. Pamo is currently expected to return from his training in New Mexico with his Ph.D. degree in range management in late 1983. However, there is considerable confusion over his future status vis-a-vis the Project with many people assuming that he will not be reassigned to the Project as the range management specialist to replace Ms. Cleboski. Mr. Pamo's absence from the Project by reassignment elsewhere would certainly deny the Project itself of his expertise in range management but the issue is whether or not Mr. Pamo's skills

are best utilized in the Project or in some larger role.

- D. If one accepts the premise that the candidates and the skill areas selected for emphasis in the long-term training could have formed the nucleus of expertise needed to continue project activities after termination of the Project per se, then the present issue is what does one do now that it is clearly evident that the training program in place will fail to provide sufficient numbers of trained Cameroonians even to replace the American technicians in the Project - much less expand project activities beyond the current bounds of the Project.
- E. Finally, it must be stated that the evaluation team rejects the above premise and feels that the number of candidates for long-term training and the selection of skill areas for such training would never have constituted the desired critical mass of expertise needed to carry out and expand project activities after the end of the Project even if the external training program had worked perfectly. We believe that the reorganized project plan for external training grossly underestimates the number of trained personnel and the variety of skills needed to execute and expand the multiple activities of the current Project. We are seriously concerned that no training at all was offered in the social sciences (i.e. agricultural/livestock economics and rural sociology/social anthropology) as a result of the reorganization when it is manifestly evident to us that the Project cannot hope to have any real and sustained successes without the involvement of a multi-disciplinary team

working in an interdisciplinary manner to plan and implement project activities. Furthermore, the present training program makes absolutely no allowances for personnel attrition, within service transfers or any similar factor and provides no margin of trained Cameroonians for expanding project activities beyond the confines of the Mindif/Moulvoudaye project zone. The evaluation team finds this evidence of poor planning in external training particularly ironic given the fact that this type of training is virtually the only element of the Project which could have been almost guaranteed to be successful from the very start of Project activities and probably would have had the longest-lasting and most positive effect on development activities in Cameroon of anything USAID and the GURC could have done in this Project. The issue, then, is what can be done to salvage the present situation.

Recommendations

The evaluation team, having considered the above issues in detail, presents the following recommendations for review and possible action:

- A. The initiation of any training program for a Cameroonian candidate in agricultural engineering depends upon the larger decision as to the Project's future. Should the GURC and USAID decide that it is desirable to, at least, extend the first phase of the Project for two years, then we believe that a Cameroonian candidate for training in agricultural engineering should be identified as a priority action and sent off for training in the first half of 1984.

If it is the case that the GURC and USAID decide to terminate the Project on April 30, 1985, then the evaluation team recommends that the present American agricultural engineer and his counterpart, Mr. Bouba, be strongly encouraged to proceed with current plans to develop a series of detailed plans for surface water reservoirs of appropriate sizes and associated structures for water control and management. If this course of action is selected, it will be necessary to forego the Project's current intention to scale all water structures to the carrying capacities of the surrounding rangelands and settle for the compromise of scaling the structures to the nearest available size of reservoir concomitant with the pre-existing engineering plans.

3. The fact that the return of the Cameroonians in long-term training will be delayed until after the American technicians have departed cannot be changed at this point. If the Project is to be extended, then this particular problem should resolve itself. Finally, if the Project is not to be extended with USAID participation but the GURC envisages continuing some or all of the current project activities, then the Experience, Inc. contract team and the USAID project officer should be required to produce a very detailed accounting of what project activities have taken place since approximately mid-1982, with explanations for each activity as to why it was undertaken, the projected strategy for its implementation, and the expected end results. This should be followed if at all possible by a working session in the United States between the American

technicians and their Cameroonian counterparts.

- C. It is perhaps inappropriate for the evaluation team to comment on the possible future placement of a Cameroonian civil servant. However, there was considerable discussion of this issue during the evaluation and we feel constrained to make two brief comments. First, it would appear essential that the issue of Mr. Pamo's job placement be resolved by the GURC in the near future to mitigate the tensions caused by the continued uncertainty. Second, it is the evaluation team's opinion that Mr. Pamo might better utilize his newly acquired skills in range management at a higher level of governmental service where he had program responsibilities in a regional planning program, rather than returning to the rather isolated and confined job responsibilities in the Project itself. One possible such assignment could be within the newly established Division of Pasture Management and Pastoral Hydraulics for the Extreme North Province.
- D. With regard to the apparent deficiencies in the overall external training approach, the evaluation team's recommendations are dependent upon the ultimate disposition of USAID and the GURC on the future of the Project. If the Project is to terminate on April 30, 1985, then essentially nothing can be done in the area of long-term training at this late date. If the Project's first phase is to be extended without additional funding, then our minimum recommendation is that the agricultural engineering training slot be filled with a GURC candidate at the earliest possible date and

that the candidate be sent off for long-term training by mid-1984 at the latest. Finally, if the Project is to be extended and more funding is also available, we recommend that the whole external training plan be seriously re-evaluated with two major objectives: providing a better balance of skills to the envisaged nucleus of expertise needed to plan and implement project activities and staffing a larger institutional capacity in land use evaluation and planning. The former objective would, at least, involve providing adequate long-term training in agricultural/livestock economics, rural sociology/social anthropology, and tropical agronomy. The latter objective would essentially involve carefully considering the full range of skills and personnel requirements for a Phase II Project effort which would have much broader responsibilities for land use evaluation and planning in the Extreme North Province and in which the current Project activities would be integrated to some as yet undetermined extent.

3. Finally, while the present Project plans for additional external training activities are not an issue per se, the evaluation team wishes to express its support for two planned activities and offer two suggestions for additional activities. The two planned activities are the provision of short-term training in the United States for certain project staff in development project administration, coupled with an observational tour of range management units, and planned observation trip to Ethiopia and Kenya to visit ILCA headquarters and certain range management/livestock production projects. The two suggestions for

additional activities are that the range management specialist and her counterpart visit existing range management/livestock projects sponsored by USAID and the World Bank in Niger, Upper Volta, Mali and Senegal and that the agronomist and his counterpart visit agronomic research centers in the same four countries. With regard to the range management/livestock projects, it is suggested that visits be made to USAID/Niger's Range and Livestock Phase II Project in Tahoua, Niger; USAID/Mali's Phase III Livestock Project; and USAID/Senegal's SODESP Project. In addition, it would be helpful for this team to visit the World Bank livestock projects located in Zinder, Niger; Bobo Dioulasso, Upper Volta; and Tambacounda, Senegal. For the agronomist and his counterpart, visits are suggested to the ICRISAT Sahelian Center outside of Niamey, Niger; the ICRISAT research center outside of Ouagadougou, Upper Volta; the SAFGRAD/ICRISAT research unit at Sotuba, Mali; and the ISRA research complex in Bambey, Senegal.

8.5. EXTENSION

1. Activities

In the project reorganization document, extension activities are seen to be synonymous with in-country training activities. These activities are envisaged to include the following:

- A. The Project will provide extension support to agencies and organizations serving the Project zone. It will plan and execute, in coordination with official and local leadership, training programs, tours, demonstrations, seminars, and field days designed to establish an information and skills

delivery system from the Project to the livestock and agriculture producers.

- B. The Project will also provide training and material requirements necessary to establish, execute and evaluate controlled grazing and integrated livestock/agriculture demonstrations. Coordination will be affected with concerned agencies (MINEPIA, MINAGRI), organizations (SODECOTON), local leaders and producers through methods noted in the above paragraph to realize maximum adoption of the demonstrated improved practices.
- C. An extension information sub-activity will be supported by the Project to maximize coordination and dissemination of applicable research originating from the Project and other agencies. This will facilitate training of agents and leaders and further understanding and adoption of improved livestock and agricultural practices by producers.
- D. Training at the Mindif facility will be provided for local leaders and extension agents.

In general terms, the Project has been fulfilling the objectives of the project reorganization document and we have every expectation that project staff will continue to do so in the future. The Project has experimented with many different approaches to conveying its messages to farmers and herders. Furthermore, project staff have made concentrated efforts on several occasions over the past two or three years to hold informational and coordination meetings and seminars with local government agencies and parastatals like SODECOTON. Unfortunately, the interest in these coordination efforts does not seem to have been intense and reciprocal on the part of other development agencies in the

general area of the Project. Finally, the Project has been innovative in its use of various signs and markers to identify project activity sites and foster a sense of participation on the part of collaborating farmers and herders and in its use of a monthly newsletter in French which describes project activities and results. The principal client group for this newsletter is primary school children but the Project's expectation is that such a distribution eventually reaches the parents of these children. In addition, the Project routinely sends its quarterly progress reports to government ministries, USAID/Yaounde, and development agencies in Extreme North Province.

2. Issues

The evaluation team's review of the extension activities and philosophy has isolated the following issues for consideration:

- A. The general lack of detailed knowledge of local production systems as practiced by farmers and herders which is a precursor to effective two-way communication of development ideas and technologies. And the implicit adoption of a system of one-way communication with farmers and herders in which these persons are viewed as recipients of the Project message with no concomitant responsibility on the part of the Project to listen to or try to understand why farmers and herders do what they do now and how this affects the possibilities for change in the project zone.
- B. The lack of the ability to communicate with farmers and herders in local languages - particularly Fulfulde - by most Cameroonian and all American staff and the American staff's further problems in attempting to communicate in French.

- C. The fact that the Extension Specialist has been forced to assume what appear to the evaluation team to be an excessive number of routine administrative tasks and has been further diverted away from his primary responsibilities by a perceived need to supervise all aspects of the fire-break and water point construction program.
- D. The fact that no real intermediaries seem to exist between the farmers and herders who understand what the Project is trying to do in the zone and can provide effective feedback and evaluation of these activities from the perspective of the farmers and herders, coupled with the apparent Project policy of selecting its field agents on the basis of characteristics relevant to the American team but less relevant to the objective of effective communication with farmers and herders.
- E. The perceived need for a Project training center and transient quarters at the Mindif Project Center.
- F. The lack of an evaluation and monitoring capacity in the Project independent of the project technicians who are presently forced by circumstances to be both the implementors of project initiatives and the judges of their success.

Recommendations

The evaluation team presents below its recommendations on possible ways to deal effectively with the issues isolated above:

- A. With regard to the Project's lack of detailed knowledge of local production systems, we believe that Project operations have been

handicapped by the absence of any social science contribution to daily project discussions, planning and implementing of field activities. Elsewhere in this report, we have strongly recommended the reinstatement of the project evaluation and monitoring unit and the reemployment of, at least, a livestock economist and a social anthropologist. In addition, we feel very strongly that the project staff in the immediate future and throughout the remainder of the Project must make exceptional and continuous efforts to deliberately allocate more time for technicians to get into village situations in the pilot zone and outside it in contexts that are not always oriented toward the project staff issuing instructions and dicta to herders and farmers. The effort here must be directed at a much more sensitive understanding of herder/farmer conceptions of their production systems, why things are done as they are presently, and what objectives/aspirations these people have for themselves and their families. Such an understanding can only come, we believe, if project staff deliberately make a concentrated effort to listen to local people as juxtaposed to the current modus operandi of talking at local people.

- B. Our second recommendation is directly linked to the first in that effective two-way communication between local people and project staff is severely hampered if personnel of the Project do not have a common linguistic capability with local people and additionally have difficulties in even communicating among themselves. All evidence we have seen in field interviews and in discussions with

project staff leads us to believe that communication problems are severe between the Project staff and local people - with very few of the staff in place being able to speak Fulfulde at anything above a rudimentary level - and even serious at the level of communications in French. With respect to the latter problem, there were several moments in our discussions with Project staff when rather fundamental elements of the overall project strategy were presented from diametrically opposite viewpoints by Project staff (i.e. waterpoint design and placement, strategies for the development of livestock in the extreme North Province). As a consequence of these obvious problems, we strongly recommend that a pre-condition to assignment of Cameroonian field technicians and staff to the Project be fluency in Fulfulde in addition to technical competency. For the American staff, more intensive French preparation is called for in some cases and we believe Fulfulde lessons should be instituted for all technicians as soon as possible and continued throughout the remainder of the Project.

- C. In a related communications issue, if in fact a bilingual administrative assistant is required in the Project principally to serve the needs of American staff, we recommend that USAID, and not the GURC, be responsible for providing the funding to permit the project contractor, Experience, Inc., to hire such a person since there is presumably no requirement for such assistance in the absence of the American team. If, on the other hand, an administrative assistant to the Project Director is required as a continuing position within the Project to serve all

project staff, then this person should be recruited and paid by the GURC and, in our mind, does not have to be bilingual.

- D. We believe that the extension specialist in the Project has been put into a most unfortunate position basically as a result of GURC insistence that the separate position of contractor Chief of Party be dropped in the reorganized project, coupled with the GURC's seeming inability or unwillingness to recruit and appoint a Project Director until this year. This has meant that the extension advisor has been unnecessarily burdened with the responsibilities of being a proxy for the absent Cameroonian Project Director, in addition to his responsibilities to Experience, Inc. and USAID/Yaounde as Chief of Party, and has had to perform his assigned duties without adequate administrative support or secretarial staff. The situation has been made worse yet by the diversion of the extension specialist from his primary responsibilities to acting essentially as a construction supervisor for all firebreak and water-point construction activities. However, now that a full-time Cameroonian Project Director has been appointed and the heavy equipment specialist and the project agricultural engineer are more capable of organizing and supervising all project construction work, we believe it is essential that the extension specialist make a maximum effort to turn over all project-related administrative duties to the Project Director and also refrain from extensive pre-occupation with construction activities which detract from his primary responsibilities in extension. He should be expected to continue to service the minimum

needs of the contractual relationship between Experience, Inc. and USAID/Yaounde but a concerted effort should be made by all concerned parties to limit these contractual duties to the absolute minimum.

