



July 29, 1983

NOTICE OF MEETING

TO: See Distribution

FROM: AFR/PD, Norman Cohen

SUBJECT: Chad Refugee Rehabilitation (698-0502.4)
ECPR

AUGUST 5, 1983
2:00
Room 6941 NS

Chad- Refugee Rehabilitation
PID/PP To Be Reviewed

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ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR

FROM: Norm Cohen, AFR/PD

I. Subject: Approval for Chad Refugee Rehabilitation Project (698-0502.4) Funding.

II. Problem: Your approval is requested for a grant of \$ 4.0 Million from the (FAA section number and name) appropriation to Chad for The Chad Refugee Rehabilitation Project (698-0502.4). It is planned that \$ 1,381,000 will be obligated in FY 1983.

III. Discussion:

A. Project Description:

1. Project Purpose; The Chad Refugee Rehabilitation Project (the "Project") will provide funding to facilitate the participation of PVO's in the rehabilitation of two areas of Chad heavily damaged by drought and civil war. In the three years between FY 1983 and FY 1987, activities will be designed and implemented in N'Djamena, the Capital and western terminal of Chad's north-central commercial axis, and in Abeche, the eastern terminal of the same axis near the border of Sudan.

The goal of the project is to assist returning Refugees to re-establish themselves in Chad by restoring their agricultural and commercial productivity.

The purpose of the project is to meet the returnees immediate needs. Food for Work, technical assistance and material inputs will be used to help restore agricultural productivity in Abeche and the surrounding rural area. In N'Djamena, inputs will be used to assist in the re-establishment of small business enterprises and to create employment.

2. Conformance to AID country strategy: The project complies with the short term objectives of the AID/Chad Mission strategy as stated in the FY 1985 ABS. The project begins the restoration of the GOC's capacity to provide key inputs for increasing small-farmer productivity and to restore the traditional north-south flow of Chadian commerce. Project activities will emphasize water conservation, tree planting, food production and other agricultural activities in the Abeche area. In N'Djamena emphasis will be to restore and expand private sector enterprise that will generate employment, expand commercial potential and meet consumer needs.

3. Beneficiaries of the project: Twenty thousand Refugees will be the direct beneficiaries of the project activities. The Chadian economy will benefit from the project indirectly through increased agricultural production, improved north-south commerce and an improved environment.

B. Financial Summary:

1. First Year Funding and Life of Project:

<u>Category</u>	<u>(000)</u>	<u>First Year and</u>	<u>LOP</u>
Technical Assistance	454		1,356
Commodities	492		800
Other Costs	255		1,500
Contingency/Inflation	180		344
<u>TOTALS</u>		<u>1,381</u>	<u>4,000</u>

2. Summary Cost Estimate Breakdown:

<u>Category</u>	<u>FX\$-AID-L/C</u>	<u>GOC</u>	<u>PVO</u>	<u>Total</u>
TA	520	836	0	1,356
C/E	700	100	0	800
Other Costs	1,290	210	382	1,882
Contract O'hd	0	0	0	618
C + I	300	44	0	344
<u>TOTALS</u>	<u>2,810</u>	<u>1190</u>	<u>382</u>	<u>618 5,000</u>

C. Socio-economic, Technical and Environmental Description

The project's social soundness and economic analyses indicate the beneficiaries of the project will be refugees returning to Chad who are either small farmers or small entrepreneurs and ultimately the general population of Chad, who are among the poorest in the world.

The project has been determined to be economically, financially and technically feasible.

Food-for-work activities will be used to provide both humanitarian relief to refugees recovering from the effects of prolonged civil war and drought and to encourage self-help measures to increase agricultural production and commerce. The project will further provide a model for increased small farm productivity as a demonstration shift away from inefficient parastatal domination of the Chadian economic sector by enlarging private sector participation in the form of small independent businesses.

Through the support of project financed PVO Technical Assistance, GOC agencies responsible for project execution, which have been found to have adequate administrative capacity, will handle project activity administration.

The project complements AID mission objectives by helping to re-establish displaced persons and former refugees as productive contributors to Chadian development. The project further follows AID Mission Implementation strategy as it will serve as a basis for future development projects; will not strain the frail GOC fiscal, administrative and managerial resources; has a relative ease of start-up. The project will provide complementarity with current International Organization programming, while attacking chronic Chadian problems of employment and structural food deficits.

Cost estimates have been determined to be reasonably firm and a determination can be made that requirements of Section 611 (e) of the Foreign Assistance Act, as amended, have been met.

The environmental impact statement has been deferred. Individual activities will be analysed and approved in accordance with criteria approved by the Environmental Officer of The Africa Bureau.

D. Implementation Plan:

The Implementation Plan for the project is to be developed through OPG's to two different PVO's. The PVO's responsible for the individual activities will be responsible for site selection and presentation of an Activity Justification Paper and Implementation Plan for approval to REDSO/WA and the AID Mission in N'Djamena.

E. Responsible Officers:

AFR/PD/SWAP	Wayne King
REDSO/WA.....	
USAID/NDJ	John Woods
PVOS	

IV. Waivers:

The funds for the project are funds authorized pursuant to the Migration and Refugee Assistance Act of 1962 (MRA Act) and appropriated to the Secretary of State for migration and refugee assistance by the Foreign Assistance and Related Programs Appropriation Act, 1982 (Pub. L. 97-121). These funds have been transferred to AID for use in resettlement services and facilities for refugees and displaced persons in Africa.

Section 4(b) of the MRA Act authorized the allocation or transfer of funds available under that Act to any other Federal agency to carry out the purpose of the Act. The MRA Act does not contain any of the special requirements found in the Foreign Assistance Act, such as source and origin requirements

Therefore, Waivers for the Chad Refugee Rehabilitation Project are not required. However, as required by prudent management, the basic principles which govern the design and implementation of traditional AID assistance projects will provide guidelines for the design and implementation of activities which are to be financed with the transferred funds. General guidelines related to procurement source/origin, nationality, ocean shipping, project design procedures, procurement procedures and agreements will be followed.

V. Justification to Congress:

Use of funds under the MRA Act authorized allocations or transfers do not require Justification to Congress.

VI. 121 (d) Certification:

121 (d) Certification is not required.

The transferred funds will be used by recognized American PVO's, monitored by the AID/Chad Mission in projects approved by

REDSO/CWA.

VII. Recommendation:

Recommend that you approve the request for a Grant of \$ 4.0 Million for The Chad Refugee Rehabilitation Project (698-0502.4).

Clearances:

AFR/SWA:FEgi (Draft)
AFR/SWA:FEGilbert (Draft)
Acting DAA/AFR:JPJohnson (Draft)
AFR/DP/PPEA:JElliott (Draft)
AFR/DP/PAB:SSharp (Draft)
AFR/DP:HJohnson (Draft)
PPC/PB/C:RKramer (Draft)
AFR/TR/ARD:DShear (Draft)
AFR/TR/ARD:JHartman (Draft)
GC/AFR:LDesoto (Draft)

CHAD REFUGEE RESETTLEMENT PROJECT

May 1983

Submitted to

Mr. Wayne King
Project Officer
U.S. Agency for International Development
Sahel West Africa Project Division
Washington, D.C.

Prepared by

A. L. NELLUM AND ASSOCIATES, INC. PROJECT DESIGN TEAM

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TABLE OF CONTENTS

PROJECT PAPER FACESHEET

	<u>Page</u>
A. <u>SUMMARY AND RECOMMENDATIONS</u>	1
1. Grantee	1
2. Amount	1
3. Terms	1
4. Waivers	1
5. Description of Project	1
6. Purpose of the Project	2
7. Background	3
8. Recommendation	3
B. <u>THE PROJECT</u>	4
1. Background and Relevance.....	4
2. Description and Analyses.....	6
a. Project Goal.....	6
b. Project Purpose.....	6
c. Possible Outputs	6
d. Possible Inputs	7
3. Project Implementation and Financial Plan.....	8
a. Implementation Plan	8
b. Monitoring Plan	12
c. Cost Estimate and Financial Plan.....	12
4. Project Evaluation.....	19
5. Summary Analyses.....	20
6. Covenants and Conditions Precedent.....	25
C. <u>ANNEXES</u>	
Annex A. PID Approval Message	
Annex B. Logical Framework	
Annex C. Statutory Checklist	
Annex D. B/G Request for Assistance	
Annex E. FAA, Section 611 (e) certifications	
Annex F. Project Analyses	
(1) Technical	
(2) Economic and Financial	
(3) Social Soundness	
(4) Administrative	
(5) Environmental	
Annex G. Waivers	
Annex H. Detailed Project Budget Est.....	

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE

A = Add
 C = Change
 D = Delete

Amendment Number

DOCUMENT CODE

3

2. COUNTRY/ENTITY

Chad

3. BUREAU/OFFICE

AFR/SWA

06

4. PROJECT NUMBER

698-0502.4

5. PROJECT TITLE (maximum 40 characters)

Refugee Rehabilitation

6. PROJECT ASSISTANCE COMPLETION DATE (PACD)

MM DD YY
06 30 87

7. ESTIMATED DATE OF OBLIGATION
(Under 'B' below, enter 1, 2, 3, or 4)

A. Initial FY 83

B. Quarter

C. Final FY 87

8. COSTS (\$000 OR EQUIVALENT \$1 = 350 CFA)

A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(1,292)	(335)	(1,627)	(2,810)	(898)	(3,709)
(Loan)	()	()	()	()	()	()
Other						
U.S.	1. PVO	323	84	407	703	224
	2.					927
Host Country	-	123	123	-	425	425
Other Donor(s)						
TOTALS	1,615	542	2,157	3,513	1,547	5,061

9. SCHEDULE OF AID FUNDING (\$000)

APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
						4,000		4,000	
						4,000		4,000	
TOTALS									

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each)

11. SECONDARY PURPOSE CODES

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code

B. Amount

13. PROJECT PURPOSE (maximum 480 characters)

To provide technical, material and human resources for increasing productivity, income and well-being of Chadian returnees and their neighbors.

14. SCHEDULED EVALUATIONS

Interim MM YY MM YY Final MM YY
06 84 06 85 06 85

15. SOURCE/ORIGIN OF GOODS AND SERVICES

000 941 Local Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment.)

17. APPROVED BY

Signature

Title

Date Signed

18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/AMENDMENTS, DATE OF DISTRIBUTION

A. SUMMARY AND RECOMMENDATIONS

1. Grantee: Government of Chad
2. Amount: \$3,709,000
3. Terms: Grant funding
4. Waivers:

(a) Special circumstances are deemed to exist under Handbook 1B, Section 4C2d(1)(b) when there is present or projected lack of adequate service facilities and supply of spare parts for U.S. manufactured vehicles. In order to procure vehicles for activities approved under the project (the "Project") from Code 935 countries, a source/origin waiver is required. Under Handbook 1B, Section 5B4a(2), a waiver may be granted if "the commodity is not available from countries or areas included in the authorized geographic code".

(b) In order to procure services from suppliers whose origin is other than the authorized geographic code, a nationality waiver is required pursuant to A.I.D. Handbook 1B, Section 5D10a. The authorized geographic code for this Project is 941. However, it will be necessary to procure services from suppliers of Code 899 origin (nationality) to provide technical assistance outside Chad or other Code 941 countries.

5. Description of Project.

This is an "umbrella" project which provides financing for activities that will be implemented over a three year period -- FY 1983-87. Substantive and procedural guidelines are provided herein rather than full detail on the specific activities to be conducted. This approach was taken so as to expedite response to the urgent needs of the returnees and to facilitate involvement of PVOs which will design site-specific activities. The PVOs will submit detailed work plans including final cost estimates and site-specific social, technical and environmental analyses. USAID/N'Djamena will approve the work plans subject to REDSO review and concurrence before implementation of the project.

The project will assist those who fled their homes in Chad under the impact of prolonged civil war and drought to reestablish themselves economically. Many of these people have been the beneficiaries of relief assistance but they have now largely returned to their homes and, with their neighbors, are in need of help to reestablish grain reserves and production systems which were lost and disrupted during the war and drought years.

The project will operate in the two regions most heavily impacted by the disruptions: in the capital, N'Djamena, in the west of the country; and in the area around Abeche, near the Sudanese border in the east. The Abeche area will benefit from a rural development subproject and N'Djamena from a private enterprise development subproject.

The most prominent problems in the Abeche area are persistent, low rainfall over the last several years and dissipation of food stocks

resulting from drought and war. Since ground water in the area is not adequate for well irrigation, the project will concentrate first on self-help projects for the better capture and use of rain water: dams, reservoirs, underground water storage, levelling, terracing and diking to slow run-off and increase infiltration. Fast maturing crops which can produce better yields with the soil moisture resulting from the project will be introduced. The construction and topographical work required for the project will be paid for with food for work, thus simultaneously helping people in the area rebuild their food stocks.

The second major activity in the Abeche area--tree planting, also to be compensated with food for work, will reinforce the more direct water management effort by slowing run-off thus increasing infiltration of rain water and replenishing aquifers. Tree planting will have other important benefits. It will reduce the considerable and rapidly growing amount of labor currently required for gathering firewood, thus freeing time for more productive activity. It will reduce erosion, provide fodder for small ruminants, fruit, shade for animals and plants (more than just a luxury in the harsh Sahelian climate) and compost from nitrogen rich leguminous varieties.

Finally, the rural development subproject will strive to increase agricultural output in other ways, improve food storage and increase the productivity of livestock which is the main source of food in the project area.

The major input in the rural development subproject will be technical assistance. Material inputs, such as tree seedlings, will be modest as most of the needed materials for hydrological construction will be supplied locally.

The small enterprise and technology subproject will seek above all to provide jobs in the N'Djamena area and, to a lesser extent, the Abeche areas, to increase the supply of consumption and production goods disrupted by the war, and to expand the entrepreneurial base. It will do this by providing technology, assistance in production methodology and management, training, market analysis, and loan funds. In addition, the subproject will introduce resource conserving technology such as clay stoves which save firewood, construction materials not requiring firing, and alternative fuels.

6. Purpose of the Project

The objective of the project is to help restore peace and stability to Chad while providing humanitarian assistance to Chadian returnees and their neighbors who have been adversely affected by their flight from their homes during the civil war and by the direct impact of war and drought. The project will pursue this objective by meeting immediate needs for food, through food for work, and for consumption items and the means of production, through restoration of the economy's productive capacity. Insofar as possible, it will also move beyond the objective of restoration to lay the basis for productivity increases.

7. Background

This is a follow-on to a \$2.8 million FY 1982 project for "Relief and Rehabilitation" in Chad, supporting activities in agriculture, transportation, storage, health and shelter. It goes beyond the earlier project in focusing preponderantly on the restoration of the economy in the areas to which the former refugees and displaced persons have returned. It thus moves even further from relief than the earlier project, promoting rehabilitation just short of pure economic development. This project represents a logical step in the rehabilitation process and is a possible pilot precedent for future refugee rehabilitation activities in other countries.

Funding for the project will come from the \$30 million special appropriation for African refugee resettlement.

The project was designed in two phases. The first phase was a three week visit by a private and voluntary organization (PVO) specialist to identify possible broad areas of activity in consultation with the GOC, and to identify and contact PVOs which might implement the project. This phase was followed by a cable from the Mission recommending consideration of a rural development activity in one geographical area, a reforestation activity in another and a technology activity (introducing fuel conserving, clay stoves and a method of strengthening adobe construction blocks) in all returnee areas.

The second phase of the project design was a five week visit by a design team to Chad. The team consolidated the rural development and reforestation activities and recommended one rural development project area rather than two. Factors influencing this decision were the relatively small amount of funding available, simplicity, and heavy concentration of rural returnees in one area around Abeche. The team's visit to the Abeche region further established that water was the major need for improving the food supply outlook and that better use of rain water was by far the most promising, if not the only way of meeting this need.

The technology subproject on the other hand, was broadened as a result of the teams' investigations. It was determined that the capital of Chad was the main area of returnee concentration and that the main need there was employment opportunities and restoration of the supply of consumer and production goods. A private enterprise promotion subproject was proposed with an important element of productivity increasing technological innovation, providing long term economic benefits as well as a response to immediate needs.

The GOC was contacted extensively by the design team during its stay in Chad and concurred fully in the evolving design of the project.

8. Recommendation

Authorization of the project with a grant of \$3,709,000 for the purposes stated herein.

B. THE PROJECT

1. Background and Relevance

The end of the civil war in Chad has seen the return of tens of thousands of persons. For the most part these people, and those recently expelled from Nigeria, have resettled in their places of origin with the aid of extended family members. No exact count of the number of people displaced has been made, but at least 145,000 were previously in United Nations High Commission of Refugees (UNHCR) supported camps in Cameroon and Sudan. The total refugee population has been estimated to be between 215,000 and 265,000 people. To this figure must be added 37,000 Chadian workers expelled from Nigeria in December 1982 and the uncounted displaced persons who left their homes without leaving the country. These figures mean that as much as 10 percent of Chad's total population has been displaced.

Although the returnees have been superficially reintegrated into their societies, they remain for the most part destitute. The interruption of agricultural production and the wanton destruction of grain reserves during the war have made even subsistence impossible for some returnees and their communities. Only donated food has staved off an incipient famine in parts of Chad. The failure of rain in much of the country for the 1982 growing season has made this situation worse.

Although the food crisis has not been felt as sharply in N'Djamena, the destruction of much of the city has disrupted productive activity that provides urban employment and meets consumption and production needs.

Assistance to the returnees is thus desirable for humanitarian reasons as well as to aid the return of peace and stability to Chad.

With these factors in mind the project will work in the two areas most seriously affected by displacement, N'Djamena and the eastern region of the country near the small city of Abeche. Close to four-fifths of the returnees are estimated to be concentrated in these two areas.

Project assistance will go to communities rather than individual returnees. There is no satisfactory way of distinguishing the returnees from those who never left, nor would this be desirable. The level of destitution as a result of the war is general in many areas.

Project activities will be divided between two subprojects to be carried out by two PVOs. In the Abeche area, a rural development program will be undertaken, with emphasis on food production and related environmental conservation. In N'Djamena a small enterprise project and technology project will be introduced.

The Abeche area is currently dependent on World Food Program donations of flour to avoid famine. As discussed elsewhere in this paper, food prices are still quite high, putting an adequate diet out of reach of many. One purpose of this project is to assure food availability in the Abeche area without fostering an open-ended care and maintenance situation. Food-

Food-for-Work therefore will be used to build small dams, level fields, plant trees and create other improvements in the agricultural environment.

The voluntary agency implementing the subproject must, however, take care not to provide more food than is needed to meet nutrition needs and elicit the labor required to produce the desired improvements. Particular care will also be taken to foster the beneficiaries' sense of ownership of the improvements brought about by the project, so that they will be maintained. The amount of food distributed and the way in which it is distributed may be important in this connection.

While assuring an adequate immediate food supply is a purpose of the project, its development objective (to restore and then increase productive capacity in the project areas) is even more important.

Agricultural production will be increased by taking greater advantage of rainfall, impounding water, slowing run-off and introducing more efficient recessional crops (fast maturing crops that can take advantage of a receding water table). Tree planting to protect watersheds and aid water infiltration will be part of these efforts. Fuelwood, forage and construction material will be long term benefits of this activity. An additional important benefit will be reduction of the large amount of labor devoted to gathering firewood.

Small earth dams, many of which deteriorated or were damaged during the war, will be repaired or built with Food-for-Work. Underground catchments will be built or rebuilt. Farmers will be assisted with topographical work, such as leveling, terracing and diking at the mouths of wadis, to slow run-off. They will also be assisted with improved varieties and cultural systems for fast maturing and other food crops. Water conservation measures have been selected instead of well irrigation since ground water in the area is limited and difficult and expensive to tap (there are no rivers). Dealing with the water problem is a sine qua non of creating a viable economy in the project area. Resettlement is not feasible, even if it were advisable, since there is no place else in the country for the refugees to go without creating population pressures and problems with indigenous residents.

Other activities recommended for the rural development subproject are grain storage improvements, animal health measures and possibly digging open wells. With the help of the private enterprise and technology staff, the rural development subproject will introduce resource savings and productivity increasing rural technology such as clay stoves, alternate fuels, more efficient ways of moving water, improved grain storage facilities and food processing equipment.

The subproject is intended to be flexible to permit response to local needs and opportunities in communities not yet identified. Specific site selection has been left to the implementing private and voluntary organizations. As discussed in Annex F(1), sites will be chosen on the basis of technical feasibility, need, and ethnic balance.

The principal rationale for the private enterprise and technology subproject is that stabilization of the capital is of prime importance and

that private enterprise promotion is the best way to bring it about--by providing employment, income earning opportunities and needed materials, goods and services.

This subproject will also be concerned, on a lesser scale, with enterprise development in Abeche, particularly as it relates to the surrounding rural area. Technology will be introduced which can help conserve scarce resources in both the N'Djamena and Abeche areas, particularly wood (by the introduction of more efficient stoves, alternative fuels and inexpensive substitutes for construction materials requiring firing).

In certain respects, the private enterprise and technology subproject is experimental. It assumes on the basis of somewhat preliminary evidence that there is a significant pool of actively and potentially effective entrepreneurs in the project area and that it will be possible to help a large number of them get started or expand their activities in a relatively short period of time.

2. Description and Analyses

a. Project Goal. The goal of the project is to reestablish and upgrade the standard of living of Chadian returnees and their neighbors and to lay the groundwork for their future well-being. It will reestablish that standard of living by supplying food for work and by restoring productive capacity in the project areas, through water conservation, tree planting and other agricultural and livestock activities in the rural area and through small enterprise development in the urban area.

b. Project Purpose. The purpose of the project is to meet the immediate needs of certain returnees and their neighbors in such a manner as to provide them with technical, material and human resources for increasing their productivity, income and well-being. Emphasis in the rural area will be on food production and environment. In the urban area emphasis will be on creating and expanding enterprises which will generate employment and meet consumer needs. Short term needs are to be met by the project in three ways: (1) with food to be supplied through Food-for-Work, (2) through agricultural activities, and (3) with common consumption items and production inputs to be supplied by the private enterprise development subproject. At the same time, both subprojects have important longer range development objectives: to increase the agricultural production in general, and to broaden the entrepreneurial base and increase its efficiency and effectiveness while increasing employment opportunities. An additional objective in the rural area will be to preserve the resource base through tree planting and management.

c. Possible Outputs. The possible outputs of the rural development subproject include:

Food-for-Work distribution

Tree planting

Better tree management (watering and protection of young trees, controlled harvesting and replanting)

- Increased livestock productivity
- Limitation or reduction of herds consistent with environmental carrying capacity
- Increased agricultural productivity
- Improved food storage
- Increased return on agricultural and livestock production
- Adoption of technology which will increase productivity, improve the quality of products and conserve resources

Food production is a first priority in the rural development subproject. Attention to preserving the production base, i.e., the fragile Sahelian environment, is a second. This will mean not just preventing further damage, but substantially upgrading the agricultural environment. As a result of these activities, it is hoped that farmers involved in the project will be able to generate surplus above the subsistence level, thus increasing their incomes.

Not all of the listed rural development outputs will be produced in all communities and some may not be produced anywhere. The final choice of activities as well as of crops to be worked with will be a result of private and voluntary organization selection and study of the communities in which the rural development subproject will be carried out. The choice will also depend on need, feasibility, cost/benefit (including indirect, especially environmental, costs), ease of implementation, certainty of results and risk of unpredictable consequences. The area in which the rural development project will be carried out is subject to considerable variation of rainfall, other water availability, soils, access to markets and ethnicity. Consequently, it is not possible to say much more at this stage than that the subproject will work in certain sectors such as water management, forestry, agriculture and livestock.

The outputs of the private enterprise and technology subproject will be:

- an increase in the level of small enterprise activity, productivity and income;
- an increase in the availability of and improvement in the quality of products and services; and
- increased employment and resource conservation.

d. Possible Inputs. Precise rural development inputs will similarly be determined after selection and study of individual project sites. They will include the services of PVO community organizers and specialists in agriculture livestock, hydrology and silviculture, along with the support required to maintain them. Community organization will be oriented toward specific, productive activities, not organization as an end in itself.

Other inputs include tree nurseries, seeds, livestock, and animal medicine and vaccines, tools and well casings.

Non-agricultural technological inputs to the rural development effort will come from the private enterprise and technology subproject which will require technical staff and supporting services, a loan fund (described in the Technical Analyses section, Annex F(1)) and equipment. Materials for on site testing and for demonstrating the fabrication and use of new technologies will also be needed. The technical staff will provide training and guidance to assisted enterprises in managerial as well as strictly technical matters, in addition to introducing improved technology.

3. Project Implementation and Financial Plan

a. Implementation Plan

1) Sequence of Events

This is essentially an "umbrella" project; one providing flexible terms of reference within which the PVO implementing agents will develop site specific plans (including final cost estimates and site specific social, technical and environmental analyses) delimited, however, by the guidelines set forth in the Project Paper. In preparing the project paper the design team developed as much detail as possible in five weeks about the areas to be worked in. However, it was not possible to provide full specificity, nor desirable given the need to allow PVO grantees substantial flexibility in planning their activities at the community level. An early step in the implementation process therefore must be for the PVO's to field teams to develop site specific work plans for the two subprojects. This project paper, then, seeks approval of substantive and procedural guidelines rather than fully detailed project activities.

The following general steps are envisaged:

- project authorization

selection of PVOs

PVO submission of grant (OPG) proposal, which again will be general and not site/activity specific

USAID presentation of proposed Grant or Project Agreement and request for assignment of counterparts to GOC

Grant or project agreement and OPG's executed

Arrival of first PVO staff members in Chad to begin selecting sites and activities; setting up facilities and logistic support, hiring local personnel and negotiating operating arrangements with GOC

Arrival of experts from REDSO/West and/or AID/W to offer suggestions to PVO's on such matters as forestry, hydrology, agriculture, livestock, and environmental considerations

- Review of specific work plans by USAID and forwarding to REDSO and/or AID/W for technical review
- Approval of work plans, finalization of operating arrangements with GOC
- Completion of PVO staffing and beginning of implementation

Initial work plans should be for one year. Additional work plans should be submitted before the end of the first year for the balance of the project. The second work plan should be reviewed by USAID subject to whatever consultation with REDSO or AID/W considered appropriate; however, REDSO and AID/W review would not be required.

Particular attention should be paid after the second year of the project to the gradual transfer of responsibilities for administering institutions created by the project to the GOC or counterpart private entities.

The implementing PVO's should be selected by USAID with the advice and assistance of AID/W, particularly FVA/PVC. The basis for PVO selection should be track record in carrying out activities of the type envisaged under the project. Particular attention should be paid to the rural development PVO's proven capabilities in the following areas:

- community organization, education and motivation-essential features of the water conservation and silviculture activities, if they are to be implemented by self-help means and their benefits maintained and possibly expanded;
- capacity to plan and function effectively in a complex rural development environment, requiring a broad, comprehensive view of the rural development process-treating it as a many faceted, interrelated system rather than isolated activities;
- orientation toward fostering and ability to foster increased agricultural production and productivity, which are the main emphasis of the project; and
- ability to deal with such technical areas as hydrology, silviculture and agriculture at the level of sophistication needed to accomplish the project's production objectives in an environmentally sound manner.

The private enterprise and technology (PE&T) PVO should have to have two basic capabilities: the ability to identify and introduce technological innovations leading to increased productivity and improvement in the quality of goods and services, and a general private enterprise development capability. The technological capacity is the rarer of the two and must be given substantial weight in selection of a PVO. A consortium might prove the most appropriate arrangement.

2) Relationships of the Parties

PVOs/USAID

The implementing PVOs should obtain USAID approval for all activities. An activity is defined as a specific proposed development objective or output, such as improving a particular crop variety or introducing particular cultural practices, animal husbandry measures or small enterprise/technology dissemination efforts, at specific places. The PVOs should submit work plans for USAID approval and be guided by the schedules contained therein. Changes in work plans will require prior USAID approval.

The PVOs will submit quarterly report to USAID advising of problems, steps taken to carry out approved activities, including procurement, site visits and what was done during them, activity status, significant community reaction to the project and the substance of significant contacts with Government of Chad officials. None of these items will require prior USAID approval, though USAID may suggest implementation measures. Once activities are approved, the PVO is fully responsible for their implementation, subject only to annual evaluation and USAID suggestions.

PVOs/Government of Chad

Reports

The rural development PVO will send a French translation of its quarterly reports and its work plans to the Director of Rural Development and the Director General of Plan, and, as appropriate, extracts to other directorates. Additional informal briefings will be provided to these and other offices of the GOC as may be necessary to keep the GOC satisfactorily informed.

The PE&T PVO will send a copy of its quarterly reports and its work plans to the Directors General of Economy and Commerce, Social Affairs and Plan with extracts to other directorates and informal briefings as appropriate.

The PVOs will generally keep the concerned offices of the GOC sufficiently well informed to assure that the GOC will be able to move easily into replication of the project activities in other areas or extension of activities in the project area after the project termination date.

The PVOs will meet, as they see the need with GOC officials, at the subministerial level (including prefects) on day-to-day operational matters. However, USAID will be consulted prior to contacts with ministers and contacts concerning significant program changes or other policy matters.

Staffing

The GOC will provide two or more counterparts in each of the following areas, PE&T, hydrology, silviculture, agriculture and livestock-

range management. The exact number of counterparts will be negotiated between AID and the GOC in consultation with the PVOs. Given the stringency of the GOC's financial position (80% of the budget is supported by the French government and government employees have been on half pay for many months) the cost of mobilizing and, insofar as necessary training, these counterparts will be assumed by the project. In case of extreme necessity the GOC will designate people to be hired by it and the project will hire them as local employees until such time as the GOC is able to put them on the payroll-which in no case may be later than the project termination date. The counterparts will assist actively, on a full time basis with implementation of the project and develop the capacity to continue, after completion of the project, the types of activities initiated.

Rural Development (RD)

The Direction of Rural Engineering of the Ministry of Agriculture has already expressed an interest in supplying technical personnel for the water conservation activities under the RD subproject.

Given the limited financial capability and prospects of the GOC, community representatives should be used as much as possible as channels of communication for information on developmental matters such as water conservation, agricultural varieties and practices, animal husbandry and range management, silviculture and village level technology (e.g. construction of wood conserving stoves).

Once such representatives have been selected by the implementing PVO, in consultation with the community, they will be brought together periodically at a facility to be established under the project for brief sessions of training in the application of new materials and methods and to give feedback on prior innovations. The implementing agent will work as much as possible through the community representatives rather than directly with its own personnel, so as to leave in place a dissemination system which can continue to operate after termination of the project. The PVO field representatives will work with the community representatives in their communities providing, in effect, on-the-job training.

The implementing agent will try to establish a community representative system independent of government funding by seeking to enlist volunteers (motivated by personal interest, prestige or a desire to serve the community) or to obtain community agreement to an assessment in cash and/or in-kind to compensate the representatives, particularly for time spent in training. If such a system proves unworkable, the possibility of modest GOC compensation should be explored.

Costs of training, including facilities, will be met by the project and an agreement will be negotiated between USAID and the GOC to take over the training facilities, as well as the tree nursery(ies).

PE&T. If repayment to the small enterprise credit fund are satisfactory during the first year or so of the project, its institutionalization as a private bank (with limitation on loan size and a further capitalization requirement) will be explored. The GOC will have no direct role in management of this fund. The implementing PVO will also, from the beginning

of the project, look into the possibilities for institutionalizing the technical assistance and training side of the private enterprise subproject, e.g., through the Chamber of Commerce or an association of established businessmen formed for that purpose.

Procurement

Since the amount of offshore procurement under the project will be limited, a procurement plan is not required.

b. Monitoring Plan. It would be more accurate to refer to a monitoring approach than to a monitoring plan. The project will be implemented under Operational Program Grants (OPG's) to PVOs and responsibility for its success will rest largely with the PVOs.

USAID will carefully and promptly review work plans, the PVO's quarterly reports referenced in Section 3a above (Implementation Plan), and the annual evaluation reports called for in Section 6 (Project Evaluation). On the basis of the reports, USAID will discuss any implementation problems observed or foreseen and take appropriate action to assure the successful implementation of the project.

c. Cost Estimate and Financial Plan.

1) Introduction

The cost estimate-financial plan which follows shows the project financial requirements by year, category of input, component of project, foreign currency, local cost, and grantee and non-grantee (PVO and other donors) contribution. The Food-for-Work input to the project is shown as a GOC local cost contribution to the project since the food is to be programmed by CARE or World Food Program in Chad and issued from their stocks in country. The rate of conversion for all local currency costs is CFA 350 = \$1.00. The budget for the subprojects were developed by the team from such data as were available during the design process. The costs estimates contained in these tables will be refined during the review of PVO proposals according to criteria contained in Handbook 13.

2) Basis for Cost Estimates

All project cost estimates are based upon current expatriate salary levels, local hire rates and current estimates for cost of equipment and vehicles delivered in Chad, all as developed by PVOs presently in country. A contingency and inflation factor is built-in. The cost for Food-for-Work is based upon the estimated number of "worker days" being compensated at \$2 worth of food per worker/day. Current international air fares and per diem, and in country per diems were used for cost projections with inflationary adjustments for years 2 and 3.

3) Contingency and Inflation

Allowance for inflation and contingency have been built into years 1, 2 and 3 of the subproject activities. Ten percent (10%) was established

for contingency and for inflation of the foreign exchange items and fifteen percent (15%) inflation for the local currency items. The bulk of foreign exchange used for commodity procurement will take place in year one of the project. Technical assistance, the other major user of foreign exchange, was adjusted for inflation. Local cost components for subproject activities are adjusted for contingency (10%) and, when appropriate, inflation (15%) on the three year life of the project.

4) AID Inputs

As outlined in the following tables, AID's contribution to the project shall consist of financing technical assistance, equipment (including vehicles), physical infrastructure, commodities, training, operational costs, project personnel salaries and other direct and overhead cost of such projects. The total cost to the U.S. to complete the project will be close to \$4,000,000.

5) GOC Inputs

GOC inputs include housing and office space to be provided by the prefecture in Abeche. They also include food to be drawn from stocks in country, to be used in Food-for-Work activities where appropriate. The GOC will be asked to provide counterparts to be trained in the project. However, as most GOC employees are currently not receiving full salaries, the costs of mobilizing counterparts for project purposes may have to be borne by the project. Alternatively, the GOC may nominate candidates for training who will be eventually integrated into the respective GOC service.

6) PVO and Other Donor Inputs

The subproject activities will be implemented by PVOs and, as appropriate, by Chadian private and public sector organizations. Contributions will be expected from the implementing PVOs. The contributions may vary depending upon the nature of the subproject activities and the financial capabilities of the PVO, however, a 25% combined PVO and local private contribution will be sought. The local contribution will come from local labor and materials in the RD subproject and from private investment and Chamber of Commerce participation in the PE&T subproject.

7) Firmness of Costs

The financial tables presented within this section of the project paper are illustrative only. At the time of submission of subproject proposals by the PVOs for review and approval by USAID, the proposal will be reviewed for reasonableness, firmness, adequacy and detail of the projected costs and financial planning. Approval of the activity will be dependent, among other factors, on the accuracy and adequacy of the above.

8) Periodic Examination

As a part of the formalized evaluation plan for the project, periodic reviews will be undertaken by USAID to determine the adequacy of

implementation and financial plans for the subprojects. These reviews would determine the necessity for revisions of the financial plans and cash flow arrangements for the subproject activities.

9) Disbursement Procedures

Subproject implementation by the U.S. based PVOs will be carried out under subproject agreements entered into by AID, GOC and the PVOs. Payments to the PVO may be made under a Federal Reserve Letter of Credit (FRLC).

10) Food-for-Work

Estimates of Food-for-Work needed are thought to be on the high side. This is because PVOs may require voluntary participation of direct beneficiaries of the particular subproject activity. In cases where relief food is required, however, the participants must earn their rations rather than receive them on a dole basis. Estimates for Food-for-Work are based on "Guidelines and Criteria for Establishing Seedling Supply Services and Tree Planting Programs in Somalia" James Seyler, REDSO/EA Forestry Advisor for the tree planting activities, and on data provided by CARE for the water projects.

11) Recurring Costs

Minimal recurrent costs are anticipated. The overriding objective of the project is returnee rehabilitation, with institutionalization for the most part at the community and private sector levels rather than creation of large government institutions. The RD subproject will have accomplished its basic objectives if the beneficiary communities are returned to conditions which existed before the war and have developed a capacity to maintain project assisted water management systems and tree plantations.

It is hoped that the GOC will take over the tree nursery(ies), and village representative training center, that GOC counterparts will apply what they have learned on the project elsewhere in the country and that the GOC will follow-up in the assisted communities to help them maintain and perhaps expand their gains. However, none of these measures are required for the achievement of core project objectives. They are hoped for bonuses.

The GOC will be obliged to provide continued employment for counterparts. Few people (perhaps 10 or 12) are involved, and most if not all of them are already on government roles. The costs of continuing to operate the tree nursery(ies) and training center will also be modest. These are not large or expensive operations.

The PE&T subproject will if possible be institutionalized in the private sector. If it proves impossible to do this, it would be desirable for the GOC to take it over, but, again, not essential for achievement of project objectives. This could prove more expensive than the RD institutions, especially if the GOC were to take over the technical assistance side of the operation without the money earning loan side. It might require the

GOC to hire several high salaried professionals. However, once again we are talking of a relatively modest program.

12) Procurement of Commodities or Other Services

Procurement of commodities and services for both foreign exchange and local currency payments will be implemented by the PVOs and paid through the FRLC. A portion of these services may be provided by Development Management Services now functioning as a support group of USAID.

13) Obligation Schedule

The umbrella Grant Agreement is expected to be signed in June 1983. Full funding is expected to be made available before the beginning of year 1 activities in July 1983.

SUMMARY INCOME-EXPENSE BUDGET

	<u>Income</u>	<u>Expense</u>
RURAL DEVELOPMENTS:		
1. Water-Environmen		621
2. Tree Planting		679
3. Agriculture		622
4. Gen. Administrat		505
5. PVO HQ Overhead		300
AID	2,110	
GOC (Housing)	231	
GOC (FFW)	152	
PVO	234	
	<u>2,727</u>	<u>2,727</u>
PRIVATE ENTERPRISE/TECHNOLOGY:		
1. Technical Assistance		120
2. Materials		28
3. Loan Fund		550
4. Project Administratio		703
5. Contingency		85
6. PVO HQ Overhead		300
AID	1,428	
PVO	357	
	<u>1,785</u>	<u>1,785</u>
GENERAL		
Evaluation		120
Development Management Service		150
AID	243	
PVO	27	
	<u>270</u>	<u>270</u>
PROJEC TOTALS:		
AID	4,000	
GOC	382	
PVO	400	
	<u>\$4,782</u>	<u>\$4,782</u>

SUMMARY EXPENSE BUDGET

BY PROGRAM CATEGORY / FOREIGN EXCHANGE / LOCAL CURRENCY / YEAR / (\$000)*

PROGRAM CATEGORY	FOREIGN EXCHANGE			LOCAL CURRENCY			TOTAL
	year 1	year 2	year 3	year 1	year 2	year 3	
RURAL DEVELOPMENT:							
Water and Environment	209	123	91	59	65	73	621
Tree Planting	218	49	55	60	92	105	679
Agriculture	212	103	81	85	78	63	622
General Administration	140	73	80	65	69	78	505
PVO Headquarters Overhd	100	100	100	-	-	-	300
Total Rural Development	879	448	407	369	305	319	2,727
PRIVATE ENTERPRISE/TECHNOLOGY:							
Program	279	191	197	82	88	99	936
Loan Fund	200	200	150	-	-	-	550
PVO Headquarters Overhd.	100	100	100	-	-	-	300
Total Private Enterprise/Tech.	579	491	447	82	88	99	1,786
GENERAL:							
Evaluation	35	35	50				120
Development	50	50	50				150
Total General	85	85	100				270
Included in the above figures is Food For Work as follows:							\$4,782
				Water/Environment	24		
				Tree Planting	127		
							151

*Calculations have been rounded to the nearest thousand; therefore totals are not exact

INPUTS BY CATEGORY

(\$000)

	<u>R D</u>	<u>P E/ T</u>	<u>TOTAL</u>
Technical Assistance	414	120	534
Personnel	370	466	836
Commodities	722	117	839
Loan Funds	50	550	600
Operations Costs	<u>1,171</u>	<u>447</u>	<u>1,618</u>
Subtotal	<u>2,727</u>	<u>1,700</u>	<u>4,427</u>
Contingencies	<u>257</u>	<u>85</u>	<u>342</u>
	2,984	1,785	4,769
Logistics Service			150
Evaluation			<u>120</u>
			<u>5,039</u>

4. Project Evaluation

Evaluation will be conducted once a year during the life of the project and once within a year of its completion. After signing of the OPG, a person or persons, selected by USAID and the PVO's, will have full access to project sites and information at these times for performing these evaluations. These evaluations will be funded by the project. The preeminent purpose of the first two evaluations will be to identify the need for, and possibly forms of, in-course adjustments to the project. They will be conducted in this spirit. Recognizing the complexity and uncertainty of the project and its operational environment, the evaluations will seek better ways of dealing with admittedly difficult problems. Although USAID must be aware of all evaluation findings, less importance will be attached to publication of evaluation results than to a cooperative evaluator-PVO-USAID effort to work out new approaches where needed. The final evaluation will stress the benefits and shortcomings of the project as guidance to similar future efforts.

Evaluation at the purpose level will be derived from goal and output evaluations. The log frame states magnitudes only for outputs which do not require sophisticated measurement techniques or base data. Magnitudes, then, are omitted for rural development productivity and income increases. These outputs, as well as others for which precise base data would be difficult if not impossible to obtain should also be evaluated by seeking beneficiary opinion.

Final Evaluation of the rural development subproject will be done through a representative sample of the beneficiaries. They will be asked how they have benefited from the project in comparison to their pre-project situation.

Base data are not available on the rural development returnees' original condition, which makes an objective evaluation of rehabilitation impossible. In these circumstances, the objectivity of an attempt to establish directly whether project goals were met would be illusory. The perceptions of the intended beneficiaries are likely to be just as reliable an indicator of progress.

For the PE&T subproject, base data on employment will be gathered, if possible, from the enterprises assisted under the PE&T subproject before they are assisted. In addition, beneficiaries of the subproject will be asked what increases in income they ascribe to the project. In theory, before and after net income could be ascertained. However, it is uncertain that Chadian entrepreneurs at the level we are targeting will initially have or be willing to reveal complete information of that nature.

5. Summary and Analyses

a. Technical (see Annex f(1))

1) Rural Development

o Major Findings

Lack of water constitutes the major obstacle to agricultural production. The Abeche area has become increasingly dry since the late 1960's and never actually recovered from the great drought years of the 70's. Risks of failure for certain rainfed crops have increased dramatically. Peanuts, for example, which were at one time a cash crop for Abeche area farmers, have not produced under rainfed conditions for three years. Increasingly agriculture has been restricted to moist wadi bottoms that optimize brief periods of rain.

Water tables have apparently dropped, killing off many hectares of trees and making retrieval of water for agriculture more difficult if not impossible in many areas. The Precambrian subsoils of the project area do not hold sufficient quantities of water to make wells a satisfactory solution for agricultural needs.

In spite of this harsh environment, opportunities exist for substantially improving the productivity of the land. More effective use of available rainfall and a more intense, but drought-tolerant cropping pattern, seems to be the most hopeful approach.

The livestock situation around Abeche is complicated by drought conditions. Many of the animals have been moved south where water is more abundant. The resulting concentrations caused an outbreak of rinderpest last year. FAO efforts have the disease under control. Even under normal conditions herd efficiency for cattle is very poor. Calf mortality is high, over 60%, and lactation periods quite short—three to four months. Due to this inefficiency, although herd size might seem large, it is probably not much above subsistence levels for those who must depend on their animals for milk and meat. For many Nomads, this is their primary source of food, and, for most of the region, it is the only source of protein.

AID research and project evaluation done in the 70's demonstrated that livestock productivity could be increased by a combination of measures such as animal health, controlled grazing and improved forages. Health measures for calves were found to be particularly effective in decreasing mortality. Such efforts might stabilize herd size if extra animals were no longer needed to insure survivability.

o Recommendations

The team believes that impoundment of water through the construction of small earthen dams and underground catchment areas--along with leveling, diking and terracing to slow run-off and increase infiltration--is the most cost effective solution.

Recommended trees for shelter belts and water shed protection are also outlined in the technical annex. We believe that conservation efforts to protect land from wind and water erosion are important. Other promising possibilities for increasing agricultural productivity exist including improved seed for the Sahelian environment available from the AID sponsored agricultural research station at Marawa in nearby Cameroon. Crops such as 60 day corn and peanuts are already available. Attention will also be paid to improving grain storage at the village level. Losses are now estimated at 20%.

Due to the importance of livestock in the area, the team believes that some project activities should include efforts to improve livestock efficiency. The situation is complicated, however and these efforts should be limited to what would seem most likely to work. Animal health for calves and grazing control for small ruminants (sheep and goats) seem to be the most promising. Specifically, controlled grazing of sheep and goats and "fattening clubs" could be integrated with foraging in the newly planted shelter belts. On an experimental basis, a cattle bank, to loan cattle to herders whose herds have dropped below viability size might be attempted to help stabilize herd size. If herders had access to loan animals, they might feel less need to maintain large herds (as insurance). The cattle bank idea has been used elsewhere in the Sahel.

2) Private Enterprise and Technology

The most effective way of meeting returnee needs in the N'Djamena area, where the largest concentration of returnees is found, is to create employment. This, then, will be a primary objective of the PE&T subproject. The subproject will serve this objective by providing technology, technical assistance and training in production methodology, management, market analysis and credit. In addition to generating employment, this assistance will restore the flow of consumer and production goods disrupted by the war. By broadening the entrepreneurial base and stimulating production of new products, the subproject will lay the foundation for future economic growth.

The subproject will also introduce technology of importance in the rural development subproject area such as wood-conserving clay stoves, alternative fuels and simple agricultural processing equipment. Some assistance to enterprise development in the town of Abeche will be provided. Assistance in Abeche will emphasize enterprises which respond to the needs of the surrounding rural development area (e.g. those which supply consumer goods for the area or process its agricultural products).

b. Economic and Financial (See Annex F(2))

Although the project is relief oriented, the agricultural production activities are on a sound economic and financial basis. Per hectare analysis, using even conservative yield estimates demonstrates a favorable benefit/cost ratio. Financial incentives for the participants were also found to be substantial.

The private enterprise activities have been shown to be capable of generating both income and employment. Education and promotion costs which

are not normally ascribed to an investment generation effort may result in a less than favorable cost/benefit ratio if the number of enterprises is below the target level. Education and promotion costs would include such development-oriented activities as vocational and business education and government sponsored technological innovation all of which would contribute to Chad's entrepreneurial base.

c. Social Soundness

1) Socio-Cultural Feasibility (see Annex f(3))

(a) Rural Development

Insofar as the project is primarily for purposes of relief and rehabilitation of returnees, it presents no feasibility problems. The immediate needs of the returnees can be met with food for work for the creation of assets which will help them reestablish themselves, in the near to medium term, in a manner altogether consistent with patterns of social organization in Chad. Longer range benefits in the form of ongoing water, tree and herd management are a bonus which the project is structured to achieve, but they are not necessary to the accomplishment of its primary objective. However, insofar as longer range water, tree and herd management are secondary objectives, questions of socio-cultural feasibility are pertinent.

Water Management. Although experience with water management in Chad demonstrates that farmers and herders will make good use of the water, a longer range question is whether they will maintain water management systems constructed under the project. The record on maintenance has been less than good. It is difficult to say how much this was a result of the war, technologically sophisticated systems constructed by outsiders, or a lack of beneficiary motivation. In either case an important feature of the project will be to attempt to develop the appropriate motivation. Using self-help labor to construct the systems a process of education and community organization will be developed. There is no guarantee, but, given the obvious benefits of water management and the felt need for it, there are reasonable grounds for optimism.

Tree Planting. The tree planting project involves even more serious questions of maintenance: will the beneficiaries be willing to replace trees as they cut them down and will they be willing and able to control access for grazing, firewood, etc.? They have not exercised such restraint with regard to the area's natural tree cover, indicating that social change will be necessary for success in this aspect of the project. On the other hand, perhaps the experience of having to go long and constantly increasing distances for wood has changed attitudes toward conservation. Efforts to educate and motivate communities for conservation, which have been successful in Algeria for example, will be a key feature of the project. Given the importance of trees, experimentation would seem in order.

Livestock. Reduction of herd size and range management are the most problematical activities of all. The inherent pressures for environmentally excessive herd size are discussed in the technical analysis. Education efforts among herders have had a notoriously spotty history. We

don't know whether attention to the health of calves and "insurance" in the form of a cattle loan fund will have any effect on this. However, given the importance of cattle as a food source in the project area, some experimentation would seem worthwhile here also.

Agriculture. The proposed agriculture activities, though they will involve the introduction of new varieties and practices should not entail any major departures from existing practices. Minimal problems of social change are anticipated.

One question of feasibility applying to both the water management and tree planting activities is the availability of labor. The possible adverse consequences of diversion of labor from food production will be averted by food for work compensation. In the longer run, both the water management and tree planting activities should ease pressures on labor.

(b) Private Enterprise and Technology

The PE&T subproject presents two major socio-economic questions: does sufficient entrepreneurial capability exist in N'djamena to support the level of activity proposed, and can Chadian entrepreneurs compete with imports? The answers to these questions are not clear. They were investigated as much as possible during the short period of time available for preparation of the Project Paper, but that wasn't sufficient to guarantee results. We can say that the targets seem attainable and if proven too ambitious, the project period could be extended or its dollar amount reduced. Even with more time, uncertainties would remain since entrepreneurial potential is not precisely quantifiable. Some latitude would therefore seem desirable.

2) Spread Effect

The primary purpose of the project being rehabilitation of a particular group of people, the question of spread effect is of minimal relevance. Nonetheless, there is reason to believe there will be some. Success with water, tree and herd management and agricultural innovations should be communicable to farmers and herders outside the project area. Project personnel will certainly work with government officials to achieve this result. If the project beneficiaries can be persuaded to undertake the desired management activities, others should be receptive to the same logic.

Similarly, if the project is successful in encouraging entrepreneurship in the N'Djamena and Abeche areas, the general climate for entrepreneurship will be more favorable, not only because business generates business, but because of the power of demonstrated success.

3) Benefit Incidence

The benefit incidence of the project should be highly equitable. All members of the community should benefit from increased water availability and resulting agricultural production. Though there is nothing in the

project to prevent local elites from obtaining a disproportionate share of these benefits, there is also nothing in it to encourage such skewing. The use of community labor seems likely to generalize benefits.

Tree planting should also benefit the whole community and, incidentally, will be of special benefit to women who at present go long distance for wood.