- E. The Project staff, with the assistance of GURC and USAID experts, should seriously reevaluate the present employment criteria for monitors in the Project with a view toward what sort of an agricultural/livestock agent system is likely to be most effective in communications between the Project and the local people in the future. We are currently not convinced that the monitors in the Project can serve the twin objectives of being technical aides to Project technicians and effective intermediaries between the Project staff and the local people. We believe that the essential characteristics needed for personnel to fill these two roles are fundamentally different. The technical aide certainly needs a higher level of general education, French capability, and literacy/numeracy skills. The village-level intermediary, on the other hand, basically has to be of the local people, familiar by virtue of personal involvement with the project interventions, and willing to serve as a focal point for the process of two-way communication between the Project and the local people. We, therefore, recommend that the Project consider instituting a two-tiered system with technical aides and village intermediaries, with the latter being the present collaborating farmers and a similar group of leader herders. These leader herders should not automatically be assumed to come from the Lamido/Lawani/Jawro hierarchy in which

the Project has placed so much trust and confidence in the past but from among the ranks of genuine herders in the project zone.

F. The need for a Project training center and transient quarters at the Mindif Project Center has been difficult for the evaluation team to assess. There appears, at best, to be a need to have occasional meetings with local leaders and government officials at the Mindif Center. With proper planning, we believe these needs could usually be serviced with day-long sessions in the present Project conference room. This would be particularly true if the GURC fulfills its outstanding commitment to construct adequate storage facilities to permit the Project to move the present accumulation of seed bags and other such materials out of the conference room. With respect to training courses for herders and farmers, we strongly recommend that the Project adopt the working rule that all such training take place in the villages of the project zone with project staff going out to the local people - and camping there as necessary - rather than continually requiring the local people to come to the Center for such training.

G. With respect to the Project newsletter which is given to elementary school students who are expected to transmit the contents to their parents, the evaluation team has serious doubts as to the ability of these young children to interpret and communicate the complex ideas of the Project to their producer parents.

PROJECT INPUTS

9.1. USAID Inputs

The USAID Grant contributions to the Project are provided to fund the cost of technical assistance, training, commodities, construction, and other local costs, according to the terms of Amendment No. 5 to the Project Agreement signed July 15, 1982.

1. Technical Assistance

Except for a personal services contract for the position of Advance Project Administrator between August 1978 and August 1979 and a host country contract for the Construction Monitor position from March 1979 to June 1980, all technical assistance to the project has been supplied by Experience, Inc., commencing July 27, 1979. Technical assistance has been provided in accordance with Amendment No. 5 to the Project Agreement since its signing in 1982.

2. Training

The Grant is funding long-term training for three participants in the U.S. Short-term training in the U.S. and observation tours are planned in Kenya and Ethiopia for 1984. A fourth long-term training participant has not been nominated by the GURC. (Refer to Section 8 for details on Project training activities).

3. Commodities

The Grant has and is continuing to fund commodity procurement as outlined in Amendment No. 5 to the Project Agreement.

4. Construction

USAID inputs towards construction of the Mindif Project Center have been fulfilled in accordance with the terms of Amendment No. 5 to the Project Agreement.

5. Other Costs

Costs associated with this budget item, as outlined in Amendment No. 5 to the Project Agreement, are on-going and provide a support function for the technical assistance team and for the Mindif Project Center.

6. Assessment of Commodity Procurement

The data used in this section were obtained from the USAID/Yaounde Supply Management Division's Project Committee Status Reports.

- A. It was found that in most cases there were no inspection and receiving reports on file for procured project commodities. Given the absence of these reports, the contractor's Chief of Party should complete an inventory of all AID-procured Project commodities before the Project audit scheduled for February 1984.
- B. Commodity procurement has been piecemeal without evidence of a planned procurement schedule. It appears there was inadequate planning by project personnel and USAID/Yaounde in advance ordering of Project commodities. Hence, the untimely procurement of necessary commodities became a constraint to implementation of Project activities. For example, Project vehicles for the technical assistance team were not ordered until the arrival of the team's Chief of Party in September 1979. Three other members of the team arrived in November 1979. Therefore, four team members and the Construction Monitor had to share the two vehicles locally procured by the Project's Advance Administrator in June 1979 to accomplish their

assigned tasks. Five U.S. vehicles arrived in May 1980 concurrent with the arrival of four additional members of the technical assistance team.

- C. With all good intentions, but due to inexperience, the Project's Advance Administrator ordered some inappropriate commodities. The electrical generators for the Mindif Center were ordered without adequate spare parts and without consideration of their high fuel consumption rate. Inappropriate veterinary supplies were ordered as discussed under animal health activities in Section 8. Improvisation by the technical assistance team has found uses for such things as the tilt top trailers but these uses cannot justify their costs or the fact that they are not appropriate for the job they were intended to perform. Also, in this category is the drilling rig which despite many attempts at improvisation has been found to be hopelessly inadequate for its intended purpose.

Due to the support and maintenance provided by the North Cameroon Liaison Office Garage in Maroua, the five Chevy Blazers and pick-ups are still functioning. Otherwise, there is no servicing or spare parts available for Chevy vehicles in the north of Cameroon.

7. Assessment of Construction Inputs

The Project strategy of proceeding first to build the Project center as the primary activity of a pilot project seems illogical and ill conceived. The single most exhaustive source of Project time, money and energy has been the Mindif Project Center. Fully 45% of USAID's dollar inputs to date into this project have been

consumed by the construction, maintenance, support and administration of this complex.

Construction of the Mindif Project Center began in July 1979. Two members of the technical assistance team occupied incomplete housing at Mindif in September 1980. Final completion of U.S.-financed construction at the center was completed in September 1981.

There exist no official earmarking documents in the form of Project Implementation Letters (PILs), authorizing disbursement of Project funds between USAID and the GURC for \$582,000 in expenditures on Project construction. Several letters between USAID and CPLS on the subject of construction costs and payments are in the USAID Project files. This same mode of operation without earmarking documents was followed for \$87,682 in disbursements for Project housing rentals and gasoline payments; as well, \$7,000 was spent for miscellaneous spare parts and household furniture.

A method of earmarking project funds with PIL's was reinstated with the arrival of Roland Garner as USAID/Yaounde Controller in January 1981.

8. Assessment of Other Costs Budget Line Item

A. Mindif Project Center Operations Funded by USAID Grant Contributions

Amendment VIII to the Experience, Inc. contract signed October 14, 1981, authorized the contractor to assume responsibility for disbursing funds for Project operational costs during the period of the Project reorganization. PILs 1, 2, and 11 authorized putting funds for operation of the Mindif Project Center at the disposition of the Contractor's Chief of Party in conformity with established budgets.

Amendment No. 5 to the Project Agreement provided for GURC establishment and administration of a system to facilitate and control disbursement of and accountability for Project funds. PIL No. 10 dated March 7, 1983 specifically detailed the accounting system and clarified the procedures necessary to fulfill the terms of Annex II, Article B, Section B.5 of the Project Agreement. This PIL laid the ground work for the Cameroonian Project Director to assume administration of the local currency account for the operation of the Mindif Project Center. This responsibility has not yet been officially transferred due to the fact that the Minister of MINEPIA has not signed the joint GURC/USAID Project budget submitted in June 1983. Hence, operations at the Mindif Project Center are hampered and limited by the funds left in PIL 11.

Approval of the Project's accounting system and verification of its conformity to USAID requirements were given by the USAID/Yaounde Financial Analyst during her review of the Project's accounting procedures on July 6-7, 1983.

Funds earmarked by PILs 1, 2, and 11 were advanced to the Contractor Chief of Party. The vouchers for the advances made on PILs 1 and 2 have been submitted to the Controller's Office. Vouchers to clear advances made on PIL 11 need to be submitted by the Project once funds are liquidated so that the authorized funds for operating costs can be fully accounted for.

B. Revolving Fund for Animal Nutrition

Funding in the amount of \$10,000 was authorized by PIL No. 2 dated April 13, 1983 as a revolving fund for animal nutrition. A memorandum from the Agriculture and Rural Development Office to the Contractor Chief of Party dated December 7, 1981 outlined the regulations and accounting procedures governing monies released to this fund. The Project Officer must obtain a full accounting of these monies from the Chief of Party and the Project Director.

9.2. GURC Inputs

The Project Grant Agreement executed between the Governments of Cameroon and the United States on May 18, 1978 called for GURC contributions of \$2,123,000 to the Project. Of this total, \$1,508,000 was "in kind" contributions and the remainder of \$615,000 was for salaries of personnel and support costs.

Amendment No. 5 to the Project Agreement was signed July 15, 1982 increased GURC Project contributions to \$4,317,000 which represented \$291,000 in "in kind" contributions, \$1,018,000 for financing Cameroonian personnel commitments, \$180,000 in commodities, \$670,000 in construction costs, and \$2,158,000 in other costs including operating costs, transport, and certain activity support items.

1. Personnel

Amendment No. 5 to the Project Agreement was signed on July 15, 1982. A Cameroonian Project Director was appointed and officially installed on February 17, 1983. To date no Deputy Director has been appointed. Therefore, both the Project Director and Contractor Chief of Party must devote their time to performing routine administrative tasks which would be delegated to the Deputy Director and an administrative assistant.

Of the 26 management support personnel to be financed by the GURC, 21 are in place.

Five Cameroonian technical counterparts are also in place. No counterpart to the heavy equipment specialist has been provided. No suitably qualified agricultural engineering counterpart has been assigned to receive long-term training in the U.S. To date, three agriculture technicians, three livestock technicians and three extension information technicians to have been financed by the GURC have not been assigned to the project.

2. Commodities

The GURC has procured vehicles for Cameroonian technical personnel and has provided some veterinary supplies. Other commodities have not yet been procured.

3. Construction

The GURC has not funded its construction commitments to the Mindif Project Center.

4. Other Costs

Operating costs, transport and activity support are being funded by the GURC in accordance with Amendment No. 5 of the Project Agreement.

9.3. Financial Analysis of Project Inputs

1. USAID Inputs

Tables 1-7, on the Financial Status of USAID inputs present the associated financial inputs into the Project's five areas of activity and administration and support categories. They show expenditures to date and projected expenditures required to complete project activities by the Project completion date of April 30, 1985. In Tables 1-7, the first column is the aggregate of expenditures for fiscal years prior to the project's reorganization in 1982: i.e. expenditures through Fiscal Year 1982.

Table 8 presents expenditures from 1981. A quarterly financial reporting system was initiated by the Controller's Office of

USAID/Yaounde in March 1981. Table 8 represents the Project's financial plan with Project inputs in five budget line item categories: technical assistance, training, commodities, construction and other costs. These budget line items and their associated inputs are discussed in Amendment No. 5 to the Project Agreement. The contingency and inflation budget line item appearing in the Amendment has been eliminated and these financial contributions proportioned into the five budget categories.

From Table 8, it is projected that to fulfill present USAID commitments to the project, as per Amendment No. 5 to the Project Agreement, a total of \$5.2 million will be spent. This represents a reduction in USAID Project funding of \$1 million. A major factor contributing to this reduction has been the improved exchange rate of the U.S. dollar against the FCFA currency. The exchange rate used for USAID Grant contributions described in Amendment No. 5 was 250 FCFA to one U.S. dollar. The present rate is over 400 FCFA to \$1.00.

As evidenced by the Project funds obligated but not spent in FY 82 and 83, the rate of expenditure for USAID inputs has not proceeded as planned due to the considerable delays in Project implementation experienced during the Project's reorganization.

2. GURC Inputs

The GURC, section 10.2: GURC inputs, is not contributing to the Project as agreed in Annex I of Amendment No. 5 of the Project Agreement. The GURC Project contributions for 1982-83 were to have been 245 million FCFA. However, only 10 million FCFA was authorized for the project during the government's budgeting session. Through a special act of the Office of the President on March 22, 1983, the GURC provided additional funding of 300 million FCFA to the Project for 1982-

83 expenses. Due to the late appropriation of this money, however, only 60 million FCFA could be disbursed by the end of the fiscal year on June 30, 1983.

In June 1983, the Project Director submitted the joint GURC/USAID Project budget for 1983-84. The total GURC contributions outlined in this budget were to have been 565 million FCFA. After five months, several revisions, and a considerable reduction in funding, the budget has still not been approved. Because of this, no assessment can be made as yet as to the GURC's financial support and commitment to this project. However, as noted in Section 9.2. on GURC inputs, the government is behind schedule on its commitments and financial contributions to Project personnel, commodities, and construction budget line items. The Project Director has been requested to submit documentation to USAID/Yaounde on the status of GURC Project contributions and expenditures, both those administered by CPLS and MINEPIA.