Animal health measures, range management, grazing controls, cattle loans and limitations in herd size should also be equitable in their benefit incidence provided they are equitably applied, which is certainly the intention of the project.

Primary objectives of the PE&T subproject are employment generation and meeting consumer needs for inexpensive goods, both of which are inherently equity oriented. Concentration, moreover, will be on small, labor intensive enterprises.

d. Administrative. (See Annex F(4))

The primary administrative and management responsibilities of this project will rest with the PVOs since funding will be by means of Operational Program Grants. The GOC will have no direct administrative responsibility during the life of the project beyond approving work plans and reviewing reports and evaluations. The administrative, management, monitoring, and evaluation inputs to the project required of USAID, though minimal, will require some mission staff time. Logistical services will be provided by the Development Management Services who are providing administrative and logistics support to USAID.

e. Environmental Soundness. (See Annex F(5))

A large part of the project activity will be devoted to environmental protection. Specifically, tree planting and anti-erosion measures should stop the degradation of the land at project sites.

Potential environmental problems from water impoundment include the spread of schistosomiasis, and other water borne diseases and increased mosquito populations. Concentration of animals around wadi bottoms for watering may spread animal diseases and could break down soil structure.

Tree plantings matched with increased rainfall could bring tsetse fly into the area. This is unlikely, but possible.

In spite of these possibilities, we believe that the project will be environmentally beneficial to the area. None of the problems mentioned is of such a magnitude as to offset the benefits of reduced erosion and increased food production.

To assure the environmental soundness, the final, site specific, project workplans should be cleared with AFR/TR/SDP in AID/W and should include plans for monitoring environmental consequences.

6. Covenants and Conditions Precedent

The Grant Project Agreement will contain all applicable standard covenants given in A.I.D. Handbook 3.

The GOC will be required to fulfill satisfactorily the following conditions:

a) Prior to the first disbursement under the Grant, or the issuance by A.I.D. of documentation pursuant to which disbursement will be made, a settlement of the name of the person or persons acting as GOC representatives, plus a specimen signature of such person; and

b) Prior to an any disbursement for a particular activity proposed for financing under the Grant, an Activity Justification Paper which sets forth its purposes, the organization in charge of its implementation, and its estimated cost, including both the amounts proposed for A.I.D. financing and for financing from other sources. Moreover, a subgrant agreement will be executed which reflects the agreed upon services and/or commodities to be financed, records and receipts to be retained for audit and monthly status reports to be provided.

ANNEXES

ANNEX A: PID APPROVAL MESSAGE

To be provided by AID/Washington

ANNEX B. LOGICAL FRAMEWORK

ANNEX B. LOGICAL FRAMEWORK

Narrative summary

Goal:

To reestablish the standard of living of Chadian returnees and their neighbors and to lay the groundwork for their future well-being thus contributing to restoration of the economy.

Purpose:

To meet the immediate needs of certain returnees and their neighbors in such a manner as to provide them with technical, material and human resources for increasing their productivity, income and well-being. Emphasis in the rural area will be on food production and environment and in the urban area on creating and expanding enterprises which will generate employment and meet consumer needs.

Outputs:

Rural Development

- Food-for-Work distribution
- Repaired and newly constructed small dams, dikes, cisterns and other water conservation systems
- More efficient water use
- Tree planting
- Better tree management
- Increased agricultural productivity
- Increased livestock productivity
- Improved grain storage at village level and less storage loss
- Adoption of other technology which will increase productivity, improve the quality of products, conserve resources and produce additional income

Private Enterprise and Technology

- Increased level of small enterprise activity, productivity and income
- Increased availability and improved quality of products and services

- Increased employment
- Conservation of resources

Inputs:

Rural Development

- Services of PVO community organization, hydrology, silviculture, agriculture, livestock and health technicians
- Administrative and logistic support
- Tree nurseries
- Seeds
- Animals
- Well casings
- Credit

Private Enterprise and Technology

- Technical and support staff and consultants
- Equipment and materials for demonstrating the fabrication and use of new devices and technologies and for on site testing
- Loan funds

Objectively Verifiable Indicators

Goal: See Evaluation section of project paper

Purpose: See Evaluation section

Outputs:

Rural Development

- Per hectare yields greater than those obtainable by traditional methods
- Storage losses less than the 20% now estimated
- Increase in the growing season to at least two months beyond the last rains to demonstrate the effectiveness of water impoundment
- *- _____ trees planted
- _____ % of random sample of trees planted still intact after 1 2 & 3 years
- _____ small dams restored or constructed
- _____ other systems (underground storage, terracing, etc.) for maximizing utilization of scarce water in place
- _____ % decrease in calf mortality
- _____ month increase in average lactation period
- _____ average increase in weight of animals being marketed
- _____ food storage systems improved
- Fair price being paid for commodities purchased from traders
- Accurate weights and measures being given by grain buyers
- _____ instances of adoption of technology introduced by project

Private Enterprise and Technology

- 60 or more instances of adoption of technology introduced by project
- 180 or more loans
- 150 or more enterprises (not necessarily the same ones receiving loans) having received technical assistance (including training)
- Enterprises assisted generating average increase in employment of 3 or more persons and in net income of \$2000 per enterprise, as a result of project assistance.

* It will not be possible to quantify this and following outputs until the implementing PVOs have completed their site selection and activity plans.

Means of Verification

Goal: Project evaluation

Purpose: Project evaluation

Output: Project evaluation and implementing agent observation

Input: Disbursement data

Assumptions

Goal:

Chad will be more stable as a result of positive attitudes generated by the project.

Purpose:

1. The project will make its beneficiaries and others more content and hopeful about the future.
2. Bettering people's living conditions and giving them hope for the future will reduce the likelihood of further displacement and fissional tendencies.

Outputs:

1. The project beneficiaries will be pleased with the results of the tree planting and management efforts and will seek to maintain them.
2. Rainfall in the project area will be at a level which can support the present population and, with better water use systems, more productive agriculture and livestock raising.
3. Village grain storage losses are significant and can be significantly reduced.
4. Increased farmer and herder productivity are possible and will lead to increased income.

Inputs:

1. The project beneficiaries can be convinced of the value of maintaining trees.

2. Possibilities exist for increasing farmer and herder margins of return, and it is feasible to exploit them.
3. The entrepreneurial base in Chad can be expanded rapidly.
4. Small enterprise can at this stage generate more employment in Chad than large.
5. A significant quantity of consumption items of acceptable quality and price can be produced in Chad.
6. An acceptable percentage of small enterprise loans will be repaid.

ANNEX C: STATUTORY CHECKLIST

To be provided by AID/Washington

ANNEX D: B/G REQUEST FOR ASSISTANCE

To be provided by AID/Chad

ANNEX E: FAA, SECTION 611(e) CERTIFICATIONS

To be provided by AID/CHAD

ANNEX F: PROJECT ANALYSES

(1) TECHNICAL

ANNEX F (1) TECHNICAL ANALYSIS

A. Rural Development

In this section of the report the team would like to outline why we believe that the activities proposed will increase food production and agricultural productivity. It is our opinion that on a purely technical level opportunities exist to restore and increase the agricultural base in the Abeche area now that the disruptions of civil war have ceased. Although the environment around Abeche would seem rather harsh even without its man-made problems, certain resources exist. It would be useful therefore to review this environment, recognize its limitations and identify areas where some sort of intervention could make a significant difference.

The Agricultural Environment

The traditional agricultural base of the Abeche area has been rainfed millet and sorghum on the open plain areas and horticultural crops in the wadi bottoms. Literature based on information prior to 1973 shows a stable agriculture that in some years produced a marketable surplus of these essential crops. Table 1 shows the production of millet and sorghum in the Biltine and Ouaddai prefectures for an "average year" based on data available before 1974. We see that at that time a surplus of 22,000 metric tons per year of grain was expected. During this same period peanuts and gum Arabica were major cash crops. A peanut oil plant operated in Abeche giving the local farmers a source of cash income in addition to grain sales. Gum Arabica was collected from both wild trees and improved plantations and was sold to the Societe Nationale de Commercialization du Tchad (SONACOT).

The mid 70's marked the end of much of this type of agriculture. The team discussed agricultural activities with Mr. Mikail Gilbrail, an official

of the Ministry of Agriculture who was "Chef du Secteur Agricole" in Abeché from 1974 to 1976. He noted that by 1975 the peanut oil plant had ceased production entirely for lack of stocks. Overall grain production had seriously declined as a result of the severe drought in the 73-75 period. Mr. Gilbrail views the drought as not an isolated event, but part of a trend towards dryness in the Abeche area. Review of the available weather data and recent interviews support Mr. Gilbrail's thinking. Table 2 shows rainfall for Abeche from 1963 to 1973. In only two years was the 52 year average met or exceeded. Weather records for Abeche after 1973 were destroyed during the recent pillage of N'Djamena, but we do know that 74 and 75 were years of record drought in Chad. A report on grain marketing in Chad prepared for AID in July 1977 states that there was very poor rainfall for the 1976-1977 crop year in the northern part of the country. When the team visited Abeche, we were told by the current "Chef du Secteur Agricole" that the last three crop years have been poor. Last season it was estimated that only 180 mm of rain was received, resulting in the failure of rainfed crops. As a result of this drying trend, agricultural activities have been increasingly limited to the wadi bottom land. The wadis themselves present a mixed picture of water availability and soil types. In field visits the team observed water as much as ten meters below the wadi surface while in another area water was less than two meters deep. The ability of soils to hold water also seemed to vary. While wadi soil types in the Abeche area are generally sandy, some silt and loam soils were observed. As we shall see in the discussion of reforestation, the water table has dropped in much of the area.

In addition to these natural limitations, the effect of three years of civil war on agriculture has been profound. Most seriously, grain stocks

have been wiped out. Normally, sedentary farmers in the region stock large amounts of grain in sealed earthen containers near their homes. The team has been told that a two to three year supply, usually about 2 metric tons per family were stored. At this point, however, drought and the pillage and confiscation of grains by competing armies has destroyed these stocks. Little grain remains even for replanting. As discussed in detail in the economic analysis, this shortage is reflected in astronomical grain prices; in the case of millett 1000% higher than the previous record prices of the drought years of the 70's.

Other damage can be attributed to the war. Wadi dams which were breached during the war period have not been repaired. Supplies of basic agricultural inputs such as tools and pesticides used to treat stored grain were interrupted.

What Can Be Done

Reestablishing the agricultural base in Abadia will depend on two courses of action. First, it will be necessary to halt the environmental degradation of those areas where productive capacity remains high. Secondly, the cropping pattern will have to be re-oriented to assure a greater probability of successful harvests, even at the expense of higher yields.

- Water Conservation

Looking at the first activity in detail, we see that water conservation and retention are the most critical aspects. In an area near Abougoudam called Facha, the team was able to see a wadi dam that had been breached but not repaired since the war.

Although further study is necessary before choosing specific project sites, the Facha area is illustrative of the technical possibilities that

exist for water conservation. The dam at Facha is about 15 feet high and about 500 meters long (by eye ball estimate). The system included interconnected wells and overflow channels that could be used for animal watering and possibly expanding the amount of irrigated land depending on the water level of the dam. Although this system is not now functioning (no one could tell us exactly when the dam had been breached) it would not be difficult to rebuild, possibly with Food-for-Work.

Lack of community participation seems to have contributed to the current non-operational status of the system. The dam was constructed with heavy machinery and no effort to maintain it with hand labor was provided. There was also no effort to stabilize the earthen structure with vegetation. What grass grew there was apparently grazed off by animals, making the structure more susceptible to erosion.

Taking these factors into consideration one could then see the structure rebuilt. Food-for-Work would be used not only for construction, but for a model maintenance program. The earthen structure could be stabilized with brush or grasses and protected by using the common types of living fences that are used in the area. Brush that might be considered for stabilizing could include trees such as *Acacia senegal*, *Acacia radiana* and others. Table 3 lists species that could be used for this purpose.

High winds matched with the extreme heat of the area would make the planting of shelterbelts around wadi bottom land an effective means of conserving water. This might be paid for in Food-for-Work. Table 4 gives three species that could be used for shelterbelts and controlled browse for small ruminants (i.e. sheep and goats). As discussed in the section on livestock, it is conceivable that the shelterbelts be managed by "Fattening clubs" who would control access to the shelterbelt browse area. Such

plantings, along with cutting down on evaporation would also reduce run-off increasing water infiltration and reducing erosion.

In summary, this is a proven technology, which along with the dikes levelling and terracing have been in use for a long time in the Abeche region. Subterranean impoundment of water is also proven technology that has been used in areas to the north of Abeche. Although effectiveness will vary from one site to another, such structures usually add two months to the growing season. In addition cistern storage of water should be considered for small gardening.

The alternative to impoundment of water, well irrigation, is not considered technically feasible, nor effective. Much of the Abeche area has a highly compacted Precambrian formation which has relatively little water retention capacity. In these lower layers water accumulates only in fractures and is easily exhausted. The upper layers consist of relatively thin (10-15 meters), somewhat loose rock mantle. Water in this layer is evenly distributed but not plentiful. In fact, in many areas these layers are not sufficient to meet human needs.(a) Drawing heavily from these layers for irrigation purposes would probably lower the water table further, hastening environmental degradation.

- Cropping Patterns

New cropping patterns should be developed for both rainfed and wadi bottom agriculture. Table 4 gives possible crops for rainfed agriculture, making the assumption that rain will be less than "average" for many years. Many of the crops will, in fact, be rather low yielding such as 60 day corn or 60-day peanuts that have been developed through AID-funded research in

a. See Herd Supply and Sanitation. Pre-project analysis country report Tchad, Nov. 1977.

Cameroon. Currently, farmers are using types of corn and peanuts that mature in 90 to 100 days. The faster maturing varieties in contrast to the more slowly maturing ones, can mature while soil moisture is still sufficient. Peanut yields of these local types are estimated at about 750 kg per hectare in a good year. Rainfed peanuts, however, have not produced in the last three years in Abeche. To put this into perspective peanut types developed in the US mature in 200 days and yield four to five times as much. Although extensive research is not possible at this time, some field testing of new crops will be necessary to demonstrate that their production is not less than that obtainable from the unimproved millets and sorghum that are currently used. Information from the early 70's states that local millet in the Ouaddai area, yield 600 kg per hectare with between 300 to 500 mm of rain. This figure should form a minimum production standard. Any project supported farming that does not equal this would be a waste of resources and time. Other cultural practices developed for the Sahel in neighboring countries should be considered.

- Forestry

In addition to the shelterbelts and browse areas, the team recommends that fuelwood plantations be considered both for economic and conservation reasons.

At the present time, wood prices in Abeche are low for the worst conceivable reason. Wooded areas to the east of the city have died apparently due to a drop in the water table. The team observed miles of dead trees in this area. Easily harvested wood from the dead trees has flooded the market. We believe that new fuelwood plantations should be established in suitable areas while wood is still plentiful. The current

glut of wood may relieve pressure to cut down new planting since the dead trees are more easily harvested.

It should be added that land availability is good in the Abeche area. At present only 8% of the arable land is farmed, thus tree plantings even in areas where enough water is available will not compete with food production.

Because of the marginal nature of this area, management should be of primary importance. Fencing to protect trees with both barbed wire and natural materials will have to be considered. Previous forestry efforts in used guards to protect trees, but without a sense of community ownership these planting, were soon cut down. Using Food-for-Work to build fencing might help instill a sense of community involvement.

Management should be coordinated with the regional Forester in Abeche, who inspite of the war and receiving no salary, has been able to maintain a small nursery and a nem tree plantation near the city.

Most plantation sites should be near at least seasonal irrigation.

The proximity to Abeche of the watershed that is the source of the water in the wadi's, suggests that watershed protection could be combined with fuelwood plantation. Within fifty kilometers of the city are a number of mountain watershed areas which, at least superficially, would seem to be suitable for this type of activity. Obviously, this concept will have to be studied in greater detail before any decision can be made.

Table 5 lists trees that have been used for fuelwood plantations in areas with a Sahelian climate similar to that of Abeche.

Table 6 shows possible yields for selected species along with stocking rates. Good management, however, can increase the effectiveness of plantings. AID Forestry advisor J. Seyler has noted that some species could

be planted at a rate of 1111 trees per hectare then thinned after three years for fuelwood, leaving 625 trees/ha which could then be harvested in seven or eight years for poles and timber.

- Grain Storage

As mentioned in the introduction, low grain reserves are one of the major problems in the project area. Prior to the disruption of civil war and drought, each family stored approximately 2 metric tons of grain in large earthen containers that were kept near their homes. Although this system is appropriate to the region and easily maintained by the farmer, storage losses are unacceptably high. A report prepared for AID in 1977 estimated that twenty percent of the grain was lost between harvest and consumption. Some farmers are apparently aware of the benefits of fumigation of grain, but lack training in proper methods. The team learned that prior to the disruption of supplies, some farmers were simply mixing DDT in with their stored grain, killing off insects and perhaps a few infants. Extension efforts to upgrade storage practices should be part of the agricultural effort in the area once grain reserves are restored.

- Site Selection

Selection of beneficiary communities will be based primarily on technical considerations, given the limited water resources. Need, accessibility, and community receptivity will also have to be considered when final selection is made. Ethnic balance should have some influence in these decisions.

Millet and Sorghum production in Ouaddai and Biltine in an Average Year
(in 1000 metric tons)

<u>Production</u>	<u>Requirements</u>				<u>Total</u>	<u>Surplus</u>
	<u>Human consumption</u>	<u>Seed</u>	<u>Losses</u>	<u>Animal Consumption</u>		
99	69.2	2.3	5.0	0.5	77.0	+ 22.0

Source: Production and Marketing of Cereals in Chad
p. 124 UN 1974

TABLE 2

Rainfall in Abêché

<u>Year</u>	<u>First measurable rain</u>	<u>Total(mm)</u>	<u>Deviation from 52 year no</u>
63	May	411.8	- 80.8
64	June	646.9	+154.3
65	June	354.4	-138.2
66	May	405.7	- 86.9
67	April	339.5	-153.1
68	June	320.9	-171.7
69	April	366.3	-126.3
70	June	307.4	-158.7
71	July	342.7	-123.2
72	April	313.2	-152.7
<u>73</u>	<u>May</u>	<u>187.6</u>	<u>-278.3</u>

TABLE 3

Recommended species for stabilizing sand and earthen structures

Acacia senegal

Acacia radiana

Cercidium floridum

Prosopis juli flora

Macroptilium atropurpureum

Stylosanthes hamata

S. scabra

Source: National Academy of Sciences
Staff report Environmental
Degradation in Mauritania, NAS Press 1981 and
The National Research Council

FOOD CROPS FOR A SAHEL ENVIRONMENT

<u>Species</u>	<u>Common Name</u>	<u>Supplier</u>	<u>Number</u>	<u>Origin</u>	<u>Comments</u>
1. <u>Amaranthus cruentus</u>	Grain Amaranth	Rodale Research Center	R104	Mexico	High protein grain High protein leaves Fast growing, day length neutral
2. <u>Amaranthus hypochondricus</u>	Grain Amaranth	Rodale Research Center	R103	Mexico	Same as above
3. <u>Panicum Sonorum</u>	Panic Grass	Meals for Millions		Mexico	Forage and edible seed
4. <u>Dhaseolus acutifolius</u>	Tepary bean	Meals for Millions		Arizona	Drought tolerant crop, forage and edible seed
5. <u>Psophocarpus tetragonolobus</u>	Winged bean	University of Florida	tpt-1	S.E.Asia	Edible seeds, pods, roots, leaves, edib- le oil. Fodder
6. <u>Zea mays</u>	60 day corn	Meals for Millions		izona	Grain or livestock feed
7. <u>Arachis hypogaea</u>	60 day peanuts	USAID Cameroo			Food and livestock fodder

Source: National Research Council,

TABLE 5

SUGGESTED DRYLAND REFORESTATION SPECIES FOR USE IN CHADDry sites - 200 - 500 mm Mean Annual Precipitation

<u>Species</u>	<u>Propagation Method</u>	<u>Primary End Use</u>
Acacia albida	S, DS	FOD, RED, CONS, MULT
A. cyanophylla	S, DS	FOD, RED
A. tortilis	S, DS	FOD, RED
A. nilotica	S, DC	RED, FOD, CONS
A. senegal	S, DS	RED, C
Balanites aegyptica	VC	RED, FOD
Boswellia sp.	VC	RED, C
Commiphora sp.	VC	RED, C
Parkinsonia acculeata	S, DS	RED, FOD
Prosopis juliflora	S, DS	FOD, RED
Ziziphus sp.	S, DS	RED, HORT
Atriplex sp.	S, DS	FOD, CONS
Euphorbia sp.	VC	RED

Medium sites - 500 - 900 mm Mean Annual Precipitation

<u>Species</u>	<u>Propagation Method</u>	<u>Primary End Use</u>
Anacardium occidentale	S, DS	HORT, RED, CONS
Azadirachta indica	S, ST, DS, SR	RED, MULT
Cassia siamea	S, ST, DS	RED, TIM, CONS
Eucalyptus camaldulensis	S	RED, TIM
E. microtheca	S	RED, TIM
Conocarpus lancifolius	S, ST	RED, TIM
Leucaena leucocephala	S, DS	RED, FOD, MULT
Parkia biglobosa	S	HORT, RED
Tamarex articulata	VC	RED
Cordeauxia edulis	S	MULT

Source: Adapted from J. Seyler guidelines and criteria for establishing seedling surplus services and tree planting in Somalia.

USAID, Nairobi 1982.

TABLE 5
(continued)

Moist sites - 900 - 1,200 mm Mean Annual Precipitation (or high water table)

<u>Species</u>	<u>Propagation Method</u>	<u>Primary End Use</u>
Casuarina equisetifolia	S	RED, TIM
Tamarindus indica	S	HORT, RED
Albizzia Lebbeck	S, ST, DS	RED, FOD, CONS
Dalbergia sissoo	S, ST	TIM, RED, FOD, CONS
Smelina arborea	S, ST	RED, CONS
Sesbania grandiflora	S, VC	RED, CONS, MULT
Khaya senegalensis	S, SR	TIM, FOD, RED

KEY:

Propagation method:

- S = potted seedling
- ST = stump transplant
- SR = stripling
- DS = direct seedling possibility
- VC = vegetative cutting

Primary End Use:

- RED = species more for renewable energy development
- HORT = horticulture
- TIM = timber, poles, construction
- FOD = fodder, browse, green manure
- C = cash crop
- CONS = soil conservation, site and habitat improvement
- MULT = multi-purpose species

TABLE 6

ESTIMATED YIELDS FOR SELECTED SPECIES

SPECIES	Site Class	Stocking Rate trees/ha	Yield (m3)	COPPICE (yrs)
Cassia siamea) Azadirachta) indica) Casaurina) equisetifolia	Poor Good to Fair	625 625	8.5 10	7 (5)2
Prosopis) juliflora) Dalbergia) sissoo) Acacia) nilotica) Albizzia) lebbek) A. tortilis)	Poor	1111	5.4	4
Leucaena leucocephala	irrigated	2500	31	4
Leucaena leucocephala	Good	2500	16.4	5
Leucaena leucocephala	Fair	1111	10	6
Leucaena leucocephala	Poor	625	8.6	6
Windbreaks/ Shelterbelts	—			

Source: Adapted from J. Seyler guidelines criteria for establishing seedling supply services and tree planting in Somalia USAID Nairobi 1982.

Livestock

Animal husbandry is the most important activity in the Ouaddai region. It offers a relatively secure existence in comparison to sedentary agriculture in an area where rain is inconsistent. The importance of livestock is reflected in the small amount of land that is devoted to farming; only 8% of the arable land is cultivated in the Ouaddai according to estimates made in the early 1970's. Figures generated during that same period estimate that 700,000 cattle, mostly of the zebu type, were herded in the Ouaddai, along with 370,000 sheep and goats, 75,000 camels and as many as 30,000 horses. These animals are divided between semi-nomadic and fully nomadic herders, the former mostly members of the Maba tribe.

Cattle

Observers of the area have repeatedly commented that the most serious obstacle to a more productive, less destructive type of cattle herding is the interrelated problem of water supply and nutrition. Previous AID research on this subject found that calf mortality in Chad is quite high and that more than any other factor malnutrition was to blame. Competition for milk between humans and animals is thought to be the major cause of this, but poor productivity of natural range lands, as we shall see, surely must aggravate low rates of lactation.

The project design team discussed this question with Mikail Gibrail, an official of the Ministry of Agriculture who was Chief of the Agricultural sector in the Abeche area during the 74-76 period. He believed that water was the "preemptive" consideration in animal health. Animals were poorly nourished because they had to remain close to overgrazed areas near water sources. Previous efforts at providing deep wells had in fact made the problem worse by not addressing the question of grazing control. Poor

nutrition in Mr. Gibrail's opinion combined with the long distances traveled were the major factors in keeping mortality high.

These questions bring us quickly to a discussion of optimum herd size from the herder and environmental points of view. The number of cattle which will assure that the food and trade needs of herders and their families in a given area will be met, while ensuring the capacity of the individual herd to reproduce itself, may not correlate to the carrying capacity of the land. Although herd size may be the result of complex socio-economic factors discussed elsewhere in this paper, from a purely survival point of view, large herds are the only effective way to maintain security in the absence of any form of grazing or health management program. Let us look then at the situation in Chad.

An AID project that was designed for the Massakory sub-prefecture in the mid-70's, showed in that area 225,000 animals divided between 5,000 herding families or about 45 animals (presumably cattle or mostly cattle) per family. Massakory is in the Sahel zone as is Abeche and may be representative of that area, although there are ethnic and regional differences.