Table 9-1: Financial Status of USAID Inputs: Summary Table of Project Activities

Financial Status of Project Inputs	FY 78-82 Expenditures	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	2,634,629	1,070,450	1,093,567	344,180	5,142,826	
Grazing Lane Management and Conservation:	508,201	624,234	442,351	113,099	1,687,885	
1. Technical Assistance	475,201	208,234	312,351	88,099	1,083,885	
2. Commodities	33,000	416,000	130,000	25,000	604,000	
Animal Health:	31,018	----	5,000	5,000	41,018	
1. Technical Assistance	16,018	----	----	----	16,018	
2. Commodities	5,000	----	5,000	5,000	15,000	
3. Activities	10,000	----	----	----	10,000	
Increased Association of Agriculture and Livestock Production:	304,985	156,108	96,108	16,018	573,219	
1. Technical Assistance	282,985	96,108	96,108	16,018	491,219	
2. Commodities	22,000	60,000	----	----	82,000	
Trainings:	18,000	45,000	108,000	15,000	186,000	
Extensions:	272,306	48,054	48,054	28,032	396,446	
1. Technical Assistance	272,306	48,054	48,054	28,032	396,446	
Administration and Support:	1,500,119	197,054	394,054	167,031	2,258,258	
1. Technical Assistance	403,119	48,054	110,054	28,031	589,258	
2. Commodities	576,000	21,000	90,000	10,000	697,000	
3. Construction	582,000	----	----	----	582,000	
4. Other Costs	139,000	128,000	194,000	129,000	590,000	

Note: Technical Assistance per man month = \$8009

Table 9-2: Financial Status of USAID Inputs: Grazing Land Management and Conservation

Financial Status of Project Inputs	FY 78-82 Expenditures	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	508,201	624,294	442,351	113,099	1,607,805	
Technical Assistance	475,201	208,234	312,351	88,099	1,083,805	
1. Range Management:	160,180	80,090	96,108	16,018	352,396	
F. Abercrombie	24,027				24,027	
D. Gipe	112,126				112,126	
L. Rasmussen	24,027				24,027	
L. Cloboski		80,090	96,108	16,018	192,216	
2. Agricultural Economists:	66,742		24,027	24,027	114,796	FY 78-82 33% of time spent on Range; FY 84 & 85 6 mos. of TDY
3. Sociologist:	200,225				200,225	
4. Agricultural Engineer:	48,054	72,081	96,108	24,027	240,270	
W. Leathom	48,054				48,054	50% of time spent on Range
P. Childs		72,081	96,108	24,027	192,216	
5. Heavy Equipment Specialists:		56,063	96,108	24,027	176,198	
Commodities:	33,000	416,000	130,000	25,000	604,000	
Trucks, 9 ton	33,000				33,000	
Heavy Equipment		416,000			416,000	
Service Vehicle			55,000		55,000	
Miscellaneous			75,000	25,000	100,000	

Table 9-3: Financial Status of USAID Inputs: Animal Health Component

Financial Status of Project Inputs	FY 78-82 Expenditures prior to Project Reorganization	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	31,018		5,000	5,000	41,018	
Technical Assistance:	16,018				16,018	
1. Veterinarian TDY	16,018				16,018	A. Antroinen
Animal Nutrition Demonstrations:	10,000				10,000	Rotating fund for purchase of livestock and feed
Commodities:	5,000		5,000	5,000	15,000	
1. Veterinary Supplies	5,000				5,000	
2. Support of Veterinary Posts			5,000	5,000	10,000	

Note: Technical Assistance per man month = \$8009

**Table 9-4: Financial Status of USAID Inputs:
Increased Association of Agriculture and Livestock Production**

Financial Status of Project Inputs	FY 78-82 Expenditures prior to Project Reorganization	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	304,985	156,108	96,108	16,018	573,219	
Technical Assistance:	282,985	96,108	96,108	16,018	491,219	
1. Agronomist	216,243	96,108	96,108	16,018	424,477	
2. Agricultural Economist	66,742			66,742		33% of his time spent on agriculture
Commodities:	22,000	60,000		82,000		
1. Trailer	22,000			22,000		
2. Agricultural Equipment		60,000		60,000		

Notes: Technical Assistance per man month = \$8009

Table 9-5: Financial Status of USAID Inputs: Training Component

Financial Status of Project Inputs	FY 78-82 Expenditures prior to Project Reorganization	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	18,000	45,000	108,000	15,000	186,000	
Long Term Trainings:	18,000	45,000	42,000	15,000	119,000	
1. Pamo, E. T.	18,000	17,000	----	----	35,000	PhD Range Management at New Mexico State University
2. Engoulou, E.	----	15,500	21,000	5,500	42,000	MS Agricultural Extension at Utah State University
3. Nuza, T. S.	----	11,500	21,000	9,500	42,000	MS Animal Science at New Mexico State University
Short Term Trainings:	----	----	36,000	----	36,000	Three persons for USDA management short course and observation tours of U.S. agricultural production management
Short Term Observation Tours:	----	----	30,000	----	30,000	Eight participants to Kenya and Ethiopia for range management and livestock production
Technical Assistance Workshops:	----	1,000	----	----	1,000	Six counterparts travel to Yaounde and per diem

Table 9-6: Financial Status of USAID Inputs: Extension

Financial Status of Project Inputs	FY 78-82 Expenditures prior to Project Reorganization	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	272,306	48,054	48,054	28,032	396,446	
Technical Assistance:						
1. Extension Specialist	272,306	48,054	48,054	28,032	396,446	FY 83, 84, 85 50% of time spent on Extension

Note: Technical Assistance per man month = \$8009

Table 9-7: Financial Status of USAID Inputs: Administration and Support

Financial Status of Project Inputs	FY 78-82 Expenditures prior to Project Reorganization	FY 83 Expenditures	FY 84 Projected Expenditures	FY 85 Projected Expenditures	Total Projected Expenditures	Comments
Total	1,500,119	197,054	394,054	167,031	2,258,258	
Technical Assistances:	403,119	48,054	110,054	28,031	589,258	
1. Chief of Party	192,216	48,054	48,054	28,031	316,355	FY 83, 84, 85 50% of Chief of Party/ Extension Specialist's Time spent on Administration 50% of W. Leathom's time spent on Mindif Center construction A. Villanneva 33% of H. Schar's time spent on non-related project efforts at CPLS in Garoua
2. Agricultural Engineer	48,054				48,054	
3. Maintenance Chief	96,108				96,108	
4. Agricultural Economist	66,741				66,741	
Evaluation:			62,000		62,000	
Commodities:	376,000	21,000	90,000	10,000	497,000	
1. Generators	23,000				23,000	
2. Repair & Maintenance Supplies	43,000				43,000	
3. Household Furnishings	211,000				211,000	
4. Office Furnishings	20,000				20,000	
5. Vehicles	79,000				79,000	
6. Radio Equipment		21,000			21,000	
7. Replacement Vehicle			75,000		75,000	
8. Miscellaneous			15,000	10,000	25,000	
Constructions:	582,000				582,000	
1. Mindif Project Center	536,000				536,000	
2. USAID Garage in Maroua	46,000				46,000	
Other Costs:	139,000	128,000	194,000	129,000	590,000	
1. Mindif Project Center Operations	108,000	96,000	156,000	91,000	451,000	
2. Vehicle Maintenance	31,000	32,000	38,000	38,000	139,000	

Note: Technical Assistance per man month = \$8009

Table 9-8: Project Financial Plan for USAID Inputs (\$ 000)

Inputs	FY 81			FY 82			FY 83			FY 84			FY 85		
	Cum. Oblig.	Cum. Expend.	Funding Obligated But Not Yet Spent	Cum. Oblig.	Cum. Expend.	Funding Obligated But Not Yet Spent	Cum. Oblig.	Cum. Expend.	Funding Obligated But Not Yet Spent	Cum. Oblig.	Cum. Expend.	Funding Obligated But Not Yet Spent	Cum. Oblig.	Cum. Expend.	Funding Obligated But Not Yet Spent
Total	3037	2305	734	4539	2766	1753	5439	3867	1572	5439	4704	655	5439	5123	316
Technical Assistance	1620	1229	399	1996	1500	414	2339.9	1967	572.9	2339.3	2417	122.5	2339.3	2377	-37.5
Training	18	18	0	101	18	63	260.6	63	197.6	260.6	171	89.6	260.6	126	74.6
Commodities	467	432	55	1327	436	891	1405.4	933	472.4	1405.4	1153	232.8	1405.4	1188	217.4
Construction	654	576	78	654	582	39	654	582	72	654	582	72	654	582	72
Other Costs	272	50	222	463	139	324	579.5	267	312.5	579.5	461	116.5	579.5	590	-10.5

10. PROJECT OUTPUTS

1. Specific Project Outputs

Specific project outputs related to each of the five areas of the Project activity were discussed in Section 8 of the report. Infrastructural outputs not previously enumerated include:

A. The Mindif Project Center which comprises:

1. Forty-eight hectares of fenced demonstration area;
2. An access road grid and drainage system;
3. Seven houses, one garage, one equipment storage hanger, one office complex, one drying floor, one cattle feeding facility, one generator shed, five drilled deep wells, one hand-dug well, and guard huts.

B. Miscellaneous Commodities:

1. These commodities totalling approximately \$933,000 have been procured and are being utilized.

2. Project Documentation

The quality of project documentation to date is disappointing. In some cases it is obvious that a huge effort went into collecting data for the reports but that not enough time was allocated for data analysis and report writing. The work of Mr. Schar, the Project economist, is a good example of this. Whereas it is evident that he collected an incredible amount of data during the one and a half years he worked in the Project area, some of his analyses are superficial. For example, in his sampling procedure, he purposely selected subsamples of farmers who used animal traction and people who considered themselves livestock specialists in order to have useful data for comparison with the general farming population. However, he only makes one comparison based on this data which is that farms using animal traction were larger than the average farm. He concludes from this that farmers view "animal traction as a technique for extensifying their farming operations, rather than intensifying them".(48.P1) Even this single comparison is rather superficial. Data from other Sahelian countries shows that in general, larger households adopt animal traction and that their farms are generally larger to begin with. Farmers using animal traction may expand their area

under production somewhat but the only way to get at this information with one year's data is to look at the area under production per active worker. Schar unfortunately does not present these data.

The document written by Mr. Kulibaba, the Project Sociologist, raises some serious questions about the narrow focus of the Project on herder-farmers and farmer-herders to the exclusion of the "nomads". He also raised some valid questions about the criteria by which the Project evaluates itself, i.e. in terms of number of meetings held, etc. The evaluation team feels that it is extremely unfortunate that Mr. Kulibaba did not produce more documentation. In his End of Tour Report, the only document we could find by him, he cited two reports which were to be produced but which did not exist, at least in Cameroon. They were:

- A) Range Use Dossiers for the Three Pilot Zones in the Diamare Plain; and
- B) The Ethnotaxonomy of Plants and Plant Communities on the Diamare Plain.

The manuscripts of these documents were said by current project personnel to have never arrived in Cameroon. Mr. Kulibaba, when contacted by the evaluation team in the United States, claimed that the Project had a complete set of documents written by him on file. He further stated that these and other documents were completed before he left Cameroon (except for the ethnobotanical study), that copies were left with the Project, and indeed that the "Range Use Dossiers" had been used by other project personnel in planning the grazing blocks.

The reports of the short-term consultants were generally better. Mr. Abercrombie's report concerned the Project design and therefore has little relevance for the current Project. Dr. Antroinen's report was good and dealt directly with the issues he was asked to report on. Dr. Rasmussen's document on the design of Grazing Blocks II and III is rather general and very practical. He relied very heavily, especially for his soil classifications, on use of the resource inventory prepared by USAID, USDA/SCS and FAC(59) which specifically contains a disclaimer to the effect that the information in it should not be used directly for range management planning without extensive verification on the ground.

Mr. Gipe and Mr. Nuza's reports on feeding "trials" were disappointing because they have little scientific validity (see Section 8.3.2 paragraph 5).

Mr. Cahalan has written one report on his attempts to find a suitable perennial forage legume to be inserted in a rotation system. In addition, he reported some further results in a discussion paper prepared in early 1982 (9). He should write a more up to date report both on his agronomic trials and on the results of the survey he has just finished concerning farmers' evaluations of the agronomic package offered by the Project.

Project Documentation must be improved. Perhaps the most important output of the Project to date is the experience gained by its technicians. If this is not documented in reports directed at specific subjects, the experience is lost to the Project and to Cameroon when the technicians leave. The evaluation team feels very strongly that at least the following reports should be written:

A. Mr. Cahalan should report the results of his agronomic trials on improved varieties for the Mindif-Moulvoudaye region with the object of convincing SODECOTON of the superior productivity of the varieties he tested;

B. The technical assistance team, together with their Cameroonian counterparts should produce a synthesis report detailing the results of all Project activities since the arrival of the team;

C. The Project staff should also produce a coherent overall Project strategy statement and a detailed plan of work to cover the remainder of the existing Experience, Inc. contract by March 1, 1984; and

D. If the Project extension is accepted and the socioeconomic unit is reinstated, the technicians should attempt to analyze Mr. Schar's and Mr. Kulibaba's data in order to produce the baseline data necessary for project implementation and evaluation. Personnel attached to the unit should meet with Mr. Schar and Mr. Kulibaba in order to benefit from their personal impressions and ideas.

11. PROJECT EFFECTS: PLANNED AND UNPLANNED

1. Planned Effects

The evaluation team found it impossible to observe anything that could be clearly identified as long-term, planned effect of the Project in the Mindif/Moulvoudaye area, with the obvious exceptions of the physical construction at the Project Center and the demarcation of the Grazing Blocks. This was the case because, in effect, the Project has just begun many of its activities in the period after the reorganization and a period of one year is too short a time to observe and verify long-term cause and effect relationships.

The evaluation team, therefore, confined its observations on projected and possible effects from the current Project activities to discussion in Section 8 of the report. We perceive this section to be concerned with observable long-term effects of Project activities and find we have nothing to say on this subject at this time.

2. Unplanned Effects

Pastoralists, agro-pastoralists and agriculturalists in the Project area do not constitute self-sufficient units but rather are linked together by a complex web of social, economic, and ecological relationships. Viewed as three forms of adaptation to the local eco-system, together they constitute a wider economic unit, which has developed through the exchange of goods and services, and which cannot be easily disaggregated into its component groups.

In trying to improve range conditions by controlling grazing schemes, the Project technical staff decided to delimit three Grazing Blocks. However, in the delimitation of the deferred grazing schemes, we do not believe planning took into account the interests of all the users of the local natural resources.

The present system of Grazing Blocks ignores the rights of a sizable portion of the resource users and excludes them from their traditional grazing lands by recourse to the threat of force from local administrative authorities. The basis for the exclusion of some herders seems to be a regrettable distinction which is made by the Project staff between herds belonging to sedentary groups, on the one hand, and those belonging to non-sedentary groups. The former groups are seen to have a stronger proprietary claim to grazing in the Project area; while the latter groups' long-term grazing rights in the area tend to be discounted or disregarded by the Project.

We feel that the Project staff's attitude toward the non-sedentary groups is based on arbitrary criteria for discrimination between two different residential patterns by technicians who do not realize the complexity of the internal equilibrium in the local social sub-systems and who have not fully evaluated the potentially tragic consequences of their actions in terms of human survival among these herder groups. Therefore, the evaluation team has recommended in a number of different places and contexts that much more consideration be given to the potential social consequences of the Project's actions in disruption of the socio-cultural environment and that the range management program, in particular, be reformulated to correspond with local realities.

22/11/68

The evaluation team has also recommended that the Project staff should be made aware of the potential social consequences of their actions in terms of human survival among these herder groups. This recommendation is based on the fact that the Project staff have not fully evaluated the potentially tragic consequences of their actions in terms of human survival among these herder groups.

Appendix 1

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12. LESSONS LEARNED

This section presents the evaluation team's summary of what can be learned from the experience of the Project to date. All points raised here have been dealt with in other sections of the report.

1. The most important lesson to be learned is that development of a livestock sector requires a much longer time frame than the current five-year mandate for the Project. This is particularly true given the long generational intervals of cattle, the long periods of time required to reestablish optimal range conditions, the variable weather conditions in the Project area, and the large number of biological parameters which must be estimated over time to establish a viable range management system. What is needed is a program approach and a long-term commitment on the part of the GURC and the donors to a coherent overall strategy in resource management, as opposed to a project approach which is by definition limited in both time and scope. This issue is dealt with in more detail in Section 8.1.3 of the report.
2. The second lesson is that excellent socio-economic data collection and analyses is required both prior to and in conjunction with all Project interventions. The need for this type of research and monitoring is emphasized in Section 7 on Project Beneficiaries and in Section 8.5.3.
3. The third lesson is that a very clear distinction must be made between the implementation of general theories which are universally true and the application of technologies which are derived from general theory but must be adapted to and tested under local conditions. Sections 8.1.3 and 8.3.2 deal with this issue in more detail.
4. The fourth lesson is that long-term academic training for technicians must be accomplished early in a project's life so that returning trainees can participate in the Project and profit from the on-the-job experience. This issue is elaborated in Section 8.4.2.
5. The fifth lesson is that Project activities and personnel should be subject to continual objective appraisal and criticism by outside evaluators. This is crucial because it is very easy in the course of a project to become so involved in implementing day-to-day project activities that one loses one's perspective on the overall goals and objectives of the

project and how the project relates to the host country's socio-cultural environment.

6. The sixth lesson is that communication with people who are the intended beneficiaries of Project activities is a two-way process. The adaptive research process necessary to develop effective technical packages is critically dependent upon receipt of feedback from the people who participate in Project activities. Section 8.5.3 deals with this issue in more detail.
7. The seventh lesson is that problems faced by the Project are most effectively dealt with by a multidisciplinary team working in an interdisciplinary manner. There are very few development problems in the developing world which are amenable to solution by individual technicians working within a single discipline and in isolation. Section 8.4.2. elaborates on this point.
8. The eight and final lesson is that there is a need to encourage more initiative from the private sector. The evaluation team feels that these initiatives can be stimulated by the creation of Livestock Herders' Associations in this particular case but the point has wider application.

13. SPECIAL COMMENTS

1. Elements for the Extension of the Phase I Project

The following is a list of the elements and activities upon which we feel the Project should focus for the remainder of the current phase and throughout the Project extension until December 1987:

- A. The reinstatement of a socio-economic unit should be a condition precedent to the extension of the Phase I Project. The critical problems facing the Project must be dealt with by a multidisciplinary team in an interdisciplinary manner. The socio-economic unit is essential to produce the research, monitoring and internal evaluation work necessary to carry the Project to a successful conclusion and prepare the way for a possible Phase II Project.
- B. In order to create a well-balanced and critical mass of Cameroonian expertise to carry out a Phase II Project and/or to carry on Project activities after Project termination, the training component must be substantially expanded.
- C. A new "grazing block" system should be instituted immediately. A much smaller grazing trial/demonstration program should be conducted in a much more vigorous scientific manner with fixed protocols, timely and comprehensive data collection, and prompt analysis and write-ups of the research results.
- D. The current grazing blocks should be used for demonstrations in controlled burning, control of brush encroachment, soil and water conservation techniques, grass reseeding activities, and water point development.
- E. A revised policy on water points should be instituted on the basis of a seasonal grazing strategy involving consideration of both the Diamare Plain and the South Yaeres Eco-Systems. The policy should include:
 - i. Smaller water points, widely distributed, and placed in accordance with the

observed grazing patterns in the Project area and which are subject to drying out in the dry season; and

- ii. Shallow wells in the Diamare Plain developed as a function of the herds (i.e. size and types of herd animals) which remain in the Diamare Plain throughout the dry season.
- F. Three Livestock Herders' Associations should be formed before the end of the extension phase as per Section 13.3 below).
 - G. Preliminary socio-economic reconnaissance studies should be carried out in the South Yaeres Eco-System in order to gather data on local production systems, distribution of population and herders, and the relationships between agriculture and livestock enterprises in the area.
 - H. More emphasis should be placed on animal production activities resulting in a more balanced approach between these activities and range management activities already in place. These activities should include on-farm demonstrations of small ruminant feeding using crop by-products, helping Livestock Herders' Associations to establish their needs for supplementary feedstuffs and minerals, and devising a rational and low-cost system for provision and administration of veterinary vaccines and other medicines to livestock.
 - I. If funds are available, trial aerial surveys should be carried out in the Mindif-Moulvoudaye region in order to develop the capacity and test the methodology for rapid, low-cost censusing of the project area prior to the initiation of a Phase II Project.
 - J. The project should pursue contacts with the MINEPIA team responsible for fly eradication around N'goundere in order to conduct trials on elimination and/or long-term control of biting flies in the Project area.
 - K. The Project agronomist should write up the results of his attempts to develop a viable rotation system with perennial legume. In addition, he should report the results of his

adaptive research on peanut varieties to SODECOTON in a written document. Responsibility for extension of this rotation system should be left to SODECOTON. Furthermore, research on perennial forage crops should be passed over to a joint IRN/IRZ effort.

2. Elements for a Phase II Project

The following is a list of elements and activities which we feel would be important to any Phase II Project:

- A. As a condition precedent to a Phase II Project, a land use planning unit should be established in the Exrema North Province to undertake a major land resources evaluation study. This study should produce necessary data and analyses to allow the institution of a process to set priorities for land use and development in the area. The goal of such an activity should be the establishment of an equilibrium between competing claimants for land use based upon the land's highest and best use and the need to sustain resource productivity in the long-term.
- B. The Project should provide funding for routine aerial surveys of the Diamare Plain and the South Yaeres Eco-systems. Each year in the former area, two surveys should be conducted, one at the beginning of September and one in January or February. Only one survey in January of each year would be necessary for the South Yaeres Eco-system. The current aerial survey system being utilized by ILCA in West Africa can census up to 64 independent variables in a single overflight with a turn-around time of approximately four months from initial overflight to production of the final analysis of an area.
- C. A major effort should be undertaken to eradicate noxious biting flies in certain zones of Mindif-Moulvoudaye area and in transhumant areas between this area and the South Yaeres. This would open additional land for grazing during the rainy season and reduce pressures in the present grazing areas.
- D. A trial grazing block system, such as the one recommended for the Mindif/Moulvoudaye area,

should be set up in the South Yaeres to study the second half of the annual grazing system and develop appropriate grazing management strategies and land use plans for this Eco-system.

E. Project personnel should expand their activities with Livestock Herders' Associations. The Associations formed during the extension phase should be encouraged in their on-going activities and the Project should build upon this initial experience in developing additional Associations.

F. An animal scientist should be a member of the Phase II Project team. His main responsibility should be to collect data to estimate production parameters for herds and flocks such as age at first calving or lambing, length of calving intervals, milk production, length of lactation periods, weight losses in animals during the dry season, and other such variables. He should also attempt to monitor seasonal herd and flock movements by marking certain local animals.

G. Adequate long-term training should be made available to Cameroonian personnel to create the critical mass of local expertise needed to carry out and expand project activities while, at the same time, allowing for personnel attrition due to within service transfers, promotions, and other factors. It is particularly critical to have personnel trained in the social sciences such as rural sociology, social anthropology and agricultural/livestock economics.

H. The development of water points should be continued based on the experience gained in the Phase I Project.

I. All livestock and range management activities should be transferred from the existing Project into the Division d'Aménagement des Paturages et d'Hydraulique Pastorale. Furthermore, the socio-economic unit of the Project should be institutionalized within the framework of MINEPIA.

3. General Comments on Livestock Herders' Association

1. Introduction

The evaluation team views the creation of Livestock Herders' Associations as a necessary institutional framework for the development of livestock production in the Extreme North Province. The goal of this Sub-Section is to present the evaluation team's general views about the internal structure of these associations and the main criteria for the organization.

A. Basic Structures of Social Life

The Livestock Herders' Associations should be made up of homogenous groups which reflect the local social structure and economic organization. With regard to the sedentary and semi-sedentary social groups in the project area, even a brief sociological analysis allowed us to distinguish three basic levels in the social structure: the family, the neighborhood and the village.

- i. The village, called saare, is the basic unit of all social and economic life. The concept of family can be more or less extended according to the local ethnic groups. It could include not only the spouse(s) and children of an individual but also the married sons with their spouse(s) and children or even hired labourers (herders or farm workers).
- ii. The neighborhood, called fattude, constitutes a more structured residential unit, which is made up by homogenous familial groups, having common goals and economic interests, on the basis of kinship and residential proximity.
- iii. The village which can be called either siire or wuro: basically, the siire is the village of non-

moslem people, i.e. the population called "pagans", such as the Toupouri, the Guiziga, the Moundan etc., while the wuro is the village of the moslems, i.e. the FulBe and the Bornuans. This ethno-religious distinction has lost its significance but it retains certain value for the geographer for the spatial location of the habitat and the socio-economist (i.e. the two categories represent two different production systems, the farmers with limited animal enterprises and the herders with casual crop farming).

With regard to the herders with no crop farming (i.e. FulBe, Shuwa Arabs, WoDaaBe) the conception of territory is wider than that of sedentary people, no longer including limited and fixed geographical structures but rainy season and dry season grazing areas and transhumance trails between the areas. The term wuro (plural gure) designates at the same time the kinship group or fraction and migratory group. In other words, for the nomadic herders, there is a correlation between the kinship group and the group who "de facto" cooperate in management of space, and who organize common transhumance patterns. The kinships concept is rooted in concrete relationships at the level of pastoral and economic life complex systems of animal transfers through gifts, loans, inheritance and through intermarriages. Several gure eventually constitute a more complex unit, the lenyol or clan, which is a more or less vague cultural unit and which unites people from the same ancestry.

2. The "Homogeneity" Criterion

The evaluation team believes that the above mentioned general considerations should form a basis for identification and organization of Livestock Herders' Associations during the extension phase of the Project. Homogeneity should be the basic criterion for the choice of potential social groups as Associations.