A study done in East Africa by Brown on the size of herds for nomadic people in a semi-arid zone, demonstrates what the number of animals might mean to a typical family in the Sahel. A family size of 8 persons was assumed to require 5480 liters of milk during the year and 876 kg of meat with a 75% milk/25% meat diet. This requirement could be met on a daily basis from seven or eight cows. Under range conditions, however, lactation periods are short, only about six months, thus to maintain milk production twice the number of cows are necessary, 14 to 16. If the calving percentage is 70% then at least 20 cows are required to maintain the 14 to 16 needed for milk production. Female replacements would have to be included in the

herd along with several males. A minimum of two mature males is considered necessary as a safety measure against death or injury of either of them. With these factors in mind Brown calculated the total number of animals the nomadic pastoral family would have to keep:

	<u>Females</u>	<u>Males</u>
Breeding	20	2
Calves under 1 year	7	5
Immatures (1-2 years)	4	2
Immatures (2-3 years)	3	1
	<u>34</u>	<u>10 = .44</u>

This would suggest that herd size in Chad may be no more than subsistence levels. Prior AID research found that calving rates here were only 60%. The rate of calf mortality, mentioned earlier, was estimated to be between 30 and 40 percent. Parasites such as ascaris and other round worms may be the immediate cause of death but lack of milk is the underlying reason for high mortality. This scarcity of milk would also suggest that herd size could not be much above mean survival. Overall herd increases were not more than 11% in any year, again according to AID.

It should be noted that these observations were made before the catastrophic drought of the mid-70's and the later upheaval of the civil war. Work done by Goffings between these two events would seem to support the conclusions that the team was drawn. Although he did not include the Ouaddai area in his study he found that herd size although variable was mostly between 20 and 100 heads with somewhat larger herds in the eastern part of the country. Herds held by nomads tended to be larger, but he does not show how many people are supported by these herds. He notes however, that in most cases the large numbers represent those animals held by an entire village.

During the team's visit to Abeche, we learned that the situation was complicated by the consecutive years of dry weather that had forced many cattle herders further south. The poor rangeland conditions in Ouaddai were reflected in the low periods of lactation. According to the "Directeur d'Elevage" at Abeche three or four months of lactation per year per cow is all that can be expected. Herd size as estimated to be about 35 animals per family for the semi-sedentary groups.

The conclusion of this discussion is that although herd size may be barely above subsistence levels from the herder's point of view, the continued degradation of the Sahelian range lands demonstrates that current management practices are not adequate to support his system indefinitely. Average carcass weight of animals slaughtered in N'Djamena decreased from 196 kg in 1965 to 164 kg in 1970 to 153 kg in 1973, the last year for which figures are available. The natural range lands that surround Abeche are typical of the Sahelian zone of Chad. The dominant grass types are Chloris pilosa, Lenchrus bi flora, Aristida mutabilis and Bactyloctanium egyptium. For the most part, these grasses are not preferred species for rangelands. They are coarse with low levels of digestibility, especially as the plants grow older. A preferred type, Andropogon gazanus is found in small amounts but its presence is considered insignificant. In sum, the rangelands found in the area are not particularly nutritious for cattle, with a marked absence of protein rich legumes with the exception of browse available from leguminous trees such as Acacia species. The marked overgrazing has lowered nutrient levels even further. It should be noted that such damage is not irreversible. Areas to the West of Abeche where continued fighting has disrupted normal grazing patterns have seen the rebirth of the thick natural grass cover. FAO rangelands specialist Ivan Sikura states that only about three years is needed for such regeneration to take place

Recommendations for Cattle Projects

Although selection of project sites and activities should be made by the PVOs concerned, the team believes that some project goals and possible areas of intervention are evident. First, we believe that herder security should be the basis of any project in the area and from this will evolve other activities aimed at improving the environment. Such activities should remain small in scope and experimental in nature given the limited resources available and short time period. Project activities that might enhance herd stability could include:

- Animal Health. Prior work by AID has shown that measures against worm infestation such as Neo-ascaris vitulorum and Strongylus papillosus are both effective and inexpensive when administered to calves. Treatment of adults is more costly. Such measures could reduce calf mortality rates. Other diseases that can be controlled or treated are Anthrax (Charbon bacteridien), pleural pneumonia pasteuriosis, plasmosis and trypanosomiasis.

- Cattle Bank. In at one other Sahelian country a system of lending cattle to stabilize herd size has been attempted as a management tool. In areas where returning refugees have lost herds this system could be used to restore herds to subsistence levels, more importantly, however, it could be a way of limiting herd size by cushioning against catastrophic losses. We believe that a very small scale effort to build a system should be tried in the project area on an experimental basis. The system could be tied into animal health activities.

- Range Management and Improvement. This difficult task will have to be addressed at some point in the project. Activities that come to mind include grazing controls, in accordance with traditional social structures, cattle fattening societies again fitted into traditional structures when possible, and range preserves.

- Pasture Improvement. This activity might be used with semi-sedentary peoples of the Abeche region such as the dominant Maba tribe. It could draw on the voluminous range research that has been done in neighboring Sahelian countries.

Small Ruminants

Although cattle are more numerous in the Ouaddai area, goats and sheep probably play a more important role in human nutrition. For most of the population, they are the major source of animal protein in the form of milk and meat. This is especially important in that vegetable protein would appear to be lacking. The team was told that beans and other leguminous plants are not eaten regularly in the region, peanuts being the exception.

Although goats and sheep are often blamed for the desertification of the Sahel zone, this ability to browse efficiently is their greatest asset.

The team recommends that some effort at controlled browsing and grazing be undertaken.

Prior experience in Syria has shown that the formation of "Fattening Clubs" to increase individual animal weight can be an effective means of controlling browsing and grazing. In the discussion of forestry, we have listed species that can be used for both fuelwood and fodder. We would like to add that an Australian bush Atriplex nummularia has been successfully introduced to nomadic herders as a perennial palatable shrub that with a modicum of protection can add significantly to small ruminant diet.

In summary, we believe that small ruminant programs will be useful in the Abeche area if they are tied to the reforestation and conservation efforts.

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- (1) Draz, Omar on Remote Sensing in Range Management and Conservation. Int. Symp. on Remote Sensing of Environment. Cairo, Egypt 1981

B. Private Enterprise and Technology

The purposes of this subproject are to: generate employment and income in the returnee community; meet needs for materials, goods and services, particularly those the supply of which was disrupted during the civil war; introduce resource saving technology; broaden the entrepreneurial base; increase production and productivity (by introducing new technology) and improve the quality of goods and services. These purposes will serve as criteria for prioritizing assistance under the subproject.

Most of the subproject activity will be in the N'Djamena area, but in the case of particularly beneficial opportunities it will also function in the Abéché area in support of the RD subproject. In this connection RD personnel will be responsible for dissemination of technologies of widespread utility in the rural areas around Abéché. The RD PVO will also assist the PE&T PVO, in any way consistent with RD staff needs and availabilities, to carry out activities in the Abéché area, e.g. by obtaining or disseminating information. The PE&T PVO may station a local employee or employees or TCN(s) as permanent representative(s) in Abéché depending on the level of activity in that area.

The grantee will assist enterprises with technological innovations and other technical assistance including managerial training and with credit (at market rates), in accordance with the following criteria.

Assistance Criteria

(i) Employment Generation will be given priority in choosing assistance targets since the project is funded from refugee relief and resettlement funds and employment will meet a most significant and widespread need of the returnees. Any type of enterprise engaged in the production and sale of goods, materials or tangible services may be assisted. Assistance will not be given to enterprises engaged exclusively in trade, or dealing with intangibles (e.g. banks, insurance etc.) except insofar as such assistance would aid directly in carrying out assistance to enterprises producing goods, materials and tangible services, or in

cases where an especially important need for the trade or intangible can be demonstrated and is not otherwise likely to be satisfied. The assumption underlying this criterion is that the production/tangible service type of enterprise will generate more employment than the other.

Preference will be given to small enterprises requiring loans of less than \$5000, both to maximize employment generation and to broaden the entrepreneurial base. Exceptions may be made for enterprises requiring more capital where it can be demonstrated that they will be particularly effective in generating employment. The significant ratio will be that of employment generated to project loan, rather than employment generated to total capital investment.

Other criteria than employment, such as meeting consumer needs, may be overriding where the non-employment need to be met by the assistance is particularly important.

Higher priority will be given to number of jobs generated by a particular assistance effort than to the amount of income associated with the jobs.

In calculating the employment consequences of an enterprise secondary employment generation should be considered. For this reason, generally those enterprises which use domestic products and services, as opposed to imported ones, should be preferred.

(ii) Foreign Exchange Cost. The second most important criterion in selecting assistance targets is that preference will be given to those enterprises which put the least drain on Chad's scarce foreign exchange resources. This means that enterprises with relatively high foreign exchange cost may be assisted only if they generate a compensating amount of foreign exchange income.

(iii) Production and Consumption Needs. Since this is a refugee reestablishment project the third criterion for the selection of assistance targets is the effectiveness of the enterprise in meeting production and consumption needs the satisfaction of which has been impaired by the civil war. Production needs will be given precedence over consumption needs except insofar as the latter relate to particularly important items of consumption.

(iv) Ease and Speed of Implementation. Those activities which can be carried out most quickly and with the least investment of the implementing agent's time will be preferred over others. In this way the implementing agent will be able to accomplish more in meeting subproject objectives.

(v) Resource Conservation. Protecting the production base through resource conservation is next in importance, lest development in Chad be put on a treadmill trying to keep abreast of a diminishing resource base. Examples of a resource saving technology are wood conserving clay stoves and construction blocks which do not require firing.

vi) Loan Size. Other things being equal, the enterprise with the lowest loan requirement as a percentage of investment will be preferred, on the assumption that it will yield the highest return on the AID investment.

vii) Broadening the Entrepreneurial Base is an objective in itself though it is also an important reason for the 4th and 6th criteria, ease of implementation and loan size. This and the next two criteria relate to increasing production capacity. A Broader and stronger entrepreneurial base is considered the most effective way of doing this since effective entrepreneurs will invest, innovate and increase productivity with or without outside help.

viii) Economic Impact. Other things being equal the priority to be attached to a particular enterprise will be determined by the amount of product it generates per dollar of AID assistance.

(ix) Productivity. The most important type of innovation will be that which increases productivity.

(x) Improvement of the Quality of Goods and Services. The assumption in placing this so far down the list is that, although by no means unimportant, it will contribute less to economic growth and well-being than the preceding priorities.

(xi) Foreign Exchange Earning. Will be the last criterion, other things being equal, those enterprises which earn foreign exchange will be preferred over those which do not. However, this will not take precedence over domestic market needs. Foreign exchange needs are likely to be more effectively met by projects dealing with slightly larger enterprises than by those assisted under this project. Nonetheless, opportunities to earn foreign exchange through small enterprise should not be disregarded.

Feasibility

The \$450,000 loan fund would provide for 225 loans at an average \$2000 per loan, 75 loans per annum or 6.25 per month during the life of the project. The pent up demand for loans in N'Djamena is large and it is believed that loan demand over the 3 year life of the project will easily exceed \$150,000 a year. The limiting factor rather is the capacity of the implementing PVO to screen and process loans and provide technical assistance to those who need it. We have been advised by the VITA representative that it could handle a loan program of the magnitude indicated.

The assistance possibilities identified by the VITA representative during his April 1983 visit to N'Djamena are as follows:

- producing fuel-efficient wood stoves
- producing CINVA RAM (improved, long lasting adobe) block machines and blocks for sale to government and private sector clients desiring to construct inexpensive but durable buildings with little high cost cement or brick
- handicrafts - working with artisans to raise quality and developing new marketing channels
- developing a modestly equipped electrical apparatus repair shop

- manufacturing small hand pumps
- fabrication of improved hoes, carts, seeders, rice hull removers and other devices useful in rural areas

These are not just theoretical possibilities. They are supported by preliminary investigation of demand and feasibility. The first five listed have been verified to the extent that with a little more checking it would be possible to confirm their workability and to begin the process of locating specific entrepreneurs, providing them with the needed funds and technology and getting them started. In other words it would be possible to have these enterprises under way shortly after the implementing agent personnel arrive in Chad.

Other promising possibilities which have been only minimally explored are:

- roofing materials, e.g. replacing or possibly renewing termite resistant Ronier palm which is excellent for rafters but fast disappearing under the demand for housing reconstruction in N'Djame
- other construction materials, and services such as soldering and carpentry
- furniture production
- prosthetic devices, for which there is considerable unsatisfied demand in Abéché as a result of the civil war
- PVC pipe for irrigation etc.

N'djamena: Profile of the Economic Sector

Activity of the economic sector in N'djamena at this time is almost entirely restricted to trade and small commerce. Industrial infrastructure was never highly developed; and what existed prior to the civil war has been destroyed, or has ceased to operate.

*Before World War II, Chad, isolated and distant in the heart of Africa, offered no easy routes of access or export, and few resources of interest to world merchants. Only cotton culture, which the French introduced in 1928, offered any economic value beyond Chad's own borders. There was little to draw investment capital to this "Cinderella" of the French Empire.

In World War II, De Gaulle's Free French Forces established a strategic military camp and airbase in Fort Lamy (N'djamena), and this stimulated a transient economic bloom for local commerce, and the agriculture of the hinterland; but this was a quickly fading flower.

Post war decades of the 40's and 50's saw gradual progress in development of education, roads, etc., and planning and embryonic development in Chad's primary sectors of production, to wit, agriculture and livestock raising.

It is useful to understand that, though rich in traditional social and cultural interest, from the viewpoint of "modern" socio-economic structure, Chad was all but a "Tabula Rasa."

*Material drawn from Diqum Baye et Langue, 1969; L'Essor du tchad.

After Independence, Chad began (1962) to develop planning capability. The mid-1960's saw efforts to research and inventory resources, and the beginning of "pre-industrial" studies. Much of the research done was carried out through the extraordinary scientific and technical teams working in the programs of ORSTOM (Office de Recherches Scientifiques et Techniques d' Outre mer), and IEMVT (Institut d' Elevage et de Medecine Veteriuaire des Pays Tropicaux), in collaboration with the INTSH (Institut National Tchadiem pour les Sciences Humaine founded in 1961).

Chad's proposed economic development schedule thus envisaged for the production sector:

1. Fostering diversification and productivity in agriculture both for the internal, subsistence market, and for the export market (i.e., cotton, peanuts, etc.).
2. Organization of storage, transformation, commercialization and distribution systems for agricultural products.
3. Development of the transport sector at all levels.
4. Hydraulic development for agriculture, livestock, and human use.
5. Rationalization of the vast traditional livestock sector, including development of:
 - veterinary medicine
 - range management
 - ranching systems and "off-take" management
 - processing and installations for animal products such as meat, milk, yogurt, butter, and hides.

6. Rationalization and development of the fisheries sector.
7. Lastly came: Development of the industrial sector, and
8. Assistance to and further development of the Artisanal sector.

As capital and first city, N'djamena fits into these development projections in the following ways:

A. Agricultural Production

1. Agencies of control for the commercialization of specialized agricultural (and other) products have their head offices in N'djamena, i.e.:

COTON FRAN for cotton

SEMABLE for wheat

SEMALK & SEMAB for rice

SONACOT for peanuts, gum arabic, and natron

Storage facilities run from damaged to non-existent.

Transport systems are privately owned and little regulated. A powerful truckers union has both farmers and urban purchasers at its mercy.

2. Agricultural products for consumption into the city come from market gardens around Gaow or from Lake Chad polder-gardens around Korel.

Peppers, tomatoes, green beans, spinach, okra, melons, cucumbers, peanuts, manioc, sugarcane, millet, sorghum, and corn are grown in rotations by Shintala and M'Hamid Arabs where sedentarized by the availability of water.

These products move directly in the N'Djamena market. Transport is by anything from camel to car, by way of bicycle and woman-back.

B. Transformation facilities are:

1. The Grands Moulins du Chad

Wheat (flour) mills: Non-operational

2. Jonasut — a plant to transform bulk sugar into conic sugar loaves
—non operational

3. A beer brewery - Non operational

4. A Coca-Cola plant - Non operational

5. CMFA - the Dairy Plant of Farcha now produces yogurt, butter, and milk (of uncertain pasteurization)

6. The Farcha slaughterhouse, with cold-chambers, freezing plant, and meat-control laboratory — was to have been the focal element in the commercialization and export of Chad's excellent beef. It is currently operating on a minimal basis, and most meat in the market is butchered clandestinely, and without controls.

C. Transportation and distribution is by whatever rolls. At 6 a.m. in the streets, one sees small vans piled high with bloody sides of beef, travelling to the market, side-by-side with two-wheeled pushcarts simlilarly loaded.

D. N'djamena is the commercial center for fisheries of the Logone-Chari-Lake Chad Bassin.* These waters are fished commercially year round, and the fish are dried or smoked by artisanal methods. Two-thirds of the catch is consumed by those who take it. The rest travels to markets in country, and some to Nigeria, Cameroon, and the Central African Republic. There is as yet no industrial processing, and the introduction of modern equipment and handling methods, as well as distribution could be a valuable area to develop. There exists marketing cooperatives which could benefit from credit structures, but their history should be carefully evaluated.**

E. The industrial sector in N'djamena is very limited. Aside from what has been described above under "Transformations," there are:

1. A small paint factory (hiring 6 people)
2. A SOMAT plow factory (for animal traction) non-operational
3. A factory for wood and metal furniture, which also produces door and window frames on order
4. A brick factory — non-operational

* 60,000 to 80,000 tons of fish a year.

** FAO is looking at this sector.

5. A factory that makes large, coarse but efficient cast-aluminum cooking pots. (These sell for CFA 3,000 to 7,000—\$12 approx. 350 CFA)
6. There are several factories which produce four-poster metal beds at
 - double bed - CFA 50,000
 - single bed - CFA 25,000
7. There is a factory producing military uniforms and work clothes.
8. A very interesting small factory/workshop is now beginning to produce welded metallic frames for roof supports, which can inexpensively replace the vanishing wood for rafters. Launched at the initiative of the Kabalai Mission, in connection with its UNHCR funded reconstruction facilitating role, this (private) enterprise needs technical assistance in developing management, technology, and to develop, its market. It offers a prime resource for N'djamena construction material requirements.
(*"Atelier de Soudure, M. Nombayeso B.P. 456, N'djamena, or through Kabalai Mission's Pere Corti*)

Of the greatest interest for this project will be development of the "Atelier" or Workshop level of enterprise. The greatest level of need in the city is for construction and furnishing materials. With 15% of N'djamena completely destroyed, more than 75% is damaged and in need of reconstruction.

Standard building material is the "Banko" or adobe block, which every householder can make

To Note: The project implementing agency should carefully review the (long, problematical) history of CINVA RAM type production in Chad, before launching any similar effort.

There are, however, other interesting prospects in this area:

1. CFAO may soon be proposing a "miracle hardening ingredient" for adobe blocks, and
2. UNIDO¹ possesses studies on the use of laterite mixed with oxide of iron to replace cement.

A building materials enterprise should plan to develop its market throughout the UDEAC² zone, because Chad will ultimately be a limited market.

In this connection, let us briefly remark that there are traditional means of hardening, glazing, or rendering impermeable earthen block houses. In nearby Cameroon, people harden their walls and terraces with a special "earth-worm digested" dirt taken from caves, and mixed with oil. Used as a mud "stucco" over adobe block walls, or to line hafirs³ and cisterns, it is said to be impermeable.

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1. UNIDO, United Nations Industrial Development Office.
 2. UDEAC - Customs Union; Union Douaniere et Economique d'Afrique Centrale.
 4. HAFIR: An impluvium for harvesting/storing rainwater, see infra.

The same effect is obtained in North Africa by mixing a bit of homemade soap into the adobe, and polishing carefully with stones when dried.

Since house holders can and do make their own adobe, what is most needed and in shortest supply is roofing materials. Metal-grid roof supports can replace rafters. But a commercial forestation project to grow the ronier palms which produce the best hard, insect-proof rafters would be sure to have a market.

F. Artisanery

Within the artisanal production sector, N'djamena has skilled workers in:

- o Book Binding
- o Tanning
- o Production and other leather objects such as: belts, shoes, and purses
- o Ivory sculpture
- o Wrought and forged iron items such as spears, fishing harpoons, sample agricultural tools, etc.
- o Silver jewelry: before the war a Renaissance in this art developed among Arab metal smiths.
- o Baskets

A Centre Artisanai existed before the war but is now inactive. Much of the impetus in artisanal development was the work of one Frenchman, Bernard Javlin, no longer in Chad.

G. Trade and Commerce

Although the market is very disorganized, trade and commerce are exceedingly for active in N'djamena.

At the top of the pyramid sit three major trading companies, each of which has diversified into a set of branch companies to handle different segments of the trading market. These are respectively:

- o NSCKN (a lever holding company)
- o CFAO (french), and
- o SCAO (Paris-BAS Bank-holding Co.)

These companies handle all levels of goods from capital intensive, to textiles and food and beverages. They are involved in both import and export, with exceedingly unhealthy bias to import.

Below this level are a series of smaller French, Syrian, and Portuguese trading companies which import and distribute general goods.

An interesting parastatal, SONAKUT, exports local products such as freeze-dried Hibiscus flowers, natron, gum-arabic, and cantharides flies.

There are a handful of important Chadian, Sudanese and Fulani wholesale merchant traders. They, in turn, distribute to the smaller "capillary" traders who sell at the retail market level.

There is inclined to be specialization of product and sector by ethnic community. Thus:

- o Hausas specialize in cattle and fish.
- o Djellaba-Arabs (Sudanese), and Libyans engage in the textiles trade.
- o Yemenis handle enameled tin-basins, and glass.
- o Hadada and Kanembou buy and transport natron, etc.

UNIDO, the United Nations Industrial Development Organization, is now helping the Ministry of Economy and Commerce to reorganize. UNIDO is studying the formation of a semi-public agency to develop and foster small enterprises.

At year's end, it is further anticipated that the World Bank may undertake some efforts to promote small enterprise development in the Chad; but there is room for all efforts directed toward balancing and integrating the Chadian economic system.

Enterprise Analysis.

Before introducing a new technology through an enterprise, lending money for one or providing technical assistance, the implementing PVO will confirm the marketability of the product or service to be financed or introduced and perform a financial analysis to determine the soundness of the enterprise and the financial viability for which it is requesting assistance.

ANNEX F: PROJECT ANALYSES
(2) ECONOMIC AND FINANCIAL

ANNEX F (2) ECONOMIC AND FINANCIAL ANALYSIS

A. Rural Development

The most important questions that the team would like to address here are whether the project activities make any sense in the economic context of the Abeche region and whether the financial incentives are great enough to small farmer participation.

Economic Analysis

A shortage of food caused by a shortage of water is the overwhelming or as one official put it "preemptive" problem of the Abeche area. Aggravated by years of civil war, this need is so pressing that it has disrupted many other economic activities. The extent of this shortage is reflected in grain prices which quantify the seriousness of the situation. The sensitivity of prices to supply indicates what economic effects project activities might have in the region. In table 1 we have related grain prices from four different periods. The first two columns show grain prices during the 73-74 drought period. The third and fourth columns show grain prices in Abeche before and after the arrival of World Food Program (WFP) flour (_____ tons delivered so far this year). We can conclude from these figures that market price sensitivity clearly demonstrates a shortage as severe as the drought years. Millet prices, for example before the arrival of the WFP flour had risen to 500 CFA per kilo(a) or ten times the price in 1973. Even with the arrival of the WFP flour the impoverished residents of Abeche are paying much more for rice than one would in an American supermarket.

(a)The local unit of measure, the koro, is a volumetric measurement that is equal to 2 kilos for millet, but perhaps 2.5 kilos for heavier grains such as rice or wheat. Prices are derived from a survey done by the team as koro prices, verified by local officials in April 1983.

This food shortage was foreseen in the late 70's by AID analysts, (b) who even without the clairvoyance to see the coming civil war, predicted that grain shortages in Chad would be increasingly serious. Table 2 gives the predicted cereal deficits that were made at that time. Although there is no way of verifying these figures, they are based on sound information that was then available and give a further indication of the current situation.

Increasing food production through water development is the major agriculture activity proposed. The previous discussion shows that this makes sense in the overall economic context. A more specific economic analysis shows that benefits generated by the project are direct and quantifiable on a per hectare basis. The actual number of hectares developed and the amount of food produced will depend on specific project sites chosen by the voluntary agencies and most importantly, future weather patterns. As discussed in the Technical Analysis, vagrancies in rainfall will expand and contract the area under cultivation. Nevertheless, realistic economic models can be made for small farmers.

In our model we will use a site that the team visited, Facha, near Abeche which is one of several possible sites for water improvement. (See technical analysis.) Forty hectares could be developed for irrigated and recessional agriculture most years. Currently, rainfed millet in the Ouaddai province produces 600 kg. per hectare. Under irrigation this figure would double to 1,200 kg. according to information available. (c)

(b) Graet and Maxon, Grain marketing in Tchad, M.A.S.I. July 13, 1977.

(c) Atlas Pratique du Tchad, Institute National Tchadien pour les sciences humaines Paris 1972,

Given the vagrancies of weather and other factors 1,000 kg. per hectare would seem to be a reasonable figure for millet production in the project area.

Table 3 shows the incremental flow of benefits from the Facha site with project improvements. Table 4 gives the benefit/cost ratio of this incremental increase in productivity. The discount rate used is 12%. Experience of CARE-TCHAD with Food-for-Work in canal constuction indicates that no more than \$30,000 in project funds mostly technical assistance and support costs, would be needed to reconstruct Facha's dike system. The earthen structure could be maintained by the farmers themselves with no significant recurrent cost. Drawing on experience in an area with similar climate and pay scale in Somalia, on farm cost (seed, labor, etc.) should be about \$20 per hectare per year.

The favorable benefit/cost ratio 1:13 shown in table 4, (i.e. greater than 1) is surprising in that this project is relief oriented. It demonstrates that water conservation activities could be the basis of future development activities.

This is consistent with food and agricultural development policy guidelines(d) that require projects to enable individuals to increase their productivity. Systems of this sort would be maintainable by the farmers themselves. Recurrent costs would be no greater than those traditional agriculture plus the self-help labor required to maintain the dam. This is an important point in that the Chadian Government cannot assume costs at present.

The question raised above brings us to the major obstacle to economically viable alternatives. Government resources are so limited that

(d)AID Policy Paper: Food and Agriculture Development, USAID Washington

systems that require continuing technical support could not reasonably be expected to function after the termination of project assistance. Alternative agricultural projects that the team has considered included mechanical lifting of ground water and large scale livestock improvement. In both cases we concluded that neither concept would be maintainable by the farmer themselves, nor did they respond to the immediate needs of the situation.

Forestry

The current glut of wood in the Abeche area that has lowered both consumer and producer prices makes straightforward economic analysis (i.e. benefit/cost ratio and internal rate of return) difficult. Discontinuing the current low price over, say, ten years would not make sense when we know that the harvest of dead trees must soon end. (See technical analysis.) When this supply will be exhausted, with the inevitable rise in fuelwood prices, is not known at this point. For the sake of illustration however, if we were to take a species, Acacia nilotica, that is known to produce in sites similar to those around Abeche about 5.4 M³ of fuelwood per hectare would be available at the end of four years. At current prices a cubic meter of wood is worth about 4000 CFA or \$11.00. Thus in four years only \$59.00 per hectare will have been generated. If the 12% discount rate is used as the opportunity cost, the economic return would clearly be negative even if the cost of tree planting were small.

But these figures do not face up to the reality of the situation. First, as explained in the technical analysis, land is available for tree planting that does not compete with agricultural production and has marginal values as grazing land on a per hectare basis. We also know that demand for fuelwood will continue. The only conceivable alternative is

kerosene. Kerosene, however, is not readily available, is expensive for the common man, and is incompatible with cooking habits such as barbecuing meat.

The current market price of fuelwood does not accurately reflect the value of labor that would be saved and available for other productive purposes if there were nearby fuelwood plantations. The environmental benefits of trees form another unquantifiable though important economic consideration. Environmental improvements are a major project goal.

Overall the forestry activities proposed seem to be on a sound economic base in spite of the current low price of fuelwood.

Livestock Activities

The livestock activities proposed do not merit full-blown economic financial analysis, given their experimental nature and extremely small scope. They are not designed to generate income. Such activities are justified because livestock herding forms the basic subsistence for many people in the region. Some contribution to this economically important activity would be useful.

In all frankness, however, the team believes it is questionable whether the creation of healthier herds and an improved rangeland environment are possible within the context and time frame of this project. Quantifiable direct benefits could not be obtained without achieving these goals.

Agricultural Production

The agricultural production part of this project is designed to generate income for the small farmer after subsistence needs have been met. We have seen in the economic sections that a favorable benefit/cost ratio can be generated for an illustrative project site, but how does this translate into small farmer income? In the previous section, we have used millet as an example, but other crops are possible. We have assumed that

millet can be grown with or without irrigation, with yield differences the measure of project success. Other crops such as 90-day peanuts could only be produced with irrigation if a reasonable chance of successful harvest is expected. Project activities should increase the small farmers's options and possible financial return of his labor.

In table 5 we have calculated options that a small farmer with two hectares would have with and without project assistance. The financial gain in current prices over a four-year period is shown. Two crops, millet and peanuts, are possible with project irrigation. To be realistic we have assumed that one year in four will be too dry for peanuts and rainfed millet, but that a lightly irrigated crop of millet would produce.

At the end of four years an additional \$1,580.00 worth of food would have been produced due to project activity. An extra \$395.00 per farmer in annual income compares favorably with Chad's per capita income of less than \$200.00. Obviously these figures should be adjusted for inflation, or deflation (as is the case this year), but the effects of war and donated foods have distorted markets so much in the past few years that assigning a fixed inflation rate is not realistic. We see then that local farmers will increase their revenue and be assured a more stable yield. On this basis, it is reasonable to assume that financial incentives are great enough to participate in project activities.

One might ask why Food-for-Work should be necessary if the proposed water conservation and tree planting are financially desirable. There are three reasons. One is that it would provide a safety net in the event that rainfall is as light as anticipated this year. A second is that it will help the participants rebuild traditional grain stocks lost during the recent drought and civil war. A third is that the benefits of

reforestation and, some forms of water management, are not immediate and therefore not always evident to peasant farmers and pastoralists so that they may need an additional incentive.

Extension efforts in marketing might help local farmers realize even more income. There is evidence that private traders are less than fair with weights and measures(3) and barter. Relationships between peasant farmers and middlemen are often misunderstood by outside observers who may be unaware of certain costs and relationships such as time consumed reaching remote areas, variations in product quality and provision by the trader of high risk loans not available from other sources. However the possibility remains that poorly informed farmers in Chad, as elsewhere, are taken advantage of by traders and that they could negotiate more favorable exchanges if they were better informed on the problem and organized to deal with it.

(3) Graetz and Maxon, Ibid, page 2.

ANNEX F: PROJECT ANALYSES

(3) SOCIAL SOUNDNESS

ANNEX F (3) SOCIAL SOUNDNESS ANALYSIS

I. Summary

A. Refugees and War-Related Damage

Refugees and war victims in Chad, with a few exceptions, are no longer sitting in camps. They have returned home to pick up the pieces, and to cope with the short falls that come in the aftermath of war.

Some areas have suffered more than others:

N'Djamena, the Capital, was for long periods the scene of intermittent, heavy fighting. During the period from the end of March 1980 till December of that year, the city was largely abandoned to combatants and looters. Many Southerners fled to their provinces in the South, other citizens escaped across the Chari River to Cameroon and Nigeria. At least two-thirds of N'Djamena's 300,000 inhabitants at some point sought refuge outside the country.

Chari Baguirmi province, along with Guera, Batha, and Waddai was the path of competing armies, and suffered ravage and destruction. Guera, Batha, Salamat, and parts of Waddai are still subject to roving bands of ex-soldiers turned brigand. Mongo, Guera's hard-hit capital, is currently an enclosure surrounded by unstable hinterland. People fled from Waddai to Sudan when the Libyan Army occupied Abeche in 1981. Up to 15,000 people sought shelter in Sudan's border province of Darfur, at el Genuina.

Northern merchants trapped in the South became scapegoat to southern anger. Those who were not killed fled into the Central African Republic.

More recent refugees from Nigerian political xenophobia have returned into N'Djamena and Lere (December 1982). From these points of arrival, some accepted conveyance to up country villages of origin.

Although not a war-damaged zone, Lac and Kanem provinces now contribute their quota of displaced persons due to lack of water, and almost total loss of pastures following two years of insufficient rain.

The consequences of drought, throughout the north and east as well, are currently rendered more desperate because people, in the wake of war, have lost their normal stores of grains and dried foods which might have seen them through until the next harvest. Game and wild-foods, normally a fall back resource at the lean season, are this year diminished through drought, and the hunting excesses of Libyan occupiers. Add to this catalog of hardships failing wells in the North¹, and a major epidemic of rinderpest which has this year ravaged the too-long unvaccinated herds.

Poor, remote, and land locked Chad had never progressed far along the path of modern development. But most levels, and elements of infrastructure, which were developed, whether administrative, economic, or material, have been disrupted, or vanished in connection with the war.

The southern provinces of Moyen-Chari, Tandjoile, the two Logones, and Mayo-kebbi suffered far less materially than did the Sahel belt. But Southerners furnished the cadres of the bureaucracy, and were the yeast of N'Djamena. These elements of the population have suffered too from displacement, and the loss of jobs and property.

II. Needs and Problems: The East

In Waddai and Biltine at this time, only some of the traditional coping strategies are effective. Subsistence has always been precarious in Chad, and resources and margins narrow. Since time immemorial people of these regions have organized their social life and their socio-economic activities

¹Borbou, Ennedi, Tibesti, and Biltine.

around the central facts that drought and natural catastrophe were for them in no way exceptional, but the regularly recurring phenomena of life. Traditional systems of pastoral transhumance, nomadism or village-based mixed agriculture developed a delicately balanced ecological equilibrium. The traditional modes of production have been highly sensitive to the realities of geography and means.

A. Survival Strategies

Thus Bonte and Rayhaut* show systems based on:

(1) Rapid and flexible movement of herds and people in response to irregular and unequal distribution of rains and pastorage, varying in distance from year to year according to the generosity of nature and the season.

(2) Reserves of food stored either (Nomads) on the hoof, or (settled farmers) in ancestor guarded graneries. The latter stored grain for the season, for the lean period till the new harvest, and for the seed crop; and if possible something more for the hazards of fortune.

(3) A dispersal of herds both geographically and socially. Although desire for status and security might lead to accumulation of wealth in cattle, a constant circulation of these animals is a necessary condition of social--as well as technical--organization. Thus members at all levels of the community have access to the animal-based necessities of subsistence. This dispersion of herds integrates social support in the community; protects animals against the risks of drought, epidemic and theft; and

*CF Articles p. Bonte & C. Rayhaut in Secheresses et Famines du Sahel, Paris Maspero, 1975 v. II.

permits each producer to rapidly reconstitute his drove in case of loss.

(4) Diversification of species raised in any herd, with their differential exploitation of the biome, permits use of all resources in this austere land. Each animal provides varying resources to the herder as well.

(5) Use of oasis and rainfed agriculture, hunting, and gathering, and seasonal caravan commerce, round out the diversified strategy developed in these survival economies.

B. Current Shortfall

These strategies now fall short because the eastern regions face not one, but a nexus of problems.

(1) Reserves of food are gone for reasons discussed more fully elsewhere in this annex.

(2) Hunting/gathering resources are severely curtailed.

(3) Herds have greatly suffered this year from the rinderpest--which attacks wild herds as well.

Goats will save the day this year; the practicality of the diversified herd is very evident.

N.B. there has been discussion of developing "live-store lending bank" in connection with this project. We feel the implementing agency will want to explore this possibility with caution. Since many mechanisms already exist within the society to service this need for access to animals, a close and knowledgeable assessment of levels of disease-loss, and an assessment of thresholds of need should be engaged before this activity is undertaken.

(4) This year, for reasons of drought and war, there is no grain crop. The staple ball or pancake of millet is at this juncture only available for purchase in the money market, or through the relief-grain supplies now distributed by World Food Relief, CARE, Swiss Disaster Relief, and other agencies. Relief supplies have brought down the sky-high prices. Feed grain as well will be shortly distributed.

(5) The possibility of moving people and herds, in these uncertain latitudes, is still the most important protection people have against catastrophe; and they are invoking this ultimate tactic fully at this time. Traveling officials, veterinaries, visiting Medecins sans Frontiers report that villages north of Abeche are empty. Abeche itself is strained in its basic resources to cope with the current flow of people to the south.

C. Rationale for Abeche Based Subproject

The ravages of war now complicate further the basic systemic problems of the Region. The proposed rehabilitation project is a direct response both to immediate and urgent needs, and to the underlying ecological problems of this arid and marginal zone.

The two objectives:

- To create an improved food supply, and
- To conserve and regenerate the wasting natural source-base have dictated the choice of project elements. These are

- Project Elements: (1) Improved Agriculture for
- Wadi-bottom horticulture
 - irrigated grain crops
 - rainfed grain crops

(2) Afforestation through

- village shelter belts
- firewood plantations
- crop-trees (i.e. gum-arabic, etc.)
- Agro-forrage plantations
- soil, water, and range conservative plantations

(3) Water production, conservation, and storage through

- wells rehabilitation
- small dams and dikes
- subsoil re-infiltration and storage systems
- hafirs, cisterns, etc.
- improved irrigation methods
- improved water facilities (i.e., livestock-water throughs, etc.)

Compatibility:

The proposed activities are directly responsive to needs expressed at all levels during the team's study of the area.

D. Impact and Beneficiaries

Direct beneficiaries will, of course, be these in villages closest to activity areas. Since frequently several villages or encampments use the resources of a given well or wadi-bed, impact should be wide within the

area.1 Improved agriculture should also permit marketable excesses and enrich the food supply to Abeche market, as well as supplying trading materials for the petty commerce/exchange circuits between more and less mobile people.

It is difficult to speak of women as more or less benefited than others. Among these hard-working people, women and men and children all join together to raise and pour water for the herds; to plant, weed, water, and harvest the wadi-gardens; to dig for and transport human-use water from the wadi-bed. Women will certainly benefit from nearby available firewood which they now seek and carry from several kilometers distance. Since women often raise and own goats, improved small ruminant culture may give them both more work—but also more personal resources and income incidence.

Improved water resources and accessibility will certainly ease women's chores. Some thought could be given to establish cooperative water-delivery systems for women, but this may not work as local women are said to be very individualistic.

E. Previous Experience

Several of the elements of this project have been attempted in the area before by the Mission Evangelique Unie, under the direction of Dutch missionary Willem Spronk. In collaboration with UNDP and the ILO, the United Evangelical Mission worked with people from Fasha and Batouma villages to build a dike to capture wadi run-off water, infiltrating a bottom zone to store ground water for crops.

Lessons learned were:

- Dikes, dams, etc., are better built by villages themselves than by machines (here a bulldozer). With relatively little of their own labor invested, villagers were fatalistic when the dike breached, and have not seen themselves able to repair it.

- The plantation of 400 nem trees, fenced with thorns, now boasts one solitary remnant tree. No one stopped the goats

It is suggested that close attention be paid to the choice and motivation and training of "animateurs" chosen within the impacted community. It will be imperative to identify "leader" elements.

F. Issues

Among constraints the proposed project will face are:

(1) A continuing degrading climatic trend. "Man proposes, but God disposes...." With or without man's ecological folly or foresight; the rains are more capricious, the ground water is lessening, the desert is advancing in the area. This project proposes the best of known techniques to combat desert encroachment.

(2) The larger society, in its political, financial, and administrative aspects, is fragile. There are great pressures on the Prefect of Waddai (responsible also for Biltine) to cope with larger than life-size problems. He welcomes all assistance in the area, particularly with basic resource problems. But the overstretched administration will have few resources to offer this project.

(3) Logistics and communication may prove a problem. Abeche is distant and isolated; the plane does not always fly; the road through Ati is sometimes cut by floods, sometimes by trouble. Communication currently

is by radio-call through either Swiss disaster-relief, or Medecins sans frontieres networks. The project should be planned to work with locally available materials and products for reasons of immediate practicality; but also to firmly institutionalize activities within a material-logistical frame which people can subsequently maintain.

(4) It will be necessary to plan within the framework of the yearly cycles of activity and mobility. In practice this means, for example, that one set of people may plant the shelter-belt of trees; but as they move south to dry season pasture, there may, or may not be someone left to water them. Other group(s) moving down into the area from farther north may cut those succulent young saplings for goat fodder....At some seasons the area may be heavy in manpower, at other moments only old people, a few women and children will be in residence. "Critical mass" of potential labor-pool may be insufficient to accomplish the projects required work. Some seasons are heavy in work load. It will be necessary to determine when (and if) people will have time resources to devote to "unproven" activities.

(5) A final point to consider deals with equilibrium in land-use. Traditionally people have used certain areas for intensive farming of subsistence crops, other areas within their range of useful distances being left to fallow, or as pasture which the animals would simultaneously fertilize.

With the use of fast-maturing crops, denser planting methods, and extended development of cash-crops such as peanuts, the ecological equilibrium is often upset. Fallow periods become shorter or disappear (often disastrous with marginal soils). The balance between pasture land and agricultural land becomes upset, and the diversified eco-base of subsistence is narrowed--increasing vulnerability to drought and other

external blights. A bias toward increasing cash-cropping may diminish acreage put to subsistence (millet, sorghum) production beyond thresholds which permit family maintenance. A farmer may have to spend more to buy foodstuffs than he makes on his peanuts. Therefore, some time—or study by a trained socio-economic analyst—should be devoted to determine patterns and activities of the "socio-economic baseline." Again, this should be referenced to the calendar of cyclical operations and mobility.

III. Needs and problems: N'Djamena

N.B. See following section of the Social Soundness Analysis for description of N'Djamena and its populace; and the technical analysis, N'Djamena: Profile of the Economic Sector, for an understanding of the economic plight.

A. What Exists

Long months of fighting reduced N'Djamena to a battered shell, her once-pretty villas, gardens, and tree-lined streets turned into dust heaps and listing walls.

Today, with French and multi-lateral assistance, many systems are beginning to be revitalized: Water, sanitation and electricity are generally operating. Bicycles, and a fleet of dilapidated taxis assure general transportation; goods are pushed, heaped high, in two-wheeled carts.

Hospitals and Health Centers operate with foreign volunteer, or technical-assistance doctors. Schools have recently reopened as have social centers. Pharmacies are open though ill-stocked. Hotels—though marked with bullet holes and bloodstains—are receiving and feeding guests.

The city does not lack for overall goods supply.¹ There are police posts and a level of protection. At least some of the services of most Ministries are operating, and the Government has launched a call to all civil servants to return to their jobs.

Trade and petty commerce are flourishing; whatever can be had across the Cameroon or Nigeria Borders is for sale in the market.

Religion and religious services never disappeared.

B. What Is Needed

What is needed is to rebuild the habitations and work places of the city, and to reestablish production of goods and services, creating jobs and salaries.

C. Rationale for N'Djamena-Based Subproject

The proposed Small Enterprises project is directly oriented to meet these needs, and addresses first priorities.

This project is not designed to create institutions or major industrial complexes, which are beyond its scope. Its emphasis should be to renovate or develop "workshop level" enterprises which could variously:

- Cater to the need for construction materials and services in short supply (e.g. roofing, and roof supply)
- Build or repair production and agricultural tools
- Produce development materials and/or services for the Region (e.g. hand and foot pumps to reactivate wells; "PVC" drip irrigation plastic pipe)
- Establish or resuscitate artisanal cooperatives;

¹Some things are in good supply; i.e. fruits, bread and bakery goods, poultry, canned or conserved foods.

- Create production workshops for articles on short supply (e.g. a factory for older children's clothes);
- Develop women's coopeatives to start commercial truck-gardens and poultry production units;
- Engage in food conservation and/or preparation enterprises (e.g., a good bakery or preserved foods to market in northern food-deficient areas);
- Develop fuel-wood tree plantations to service N'Djamena's needs;
- Produce fuel-conserving clay stoves;
- Produce furniture to equip houses and work places.

Recommendations

(1) In general, enterprises should be designed to have as many people as possible. A major objective is to create salaries. Cooperatives are of interest for this reason, but will be most functional when they group people with traditional relations (i.e., ethnic cohesion, etc.)

(2) It will be essential to develop close information and background on the group in question, and their sponsorship.

(3) Potential markets for product or services should be carefully explored, and distribution and marketing strategies planned. In this regard, regional (extra-Chadian) associations and organizations (UDEAC, etc.) should not be overloaded.

(4) There should be some preference given to enterprises and training for women. With women-headed households multiplied because of war losses, these are war victims, as are their families.

(5) The Ministry of Social Affairs would be happy to see efforts made to train and employ "drop-out" and orphan boys. Training in building trades skills could be stressed here.

Spread Effects

This project should have a persistent and wide felt impact on people in N'Djamena and its region. Benefits it could/should provide are:

- Reconstruction in the shattered city
- Salaries and money in circulation
- Improved food supply
- Improved food storage/distribution
- Needed goods
- Tools for production
- Tools for development
- Vulnerable sectors of the population aided toward independence
- Renovation, integration in the economic sector
- Improved management, marketing, and distribution skills and strategies developed.

II. DISCUSSION

Background Notes

Chad is a land of many races, many languages. From early times the Chadian Sahel has served as a cross-roads: along north-south and east-west axes, major routes of migration, trade, transhumance and pilgrimage have criss-crossed this region of the central Sudan. In the Sahel, and around Lake Chad, existed sultanates and kingdoms important in the history of Africa: Bornu (now Cameroon), Kanem, Chari-Baguirmi and Wadai were muslim kingdoms. The princes of the Kotoko in the Chari-Logone basin, and the Moundang/Fulbe kings of Léné belonged to the great E. African systems of "divine" and symbolic kingships.

Over 150 different languages - not to mention dialects - are known in Chad, and customarily classified in 12 major language groups. Of Arabic alone, considered the "trade language" in the center, north and east of Chad, more than 30 major dialects are spoken.

Chad is rich in human history and diversity.

Throughout Chad's history, the harsh realities of climate, season, distance, and water have been limiting and defining factors. Traditional economies whether sedentary or nomadic have been - and still are - closely adjusted to the regime of seasons. The great flood-plains of the rainy season isolate whole districts, and interrupt communications. But several seasons with sub-standard rains can trigger major migrations to the South. Cyclical changes in climate beget changes in basic economic support systems. Examples are: a shift from camel-based to cattle-based herds^{1/} with all the modifications that entails; or from nomadic herding to settled oasis or

^{1/} c. 30 years ago, camel-breeders of Kanem made such a shift to cattle.

village agriculture (if only for a transitory period). Chad is a land in which technology has always - of necessity - adjusted to a harsh and overwhelming nature.

From the beginning of the current century, the French strove to consolidate their colonial position in the central Sahel and regions of the South. Significantly, Borkou and Tibesti - regions of empty spaces and independent camel-herders - remained till 1965, i.e. 5 years after Chadian independence, under French military rather than civilian administration.

Cinderella of the French colonial possessions, Chad knew relatively little socio-economic development. However, the first great social change brought about by the French presence was the military enforcement and extension of the "Pax Romana". Various prior inter-group relations of feudalism, war and spoliation or razzia, and shifting alliance, were replaced by the overarching law of empire. Abolished was the ferocious slaving commerce of Rabah's Bornou; and the traumatized South, from Mayo Kebbe to Salamat was gradually revitalized.

From Fort-Lamy, parallel structures of western colonial administration were gradually extended to leach power from the Sahelian feudal states. Only at levels of village (or ferik encampment) and minimal lineage did traditional and colonial political systems converge in the persons of traditional chiefs. (However, in the 1930's, traditional sultans were reintegrated into the "modern" power structure as canton-level chiefs.)

In the South, colonial rule forced the cultivation of cotton, which was to become the one-crop basis of export earnings.

French education - mostly offered under missionary auspices - was generally welcomed in the sedentary South. Sahelians and northerners, often unreachable in their nomadic circuits, retained their traditional forms of Islamic education: the Koranic school (whose teachers traveled with the camps), which initiates children into at once a religion, an elegant classical language, and the social and ethical forms and concepts of Muslim civilization; "high school" and "college" in this

traditional desert, Muslim educational context consisted in - and remains - personal attachment to a wandering scholar-teacher (the muallim or mallam) who transmits his knowledge of law, traditions, history, grammar, science, literature and "belles-lettres" to this coterie of disciples. In addition, Zawiyas, the Centers formed by religious leaders of the major Islamic brotherhoods (i.e. the Senoussiya, the Kadiriyyah, the Tijanniya) are often "universities" of the Islamic sciences. Well-known Zawiyas exist in Chad, along the Pilgrimage route of the Hadj, at Oum Hadjer and Abéché. Also in mosques, or "Zango" (caravanserais) for the pilgrim trade, wandering scholars discuss and teach the "Ulum Islamiyun" or classic Islamic sciences.

This discussion of different educational systems should make clear some of the divergences in "world-view" between Southerners and Northerners in Chad.

The period since Independence (11 Aug., 1960) has seen many changes in the education picture.

ex:	Year	Total primary school enrollment
	1951 - 52	2 729
	1959 - 60	53 936
	1965 - 66	163 962

"Modern" education is now seen as a stepping stone by Northerners and Southerners alike. At this time, in Abéché, some nomadic families leave children behind to stay with families in the town and attend school throughout the academic year. This is the only - though not an optimum - solution.

In N'Djamena, the College of the Central Mosque now mixes "modern" and Islamic studies in the curriculum of its desert-blue uniformed boy - and girl - students.

However, questions of fundamental importance as to the future orientation of education policy have in no way as yet been addressed.

Background Notes, cont'd

After 1944, the Conference of Brazzaville pointed the way to a new era for the French Central African colonies. With independence in the offing, an increasingly politicized Chad struggled to develop the infrastructure necessary to a modern state. The French had built rudiments of social services, administrative and economic apparatus. In the 1960s, Chadians with heavy French support, made optimistic plans for all sectors.

Basic studies were made or envisaged in sectors such as geologic and mineral resources, hydrology, soils, agriculture, livestock husbandry, fisheries, demography etc; some basic modern industries began to develop such as cotton and sugar processing, meat-packing, etc.

The traditional commercial sector with trade in live-stock, and petty exchange items continued to thrive.

"L'ESSOR DU TCHAD", an analysis and report published in 1969 by Mr. Diguimbaye, the then-Minister of Plan, with the assistance of his French collaborator Mr. R. Langue, gives a balance-sheet for existing development in the modern sector, as well as projected goals for all economic and social divisions - from that year's optique.