In fulfulde, the word pottal can form the linguistic and cultural translation of the concept of homogeneity: pottal, from the verb fotta which means "to meet", signifies "agreement, consultation, collaboration". This concept is not abstract. It is a dynamic, geographically located concept. Pottal is then "the space of the meeting, of the encounter". The term pottal deals with the horizontal structure of the society, i.e. the solidarity bonds between individuals, the mutual assistance, the exchange, the division of the work and the sharing of the responsibilities. It is the necessary complement of the concept of laamu, that is the chieftainship, the political power which deals with the vertical structure of the society, i.e. the relationships between chiefs and client groups, the hierarchical status and the imperative norms. The term pottal therefore signifies association in a dynamic sense: it is everything that pulls together individuals, which unifies by concrete linkages, which draws people into consultation on specific tasks and goals. In sedentary groups, the neighborhood is the milieu where the pottal can grow, whereas for the nomads this milieu is the wuro/fraction.

3. The Sharing of Responsibilities within the Groups

Each homogenous group, neighborhood or fraction, organizes itself around its specific needs. In contrast to the political power which is inherited, socio-technical roles are assigned by

virtue or competence. Thus, the kaydal means the pastoral leader, the man who has a recognized competence and who has a power about everything concerned with herders and natural resources; the masay, on the other hand, means the agricultural leader, the man who has a recognized competence concerning agricultural subjects and the timing of different agronomic operations. The kaydal (a fulfulde word) is always chosen from amongst the pastoralists, whereas the masay (a guiziga word) is generally chosen from the agriculturalists. Everybody, without ethnic distinction, follows the advice of these authorities whose power/influence is not perceived to be in conflict with the political power to the laamiDo, or the jawro. The kaydal and the masay possess a power in which the technical, magical and religious aspects are inextricably linked. Thus, to give an example, it is the kaydal who knows the needs of cattle in relation to the vegetative stage of the range; but it is also the kaydal who is a diviner knowing the secret formulas to protect the herd from the dangers of wild animals.

4. Conclusion

The evaluation team thinks that this type of anthropological and sociological study should continue and the concepts should be more thoroughly examined during the extension of Phase I Project. Our recommendation is that at least three Livestock Herders' Associations, reflecting local social structure and cultural values, be formed before the end of the Project. By virtue of the principle of homogeneity, we believe that these Associations should be made up of a limited number of families (i.e. between 15 and 30). They should be organized around the concept of shared responsibilities, according to the competence of the persons involved in order to meet the real needs of the people. Each Association could have a revolving fund at its disposition which

will be created by means which have yet to be defined. This will serve to promote a series of activities to increase the pastoral productivity and to improve the welfare of the local population. Included in these activities could be:

- A. A herd of young male animals to be fed out for marketing;
- B. A herd of females to be fed out for local milk production;
- C. An internal credit system to sustain families during critical periods of the year;
- D. Creation of small storehouse for the Association containing a wide variety of basic necessities for livestock production such as medicines, both human and animal feed supplements, and the like.

Within the framework of the Associations, a training program could be undertaken to provide each group with a number of technical specialists from within its membership, such as:

- A. A para-veterinary assistant;
- B. A para-medical assistant;
- C. A range management specialist;
- D. A specialist in well digging and maintenance; and
- E. Specialists in improving the management and skills of the local small-scale industries.

The Phase II Project should have the two-fold objective of extending Associations to other social groups and creating a more complex institutional framework which links several Associations at the regional level into "village" and "pastoral" communities, as per the stated policy of GURC in 1981-86 Five Year Plan.

14. PROJECT CHRONOLOGY1. Introduction

The project chronology listed below has been pieced together from a combination of existing project documents, the project officer's chronological files, and interviews with project personnel.

2. Project Chronology

<u>Date</u>	<u>Activity</u>
June 1974	<p>Notification from the GURC to the United States and French assistance offices in Yaounde that the government desires assistance in developing plans for the modernization of the livestock sector in the area north of the Adamaoua Plateau. Government objectives in the proposed plan were:</p> <ul style="list-style-type: none"> A. The definition of a long-term water program; B. The strengthening of measures against certain diseases; C. The study of land use to better delineate zones for livestock and agricultural production; D. The intensive utilization of agro-industrial by-products and harvest wastes; and E. The control of the tsetse fly south of the Benoue.
July-September 1974	<p>The United States responds to the GURC request by proposing that a prefeasibility reconnaissance be carried out in conjunction with the Development Assistance Plan (DAP) exercise for Cameroon already planned for 1974.</p>
October-November 1974	<p>A ten person interdisciplinary DAP planning team is fielded and recommends that AID assistance efforts in Cameroon be addressed to assisting the people in northern Cameroon, the country's poorest region. This area was selected for concentration because:</p>

- A. It was compatible with the Congressional Mandate in force at the time;
- B. The emphasis of the GURC was placed upon reducing regional income disparities;
- C. The Sudano-Sahelian semi-arid environment was of concern to the United States due to the impact of the Sahelian drought;
- D. The activities requested by the GURC in food crop and livestock production were similar to activities being financed by AID in other Sahelian countries and there could be positive program interaction in terms of adaptation of technology and implementation experience; and
- E. The United States experience in semi-arid programs indicated that existing United States technology might be relevant and that the United States could provide some expertise relevant to the problems of semi-arid agriculture and livestock.

174

The focus for United States involvement was established by a statement in the DAP for the period 1976-1980 which read as follows:

"The variety of land-use patterns, the changing nature of some elements of current land use and land capability, and the variety of efforts, both by the GURC and by external donors, underway and planned in areas with high potential but a fragile ecological base reinforce the need for a comprehensive land use survey...

Environmental and economic reasons related to the differing land use patterns indicate that the long-term, most productive use of land will depend upon developing integrated and complementary

programs for cash/food crop rotation in conjunction with rotation for leguminous forage crops and livestock production. Therefore, although agriculture and livestock are presented separately..., the program should be conceptualized as the single effort to maximize the effective use and conservation of natural resources"

(8, Volume I, Section II, p. 227).

AID responds to the GURC's request for a livestock study within the context of the broader land use study. The land resource inventory is to be the base for future program expansion in an overall regional rural development effort.

November-
December 1974

A mixed GURC/FAC/AID team consisting of Dr. Eyidi, Director of Animal Production, Dr. Garoust, Chief of Livestock Services in the north, Mr. vanDawen, Ministry of Plan, Mr. Lachaux, FAC, and AID representatives, Mr. Berry, Mr. Abercrombie, and Drs. McLeroy and Ferguson spent two weeks in the north developing a revised scope of work for the proposed livestock study and presenting it to the GURC.

December 1974

GURC accepts the revised scope of work which recommends a three phase study to include:

- A. A baseline survey of land, water, livestock, agronomic and social aspects of North Cameroon;
- B. The development of a long-term strategy for modernizing livestock and identification of a series of medium-term projects which contribute to the realization of the strategy; and
- C. The design of several projects so that these projects can be submitted to the donor community for financing.

- February 1975 Representatives of AID and USDA/SCS (Abercombie and McClelland) visit Cameroon to develop an actual work plan for the studies and finalize this plan with FAC (Lachaux) and the GURC (Eyidi). It is agreed that a six-man land resources team and an eight-man (later expanded to ten-man) livestock project design team would be jointly financed by AID (33 man-months) and FAC (22 man-months).
- February-March 1975 On the basis of the above agreement, an AID Project Review Paper is prepared by Rulen, Bahl, Ferguson and Abercombie and AID/W reviews this PRP on March 5, 1975.
- April 1975 Final approval for the three phase study is obtained by memorandum from AID/W dated April 7, 1975. The estimated cost of this study is 332,000 dollars.
- May-October 1975 The land resources survey is implemented by USDA/SCS, with the assistance of Dr. McLeroy. Subsequently, Utah State University and Louis Berger, Inc., are recruited for the livestock project identification and design effort. Total amount of funds actually made available by AID for the three phase study is in excess of \$500,000.
- October 1975 The problems of mounting a multi-donor, bilingual, effort in this area become severe. Teams and designers seriously overestimate the amount of original data to be gathered and underestimate the amount of time required for drafting, editing, synthesizing, translating and discussing the actual reports.
- These difficulties assume the dimensions of a major handicap as the fieldwork is completed in October. The land resources team, as a result, notes that their study will be useful in determining in general terms the potential of the resource unit and in planning land use and developing resources at the level of the Division but should not be used for detailed planning of individual projects.

Additional problems arise when the contract livestock team arrives in Cameroon to find that the land resources survey team has already left and has taken their documents with them.

These problems are compounded by the fact that the GURC is apparently not convinced of the value of the land resources study and is seriously concerned that AID/FAC might be undertaking another general survey. Thus, Cameroonian participation in the land resources study is minimal and is composed almost entirely of periodic briefings and consultations rather than participation in implementation.

November-
December 1975

In seeking to address GURC concerns, the livestock design team uses the period of fieldwork to concentrate on project identification. As a result, its preliminary report, when submitted to AID/W, is found to be seriously deficient in that it does not provide an overall strategy framework or attempt to indicate priorities among projects, the degree to which each project is related to the other projects, or the contribution each project might make to the comprehensive development of the livestock sector within the recommended strategy.

January-
February 1976

The participants attempt to rectify this situation by a series of seminars and consultations in Logan, Utah and Paris, France and these meetings result in preparation of an overall synthesis of the current livestock situation, constraints and development potential in the northern region. Based upon this analysis, recommendations for global objectives and strategy and a program of project activities is developed.

March 1976

The global objectives and strategy and the program of activities is presented to the GURC. The GURC endorses the proposed strategy and notes that a similar strategy has been proposed by the GURC itself for the Fourth Five-Year Plan (1976-1980). The Cameroonian

representatives request, however, that certain changes in emphasis be made regarding the specific projects to be designed. The GURC believes that geographically specific actions would be difficult to plan and initiate because they involve changes in traditional livestock practices. Therefore, the GURC requests emphasis on institutional support for the Ministry of Livestock, Fisheries and Animal Industries through the strengthening of certain division: namely, animal health activities, water development, and a program to develop the distribution of agro-industrial by-products.

Further consultations result in a compromise by which it is agreed that the livestock team's final report will include recommendations regarding the general strengthening of these governmental services as well as geographically specific activities.

April 1976-
February 1977

Livestock design team implements its agreed mandate and produces a two-volume Project Paper for the proposed North Cameroon Livestock and Agriculture Development Project (Project No. 631-0004).

March 1977

The AID/W project committee reviews the Project Paper on March 8, 1977 and suggests a number of minor revisions.

April-June 1977

The Project Paper is revised to reflect the issues raised.

July 1977

The AID/W project committee reconvenes and reviews the revised Project Paper. The project committee on July 11, 1977 unanimously approves the revised Project Paper and recommends authorization of the project. The project committee further agrees that there are no outstanding issue that require resolution in an ECPR.

November 1977

The North Cameroon Livestock and Agriculture Development Project is authorized and approved by signature of

the AID Assistant Administrator For Africa on November 10, 1977. The project is authorized for a term of six years at a grant funding level of \$6,200,000.

December 1977-
April 1978

USAID office in Yaounde negotiates and finalizes the Project Grant Agreement with the GURC.

May 1978

The Project Grant Agreement is signed on May 18, 1978 and the North Cameroon Livestock and Agriculture Development Project officially becomes a GURC/USAID development project effort.

August 1978.

Mr. Rick Carron is hired by personal services contract as the Project Advance Administrator. He selects the location of the present project site at Mindif in collaboration with GURC personnel.

September 1978

Amendment I to the Project Grant Agreement is signed on September 5, 1978 and allocates an additional \$21,000 for commodities. This increases the total of funding allocations from the original Project Grant Agreement total of \$1,029,000 to a total of \$1,050,000.

March 1979

Mr. Michael Orban is hired by host country contract to oversee the construction of houses and other facilities at the Mindif project center. Amendment II to the Project Grant Agreement is signed on March 22, 1979 and allocates an additional \$875,000 for various commodities (i.e. furniture and appliances) plus heavy equipment, project vehicles, and construction expenses. This amendment raises the total of funding allocations from \$1,050,000 to \$1,925,000 for the project.

June 1979

Mr. E.T. Pamo, Ingenieur Agronome, is assigned to the project as the first counter part provided by the GURC.

July 1979

Construction of the Mindif project center is begun.

The contract between Experience, Inc. and AID, as represented by the Regional Economic Development Services Office (REDSO/WA) in Abidjan, Ivory Coast, is signed to provide the technical assistance specialists required for project implementation. The effective date of the contract is July 27, 1979.

August 1979

Mr. Rick Carron, the Project Advance Administrator, finishes his assignment and leaves the project.

September 1979

Mr. Peter Daniells, Chief of the Experience, Inc. team, arrives in Cameroon on September 16, 1979.

November 1979

Mr. Cal Burgett, Experience, Inc. extension specialist, and Dr. Frank Abercombie, Experience, Inc. TDY range management specialist, arrive in Cameroon and are posted in Maroua. Mr. H.A. Schar, Experience, Inc. agricultural economist, arrives in Cameroon and is posted to the CPLS office in Garoua.

December 1979

An initial survey is undertaken by project personnel to familiarize themselves with the agricultural system in the project zone. The results are published as "The Agricultural and Livestock Situation in the Mindif Arrondissement: Reconnaissance Survey December 5, 1979 - January 28, 1980" (43).

Mr. Peter Daniells is given the additional administrative duties as project director by the CPLS and the USAID officer in Yaounde.

February 1980

Dr. Frank Abercombie completes his assignment and departs from Cameroon having participated in the team reconnaissance survey of the project zone, determined the heavy equipment needs for the project based upon the original Project Paper, and proposed a pasture management system for the zone also based upon the original Project Paper. At the time of his departure, the issue

of underfunding for the project in comparison with its expected outputs is already being raised by the Experience, Inc. team.