Most development advances, as there pictured, have been wiped away in Chad's years of civil war. What remains are:

- 1) An attractive people with a great desire for peace.
- 2) Some age-old rural social-economic systems whose limited energy-level technology is a direct response to the seasons and conditions of their harsh environment.
- 3) Some damaged urban infrastructure in the capital.
- 4) Less damaged infrastructure in the relatively little-touched South.
- 5) A relatively little developed Sahel and Northern region.
- 6) Some cadres, and a rising generation in which the education pyramid is much more broadly based, though studies interrupted by the war - have only recently resumed.

traditional roles, obligations, and power-alignments are juxtaposed to remnants and rudiments of "modern" technologic concepts, services, and institutions. All of these are in very inequal distribution.

SOCIAL SOUNDNESS ANALYSIS

History and Context: Refugees and Regions

After seventeen years of intermittent warfare, and a succession of perilously dry years, battered Chad is beginning to rebuild. Her citizens - both those who fled before the armies, and those who stayed behind - have suffered disruption of their lives and work, and loss and damage in their families and their property.

Some areas have suffered more than others: hardest hit were the capital at N'Djamena, with its hinterland in Chari-Baguirmi, and the eastern region of Wadai, with nearby Siltine and Ennedi farther to the north.

Gouera Province suffered heavily along the route of troop movement: As in other areas, emergency food and medical aid are currently being offered there. This paper will not discuss the Gouera region further, because it is felt it would be difficult to establish development-oriented rehabilitation efforts there at this time.

The West

The first battle of N'Djamena was February 12, 1979. There were many civilian deaths, and people fled to the interior of the country. Southerners - the majority of the bureaucracy - went home to the five southern provinces, transporting their technology monopoly with them. Northerners - mostly merchants - residing in the South, left under menace. There were deaths, and many Northerners fled into the neighboring Central African Republic, or Cameroon. Some worked their way through Cameroon and regained their homes via Kanem. Pockets of others remained in the Central African Republic: some in Bangui were registered by UNHCR. Small groups remained along the border.

The second battle of N'Djamena began March 20 and 21, 1980. The capital was a war theater from then until December 15th of that year. Heavy and repeated fighting destroyed much of the city;

History and Context: Refugees and Regions (cont'd)

the cathedral lost its roof; no building was without its scars. Urban life, civic services, and government effectively ceased.

By April of 1930, Koussari in Cameroon, normally a town of 10,000 souls across the Chari River, was full of Chadians living in the streets, the open spaces, renting where they could, if they had the means. Most stayed there until the end of 1931. Some waded daily across the river trying to bring out their goods. A market developed in Koussari to serve this population. N'Djamena was pilfered: records vanished from government offices, text books disappeared from schools, ice-boxes and stoves and household furniture melted away.

Koussari may have had 150,000 at some point; after a time a camp was built, and 120,000 were registered there. It was divided into 13 sectors. The camp population was a cross section of Chad's ethnic diversity: perhaps half each from north and south, and grouped largely into ethnic wards.

From a pre-war urban populace of circa 300,000, perhaps 2/3 fled the city of N'Djamena; 1/3 stayed throughout to take what came. Later the Cameroonians built a camp at Poli, farther south and to the interior, which was to hold the hard-core exiles whose political affiliations made them fear to return. Designed for 30,000, Poli never held more than 7,000 refugees; at this writing only a few hundred may remain.

There were Tchadian refugees in Nigeria at Ganharu and New Hardy near the border. An UN High Commissary for Refugees agent dealt with them, as well as those who sought shelter in Maiduguri, where a resident Chadian population had long existed. This HCR effort ceased in December 1932.

History and Context: Refugees and Regions (cont'd)

The East

In January, 1930, FAN (Habre) and FAC (Goukouni) troops fought in Wadai provinces. Officials in the eastern regions--many from the South - fled into neighboring Sudan where they settled in and around El Geneina, a trading city of 30 - 35,000 people in the bordering province of Darfur.

Later, in March of 1930, when Habre left the GUNT (Government National Union), he fell back on his strong-hold of Abéché, Waddai's capital.

The Libyan/Goukouni-Government (GUNT) mutual defense treaty of June 15, 1930 brought Libyan arms and soldiers into Chad, and turned the balance against Habre's FAN forces. When he was forced to flee to Cameroon, much of his supporting forces, and peoples of east/central Chad sought refuge in Sudan/as well. In December of 1930, UNHCR began to care for circa 3,000 Chadian refugees at El Geneina.

In January 1931, Goukouni and Kadafi announced the merger of Chad and Libya. In the summer of 1931, Libyan troops occupied Abéché, preventing people from planting their fields when the rains began to fall. Goukouni's troops and the Libyans robbed people in the eastern provinces of the food in their granary-reserves, and carried off much cattle to the north into Libya. The Libyans hunted the game of Waddai, Ziltine and Ennedi, from helicopters. So effective were these animal massacres, that most of these regions are now stripped of wild animal populations. As hunting and gathering have always formed an appreciable part of the nomad food supply, this disruption in the ecologic balance adds its quantum to today's picture of incipient famine.

With the advent of the Libyans in Waddai, both nomad and sedentary people from the eastern provinces crossed into Sudan. The first eastern-sector refugees (largely urban dwellers) had brought

History and Context: Refugees and Regions (cont'd)

skills, and were relatively easy to absorb in El Geneina. The second wave, of largely rural peoples, now competed with their Furi hosts for limited resources in the area. Sudanese government efforts established camps at Goni Masr and Karantina near El Geneina, and CARE distributed food. The Médecins-sans-Frontières set up medical back-stop, and HCR was on the scene.

By 1982, drought was another complicating factor. The maximum number of refugees registered at the Sudan camps - in October 1982 was in the neighborhood of 13,878. Between 8,000 and 10,000 in the camps were actually fed.

The Return

It is believed that altogether between 200,000 and 250,000 refugees returned to the N'Djamena area from asylum in the neighboring states. 30,000 were brought back, through official efforts, but many drifted back as they had gone, on their own.

From October/November of 1981 through the following June, the first "repatriation/rehabilitation program" was sponsored by the UNHCR, which offered food and basic living goods such as blankets and kitchen pots. Much of this was handled through CARE-CHAD and the Kabalai Catholic Mission.

Habre's army returned, victorious, in early June 1982; and a published amnesty called for citizens to return. During much of 1982, the HCR fed most of N'Djamena with food stuff coming from American PL 480. In 1983, food came from Kuwait, France, Belgium, Switzerland, Japan and Argentina.

Distributions were made of sorghum, millet, rice, corn, and wheat and flour; also milk, and edible fats, tinned fish and tinned meats.

Everywhere the UNHCR and CARE found a great problem to determine who was a "refugee" and who not, and who had the "official" right to receive supplies. Although registered "card-carrying" refugees existed, many had gone, and returned of their own volition without

History and Context: Refugees and Regions (cont'd)

benefit of "state" or "agency". Folk who had stayed in the country had often suffered more, or were equally destituted. Tempers rose, and the right to receive became a politically sensitive issue. Demonstrations in front of CARE-CHAD made the point and the Government accepted the responsibility to designate beneficiaries. Both CARE and the N'Djamena Kabalai Mission offered "self-help" assistance to people prepared to rebuild their homes and shops. In a first phase, the mission loaned construction materials and tools (wheelbarrow, pick-ax, shovel, ladder, trowel, empty-barrels, and frames for adobe-bricks) to heads of family grouped in cooperative teams of five. When the tools were returned, roofing materials were given.

Another reconstruction-assistance phase has begun in N'Djamena recently.

HCR ceased to offer food relief in N'Djamena on 29 March, 1983, but the World Food Program and CARE-CHAD are still distributing in various contexts, and vulnerable parts of the population depend on this food.

The El-Geneina refugees began to return as of June 1982. Possibly 15,000 in all have returned to the Waddai/Biltine/Ennedi area. Perhaps 500 more still remain in El-Geneina.

As of September 1982, it became clear in the east that hunger was just around the corner. Abóché market offered food stuff, but at five times the normal price. Medical survey teams were in disagreement about the signs of malnutrition in children; but Cuareda, Iriba, Biltine and Fada signaled growing hardship.

The Libyans had inhibited planting in the sufficient rains of 1981; in 1982 the rains never came. From a normal yearly rainfall of 470 mm (already minimal for agriculture), Waddai region dropped in 1982 to a scant 134 mm. Burnt pastures did not come back in grass. The millet harvest was zero. The food reserves were gone. Swiss Disaster Relief sent an observation team.

History and Context: Refugees and Regions (cont'd)

A month later, they opened the relief office in Abéché and grain trans-shipped through Nigerian ports began to arrive in Madaï, from where German-donated trucks have moved it into the stricken areas. An immediate effect was the drop and stabilization of food prices in the market.

In 1971, the social-geographer, Clanet, ascribed to Abéché 27,000 inhabitants. But Abéché had a declining population before the war with a migratory-labor drain to the gum arabic harvests of Kordofan, and the cotton-plantation jobs of the Gezira in Sudan. High mortality in the war, and much displacement, make numbers-guessing chancy. However, of the circa 15,000 refugees in Sudan, all returnees have transited Abéché; without resources to resume a rural life, many have stayed on in town. Returning herders from the northern administrative regions of Siltine and Ennedi, with no pastures, no millet fields, and the drying up of wells - have, many of them, moved their herds and families deep into Salamat and Mayo Kebbe in the South, for dry season pasture. Even normally sedentary villages have taken to the tent for lack of water, and travelled to the South.

In Abéché, population figures now suggested run as low as 40,000 as high as 70,000. The Préfet advised that in recent days a new 5,000 have arrived from Sorkou-Ennedi-Tibesti (S.E.T.) regions in the north, moving south because the wells are dry. The continued displacement lays further stress on the marginal resources of Abéché already encumbered with the return of refugees from Sudan.

Nigerian Expellees

Chad's most recent wave of refugees were expelled from Nigeria in December of 1962. In the neighborhood of 700,000 Chadians normally live and work in neighboring Nigeria; when foreigners were expelled, some 37,000 returned to Chad. N'Djamena received in the neighborhood of 24,000; and approximately 13,000 people came home through Fiquil in Cameroon, thence to Léré in Mayo Kebbe prefecture. Many of these people accepted UN Disaster Relief

History and Context: Refugees and Regions (cont'd)

Organization (UNDP) relief donations of basic gear and "grub stake", and transportation to places of origin in Batha, Salamat or Sarh. Some also settled in N'Djamena, crowding further the populous districts of "Merdjane-Dafec", "Sénégalais" or "Repos".

One asks: "Where do all these people go?" because today, "refugees" seem hard to find in Chad. No one can take you to a camp, point out a sector of the city where "refugees" are to be found.

Though some people went to camps, have cards, and their names on lists, in fact the whole of N'Djamena's population has been displaced at some time, lost property, and suffered.

As people have come back, they have moved into the ruins of their houses, or the corners of a brother's house. They eke a living through petty commerce, or stretch and share the supplies they receive.

"Refugees" and "war victims" are not visible, because they are everywhere, each with his own tale of hardships and dislocation. In effect, the whole of N'Djamena and Abaché regions continue to suffer the aftermath of war.

SOCIAL SOUNDNESS ANALYSIS

Small Enterprises Sub-Project

N'Djamena

Description of the City, with damaged area, and Reconstruction

The City of N'Djamena was first the scene of battle in February of 1978. A year and five weeks later began the long, disastrous "second battle": for ten long months of 1980, the city knew little respite. When there was no shelling, the looters were at work. Everything that could be carried off - house-roofs, plumbing, etc. - found its way to be sold in Kousseri, or Nigeria. Today you can buy the university-library books in stalls in the center of the N'Djamena market, near the dried fish and live chickens.

Reconstruction began in October of 1981, under the UNHCR sponsored Repatriation and Rehabilitation program. Both CARE, and the Kabalai-district Catholic Mission loaned tools, and provided construction materials to Heads of Household, to rebuild their homes. From November 1981 to May 1982, circa 3,000 houses were repaired and 2,000 more are planned from that program. A second reconstruction phase began in December, 1982 to aid 4,000 families repatriated between August and September of 1982.

A third reconstruction phase has recently begun.

The city was left in ruins. Returning refugees set up life in the middle of the devastation, and wrecked buildings and districts have been roughly patched with scraps, or mats and boards, or not at all. Now busy commercial and social life animates the spoliation in the city's center. In out-lying districts - especially those to the south such as Moursal, Chagoua, Sans-Fil, and Paris-Congo which formerly housed many bureaucrats and Southerners, the empty stretching blocks of houses without roofs form a near ghost-town. Only a few children going to and from the newly re-opened district school liven the empty streets.

N'Djamena (cont'd)

Within this desolation, however, and behind compound walls, the families of some civil-servants have roofed over sheds or storage rooms to live in, because they have no money to rebuild their homes.

Thus, Mme Soti now sits and cooks under her mango tree, her family of husband, husband's brother, and four young children are sleeping and living in two tiny rooms. They have been able to roof the bathroom and toilet, and happily there is running water. Her older sister, Mme Manguère with her husband, two adolescent sons, and one small daughter are camping in the shed in one corner of the compound. It will all be worse when the rains begin. Until very recently no salaries have been paid. In recent weeks the government has been able to offer 1/2 of salary for the last 3-month period. It will be a long time, however, before there are resources to rebuild the house.

In the business-district blocks of roofless, pock-marked shops need to be repaired. Garages, work-shops need to be rebuilt, re-equipped. A women's weaving cooperative sits on the dusty ground in Chagoua to make its rugs. These women are now building their own workshop with the aid of one mason. But they will need help for the roof, and for equipment.

Population Distribution

N'Djamena groups people from all Chadian ethnicities and regions. There is a tendency for people from one region or tribe to settle in the same quartier, though all quartiers are somewhat mixed. Essentially, people from the North have settled in northerly parts of the city, and people from the South fill southern quartiers in the 3rd and 4th arrondissements (wards).

The pre-war population of N'Djamena (1978) was given as circa 300,000 but there was always a sizable population of transients.

Density of occupation varies considerably from the populous

N'Djamena (cont'd)

central and market sectors, to the bureaucratic and foreign peripheral residential sections with spacious villas and tree-shaded compounds. Most populous districts have been Ambassatns and Kabalai in the IIIrd ward, Mordjane Dafce in the Vth ward, and Anciens Combattants in the Vth. These might well be the best districts in which to site small enterprise activity.

Refugees and Survival

"Refugees" are scattered throughout the city, because most people fled, and returned to a destroyed city. Other "refugees" have come later: Nigerian expellees, mostly city-dwellers, for whom returning to a rural Chadian region of origin made no sense; Hadjerei families, fleeing from the still very unsettled conditions around M'engo, in Ouera; Kanembou, Goran, and Arab peoples from Lac and Kanem, whose live-stock losses in the several-years Kanem drought demolished their source of livelihood. All these people live with - and from - their few employed relatives; or they trade items in the market; or they look for work.

Many Chadian women go out from town every morning on foot or bicycle, to keep the small gardens that nourish their families. Others walk 10 - 12 Kms. to gather firewood to sell in the market. Still others wait patiently in the queues around Social Centers to receive the World Food Program, or CARE rations provided to pregnant and nursing mothers, to malnourished children, or to the handicapped.

CCC Goals

In the request-for-international-assistance document presented in Geneva in November 1982, the CCC limned a 4-year time frame:

- Years 1 and 2 to be devoted to relief and rehabilitation;
- Years 3 and 4 to see Chad move into major development efforts.

Most efforts to-date have been in emergency relief. Only the UNHCR/Kabalai Mission/CARE program for rebuilding dwellings

N'Djamena (cont'd)

through self-help has addressed the urgencies of rehabilitation.

Needs Assessment

Immediate major rehabilitation needs of the city and its war-damaged populace, in the view of official and qualified observers are:

- Credit to launch efforts
- Creation of labor-intensive businesses
- Availability of construction materials
- Formation of construction-skilled labor
- Marketing mechanisms and distribution mechanisms
- Job-oriented training for women
- Production of tools and other materials to rebuild damaged sectors.

'Spread Effects'

Appropriate planning should project responses to these needs. But the needs of N'Djamena should be conceptualized in the framework of "integrated" development of N'Djamena-and-its-dependent-hinterland, for the city is not only the Capital, but also the central market and motivating factor for surrounding areas, whether they be the industrial (sic) complex designed for Farcha or the polder market gardens developed in Lake Chad to serve N'Djamena's needs. Hand or foot pumps for small wells, to be made in N'Djamena, for example, can resuscitate the broken (Peace Corps built) wells-system of Kanem.

Compatibility

The Small Enterprise and Technology sub-project here presented, should be perfectly appropriate to the City's needs. It should serve to catalyze and promote economic reintegration, while at the same time it provides reconstruction and rehabilitation materials and services.

N'Djamena (cont'd)

Beneficiaries

There is a pressing need in N'Djamena for money to be "spread around the system". Although the city represents a "money-oriented" economic system, in fact, at this moment much of the population is operating in the different - and more traditional - economic sphere of exchange in kind, or in obligations, prestations, and reciprocal services. But access to money is needed in order to access goods and services which reside in the money-economy sector. In plain language, many people need paid jobs.

Therefore, the Small Enterprises and Technology sub-project should give priority to enterprises generating large numbers of jobs. Cooperatives should not be overlooked in this regard, nor piecemeal enterprises.

Organization

As a general rule, cooperatives based on traditional groupings (co-ethnicity for example) are more liable to be fruitful. As neighborhoods are frequently co-ethnic in origin, enterprises drawing labor from a contiguous locale would probably qualify.

Women's businesses and cooperatives should figure equally. There are, in post-war Chad, many women-headed households. These women show great energy, and often, good levels of commercial skills. The Directress of Women's Affairs informs us that Coran women from Kanem and the North, are all merchants who move with the transhumance, and ply their commerce along the way. They are characterized as individualistic entrepreneurs. Southern women, on the contrary, are described as women who work together well in cooperative endeavors.

Choice of Areas and Participants:

Until it is known precisely what enterprises the implementary VCLAC will choose to develop, it is difficult to specify groups or areas. As a rule of thumb, heavily populated areas will

N'Djamena (cont'd)

provide more people needing jobs. Agencies^{1/} working directly with the needs of the community can help define areas and opportunities. There are no localized concentrations of "refugees", but bona fide "ex-refugee" individuals, and people who have suffered war-and-displacement damage should have priority over others.

Constraints

The major social problem will, in fact, be that of who will have access to jobs, training, credit, etc. under the project.

It is only reasonable that people will hope to see their family, tribe, or regional colleagues favored. Project benefits will not be available for all.

In some cases, the type of activity will indicate the neighborhood and the participants in others, the VOLAC's careful consultations, should pinpoint a district or population to serve.

When a district or a product is once chosen, the further careful consultations with neighborhood representatives should clarify the population affected.

For this project it is too early for further discussion of participants.

Impact

Impact can only be discussed in the most general terms. In essence, jobs and housing, and the production of developmental products should be of benefit to both city and nation.

Economic Profile:

The reader is referred to the "N'Djamena: Profile of the Economic Sector" infra. p. , Technical Analysis.

^{1/} Ministries of Labor, Social Affairs, Missions and Relief and Voluntary Agencies, etc.

Social Soundness Analysis

Abéché, Wadai, and the North-East

The kingdom of Wadai was founded by Abd el Karim, an Arab noble, and Muslim, and ancestor of the present Sultan, Ibrahim Muhammed Ruada, in alliance with the Maba Hill-Tribes.

The first capital at Wara was moved to Abéché in 1650, where it sat astride the caravan traffic that came from the Fezzan Oases in Libya, carrying the long-distance trade to El Obeid in Kordofan and on to Omdurman on the Upper Nile.

A constant flow of merchants carried and traded exotic skins, hides, slaves, ivory, benzoin, gum-arabic, cloth, seeds, soap, kohl, salt, swords, and paper. The Sahel trade-route was frequented as well by pilgrims from the West, wandering saints and scholars, raiding parties, and ambassadors from the kingdoms of Kanem, Bornu, Baguirmi, Darfur, and empires in the Western desert such as Songhay, Sokoto and Mali.

Wadai's relations with the long-distance merchant trade made it rich. Military campaigns against its neighbors increased its strength. It had a court-life, became a center for religion and some learning, and artisans established their trades. Abéché became a major market, and the most important city of the Central Sudan.

Changing with the characters of different rulers, Wadai and its citizens alternated between xenophobic suspicion of the constant flow of strangers and an open welcome to the ideas and innovations of the outside world.

In the closing years of the 19th century, Islamic political-religious ferments of the Senoussi and Mahdist movements raised sympathies in Wadai. Abéché Sultans were Senoussi adepts and partisans when the French, in the first decade of this century, fought the Senoussi and the Arabs of the Niger and Chadian desert for colonial conquest.

Abéché, Wadai and the North-East, cont'd.

Barth and Nachtigal, 19th century European travelers, have left us cameo descriptions of that Abéché which was a central city of another day. In 1873 Nachtigal estimated Abéché's population at twelve to fifteen-thousand souls.

Small mud-walled town of the eastern Sahel, with dusty streets and uncertain wells, Abéché still sits in a hinge of history and trade. It is still a makeweight in the political balance, as a focus for the loyalties and aspirations of North, East and Central Chad. As N'Djamena struggles to build its balance of power, it must show awareness of the needs and problems which Wadai, Biltine and Ennedi now face.

The people of Abéché and its northern hinterland have suffered in the civil war, as this paper elsewhere makes clear. The current drought and impaired situation of the district's population put Abéché today in a parlous state. The influx of refugees, and continuing tide of those retreating South because of lack of water disturbs already fragile equilibria between population and elementary resources of food and water.

Abéché, Wadai and the NE : People

There are pockets of sedentary people (ex. the Mimi and Massalit) especially to the South and East of Abéché. Where wells can intercept a sufficient aquifer at relatively shallow depths, or where a major wadi offers year-round under-flow^{1/}, conditions may be adequate to permit settled villagers to raise garden-crops and orchards, which they complement with small mixed herds.

North of Abéché there is some good pasture available; but neither surface nor sufficient sub-soil water makes possible fixed settlement. Therefore, people of the region practice both long and short transhumance.

From December to April they move to the South. From the Siltine area many pass thru Batha Prefecture and cross the Batha river, where some spend the dry season normally in Chari-Bacuirmi (Arac

Groups who practice the long trek go deep into Mayo-Kebbe and some into Cameroon.

From the district just N. of Abéché, most reactions go south thru Goz-Beida and into Salamat. In bad years like the present one, they may descend into the Central African Republic. This year, the infected herds have carried rinderpest with them despite the monumental prophylactic efforts of the Service de l'Élevage (5 million cattle vaccinated). In Southern Salamat, Tandjilé and Mayo-Kebbe the herds - as well as herders - move into the domain where they are at risk to the Glossina flies which carry sleeping sickness (trypanosomiasis).

In the end of May they start North.

In August and September, in the rains, they may go as far North as Mortcha, above the 16th parallel.

When they are in Wadai, Siltine and Ennedi (but sometimes where they cross the Batha River) the transhumants plant their fields sorghum and small-millet. Often the women and children are

^{1/} Moura, at Km 45, is such a village. With mud walls and thatched roofs, it has a population of 3,654. It served as Capital of Wadai between the departure from Wara and installation at Abéché.

Abéché, Wadai and the NE : People (cont'd)

left behind to tend the crop, which is expected to give them one harvest a year.

This year (1932 planting) there has been no harvest in Biltine, Guereda and Iriba. The Arada (Biltine district) who normally travel to Ghari-Baguirmi in short transhumance, are described as being in desperate conditions, and many have fallen back on Abéché for help.

There is, in fact, a 200,000 T grain deficit in the country for the year of 1933.

Are described as being in "acute need" :

- in Batha prefecture: Oum Hadjer and Kanel
- in Biltine sous-prefecture: Guereda and Iriba
- in Ennedi : Fada and Berdoba, Cunianga Kabir

There is report of starvation deaths in the B.E.T.

- 30% of Fada children, and 27,5 % of Abéché children are described as being "below 80% of normal weight to height ratio."

Arabs of the region (fractions of the Mahamid and Bandala as well as Bedeyat) are described as true nomads. Without permanent rainy-season camps, they circulate continually. But Wadaians such as Kodoï (Mabang) and related peoples like the Massalit, Konièré and Bakhat, as well as Tama and Zaghwa, practice long treks, and return to their own "home-lands".

In every area, some clan is known as the "Owners of the Earth" and local myth or oral history will describe them as the earliest arrivals. Other clans may be the Owners of wells, or water - sometimes ritually, but sometimes because they have dug the well(s).

Later arrivals may have come, as conquerors, or clients; or may simply be the lesser-lineage descendants of younger sons

or slaves, or "despised caste" associated groups^{1/}. There are often complicated, and ritualized, relations between groups who habitually use the same elementary resources. Sometimes there is conflict.

There are arrangements between sedentary farmer groups, and herders. For example, all respect the "Marhala" or animal corridor which runs from Salamat through Wadai and Biltine to Fada and thence to Faya. Its use prevents clashes between pastoralists and farmers...

^{1/} Like the "Haddad" 'blacksmith' tribe, whose members only make in-group marriages, altho they often live and travel dispersed among other tribes. They also deal with butchering, tanning and magic, and are treated with diffidence by others.

Abéché, Wadai and the "North-East": Economics

Abéché's daily market is the center of life and economic activity for the town and for the region;

From the gardens of Wadi Moura, 45 Kms to the east, and Am Zouer on the Guereda road, tomatoes, mangos, peppers, okra, and limes travel to Abéché market in wooden cases slung on camel-back.

Dromedaries do most of the transport in this region. They are of the heavy draft-animal breed from Kanem, rather than the slender, racy mounting-camels of the Tibesti.