March 1980

Amendment No. III to the original Project Grant Agreement is signed on March 17, 1980 and allocates an additional funding of \$564,000 primarily for technical assistance. Total funding for the project now stands at \$2,489,000.

Mr. Bouba, an agricultural technician with a specialty in agricultural engineering, is assigned to the project as the second counterpart from the GURC.

April 1980

The first Plan of Work for the project is drawn up and presented.

May 1980

Mr. Warren Leathom, Experience, Inc. agricultural engineer, is posted to the project. Mr. Donald Gipe, Experience, Inc. range management specialist, is posted to the project. Both men take up residence in Maroua.

In a project memorandum dated May 22, 1980 is found the first mention of the need for a possible project reorganization to bring project objectives more in line with financial resources available for the project zone.

On May 27, 1980, the first U.S. vehicles for the project arrive in Maroua.

June 1980

Mr. H.A. Schar is moved from Garoua to Maroua by the CPLS and is given responsibility for being the project agricultural economist charged with conduct of all socioeconomic surveys.

A memorandum from Mr. Peter Daniells to the USAID Mission Director in Yaounde contains a proposal for redesign of the project. He cites the overly ambitious scope of work and the lack of GURC participation in the project as primary reasons for this proposed redesign.

Mr. Michael Orban, construction supervisor, completes his contract and leaves Cameroon.

Mr. Thomas Cahalan, Experience, Inc. agronomist, and Mr. Nicolas Kulibaba, Experience, Inc. sociologist, arrive in Maroua. Their arrival completes the technical assistance team for the project for the first time.

July 1980

Mr. Angel Villanueva is hired by the project to establish a maintenance program for the Mindif project center facilities and equipment. He is to train a Cameroonian counterpart but no such person is appointed during his contract.

The first plantings of observational trials of forage grasses are made at the Mindif project center on July 16, 1980. Seeds had been obtained from sources throughout the world for these trials with ninety-eight species and/or varieties being tried at Mindif. The results of these trials are eventually written up in "Results of the Grass and Leguminous Forage Adaptation Trials 1980-1981 Seasons" (11).

August 1980

A revised Plan of Action for the first year of the project (1980) is produced by the technical assistance team and is submitted to USAID/Yaounde and the GURC for approval.

Amendment No. IV to the original Project Grant Agreement is signed on August 15, 1980 and allocates additional funding of \$550,000 for commodities to the project. Total funding now stands at \$3,039,000 from AID.

September 1980

Six Cameroonian counterpart technicians are assigned to the project. They are:

Mr. T.S. Nuza, Ingenieur Agronome
(Zootechnie)
Mr. E. Engoulou, Ingenieur Agronome
(Vulgarisation)
Mr. J. Tsamo, Ingenieur Agronome
(Agronomie)
Dr. D. Dairou, Docteur Veterinaire
Mr. S. Beka, Ingenieur Agronome
(Zootechnie)
Mr. M. Djitik, Ingenieur Agronome
(Genie Rural).

Mr. Djitik actually serves the project for only two weeks although his appointment remains in effect until 1982. No advance notification of the arrival of these counterparts is made to the project by the GURC and no provisions are made in advance for their housing or other matters.

Mr. Thomas Cahalan and Mr. Cal Burgett are the first American project team members to move from Maroua to the Mindif project center houses. This move had been put off because of construction delays at the project center, problems with the water and electrical supply systems, and unacceptable engineering work. This poor engineering results from no soil tests being made for the project center's septic system, poor design of the houses, an inadequate road system, and construction of a shelter which is too small to contain the project generators. Nevertheless, it was felt that there should be an American presence at the Mindif project center even though the center was not complete. The over five American team members remain in housing in Maroua.

October 1980

Mr. E.T. Pamo leaves for English language training and long-term academic training at the Master's degree level in range management at New Mexico State University.

November 1980

A meeting is held between representatives of MINEPIA, MINAGRI, MINEP, USAID and the project chief of party on November 28, 1980 which marks the official beginning of the project reorganization effort.

January 1981

A method of earmarking project funds with PILs for various expenditures is put into effect with the arrival of the new USAID/Yaounde Controller, Mr. R. Garner.

Final selection of the site for Grazing Block I is made on January 30, 1981 pending formal agreement with the GURC.

- February 1981 Eight hectares are secured by the project for the satellite center for trials at Moulvoudaye.
- March 1981 Meetings are held with villagers around the Grazing Block I on March 10-11, 1981 to explain the range management system and the proposed crop rotation trials.
- April 1981 A dry season animal nutrition study is conducted at the Mindif project center and results in a report entitled "Cattle Feeding Trial Report" by Mr. Donald Gipe and Mr. T.S. Nuza (23). This study purports to show the profitability of utilization of crop by-product and residues for dry season cattle feeding.
- May 1981 Mr. H.A. Schar is requested to conduct a study of vegetable marketing in Garoua for the CPLS.
- Mr. Warren Leathom completes his assignment and leaves Cameroon. During his assignment he plans subsurface dams and develops the specifications for the heavy equipment needed by the project.
- Dr. Aaron P. Antroinen, veterinarian consultant, arrives on a TDY consultancy to evaluate the GURC animal health service in the project zone and to make recommendations on how to strengthen veterinary services. The consultancy results in a report entitled "A Survey of Animal Health Services in the Mindif Arrondissement" (2).
- June 1981 Mr. Donald Gipe, project range management specialist, completes his assignment and leaves Cameroon after producing an end-of-tour report (24).
- Six farmers begin to participate in the project crop rotation trials with assistance from the project agronomist.
- Mr. H.A. Schar completes one year's work on socioeconomic surveys and issues a report entitled "Results of an Agricultural Economic Census of Selected Areas of the Arrondissement of Mindif" (51).

A series of meetings is held with local leaders and livestock producers on grazing block management procedures.

Forage grass trials and forage seed multiplication plots are planted on June 25, 1981.

July 1981

Project range monitors are trained and begin working in Grazing Block I.

Mr. Angel Villanueva leaves the project. A report entitled "A Survey of Water Resources and Distribution in Mindif" (39) is issued by Mr. Nicolas Kulibaba. It presents data on water supply systems and well locations and types in the town of Mindif.

The controlled grazing schedule on Grazing Block I is instituted.

August 1981

Mr. James Jackson, USAID project officer, departs Yaounde and Mr. Richard Goldman, deputy agriculture and rural development officer, becomes the interim project officer for the project.

On August 11, 1981, a meeting of CPLS, USAID and project team representatives, chaired by the Governor of the North Province, is held to review the project reorganization plan proposed by USAID. During this meeting, it was decided that:

- A. The Mindif-Moulvoudaye project should retain a certain autonomy and there was opposition to placing the project under the MINEPIA.
- B. CPLS should remain the executing agency for the project.
- C. The project does not need a Cameroonian Director or Co-director but officials already in place at the Sous-Prefecture in Mindif, for example, can provide any assistance required.

- D. USAID should order the heavy equipment and other machines promised in the original Project Grant Agreement.
- E. The Mindif-Moulvoudaye project should have its own maintenance and repair capability for heavy earth moving equipment.
- F. The technical assistance team for the project should be reduced to four persons - i.e. the extension specialist, the livestock and range management specialist, the agricultural engineer, and the heavy equipment maintenance specialist. All other team members should leave upon completion of their current assignments - i.e. the Chief of Party, the agronomist, the economist, and the sociologist.
- G. The animal health program should be augmented and expanded.

September 1981

USAID Yaounde did not agree with all the decisions and they were subsequently revised at the Ministry level Yaounde.

Dr. D. Dairou, veterinarian and counterpart, is transferred to Yagoua Livestock Sector Chief and leaves the project.

Mr. Peter Daniells completes his assignment and leaves Cameroon. Mr. C. Burgett assumes the Chief of Party position in addition to his role as extension specialist.

Amendment No. VIII to the Experience Inc. contract authorizes disbursement of the Mindif Center operating funds by the Chief of Party during the period of the project reorganization.

U.S. financed construction at the Mindif center is completed and the project personnel begin using the office complex for the first time. Prior to this time, project personnel were required to conduct all their business from their houses.

October 1981

Mr. H.A. Schar issues "Farming Systems in the Arrondissement of Mindif: A Status Report" (48). This is his final farming systems analysis for the project.

The project conducts a tour of the project crop rotation trials, grazing blocks and the Mindif center for interested farmers and livestock producers.

Mr. Nicholas Kulibaba issues "Socio-physical Status of Grazing Block I" and distributes the report locally. No copy is found in the project files. The project conducts the first meetings with livestock producers surrounding Grazing Block II.

November 1981

Mr. H.A. Schar and Mr. Issa Ousman issue "The Profitability of Small Farm Enterprises in the Arrondissement of Mindif: the interrelation of labor and income" (52). This report emphasizes the cash flow problems and labor bottlenecks faced by farmers in the project area and purports to show how these factors inhibit them from adapting recommended practices.

Mr. H.A. Schar issues "Prospective on the Future of Livestock Marketing in Extreme North Cameroon" (49). This report purports to elucidate some current problems in the livestock marketing system in the region.

On November 19, 1981, the Project Reorganization Document is formally approved in internal reviews by USAID/Yaounde. This document is then submitted to MINEP for approval.

Project personnel hold the first coordination visit with the IBRD Project Centre-Nord.

December 1981

Mr. H.A. Schar leaves the project and is not replaced.

Seven representatives of the project and local government services take a one week tour to Ahmed Bello University in Nigeria to study their range management research and extension programs.

January 1982

The initial survey of Grazing Block III is begun.

Mr. Leroy Rasmussen, a range management specialist, commences a TDY consultancy at Mindif to develop plans for Grazing Blocks II and III. His final report is entitled "Design and Planning Factors Affecting the Development of Grazing Blocks No. 2 and 3 in the Mindif Arrondissement" (46).

On January 18, 1982, an interagency cooperation and coordination meeting for all local development agencies working in the project zone is hosted by the project at the Mindif Center.

On January 31, 1982, a meeting is held in Yaounde with participation of MINAGRI, MINEP, CPLS, USAID, SODECOTON, and MINEPIA to fully discuss the responsibilities of each party under the project reorganization.

February 1982

Housing is finished for two GURC technicians at the Mindif project center.

A series of meetings are held to orient livestock producers to the grazing schedule and rotations in Grazing Block III.

Local authorities express continued concern about the absence of heavy equipment at the project and the failure to provide the water points promised.

On February 17, 1982, the Minister of Agriculture, accompanied by the Governor of the North Province, the Director General of MINAGRI, a CPLS representative and other local officials, meets with project personnel at the Mindif Center to review the project. The status of the project reorganization and the CPLS position on taking no further role in project support or implementation actions are discussed. A radio press release portrays the project as "marking time".

USAID provided veterinary supplies are distributed to GURC officials at a ceremony on February 19, 1982.

In an effort to promote the coordination of development efforts in the project zone and to increase interest in the project's research program, the technical assistance team circulates a discussion paper and holds a meeting with development agencies in the area. The paper presents the responsibilities of the different organizations in the region and presents how the project fits into the regional scheme for development. Research results from the 1981 crop rotation trials are also presented.

On February 26, 1982, Mr. H. Tchoukdira, Ingenieur Agronome (Vulgarisation) arrives as a counterpart for the extension specialist.

Mr. Semedi Soulaye, accountant, is assigned to the project. Other than two secretaries, he is the only administrative support person provided up to this point by the GURC. On February 9, 1982, all recruitment of personnel for the project is suspended by CPLS. The GURC by the same letter restricts its involvement in the project to only paying the salaries of the counterparts and providing for gasoline and maintenance for their vehicles.

A second interagency coordinating committee meeting is held at the Mindif Center on February 25, 1982 at which

time coordination in the marketing of agricultural produce is discussed with the National Cereals Office representative.

March 1982

Mr. N. Kulibaba moves to the Mindif Center and takes up residence.

On March 9, 1982, the technical advisor to the President, Mr. Leonard Claude Mpouma, and the Executive Secretary of CPLS, Mr. Yaya Gaga, visit the project to discuss the project reorganization, project equipment requirements, the technical feasibility of the project, the proposed increase in GURC cash contributions for project support, and the nominations of US specialists and Cameroonian participants for long-term training in the United States.

April 1982

The project makes an unsuccessful attempt to rent heavy equipment to start the development of the water points in the Grazing Blocks.

Contacts intensify with livestock producers in Grazing Blocks I and II. Firebreaks and perimeter trails are being cut by hand labor at this point.

Training sessions are held for farmers participating in the on-farm crop rotation trials and trial plots are laid out.

May 1982

On May 24, 1982, Mr. Chris Phelps arrives in Cameroon and becomes the project officer for the project at USAID/Yaounde.

June 1982

Deferred grazing is continued on Grazing Block I for a second year and begins in Grazing Block II. Fourteen farmers participate in the on-farm crop rotation trials.

Mr. T.S. Nuza presents the results of another dry season feeding trial in a report entitled "Balanced Feeding of Lactating Beef Cows for Sustained Milk Production during the Dry Season" (44).

July 1982

Mr. Nicolas Kulibaba, project sociologist, leaves Cameroon after completing his assignment and is not replaced.