The man transporting the produce to market carries a couple of long spears: until the Libyan sojourn in the district, there were lions, as well as much other game. But men go armed in any event: his leather-sheathed dagger is strapped to his upper arm by two leather bracelets. He will use it to cut his meat or bread at meal-time.

Several other merchants, with their camels, are along this road which comes from Adré, and from Sudan. These men engage in the cross-Sahelian trade. Coming now from Darfur, they are transporting edible oil, soap, tea, rice, wheat-flour, and some Sudanese ladies' veils ('tobe). One man has some goats as well. Normally, such traders would be transporting sacks of millet and sorghum, because we are nearing the period of the "soudure" when people's grain-stocks from last harvest run-out, and the new grain is not yet in head. At that time, those who can, buy grain to tide them over. People with no money first reduce the family rations in quantity, then cut to one meal a day - sometimes one meal every second day. At such times, it is a problem to keep seed-grain. Transporting traders make their money between the difference in the buying price in one region and the selling price in another. Often they work on minimal margins.

1/ "Am Zouer" means "Mother of Flowers" - an optimistic name for wadi gardens of a parched land.

Now, a major part of the grains in the area comes from Relief distributions, so prices are low in the grain market, although corn, sorghum and several millets are available.

In Abéché, the merchants, will sell some, and buy some. Some of the goats will be sold in the live-stock market, several to the butchers. The trader will continue to live on milk from several of the others, which are fresh.

These merchants will buy the flat-weave coarse rugs which are made around Abéché for 2000 to 3000 FCFA. In N'Djamena, they will sell for 12,000 to 14,000 CFA apiece. Around ATI the traders will sell soap, and sugar and rice. They will buy Ati's fine flat baskets with the soft brown and blue and henna-rose designs.

Crossing the Wadi Batha into southern Batha Prefecture, and then into Chari-Baguirmi, the traders will barter tea, and sugar; and some millet and peanuts with the herders whom they find there in dry-season ferik.

Several tents, whose eight adults are caring for a herd of circa fifty-five cows will have three castrated males of the 2 to 4 year old class to sell, between them. This transaction may not take place in money at all.

Chapelle^{1/} gives us equivalents for 1957; many of these may not have changed over time:

- " - 1 goat = a big leather sack, or a tent mat (c. 5 x 9)
- 1 goat = 50 to 60 Kgs. millet in the South, or 100-120 Kgs of dates in the palmarais
- 2 goats = 1 piece of cloth 14 elbow-length long
- 1 goat = 1 Kg tea or 4 Kgs sugar
- 1 small calf (male) = 5 - 6 Goats, or a female donkey
- 1 2-year old camel = 6 - 7 goats or a female calf

1/ Chapelle, J. 1957. Les Nomades Noirs du Sahara.

Abéché, Wadai and N.E.: Economics (cont'd)

Our traders will collect more and more cattle as they go along. They will now turn north to avoid N'Djamena and the paying of customs fees as the cattle are driven into Nigeria. At the cattle market in Maiduguri the herd will bring a good price: Nigeria is rich, and its densely populous cities consume a lot of meat.

In Maiduguri, our merchants will buy enamelled tin basins of the 32-litre size, painted in large flowers and with blue rims. They will buy much sugar, because Sudan is short of sugar, and...

We have taken considerable space to describe the activities and the market level of this trade, because since the beginning of civil strife, a great deal of Chad has been living on this kind, and these levels of petty trade and commerce.

Government employees whose salaries have not been paid for 5 years live on petty commerce.

Women whose husbands are dead in the wars cross to Cameroon, and return to sell 12 cartons of cigarettes, and five boxes of soap-suds.

A woman from Khartoum sits under a tree and sells amber; aluminium rings and bracelets, and tiny amulets.

A nomad leaves his tent on the Wadi Bahr al Ghazal in northern Kanem in October taking two goats, and a pack-camel. Going south at the time of the millet harvest, he exchanges his two goats for a load of millet. Some he will leave as he repasses his encampment, but part he will exchange 300 Kms to the north for dates and salt. He recrosses the desert and with his dates buys cloth and more millet...

This is not a market-level Americans are accustomed to consider, but internal markets - on however modest a scale - are important

1/ This description drawn from J. Chappelle, op. cit.

Abáché, Wadai and N.E.: Economics (cont'd)

to understand now in Chad.

One of the consequences of war has been curtailment in the traditional internal circuits of goods. The complementarity of (Northern) herder and (Southern) settled agricultural populations found economic expression traditionally along the transhumant migration routes. Herders descending to dry season pastures carried a trade in butter, skins, milk, and herd off-take animals. Southerners sold millet, corn, spun cotton, etc.

In the aftermath of war, crops rot in Southern fields, and the North has been hungry.

Needed is improvement in roads and communication networks for the transport of basic supplies. Also needed is augmented and improved technology for the conservation, storage, and transportation of subsistence foods.

Along with the agricultural technology to increase food supplies - both human and animal - in the Wadai and North-East region, this project will address questions of food conservation and storage.

Social Soundness Analysis

Abéché, Wadai and the North-East : Nomads

During the rainy season, Wadai, Biltine pastoralists return to their home villages, which may range in size from 200 to several thousand people. From there, herds men go out to several days distance, moving with the animals from pasture to pasture, camping till the annual grasses are grazed down. Pasturage depends entirely on the quantity and distribution of rainfall. Rainfall here is not heavy, and is irregular in both space and time. Poor years occur frequently, and often come in series. Several spells of severe shortage can be expected in any twenty year period and since the 1950's there has been a degrading trend. When the rains come later than usual animal losses can be heavy in the last very dry weeks.

In these latitudes herders dispose of narrow margins; weakened animals are subject to disease, or are prey to jackals and hyenas. When the rains begin, animals are often lost when they get stuck in the mud.

The structure of the herd is of prime importance.

Nomads depend on milk for a major part of their diet, so there must be a certain percentage of animals fresh at all times, to yield food for humans and leave enough to keep the calves alive. There must be a sufficient reproductive pool to maintain the herd, and numbers of heifers to provide margin for losses. A number of steers are maintained as disposable wealth, to kill for the occasional ceremony or feast day, to trade for needed items, to use as dowry in order to marry a son. Minimal herd size for a pastoral family of eight would be about 35 herd. In the Abéché region, herds are often over 100, but these will group the animals of several tents. One cow needs a minimum of 22 Hectares to graze adequately in this region. Extra animals also serve as a form of storage of 'food for hard times'.

Nomads (cont'd)

Herders of the region keep more bulls than American stock-men would, in order to maintain breeding margins. They are not loath, however to castrate animals, and sell or trade at need. Oxen are used as draft animals during migration. They do not, however use oxen to plow.

The herds are never all in one place. Nomads keep the animals healthy by keeping the grazing unit small. This protects pasture as it limits the bourns for disease. Though a given man may own a lot of cattle, he will spread it widely. Some will be worked by a client herdsman, who has the use of herd-product for himself and family, and may be paid from increase. Some animals may support sons or other kinsmen and their families. Social/political relations both within and beyond his tribe may ride on the usufruct of other animals. There are Biltine people who have reciprocal borrowing relationships with other tribal fractions in Sudan, and in Salamat. Disaster is always hedged through the reciprocal right to access stock in times of need. For this reason, most Abéché region families have not suffered great stock losses due to the war.

But long-distance migration is their prime strategy when catastrophe threatens. They must make their calculations of the level of threat in good time, if they are to travel when there is still sufficient water and pasture to support the migration.

Both pastoralists and farmers, peoples of the Chadian Sahel and desert are also hunter-gatherers. A good proportion of their food supply has always come from the wild. Until the Libyans stripped the game supply, wild meat was eaten more often than animals of the herd. Many plants and trees are known and named and used. Thus "Hadjilis", a shrub with thorns, offers an edible fruit, the seeds make oil, and the bark is used for soap.

"Maket" is the fall-back ration in the hardest, driest years. It thrives where nothing else will. One can eat its seeds and leaves, and drink its juice.

Nomads (cont'd)

2) They want dams across wadis.

Storage dams, infiltration dams, and dikes, to capture runoff and store it in the wadi bed. These could lengthen considerably the time spent in the wadi, and allow for further planting of gardens, improving food stocks and nutrition.

3) Hafirs and cisterns.

Of various designs, the Hafir is an impluvium. The captured rainwater is percolated thru charcoal and stored in a closed cistern.

Human and Animal Health Services

Nomads are well aware that they receive fewer services and less needed help than fixed residence people. They are for obstetrical, first-aid, and veterinary health and medicine

SOCIAL SOUNDNESS ANALYSIS

Abáché, Wadai, and the Northeast : Residential Pattern

From the air, settled villages and encampments are easily distinguishable, although many of the same construction materials are used for both. In this Saharan region, the black goat-or-camel's hair tent is replaced by the "tent" made from grass-mats.

The settled village, seen from above, looks like the microscope view of cells in a tissue-culture. Large and small Zaribas (thorn, or mat-fenced compounds) with one or more mud-and-pole and mat round structures in each, are juxtaposed in a crazy pattern of "cell-division".

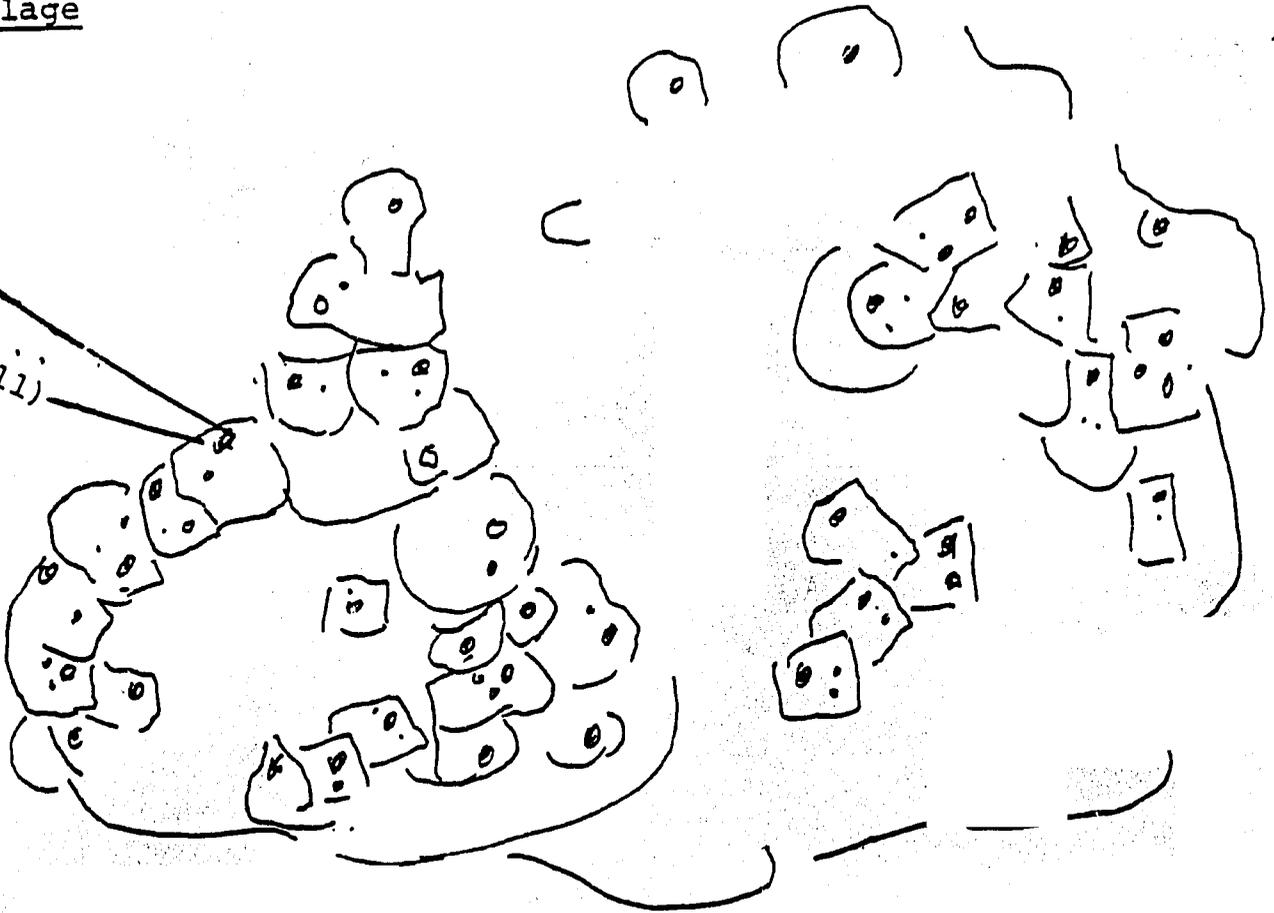
In fact, since the compounds of an extended family often abut, "cell-division" is an apt simile. Empty areas exist in no fixed pattern. The village girdle is a mix of enclosed fields or gardens (if there is water), and enclosed live-stock corrals.

The encampment takes one of two forms. Either the tents are placed in a rough horse-shoe shape, each with its brush-fenced corral behind; or tents are aligned along a dune or elevation rim in a more or less straight line. This is usually a smaller Ferik (camp).

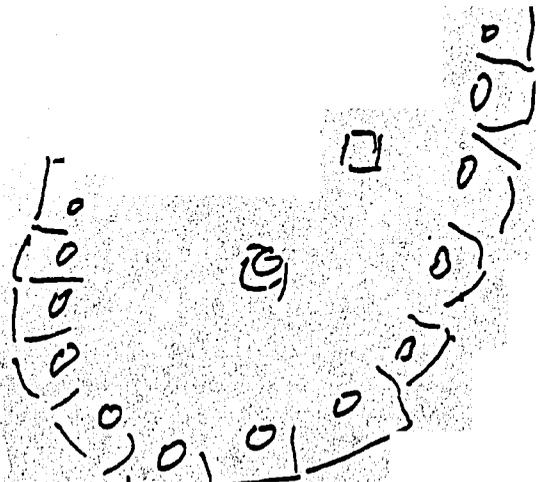
In each, mat-roofed pole-sheds serve as "reception-rooms", "council-chambers", and places to store goods.

Village

(House)
(Zariba Wall)



"Ferir" (Encampment)



- Very Large
thorn-fenced corrals
seen from the air--
often in isolated
positions

SOCIAL SOUNDNESS ANALYSIS.

Abéché, Wadai, and the Northeast: Sedentary Farmers

Where sufficient water resources exist, either in wadi-bottoms, or from furnished aquifers and wells, there are villages of sedentary or semi-sedentary people in Wadai.

These locations are predominantly to the South of Abéché; but, all wells are exploited.

The range of life-style in this area can be visualized on a continuum, where "more-settled", or "more-nomad" activity adjusts to available resources and current conditions.

Continuum of Survival Strategies

<u>SEDENTARY VILLAGE :</u> <u>with Settled Agriculture</u>	<u>SEMI-SEDENTARY</u>	<u>SHORT TRANS-HUMANCE</u>	<u>LONG TRANS-HUMANCE</u>	<u>CONTINUAL NOMADIC TRANSIENCE :</u>
Ex.: <u>Mini Kuka</u>	like Herders from Settled Villages Ex.: <u>Mara Tama Zachoua</u>	Ex.: <u>Arada Massalit</u>	Ex.: <u>Haddad Bidayet</u>	with no Fixed Points or Patterns Ex.: Arab: - <u>Mahamid</u> - <u>Rizegat</u> - <u>Culed Zio</u>

Thus, herders may settle down when conditions are good.

Or sedentary villages may send out their herds with adolescents or paid herders to pastures at several days' distance.

Sometimes the animals of settled people migrate with the nomad herds of neighbors in the annual trans-humance.

As seen at Wadi Moura and Fasha, men and women both work in the gardens.

It is the task of men to clear the ground and do the heavy hoeing. Women plant and weed and water. Women also make the small square raised beds, and the dust-canals between them to carry water to each square of peppers, onions, etc.

Tools are simple: a straight hoe, an axe, a hoe-and-mattock combination, calabasse-gourds to carry water. A heavy forked branch

Abáché, Wadai, and the N.E.: Sedentary Farmers (cont'd)

may serve in lieu of furrow-plow. There is no animal traction.

Every one harvests, and every one works at the beating of the sorghum and millet. Racks are made of poles in which to dry condiments (sesame, or various plants such as Hibiscus flowers and leaves (Rosa-Abyssinica) and wild harvests.

Most vegetables are sun-dried: tomatoes, peppers, okra, onions, garlic, dates. Tomatoes, okra, etc. are reduced to powder, and stored in jars and gourds, to make "mouille" or 'sauce', which - with millet-ball, or millet-pancakes ("Quisar") - are the basis of diet.

Clabbered milk and grain are mixed with water, and drunk for refreshment, or to "give strength" during the day, or in the early morning.

Except where the wadi is very large, and with exceptional year-round under-flow, agriculture is barely of subsistence level, and most people depend heavily on the milk-proteins from their herds. This is supplemented by occasional chickens, or wild doves. sometimes a goat or lamb.

Most people produce relatively little marketable margin.

This project is designed to address needed rehabilitation measures in the aftermath of war.

But it looks beyond the measure of the moment to deal with the pressing and fundamental problems of the region.

Improvement in water and food resources in this chronically marginal or deficit zone will benefit all urban, sedentary, and mobile peoples of the area.

SOCIAL ANTHROPOLOGIST'S INTERVIEWS AND CONTACTS

N'Djamena:

Wednesday 30 March '83

1. AID Director: John Woods
2. Dir. Médecins sans Frontières: Dr. J-P Luxen

Thursday 31 March

3. Dir. Gen'l Adjoint Min. Health: M. Kinbé Ngassadi
4. CARE Officer: Bill Stringfellow
5. AID FFW Officer: Les McBride

Friday 1 April

Ministry of Social Affairs

6. Sec'y of State for Women's Affairs: Mme F. Kimto'
7. Jesuit Mission Dir. of Develop. Planning: Father M. Fournier
8. UNHCR Director: Otto Hagenbuchle

Saturday 2 April

9. Dir. Gen'l Min. Public Health: Dr. Amoula
10. Directress Min. Social Affairs: Mme A. Gossingar
11. Group meeting with Jesuits working in different parts of Tchad: Fathers Fournier, Fort, Ferrer

Monday 4 April

12. Visit to villages of N'Dugia, Baltara etc. and Lake Chad irrigated agricultural complex: discussion w/ Sous-Préfet M. S Préfet: M. Ramadan

Tuesday 5 April

13. Dir. Gen'l Min. Eaux et Forêts, etc.: M.
14. Dir. UNDP: M. Wali Shah Wali

Wed. 6 April

15. Dir. UNIDO: M. P. Zysset
16. ILO Cooperatives Expert: M. A. Coulibaly

Thursday 7 April

17. Dir. French Mission d'Aide et Coop.: M. G. Massa

Friday 8 April

18. Conseiller Min. Elevage : M. J-P Goffings

Abéché:

Wed. 13 April

19. Swiss Disaster Relief Director: M. Walther Egli

20. Médecins-sans-Frontières doctors: Martine & Jean-Marie Fromme

Thurs. 14 April

21. Préfet of Abéché: M. Maïde

Fri. 15 April

22. Min. Agric. Chef de Secteur: M. Hassan Yacoub

23. Chef Service Vétérinaire: M. Ganda Kado

24. Chef Inspection Forestière: M. Omar Ngaré Adoum

25. Combattant: M. Jibrine Ouardougou

15 & 16 April

26. Officials in villages of Abougoudam, Fasha and Moura

27. Sisters at Catholic Mission:

Directress: Sister Nadia Karaki

Teacher: Sister Rose Khouri

Social Center Directress: Sister Cristilla Abi Khalil

17 April

28. Priest of the Abéché Mission: Père Coudray

N'Ojamena:

18 April

29. Social Worker: Mme Depor

30. Social Center Directress at Farcha: Mme Naomi

31. Social Center Directress at Repos : Mme

19 April

32. Ladies in Quartier Sans Fil: Mmes Pilasti, Soti & Mangeré

21 April

33. Priest at Kabalai Mission: Père Corti

SOCIAL SOUNDNESS ANALYSIS

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ANNEX F: PROJECT ANALYSES

(4) ADMINISTRATIVE

Administrative and logistic support for the PVOs (vehicle repair, maintenance and repairs, expediting, commodity procurement assistance, travel communications, etc.) should be provided by the Mission support contractor, Development Management Services. This will reduce overhead costs, increase the reliability of administrative support and avoid competition among USAID supported programs for goods, facilities or services.

USAID

USAID will have the responsibility of supervising the PVOs in accordance with the regulations governing OPGs. USAID in conjunction with the appropriate departments of the GOC will also review and approve the PVO subproject activity proposals. The administrative, management, monitoring and evaluation inputs to the project by USAID will require an allocation of staff time sufficient to achieve sound and effective project implementation and required support to the GOC and PVOs.

ANNEX F(4) ADMINISTRATIVE ANALYSIS

In one important respect administration of this project will be unusually problem free. The cooperating government, burdened as it is with other reconstruction efforts is being asked to make minimal contributions to the project with minimum administrative requirements. AID administrative responsibilities will also be somewhat less than for other projects since Operational Program Grants are involved putting the primary burden of administration on the implementing PVOs. On the other hand, the logistics of project support in Chad, particularly for the Abêché area, will be more difficult than normal.

The PVOs

The subprojects will be implemented by U.S. based PVOs with participation where possible by Chadian public or private institutions. Such projects will be carried out with the approval of the appropriate ministries of the GOC and the USAID mission.

In the implementation of subprojects, PVOs will recruit local and expatriate personnel, procure the necessary equipment and commodities (through the USAID contractor Development Management Services), provide the necessary logistical support as well as organize and supervise activities, including FFW activities that subprojects may contain.

In so far as possible the PVOs selected will have at least five years of program experience in Africa with preference given to experience in the Sahel.

The PVOs will negotiate the necessary operating agreements with the appropriate departments of the GOC.

Discussions are currently underway for the creation of a coordinating body for general PVO operations in Chad.

The PVOs who have expressed interest in the subprojects are currently registered with AID and already have experience managing projects in Africa. They have demonstrated a capability of meeting the technical, managerial and administrative requirements.

ANNEX F: PROJECT ANALYSES

(5) ENVIRONMENT/L

ENVIRONMENTAL ANALYSIS

Description

Some notions of geography are essential to a comprehension of Chad's situation today.

From south to north, Chad sits astride three major climatic zones: to wit: Sudanic savannah, Sahelian steppe, and desert.

In the deep south of the two Logone provinces and Moyen-Chari, 1100 mm plus annual rainfall permits the alternation of heavily wooded savannah with Guinean-type forest. With impermeable soils, much of this region as well as Salamat, is flooded throughout the rainy season which begins in April, and finishes sometime in October/November.

Above the 10th parallel, a region of densely wooded savannah (500 to 500 mm. annual precipitation) becomes progressively drier to the north. This is interrupted by the relatively infertile central highlands of Guera.

In the region north of N'Djamena, the capital, the 500 mm. isohyet marks the shift to a Sahelian landscape of sparse and dusty acacias, and associated xerophytic scrub. N'Djamena itself draws its water from the Chari river and, with irrigation, grows gardens, and can line its streets with perfumed and flowering trees. Nevertheless, it is a dusty city, where the harmattan's hot wind testifies the Sahelian presence.

The towns of Ati and Abêché (13th to 14th parallels), roughly limit the 350 mm. isohyet, north of which the sub-desert steppe melds progressively into true desert, somewhere around the 15th parallel. North of a line running from Mao, in Kanem, to Giltine rainfed millet and sorghum can no longer grow; and only oasis and occasional wadi-bed gardens thenceforth permit some agriculture.

The seasonal (but immense) Batha river^{1/} marks the northern line of dry season pasture for many transhumant nomads who descend from the north during the dry season. In better rainfall years, there is wet-season pasture for 3 or 4 months to about the 15th parallel, and in mountainous areas of Wadai, Giltine and Ennedi in the East, and the Tibesti region of the far-north.

Much of the region north of Ati is covered in moving, or stabilized dunes of wind-sifted, or ancient lake-bed sands. Where there is sub-soil water, some pasture and dune-valley cultures exist.

In the north Chadian desert, jagged but worn-down volcanoes of the Tibesti slope off into the peneplanes of Zorkou and Ennedi.

Throughout the eastern and northeastern regions of Wadai, Giltine and Ennedi, there are no major water bearing geologic structures. Of pre-Cambrian metamorphic rock, these strata harbour only limited and localized shallow pockets of water in weathered-mantle soils. Therefore captation of meteorological water becomes of prime importance to life in this region.

It is instructive to overfly the Chadian Sahel. At dry season's end, the arid, tawny land below is gullied with the dry-beds of countless wadis. In the rainy season, these small wadis will intersect and flow into large wadis. Large wadis will parallel and spread into flood basins. What is not stored in the wadi beds will join with other drainage accumulations till it forms wide and dangerous seasonal rivers like the Sarh-Batha and the Bahr-Azoum which empty into the Lake Chad, or Lake Fitri systems.

^{1/} An immense accumulator-wadi, the Batha drains a major sector of east-central Chad, emptying into the Lake Fitri. In the rainy season, the crest travels 45 km. a day !

The dry season land looks like a desiccated graveyard for empty rivers. When the rains are sufficient, these fossil-streams come back to life. The technological problem posed by the area is:

How to retain and conserve this wasted run-off water for productive use ?

The current climatic trend toward increasing desiccation makes this problem ever more crucial for populations of the north and

Issues

The proposed integrated rural-development project for the Abéché region offers essentially five elements, to wit:

1. Improved wadi-bottom agriculture, including such as :
 - .1 Horticulture
 - .2 Irrigated grains
 - .3 Tree-crops (ex.: fruit trees, etc.)
2. Improved rain-fed agriculture
 - .1 Improved cropping methods
 - .2 Improved varieties
3. Afforestation
 - .1 Village shelter belts
 - .2 Firewood plantations
 - .3 Crop trees (argan-nut, gum arabic, jujubier)
 - .4 Agro-forage plantations
 - .5 Soil, water, and range-conservation plantations
4. Water production, conservation and storage
 - .1 Rehabilitation of existing wells
 - .2 Small dams and dikes construction
 - .3 Subsoil re-infiltration and storage systems for rain-water harvesting

- .4 Construction of Hafirs, cisterns, etc.
- .3 Improved irrigation methods (ex. drip irrigation)
- .2 Improved facilities (ex. watering troughs, water-delivery to domicile, well curbs and aprons.

It is useful to examine possible risk factors inherent in the proposed program:

1. Input: Improved agricultural practices for wadi-bottoms; i.e. intensive and extensive cropping methods; introduction of improved yield or fast-maturing varieties.

Possible degrading factor: Greater use of soils through intensive farming; tools could break, erode fragile soils.

Problem caused: Fertility loss; eventual soils erosion.

Corrective response: use of appropriate methods and tools; use of corrective and soil-enriching crop rotations.

2. Input : Improved rain-fed agriculture

Note: Rain-fed agriculture is marginal and minimal in this area. We see only advantages to proposed efforts to manage and regenerate soils. The one caveat would require minimal-soils-displacement tilling and cultivating methods and tools.

3. Input: Afforestation

1. Possible degrading factor: Could limit too-narrowly introduced species

Problem caused: Cause ecologic disequilibrium; one blight could kill all.

Corrective Response: Plant multiple experimental varieties. (Refer : annexed National Research Council list of species, and see infra.)

3.2 Possible degrading factor: Planting trees, dense vegetation in and near wadis

Problem caused: introduction of *Glossina* "tsetse" fly which vector trypanosomiasis, thus extending existing zone.

Corrective response: Trypanosomiasis is not considered a problem north of the 10th parallel, except in the regions of Lake Chad and the Chari River course, where year-round flow makes high humidity.

4. Input: Water Production, Conservation, and storage:

4.1. Possible degrading factor and problem caused: Building dams and dikes, by increasing standing water and vegetation, could increase malaria-vector anopheles mosquito (10 varieties found all over Chad). Malaria is now the "most significant to public-health disease"^{1/} in Chad; and Falciparum variety is the most prevalent during the rainy season.

Corrective response: Malaria is already endemic. Mosquito-control efforts, as well as health-education, health surveillance, and medication, are the only res

4.2. Possible degrading factor and problem caused: Impounding water could increase the stagnant ponds which breed Bulinus (3 varieties in Chad) and Biomphalaria (4 varieties in Chad) snails, the hosts and vector of Schistosomiasis. Both S. Haematobium and S. Mansoni are prevalent in Chad (ex.: in the Faya-Largeau Oasis) but not heretofore in Abéché region.

Corrective response: Schistosomiasis presents a many-layered problem. Best responses offered to date are: health-education coupled with building - and use - of sanitary latrines. Promising research is being done with biological counter-measures: ex.: plantation of ENDOD and other natural molluskiocides, along

^{1/} Suck, A. et Al: Health and Disease in Chad, 1973.

vulnerable water-sites.^{1/} These measures will be undertaken by the implementing agent.

4.3. Possible degrading factor and problem caused: Building dams could - during the spate season, create the environment for the simulium damnosum fly which vectors onchocerciasis, or "River Blindness". It has, in fact, happened in Chad with a dam built in the Chari-Logone Basin area.

Corrective response: The team proposes that some studies should be applied to this problem.

It is known that Simulium D. has a very-narrow breeding niche, and correct engineering of dams for water-depth, water-speed, etc. may be the corrective factor.

Conversely, greater efforts to use underground dams, and sand-filled reservoirs with water-accessed thru drainage pipes may be an answer.

5. Inputs: Improved and repaired wells and Provision of veterinary medicine.

Possible degrading factors and problems caused: More water available for livestock use, and improved animal health may increase grazing pressures beyond the carrying capacity of the land. Around wells and water holes pasture becomes destroyed and soils compacted. Over-grazed range sees loss of perennial and "good" grasses and brush-cover leading to loss of soils, sub-soil water, and general erosion and desertification.

Corrective response:

1. Policy of developing multiple small water-points rather than single large-scale installations (i.e. shallow-wells)

1/ We suggest reference to US National Research Council material:

which recuperate meteorological water, rather than desalination wells exploiting fossil sources, etc..

Policy of developing:

- Agro-forage in shelter-belts
- attempts to establish rational grazing based on traditional land ownership and tenure
- attempts to selectively seed and protect seeded pasture zones (thorn-bush barriers)
- develop better herd-structure through judicious mix of veterinarian medicine, and off-take combined with development of advantageous marketing system.^{1/}

It is felt that the advantages of the proposed IRD project are very real.

Firstly, they present an immediate and direct response to the perceived needs, of officials, technicians, and just people of the area.

Secondly, they present a response intimately compatible with ecologic problems of the region. These are tested techniques for rehabilitation of degraded soils, water resources and vegetation. Conservation, restoration, and enhanced genetic diversity are the best tools we now know to combat desert encroachment.

^{1/} Ref. should be made to Service de l'Elevage projects for regional "ranches".

ANNEX F(5)

REQUIRED DIACHRONIC ENVIRONMENTAL REPORT ON ABEICHE REGION RD SUBPROJECT FOR
AGRICULTURE, FORESTRY, AND WATER RESOURCES CONSERVATION

File should include:

1. Progressive series of sketch-maps and photographs of affected site areas and activities/facilities as developed by project. This should begin with base-line photographic documentation.
2. Environmental assessment checklist completed on yearly evaluative schedule for each site and/or facility.
3. Recommendations for redressive action to be incorporated into annual evaluation.

Environmental Checklist
Agricultural Site

General Information

1. Type of improvement(s)

Water

2. Moisture availability indices for current year
 - Average rainfall at site:
 - Periodicity
 - current and year's status
 - average evapotranspiration
 - Water sources for the site

Soils

3. - Evidence and degree of soil salinity
 - . Leaching—requirement? possibility?
- Condition of soil (tilth)
- General soil fertility
- Application of organic matter
 - What kind?
- Degree of soil loss by wind erosion
- Degree of soil loss by sheet or gully erosion during rainy season
- Effectiveness of anti-erosion measures

Drainage

4. Is there stagnant, standing water in fields or gardens?
 - Does flooding occur during rains?
 - Does water infiltrate, run-off, drain?

Irrigation

5. What type system?
 - Efficiency by unit
 - Efficiency by System
 - Efficiency/utility as a program?

Land Use

6. Changes in land use:
 - Pasture to Agriculture or vice versa? Percentage of land affected?
 - Fallow: changes in fallowing practice if any?
 - Changes in crop type
 - Subsistence to commercial or income generating or vice-versa?
 - Comments on any effects of varietal change (use of faster-maturing or high-yield types)?

Crop and Food Storage:

7. Evidence of pesticide misuse?

Environmental Checklist
Hydraulic Improvement Site

General Information:

1. Moisture availability indices calculated for the current year
2. Water resources of the site:
 - Meteorological
 - Surface
 - Subterranean
3. Average annual rainfall at site:
 - Periodicity
 - Current year's status
4. Type of improvement or facility
 - Reason for it
5. Source and handling of potable water near site.

Gains Noted:

1. Water harvested
2. Activities/amenities made possible.
3. Water table raised?

Problems Noted:

1. Water loss by
 - Diminished rainfall?
 - Lowered water-table?
 - Faulty or unrepaired facility?
 - Evapotranspiration?
2. Agricultural water quality
 - Evidence of soil salinity?
 - Degree of soil salinity of project?
 - Average leaching requirement? possibility?
3. Water - Health Relationships
Disease: -Evidence/incidence of increased anopheles mosquito/malaria presence?
 - Evidence/incidence of waterborne
 - Evidence/incidence of Bulinus or Brophalaria snails and/or Bilharzia?
 - Evidence/incidence of glossinia flies ("tsetse") or trypanosomiasis
4. Protective Improvements
 - Efforts made by project to encourage, assist or teach latrine building and its advantages
 - Efforts made by project to monitor and/or treat water health hazards (i.e. stagnant water, mosquitoes, snails).
 - Efforts made by project to disseminate water-related health information and education, and information on health protective measures.

Environmental Checklist
Forestable Site

1. General Information
 - General condition of site? (Absence of ground cover, gully, erosion, evidence of undesired livestock browsing and damage?—these are all considered negative factors.)
 - Degree of competition for water used in wood lot by humans, livestock, agriculture?
2. Soils
 - Condition of soil in wood lot
 - Degree of soil lost during wood lot preparation
3. Genetic flexibility
 - variety and number of species used?
4. Uses of Site
 - Wind break: effectively prevent areal erosion?
 - Forrage: effectively used and protected? or overbrowsed?
 - Fuelwood: Is system understood and renewed?
5. Uses of pesticide: Is there evidence of misuse?

Environmental Checklist
Livestock Facilities

(Note: Livestock health facilities and rangeland improvement measures have been discussed in connection with this project, but due to funding limits are only a tentative proposition and not specifically budgeted. This page is therefore a tentative inclusion for the environmental checksheet.)

Rangeland Improvement

1. Is genetic variety protected in attempts to seed improved grasses?
2. Are protective measures taken to permit range grasses to develop?

Animal Health

1. Introduction of disease breeds or strains?
2. Are safeguards established to protect the equilibrium of land carrying—
potential to animal populations?
3. Is overcrowding around water facilities avoided?

ANNEX G: WAIVERS

ANNEX G

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: AFR/DR, Norman Cohen

SUBJECT: Chad: Refugee Resettlement Project _____ - Source/Origin Waiver for Procurement of Geographic Code 935 Vehicles and Motorbikes

Problem: Your approval is required to authorize a source/origin waiver from Geographic Code 000 to 935 for vehicles and motorbikes; and to authorize a waiver of the requirement of FAA 636(i) that motor vehicles be manufactured in U.S.

- A. Cooperating Country : Chad
- B. Authorized Document : Project Paper
- C. Project : Relief and Rehabilitation
- D. Nature of Funding : Grant Funding from Economic Support Fund Appropriation
- E. Description of Goods : Vehicles and Motorbikes
- F. Approximate Value: : _____
- G. Probable Source : Western Europe
- H. Probable Origin : Western Europe, Japan

Discussion: Special circumstances are deemed to exist under Handbook 1B, Section 4C2d(1)(b) when there is present or projected lack of adequate service facilities and supply of spare parts for U.S. manufactured vehicles. In order to procure commodities from Code 935 countries, a source/origin waiver is required. Under Handbook 1B, Section 5Ba(2), a waiver may be granted if "the commodity is not available from countries or areas included in the authorized geographic code."

The principal reason for which non-U.S. manufactured vehicles and motorbikes are expected to be purchased under the Project is the lack of servicing and spare parts. These vehicles and motorbikes will be procured by volags and other donors for activities they are implementing pursuant to approved Activity Justification Papers and executed subgrant agreements. In order for them to maintain the vehicles and motorbikes, it will be necessary to rely upon commercial facilities in Chad to service U.S. vehicles in order to make this alternative practical.

The amount _____ has been requested for vehicles and motorbikes, even though the entire amount may not be used during the two (2) year life-of-project. Nevertheless, we believe AID's authorized representative in Chad should be able to approve activities pursuant to Activity Justification

Papers which call for vehicles and motorbikes without reverting to obtaining approval from AID/W for a waiver whenever the proposed activity calls for vehicles and/or motorbikes in excess of \$50,000.

In view of the aforementioned, it is recommended that the AA/AFR.:

(a) Approve a vehicle procurement source/origin waiver from A.I.D. Geographic Code 000 to 935; and to authorize a waiver of the requirement of FAA 636(i) that motor vehicles be manufactured in U.S.

(b) Certify that exclusion of procurement from countries other than the cooperating country and countries included in Code 941 would seriously impede attainment of U.S. foreign policy objectives of the foreign assistance program.

APPROVED _____

DISAPPROVED _____

DATE _____

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA

FROM: AFR/DR, Norman Cohen

SUBJECT: Chad: Refugee Resettlement Project _____ : Waiver for Procurement of Geographic Code 899 Technical Assistance and Training Services

Problem: Your approval is required to authorize an origin (nationality) waiver from Geographic Code 941 to Code 899 for technical assistance and training services.

- A. Cooperating Country : Chad
- B. Authorized Document : Project Paper
- C. Project : Relief and Rehabilitation Project
- D. Nature of Funding : Grant Funding from Economic Support Appropriation
- E. Description of Services: : Technical Assistance and Training
- F. Probably Origin : Geographic Code 899 countries

Discussion: In order to procure services from suppliers whose origin is other than the authorized geographic code, a nationality waiver is required pursuant to A.I.D. Handbook 1B, Section 5B10a. The authorized geographic code for this Project is 941. However, it will be necessary to procure services from suppliers of Code 899 origin (nationality) to provide technical assistance outside Chad or other Code 941 countries.

Under the Project, it may be desirable to obtain technical assistance for rehabilitation activities from French or other European experts--French and Arabic speaking--who are familiar with Chad.

Pursuant to Handbook 1B, Section 5D10a(1)(b), "a nationality waiver may be obtained if no suppliers from countries or areas included in the authorized geographic code are able to provide the required services." With respect to technical assistance, this waiver is necessary as a result of the paucity of French-speaking American technicians in Chad and the U.S., who are available on short notice to provide required services.

This project involves culturally sensitive technical inputs which require a fluency in French and/or Arabic speaking and, in some cases, a familiarity with Chad or the Sahelian environment.

Recommendation: In view of the aforementioned, it is recommended that the AA/AFR:

(a) Approve this waiver from Geographic Code 941 to Code 899 to allow the financing of _____ worth of technical assistance having its origin in Western European Countries; and

(b) Certify that the interest of the United States are best served by permitting the procurement of services from the Free World countries other than the cooperating country and countries included in Code 941.

APPROVED _____

DISAPPROVED _____

DATE _____

ANNEX H: DETAILED PROJECT BUDGET ESTIMATES

SUMMARY BUDGET
CHAD INTEGRATED RURAL DEVELOPMENT SUB-PROJECT

	U.S. Dollar Expenditures			Local Currency Expenditures			TOTAL
	Year 1	Year 2	Year 3	Year 1	Year 2 (US \$)	Year 3	
EXPENSE:							
1. Water Management	209,440	122,630	91,130	59,050	65,345	73,400	620,995
2. Tree Planting	218,060	48,520	54,700	160,220	92,445	105,260	679,205
3. Agriculture	211,623	103,400	80,750	84,810	78,332	62,855	621,770
4. General Administration	139,700	73,150	80,400	65,340	68,995	77,495	505,080
5. PVO Headquarters Overhead	100,000	100,000	100,000				300,000
TOTAL IRD SUBPROJECT	\$878,823	\$447,700	\$406,980	\$369,420	\$305,117	\$319,010	<u>\$2,727,050</u>
INCOME:							
AID							\$2,110,098
GOC - Food-For-Work							151,500
Housing-Abeche							231,000
PVO Contribution							234,455
							<u>\$2,727,053</u>

Prepared by:
H. D. Swartzendruber
April 26, 1983

IRD DETAILED BUDGET WORKSHEETS (EXPENSE)

	U.S. Dollar Expenditures			Local Currency Expenditures			Line Totals 3 Years	Subject Totals 3 Years
	Year 1	Year 2	Year 3	Year 1	Year 2 (L \$)	Year 3		
WATER ENVIRONMENT								
I. Salaries								
Engineer	40,000	44,000	48,400				132,400	
Asst. Engineer (Local)				2,400	2,700	3,200	8,300	
Well Const. Supervisor 4 x \$150 per month				7,200	8,280	9,520	25,000	
Dam Construction Supervisor 2 x \$150 per month				3,600	4,140	4,760	12,500	
Assistants 6 x \$100				7,200	8,280	9,520	25,000	\$203,200
II. Housing								
Office Abeche (1/6 of \$1500)*				3,000	3,500	4,000	10,500	
Residence Engineer*				12,000	14,000	16,000	42,000	
Furniture	3,000			1,500	500	500	5,500	58,000
III. Vehicles								
4 w/d pickups - 2	38,000						38,000	
Motorcycles - 2	3,000						3,000	
Parts/Maintenance	10,000			1,500	1,725	1,950	15,175	
POL				5,000	5,500	6,000	16,500	72,675
IV. Materials								
Well Forms @ \$1,000	4,000						4,000	
Wheel Barrows @ \$40	2,000	2,000	2,000				6,000	
Picks-Shovels @ 8.00	2,400	1,200	1,200				4,800	
Cement @ \$340 per MT	34,000	34,000	17,000				85,000	
Rerod @ \$6 each	6,000	6,000	2,400				14,400	
Miscellaneous	5,000	5,000	2,000				12,000	126,200
V. Truck Hire				3,000	3,500	4,000	10,500	10,500
VI. Shipping 40% Commodities	43,000	19,280	9,840				72,120	72,120
VII. Contingencies (10%)	19,040	11,150	8,290	4,650	5,220	5,950	54,300	54,300
Subtotals	\$209,440	\$122,630	\$91,130	\$51,050	\$57,345	\$65,400		596,995
VIII. Food For Work								
Wells 3,000 mandays @ \$2				2,000	2,000	2,000	6,000	
Dams 9,000 mandays @ \$2				6,000	6,000	6,000	18,000	24,000
	\$209,440	\$122,630	\$91,130	\$59,050	\$65,345	\$73,400		\$620,995

IRD DETAILED BUDGET WORKSHEETS (EXPENSE)

TREE PLANTING	U.S. Dollar Expenditures			Local Currency Expenditures			Line Totals 3 Years	Subject Total 3 Years
	Year 1	Year 2	Year 3	Year 1	Year 2 (US \$)	Year 3		
I. Salaries								
1. Chief Forester (Expat.)	40,000	44,000	48,400				132,400	
2. Asst. Forester (Local)				2,400	2,700	3,200	8,300	
3. Nursery Foreman (\$150 p/m)				1,800	2,040	2,380	6,250	
4. Nursery Assts. (2 @ \$110)				2,640	3,060	3,500	9,200	
5. Plantation Foreman (\$150)				1,800	2,070	2,380	6,250	
6. Plant Assts. (4 @ \$110)				5,280	6,120	7,000	18,400	180,800
II. Housing								
1. Office Abeche (1/6 of \$1500)*				3,000	3,500	4,000	10,500	
2. Resident Chief Forester*				12,000	14,000	16,000	42,000	
3. Furniture	3,000			1,500	500	500	5,500	58,000
III. Vehicles								
4 w/d pickups - 2	38,000						38,000	
Tractor - 1	12,000						12,000	
Browsers - 2	6,000						6,000	
Wagon - 1	5,000						5,000	
Motorcycles - 4	6,000						6,000	
Parts/Maintenance	11,500			1,700	2,300	2,600	18,100	
POL	—			5,500	6,325	7,300	19,125	104,225
IV. Materials								
Nursery	5,900	120	1,300	2,400	800	900	11,420	
Plantations	6,500	—	—	12,000	—	—	18,500	29,920
V. Water Source Dev. Nursery	20,000	—	—	60,000	2,000	2,300	84,300	84,300
VI. Shipping (40% Commodities)	44,380						44,360	44,360
VII. Contingencies (10%)	19,800	4,400	5,000	11,200	4,500	5,200	50,100	50,100
Subtotals	218,060	48,520	54,700	123,220	49,945	57,260		551,705
VIII. Food For Work								
Nursery - 11,250 mandays @\$2				7,000	7,500	8,000	22,500	
Plantation - 52,500 md @ \$2				30,000	35,000	40,000	105,000	127,500
Total Fuelwood Plantation	218,060	48,520	54,700	160,220	92,445	150,260		679,205

IRD DETAILED BUDGET WORKSHEETS (EXPENSE)

	U.S. Dollar Expenditures			Local Currency Expenditures			Line Totals 3 Years	Subject Total 3 Years
	Year 1	Year 2	Year 3	Year 1 (US \$)	Year 2	Year 3		
AGRICULTURE								
I. SALARIES								
1. Coordinator	40,000	44,000	48,400				132,400	
2. Ag Supervisor @ \$150/mo.				1,800	2,070	2,380	6,250	
3. Local Assistants (Guards, Extensionists, Laborers) 10 @ \$100 per hour each				12,000	13,800	15,870	41,670	180,320
II. HOUSING								
1. Office Abeche (1/3 of \$1500)				6,000	7,000	8,000	21,000	
2. Residence of Coordinator				12,000	14,000	16,000	42,000	
3. Furniture	3,000			1,500	500	500	5,500	68,500
III. VEHICLES								
4 w/d Pickup (1)	19,000						19,000	
Motorcycles (3)	4,500						4,500	
Parts/Maintenance	5,500			900	1,250	1,400	9,050	
POL				2,900	3,500	3,900	10,300	42,850
IV. MATERIALS/EQUIPMENT	60,000	30,000	15,000	10,000	9,000	9,000	133,000	133,000
V. SHIPPING (40% of Commod.)	60,400	20,000	10,000				90,400	90,400
VI. LOAN FUND				30,000	20,000		50,000	50,000
VII. CONTINGENCIES	19,223	9,400	7,350	7,710	7,212	5,805	56,700	56,700
TOTALS	211,623	103,400	80,750	84,810	78,332	62,855		621,770

-4-

171

IRD DETAILED BUDGET WORKSHEETS (EXPENSE)

	U.S. Dollar Expenditures			Local Currency Expenditures			Line Totals 3 Years	Subject Totals 3 Years
	Year 1	Year 2	Year 3	Year 1 (US \$)	Year 2	Year 3		
PROJECT ADMINISTRATION								
I. SALARIES								
1. Project Manager	40,000	44,000	48,400				132,400	
2. Administrator (N'Djamena)	20,000	22,000	24,200				66,200	
3. Local Administrative Staff (4 x \$300/month average)				14,400	16,500	19,000	49,900	248,500
II. HOUSING								
1. Office Abeche (1/3 of \$1,500)*				3,000	3,500	4,000	10,500	
2. Office/Team House N'Djamena				12,000	14,000	16,000	42,000	
3. Project Manager Residence*				12,000	14,000	16,000	42,000	
4. Furniture	5,000			5,000	1,000	1,000	12,000	106,500
III. VEHICLES								
1. Landcruisers - 2	35,000						35,000	
2. Mopeds - 2	4,000						4,000	
3. Repairs/Maintenance	10,000			1,500	1,725	1,950	15,175	
4. POL				5,000	5,500	6,000	16,500	70,675
IV. OFFICE SUPPLIES/EQUIPMENT	10,000	500	500	500	500	500	12,500	12,500
V. COMMUNICATIONS	3,000			6,000	6,000	6,000	21,000	21,000
VI. CONTINGENCIES: 10%	12,700	6,650	7,300	5,940	6,270	7,045		45,905
SUBTOTALS	139,700	73,150	80,400	65,340	68,995	77,495		\$505,080

*Abeche housing will be provided "Gratis" by Prefecture

172X

Private Enterprise/Technology

	U.S. Dollar Expenditures			Local Currenty Expenditures			Total
	Year 1	Year 2	Year 3	Year 1	Year 2	Year 3	
I. Salaries:							
Project Manager	50,000	55,000	60,050	—	—	—	165,000
Asst. Project Manager	40,000	44,000	48,400	—	—	—	132,400
Fringes: 30%	27,000	29,700	32,670	—	—	—	89,370
Office Asst. (1) @ \$400/mo.				4,800	5,520	6,350	16,670
Program Assts (3)@ \$400/mo.				14,400	16,560	19,050	50,010
Secretary (1) @ \$300/mo.				3,600	4,140	4,760	12,500
II. Housing:							466,450
Office				12,000	14,000	16,000	42,000
Project Manager Residence				12,000	14,000	16,000	42,000
Asst. Manager Residence				8,000	9,200	10,600	27,800
Furniture	5,000			5,000	1,000	1,000	12,000
III. Vehicles:							123,800
Landcruiser	18,000						18,000
Town Car	12,000						12,000
Repairs/Maintenance	9,000			1,500	1,725	1,950	14,175
POL	—			5,000	5,500	6,000	16,500
IV. Supplies/Equipment:							60,675
Computer	12,000	500	500				13,000
Audio-Visual	5,000						5,000
Other Equipment	3,000	500	500				4,000
Supplies	3,000	1,500	1,500				6,500
V. Communications:				8,000	8,000	8,000	24,000
VI. Materials:							24,000
Cement	5,000	5,000	5,000				15,000
Steel	3,000	3,000	3,000				9,000
Cinvaram Machines (10)	3,500	—	—				3,500
VII. Technical Assistance (\$1,200 wk):							27,500
Stoves (10) 12,000 (3) 3,600 (2) 2,400							18,000
Cinvaram (5) 6,000 (2) 2,400 (10) 12,000							20,400
Small Ent. (12) 14,000 (10) 12,000							26,400
Travel/Per Diem	26,000	16,000	13,000				55,000
VIII. Contingency 10%	25,400	17,370	17,950	7,500	8,000	9,000	119,800
IX. HQ Overhead 32%	100,000	100,000	99,502	—	—	—	299,502
X. Loan Fund	150,000	200,000	200,000				550,000
							TOTAL
							<u>1,785,447</u>
							INCOME: PVO Contributions
							178,545
							TOTAL FROM AID
							1,606,902
							<u>1,785,447</u>