Amendment No. V to the original Project Grant Agreement, which contains the official project reorganization, is signed in Yaounde on July 15, 1982.

This amendment also obligates an additional \$1,500,000 for the project bringing the total U.S. funds obligated to \$4,539,000.

Following the reorganization of the administrative structure of the North Province, the project administrative links are changed from the Department of Diamare in Maroua to the Department of Kaele in the town of Kaele.

The project Plan of Work and Project budget for the fourth quarter of FY 1982 and all of FY 1983 is completed and submitted to USAID/Yaounde for approval.

August 1982

At a meeting with nomadic herders, local administrative officials and project personnel, the herders are told they can use the Grazing Blocks if they agree to follow the controlled grazing program. The herders decide that they cannot follow the grazing program and they are therefore not allowed into the Grazing Blocks.

Mr. Carl van Heaften, Experience, Inc. vice-president, arrives in Cameroon to renegotiate the Experience, Inc. contract for project participation and to review project progress. Negotiations are completed in ten days.

On August 30, 1982, the candidate for the U.S. range management specialist, Miss Linda Cleboski, is approved by MINEPIA.

September 1982

The new Perfect of Kaele visits the project at Mindif.

At a meeting on September 20, 1982 at CPLS headquarters, chaired by the Governor of North Province, the transfer procedure for transferring of responsibility for project administration from CPLS to MINEPIA is reviewed. The MINEPIA representative refuses to take responsibility for the project because he has not yet received official authorization to do so from MINEPIA in Yaounde.

October 1982

The heavy equipment for the project arrives in Douala.

On October 6, 1982, the USAID/Yaounde Mission Director and ARD Office Chief review project activities with project personnel at the Mindif Center.

November 1982

Firebreaks are completed on 1,300 hectares of pasture in Grazing Block II. A series of fire control meetings for participating herders are held in Grazing Blocks I and II.

On November 14, 1982, the Mindif Center operating funds authorized for May 1982 are received.

On November 15, 1982, Miss Linda Cleboski, project range management specialist, arrives in Mindif. At this point, the project has been without a range management specialist for sixteen months.

December 1982

Harvesting of one ton of *Andropogon gayanus* seed for use in pasture reseeding is completed.

Firebreaks are cleared on Grazing Blocks I and II by controlled burning.

On December 12, 1982, the project starts the redesign of Grazing Block II.

January 1983

Mr. Philip Childs, project water and soil conservation specialist, arrives in Cameroon to start his assignment.

Mr. E. Ekoa departs for the United States to start his studies in agricultural extension at Utah State

University. These studies are expected to lead to a Master's degree.

Project personnel participate in preparation of the GURC budget submission for FY 1983/1984.

On January 16, 1983, drilling tests begin to locate appropriate sites of project water points. Inappropriate equipment and breakdowns delay the process.

February 1983

A series of meetings to organize participants for the grazing management of Grazing Block III are started.

Dr. D. Dairou is appointed as the first Cameroonian Project Director for the project on February 17, 1983. On the same date, the project is officially transferred from CPLS to MINEPIA administration.

On February 21, 1983, the first Agropastoral Seminar is held at the Mindif Center to promote cooperation among agencies working in the area.

Miss Cleboski continues the dry season feeding trials begun by Mr. Gipe.

March 1983

Mr. Ralph Bagrowski, project heavy equipment specialist, arrives in Mindif to start his assignment on March 11, 1983.

On March 22, 1983, the GURC authorizes a special appropriation to the project for FY 1982/1983 of 300,000 FCFA. This appropriation includes funds for transport of the heavy equipment from Douala to the project in Mindif.

April 1983

The project budget outline for the remainder of FY 1982/1983 projects expenditures of 60,000,000 FCFA.

On April 24, 1983, the project heavy equipment arrives at the Mindif Center.

May 1983

Mr. T. S. Nuza departs for the United States to pursue his Master's level graduate studies in animal nutrition at New Mexico State University.

Recruitment and training of heavy equipment operators is begun.

Twenty-four hour per day use of the heavy equipment on construction of the first water point is initiated on May 9, 1983.

The IRZ Director from Ngaoundere visits the Mindif Center to coordinate trials on forage production with project personnel.

A tree nursery for 10,000 seedling trees is established at Mindif Center. The trees are to be used for erosion control efforts.

Meetings on cattle feeding are held for livestock producers at the Mindif Center to emphasize trial results and the possibilities for dry season feeding.

June 1983

Dr. D. Dairou, the Project Director, supervises an endo-parasite and rinderpest vaccination campaign.

A meeting is held to clarify the responsibilities of all participants in the management of Grazing Block III.

A total of thirty farmers participate in the crop rotation trials at the three project intervention sites.

The remaining pieces of heavy equipment for the project - i.e. a Rome plow and a scaper arrive at Mindif on June 4, 1983. Additional agricultural equipment arrives on June 7, 1983, ending the need for the project to borrow equipment.

The joint GURC/USAID project budget is submitted to MINEPIA for FY 1983/1984.

Amendment VI to the Project Grant Agreement is assigned and allocates an additional \$900,000 for project activities. The total funding allocation for the project is now \$5,439,000. The amount of the original grant as yet unallocated is \$761,000.

July 1983

Clearing of the perimeters and fire-breaks using the heavy equipment is initiated and completion of the layout of Grazing Blocks II and III is accomplished. The first water point is completed.

Deferred grazing is continued in Grazing Block I and II and begun in Grazing Block III. Planting of twenty hectares of Andropogon gayanus is done in Grazing Block I.

August 1983

Heavy equipment operations are halted in the first week of August by the rains. Range inventory and production sampling is begun on all three Grazing Blocks.

Planting of trees for erosion control purposes is started in Grazing Block I.

On August 7, 1983, 250,000,000 FCFA in provisional funds are appropriated by MINEPIA for project operations.

September 1983

MINEPIA fly control team arrives to survey the fly situation in Grazing Block II.

Initiated contacts are made by project personnel for the planned training trip to Kenya.

Miss Linda Cleboski, project range management specialist, and her counterpart visit the National Herbarium in Yaounde for one week to study forage species identification. A series of aerial photos of the project zone is ordered.

Construction on water point 2 is started on September 25, 1983. Clearing of firebreaks and perimeter trials is continued and access roads to Grazing Block II are cleared.

October 1983

The project heavy equipment team establishes a temporary base camp in Grazing Block II and operates from there.

Dr. Dairou negotiates a compromise on the GURC FY 1983/1984 budget which has not yet been approved.

November 1983

Bulk fuel storage facilities have still not been installed at the project center.

Remaining construction at the Mindif Center not completed as of the end of this chronology:

- A. Heavy equipment maintenance garage;
- B. Four additional counterpart houses;
- C. Project warehouse;
- D. Planned annex to the office; and
- E. Visitors and trainees quarters.

Project Assistant Director and bilingual secretarial positions for the project remain unfilled.

Joint GURC/USAID project budget for FY 1983/1984 has not been approved.

Project evaluation team arrives in Yaounde on November 13, 1983 and, after four days of consultations at USAID/Yaounde, travels to Maroua on November 17, 1983. Evaluation starts at the Mindif Center on November 18, 1983.

15. EVALUATION METHODOLOGY

1. Evaluation Team Composition

This Project Evaluation Report was prepared by an evaluation team composed of three consultants from Ithaca International Limited, one representative of USAID/Yaounde, one representative of the Ministry of Livestock, Fisheries, and Animal Industries (MINEPIA), and one representative of the Ministry of Planning and Industry (MINPI) of the Government of the United Republic of Cameroon (GURC). These persons were:

Mr. John H. Eriksen	Agricultural Economist and Team Leader, Ithaca International Limited
Mr. Vincent Barrett	Range Management/Animal Science Specialist, Ithaca International Limited
Mr. Angelo Bonfiglioli	Social Anthropologist, Ithaca International Limited
Mr. Christopher Phelps	Project Officer/North Cameroon Livestock and Agriculture Development Project, USAID/Yaounde
Mr. Ayong Engille	Ingenieur Agronome, Chef de la Division d'Amenagement des Paturages et de l'Hydraulique Pastorale du Diamare, MINEPIA
Mr. Wakam Jean	Economiste, Direction de Plannification, MINPI.

2. Timing of the Evaluation

This evaluation was conducted in the period from 11 November to 21 December 1983, with an additional period for final report writing, translation and reproduction in Ithaca, New York from 2 January to 20 January 1984. During the period of the evaluation team's work in Cameroon, the following schedule was followed:

- A. Two members of the team from Ithaca International Limited (i.e. Eriksen and Barrett) had initial briefings with USAID/Yaounde and MINEPIA personnel in Yaounde during the period from 14 November to 17 November 1983.

- B. Three members of the team (i.e. Eriksen, Barrett and Phelps) flew from Yaounde to Maroua, Cameroon on 17 November 1983 to begin field work and Mr. Bonfiglioli joined these team members on 21 November 1983 after flying directly from Paris to Maroua via Douala, Cameroon. Mr. Ayong joined the team at Mindif, Cameroon on 22 November 1983 and Mr. Wakam arrived at Mindif on 24 November 1983.
- C. The evaluation team conducted its field work in and around Mindif, Cameroon until 12 December 1983 when part of the team left Maroua for Yaounde. Prior to this departure, a full briefing was held for the staff of the North Cameroon Livestock and Agriculture Development Project to share with them the evaluation findings and recommendations as drafted.
- D. Work continued on the draft evaluation report in Yaounde, Cameroon until 15 December 1983 when the draft was given to USAID/Yaounde and officials of the Government of the United Republic of Cameroon for review and comment.
- E. A final briefing and discussion session on the evaluation's findings and recommendations was held on 19 December 1983 in Yaounde. At that time, the consultants from Ithaca International Limited recorded all comments and suggested revisions from USAID/Yaounde and GURC briefing participants for incorporation, as appropriate, into the final evaluation report.
- F. The final evaluation report was produced in Ithaca, New York, by the three consultants (i.e. Eriksen, Barrett, and Bonfiglioli) with the assistance of Dr. Dan Aronson, anthropologist and Ithaca International Limited vice-president, and submitted to USAID/Yaounde on 10 February 1984.

3. Evaluation Objectives

The USAID/Yaounde objectives for this evaluation were submitted to Ithaca International Limited as a Scope of Work for the Evaluation of the North Cameroon Livestock and Agriculture Development Project (631-0004). This Scope of Work is appended to this report as Annex I and, therefore, is available to the reader in its entirety.

4. Evaluation Methodology

The evaluation proceeded through the customary review of existing project documents, files, minutes of meeting, field trip and quarterly reports to augmentation of these materials with outside academic materials on the area and its people to field interviews with project staff, government officials, other subject matter specialists, local herders and farmers. Interviews were conducted in English, French and Fulfulde as appropriate. While in the project area, the evaluation team worked a seven-day week and divided each working day approximately as follows: 0730 to 1400 hours in field tours, briefings, interviews and site visits; 1630 to 2000 hours in document review and report writing. The preliminary draft evaluation report was written during the period of field work in Maroua and Mindif, Cameroon.

5. Persons Contracted and Documents Consulted

A maximum effort was made by the evaluation team to consult and digest all available written materials on the project and the factors affecting it. In addition, much of the available time was spent interviewing project staff, beneficiaries, and other concerned individuals. A record of the persons contacted in the course of the evaluation is appended to this report as Annex II. Similarly, a report bibliography of documents consulted is appended as Annex III.

ANNEX I
SCOPE OF WORK
FOR PROJECT EVALUATION

ANNEX I

Scope of Work for the Evaluation of the North Cameroon Livestock and Agriculture Development Project (631-004).

I. Background

The purpose of the North Cameroon Livestock and Agriculture Development Project is to demonstrate in a pilot zone the feasibility of implementing through local organizations a series of technical practices for integrating and intensifying livestock and agriculture production while reversing the natural resources degradation process and improving the resource base. The various project activities include: grazing land management and conservation, animal health, increased association of agriculture and livestock production, training, and extension. The project is administered by the Ministry of Livestock, Fisheries and Animal Industries and implemented under a contract with Experience, Inc., 1725 K Street N.W., Washington, D.C. 20006. The project employs five technical assistance contractors at the project site in Mindif in the Extreme North Province of Cameroon. Their fields of expertise are: Agriculture Extension Specialist (who is also the Chief of Party), Agronomist, Range Management Specialist, Agriculture Engineer, Soil and Water Conservationist, and Heavy Equipment Specialist.

II. Objective

To conduct a formative evaluation of the project.

III. Statement of Work

The evaluation requires an Agricultural Economist, a Social Anthropologist and a Range Management/Livestock Specialist. (Specifications for these positions follow in Section IV.) These specialists will work as a team with designated USAID/Yaounde staff members and official Cameroonian government representatives.

- A. The three consultants will carry out the following tasks in the course of the evaluation, with particular attention to their specialty areas:
 1. Review all relevant project documents. This should include but not be limited to the following: the Project Paper, the Project Reorganization Document, the Project Grant Agreement with Amendment No. 5, the Experience, Inc. contract and amendments, and project administrative and technical reports.

2. Based on the review of these documents as well as initial interviews in Yaounde and at the project site during the first week of the evaluation, prepare an itinerary and a list of potential issues which should be examined during the evaluation.
3. Assess progress to date in the delivery of project inputs both by USAID and the GURC, evaluation of outputs and accomplishments towards the project purpose.
4. Determine whether assumptions of the project and its design logic are still valid and whether project activities, as currently undertaken, will lead to project objectives or whether those objectives should be changed.
5. Determine whether the objectively verifiable indicators and/or the project objectives are still valid and can be utilized to measure project progress. If not, new indicators should be developed to enable USAID/Yaounde to measure the project's progress.
6. Provide guidance to the Government of Cameroon and USAID/Yaounde in making decisions regarding the future of the project and assessment of feasibility for a Phase II or a follow-on project.
7. Assess adequacy of training component.
8. Assess adequacy of extension component.
9. Assess adequacy of project infrastructure for sustained project operation.
10. Assess the technical assistance component in past and present performance.
11. Assess GURC inputs for administrative financial and personnel support as well as project interfacing with other organizations and agencies.
12. Assess the commodity procurement system.
13. Assess GURC's interest and support for the project and its projected ability to sustain the level of project activities once USAID's support ends, with a goal towards replication of project activities in other parts of the extreme North Province.
14. Assess adequacy and quality of project studies and reports.

- B. The Agricultural Economist, in addition to the assignments outlined in Section A, will evaluate the following project activities related to his area of expertise.
1. The feasibility of the project establishing a marketing purchasing association in conjunction with the grazing blocks.
 2. The impact of government pricing policy and other constraints to livestock off-take and sales.
 3. Costs versus benefits of livestock producers purchasing vaccines for their animals.
 4. Whether the grazing block activities and the deferred grazing system are adapted to the economic realities of livestock production in the project area and if these are replicable in other areas of the extreme North Province.
 5. The desirability and feasibility of operating local pharmaceutical outlets at which livestock medicines and vaccines can be properly stored and be readily accessible to livestock herders on a cost reimbursable basis.
 6. The integrated agriculture/livestock rotation cropping system comparing crop production, costs and labor from traditional systems to the rotation cropping system, and the benefits of crop residues for livestock feeding.
 7. The economic costs versus benefits of the leguminous forage fallow program and farmers receptiveness to it.
 8. Whether the demonstration trials of the rotation cropping system are producing results which can be extended on a broad scale.
 9. The cattle feeding trial studies and whether the number of animals involved in the trials are too limited to apply any statistical significance to the results.
 10. Local livestock and agriculture marketing systems and their impact on project interventions and objectives.
 11. Assessment of whether the marketing systems and the lack of farming inputs and extension services

present insurmountable constraints to the expansion of this project for a Phase II effort or another follow-on project.

C. The Social Anthropologist, in addition to the assignments outlined in Section A, will evaluate the following project activities related to this area of expertise.

1. The social soundness of the assumptions behind self-disciplined management by the existing traditional leadership with the deferred grazing system.
2. Whether the grazing block activities and the deferred grazing system is adapted to the socio-cultural environment of the project area and whether it is replicable in other areas of the extreme North Province.
3. The design of the grazing blocks and whether pasture divisions accommodate traditional village animal distribution patterns. Also evaluate the impact of the project's forcing the cooperating livestock producers to reduce their livestock numbers utilizing the grazing blocks.
4. The impact and perceptions of livestock producers to the animal health interventions.
5. The receptiveness of the small farmers in the project area to the rotation cropping system, the effects of the efforts by the project to integrate agriculture and livestock production, and any inhibitions or reservations that producers have in adopting the system.
6. Local livestock and agriculture marketing systems and their impact on project interventions and objectives.
7. Assessment of whether we have a sufficient degree of understanding of market structures and the motivations of local producers to intervene in these areas with a Phase II to this project or a follow-on project.

D. The Range Management/Livestock Specialist, in addition to the assignments outlined in Section A, will evaluate the following project activities related to his area of expertise.

1. Whether the deferred grazing system and other project range management interventions are technically the best suited for reversing the degradation of the range resources in the project area. Assess whether the technology is appropriate.
2. The environmental implications of the development of stock water reservoirs in the project area and a technical evaluation of water point capacity versus carrying capacity of the range. Placement and access, and other livestock management considerations. Also, what are the environmental, social and economic implications of broad scale development of stock water reservoirs in the North Province?
3. The range condition analysis and vegetation inventory sampling methodology being used for quantitative data collection in the grazing blocks and its statistical validity. Recommend changes, additions and improvements in the sampling system.
4. The design of the grazing blocks: the animal numbers using them versus their carrying capacity, animal distribution in the blocks, pasture divisions, placement of stock water reservoirs, fire breaks and access trails and roads.
5. The range reseeding program.
6. The soil and water conservation techniques being demonstrated.
7. The integrated agriculture and livestock production system in terms of whether crop residues are providing balanced nutritional intake for cattle during the dry season and whether there are sufficient concentrates and supplements available and if they are cost effective to feed.
8. The leguminous forage fallow system and its possible impact for herd improvement for livestock producers.
9. The cattle feeding trial studies.
10. The livestock marketing system in the project area and whether it presents a constraint to attaining project objectives.

E. In the writing of the evaluation the consultant team will coordinate and cooperate closely so as to ensure comprehensiveness and coherence in the final evaluation report.

- F. The team will undertake such other tasks relevant to the evaluation and/or to amend or modify the above scope of work as may be deemed necessary by the USAID/Yaounde Project Officer.

IV. Selection Criteria for Technical Specialists

A. Agriculture Economist:

1. Extensive experience in designing, implementing and evaluating integrated agriculture and livestock development projects.
2. Technically qualified to evaluate the economic aspects of project activities.
3. Experienced in the coordination and production of reports, studies and evaluations.
4. Extensive work experience in the Sahel region of West Africa.
5. Working knowledge of French: S-3 minimum.

B. Social Anthropologist:

1. Extensive experience in designing, implementing and evaluating integrated agriculture and livestock development projects.
2. Technically qualified to evaluate the various project activities for their social soundness and cultural appropriateness.
3. Experience in the coordination and production of reports, studies and evaluations.
4. Extension work experience in the Sahel region of West Africa.
5. Working knowledge of French: S-3 minimum. Knowledge of Fulfulde desirable.

C. Range Management/Livestock Specialist:

1. Extension experience in designing, implementing and evaluating livestock development projects.
2. Technically qualified to evaluate range and livestock management activities in the arid tropics.

3. Experienced in production of reports, studies and evaluations.
4. Extensive work experience in semi-arid and arid regions of Africa, preferable the Sahel.
5. Working knowledge of French: S-2 minimum.

V. Reports

An extensive evaluation report following AID evaluation guidelines by the three member consulting team is required. The report will include evaluation findings assessed from following the outlines described in the Statement of Work presented in Section II, and other additions as may be deemed necessary by the USAID/Yaounde Project Officer.

The consulting team is to submit 3 copies of their draft report to the USAID/Yaounde Project Officer prior to departure from Cameroon. There will also be two evaluation review sessions. The first will take place at the Mindif Center to inform project personnel and interested provincial government personnel of the evaluation's findings. The second review will take place in Yaounde with GURC and USAID personnel. Both of these reviews will take place prior to any member of the evaluation team departing Cameroon.

Within one month following the consulting team's departure from Cameroon the contractor must submit to USAID/Yaounde six copies of the final evaluation report for distribution to the project, the GURC, and within USAID/Yaounde.

VI. Relationships and Responsibilities

This is a joint government of Cameroon - USAID evaluation. The evaluation team will work under the joint direction of the Ministry of Livestock representative and the USAID/Yaounde Project Officer, who will be their primary contacts. Cooperating country liaison officials will be determined by the Ministry of Livestock as appropriate. The three member consulting team will cooperate with each other and with other evaluation team members from the Mission and the GURC in the professional work, including data collection, analysis, discussions and report writing.

VII. Terms of Performance

Six day work week authorized. No premium pay authorized.

VIII. Level of Effort

The Agriculture Economist, the Social Anthropologist, and the Range Management/Livestock consultants will be required for 31 work days with 4 days budgeted for travel. The daily maximum fixed rate for each consultant is \$242.75 per day. The authorized contract dates should be from November 11 through January 20.

ANNEX II

LIST OF PERSONS CONTACTED

ANNEX IILIST OF PERSONS CONTACTEDGovernment of the United Republic of Cameroon Personnel

Mr. Pierre Hodje	Secretary-General of MINEPIA
Mr. Koumpa Issa	Premier Adjoint au Prefect, Kaele
Mr. Bakari Yacouba	Sous-Prefect, Mindif
Dr. Tobit Francois	Chef de Secteur de l'Elevage, des Peches et des Industries Animales du Diamare
Mr. Amadou Bouhari	Lamido, Mindif
Mr. Abdoul Kaoiri	Chef de Poste Veterinaire a Moulvoudaye
Mr. Boli Zachee	Chef de Centre IRA de Maroua
Mr. Baba Abatcha	Chef, Sous-section, UNC
Mr. Jules Mandessi	Chief of Studies and Projects Section, MINEPIA
Mrs. Fotso Francoise	Ingenieur des Travaux, MINEPIA/DEP
Mr. Meng Liltmag Jean-Marie	Ingenieur Agronome, MINAGRI/DEP/DE
Mr. R. Diandumbe	Head of Research Service, IRZ
Mr. Fogang	Representative of IRA

USAID Mission Personnel

Mr. R. Levin	Director
Mr. B. Wilder	Deputy Director
Mr. R. Garner	Controller
Mr. H. Miller	Chief Program Officer
Mr. W. Litwiller	Chief of Agriculture and Rural Development
Mr. L. Dominessy	Deputy Chief of Agriculture and Rural Development
Dr. Abdel Moustafa	Project Officer/Agronomist
Mr. R. Ruybal	Project Officer
Mr. S. Scott	Chief of Project Evaluation
Ms. R. Thomas	Deputy Chief of Project Evaluation
Mr. T. Baranyi	Contracting Officer

Project Personnel

Dr. Diarou Djalla	Project Director/Veterinarian
Mr. C. Burgett	Contractor Chief of Party/Extension Specialist
Mr. Tchoukdira Hercule	Ingenieur Agronome/Extension Specialist

Mr. P. Childs	Agricultural Engineer/Soil and Water Conservation
Mr. Bouba	Ingenieur Agronome/Rural Engineering Specialist
Ms. L. Cleboski	Range Management Specialist
Mr. Beka Servici	Ingenieur Agronome/Livestock Specialist
Mr. T. Cahalan	Agronomist
Mr. Tsamo Joseph	Ingenieur Agronome/Agricultural Specialist
Mr. R. Bagrowski	Heavy Equipment Specialist
Mr. Kaina Hamdandi	Moniteur d'Essais Agricole a Bakna. (Block II)
Mr. Djonga Alexis	Moniteur d'Essais Agricole a Horlong(Block III)

Other Specialists

Mr. O. Gwathmey	Agronomist, IRA/SAFGRAD Program
Mr. W. Slocum	Office Manager, USAID
Mr. J. R. Leblay	Administrative Office, Maroua
Mr. Robert	FAO Expert in charge of the LCBC Pastoral Project in the Yaeres.
Mr. Ernst Buchmann	Chef de Region, SODECOTON a Maroua
Dr. Jean-Jacques Delattre	Director-General, SEMRY Rice Projects, Yagoua
	Livestock Specialist, SEMRY II Project, Maga

Farmers and Herders

Mr. Adji Wataka	Kessouo
Mr. Njidda Jodaade	Kessouo
Mr. Aji Juggal	Kessouo
Mr. Kamay Bayzumi	Kessouo
Mr. Bello Laido	FulBe Baguirmi
Mr. Bulama Mammadi	FulBe Baguirmi
Mr. Usuman Bukar	FulBe Baguirmi
Mr. Abdu Rahman Buuba	FulBe Baguirmi
Mr. Abdu Bidauci	FulBe Baguirmi
Mr. Hama Jam (Jowro)	FulBe Illaga
Mr. Nasaru Faariku	FulBe Illaga
Mr. Mallam Saydu	FulBe Illaga
Mr. Sufiyaanu Sannda	FulBe Illaga
Mr. Buuba Suudi	FulBe Illaga
Mr. Sali Umaru (Jowro)	Baknay
Mr. Yisa Umaru	Baknay
Mr. Mallum Umaru	Baknay
Mr. Buhari Siddiki	Baknay

Mr. Nuar Hammajam (Jowro)	Gagadji
Mr. Maamadu Seyn	Gagadji
Mr. Amini Hammajam	Gagadji
Mr. Hammau Madi (Jowro)	Mawdin
Mr. Madi Hamman	Mawdin
Mr. Abbali Madi	Mawdin
Mr. Lesmi Sinata	Mawdin
Mr. Usmaan Bukar	Mawdin
Mr. Yuguda Bakari	Mawdin
Mr. Umaru Lahana	Mawdin

Nomadic Herders

Mr. Abuna Kadiri	Shuwa Arab
Mr. Kadiri Bachir	Shuwa Arab
Mr. Jibril Gorgel	Shuwa Arab
Mr. Hassan Hussein	Shuwa Arab
Mr. Hassan Kadiri	Shuwa Arab
Mr. Mahaman Yissuf	Shuwa Arab
Mr. Abubakar Hami	Shuwa Arab
Mr. Alhaji Musa	Shuwa Arab

ANNEX III
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