Forestry Support Program

MID-TERM EVALUATION
EASTERN REFUGEE REFORESTATION PROJECT
CARE AND GOVERNMENT OF SUDAN CENTRAL FOREST ADMINISTRATION
WITH FINANCIAL SUPPORT FROM
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

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TABLE OF CONTENTS

ANNEXES

1. **Map of Project Area**
2. **ERRP Organization Chart**
3. **Expansion of Extension Activities**
4. **Individuals Contacted**
5. **Evaluation Terms of Reference**

Chapter I PROJECT EVALUATION SUMMARY

13. SUMMARY

The Eastern Refugee Reforestation Project approved by USAID on March 3, 1983 and the Government of Sudan on November 29, 1983 at mid term (July 1, 1985) had expended US$ 2,619,922 of the US$ 5,185,730 available or 50.5%. The project has four main activities to achieve its purpose. They are large scale fuelwood plantations, shelterbelt/agroforestry activities, extension activities and, to support the above three activities, tree nurseries.

Early in the project life CARE, at the request of GOS, proposed plantation targets be increased from 6000 to 8000 feddans and shelterbelt/agroforestry targets reduced from 4000 feddans to 2000 feddans. This was approved by USAID. No budget adjustments or revision was made even though the former is a more expensive activity per feddan than the latter. The project has established fuelwood plantations on 3091 feddans of a 3500 feddan target. The 1984 plantations were replanted or reseeded in 1985 where first year mortality exceeded 20%, however, those areas were not reported in the area figures.

The equivalent of approximately 317 feddan of planted and direct seeded shelterbelts (total 93 km.) have been planted in mechanized farming areas . Establishment does not exceed the equivalent of 90 feddans consisting mostly of 1985 plantings.

Extension activities are reported to have resulted in 250,000 trees planted in household compounds mostly for shade and ornamental purposes. Survival is high (50-70%) and growth good (70-100 cm/YR). Most of these trees receive supplementary water and are fenced as a voluntary local contribution.

Nurseries each with a capacity of 600,000 seedlings were established in the villages of Showak and Abu Rakham. Total seedling production to date has been 1,800,000 seedlings with Acacia seyal and A. senegal the predominant species for plantations and shelterbelts. Sixteen different species are grown for the extension program major of which are Acacia mellifera for living fences and Azadirachta indica, Leucaena leucocephala and Eucalyptus camaldulensis for shade trees.

A recent improved stoves program of training and promotion has resulted in over 500 improved charcoal stoves produced and sold commercially during the activities first nine months.

The project staffing presently includes 14 forestry department employees (who have been seconded), 63 CARE local hires (39 of which are extension workers) and 4 CARE expatriate hires. Building Construction is completed. Twenty vehicles have been purchased.

Expenditures have been higher than budgeted in the project proposal in a number of areas including nursery establishment (unbudgeted) and operations, plantation preparation and planting, extension, support to seconded staff, construction and rental, CARE/NY overhead rate, local and expatriate staff, vehicles, extension activities and the stove program. Costs have been less than budgeted for consultants. The project has been aided by currency

exchange rates which have risen from 1.3 LS/$ to 2.452 LS/$. A budget and activities revision is recommended.

14. EVALUATION METHODOLOGY

This is a programmed midterm evaluation of an Operational Program Grant (OPG) (650-0064) to CARE. A pre-evaluation assessment by CARE/GCS identified three issues for evaluation team consideration. They were 1) a predicted budget shortfall of US$ 327,414 (6.3% of life of project (LOP) costs) to accomplish project objectives, 2) a desire to expand extension activities functionally and geographically for a cost of US$ 674,284, and 3) a rehabilitation of the recently flooded Showak Nursery for between LS 130,290 and 152,506 for a total need of, at most, US$ 1,063,895. These numbers have been changed by the evaluation team

The evaluation team consisted of Tim Resch as team leader and forestry program specialist, Diana deTreville as rural sociologist/anthropologist, Abul Gasim Sief el Din as arid/semi-arid zone forestry specialist and Ali Ahmed Saleem as Central Forest Administration representative.

Tim Resch is program coordinator for Africa of the USAID ST/FENR-funded Forestry Support Program. Diana deTreville is a Arabic speaking social anthropologist experienced in program design, management and evaluation. Her area of interest is extension. The services of deTreville and Resch were contributed by the Forestry Support Program. Abul Gasim Seif el Din is a Sudanese forestry consultant with a specialization in Acacia senegal and Acacia seyal, the project's major plantation species. Ali Ahmed Saleem is Director of the Division of Afforestation and Shelterbelts of the Central Forest Administration and co-manager of the FAO-managed Fuelwood Development for Energy Project.

In Washington, D.C., prior to departure from Sudan the team leader interviewed three of the four expatriate foresters (Tom Catterson, Mike McGahuey and J.M. Kramer) involved in the project design and read general project documentation and Sudan forestry information. The team leader and social anthropologist arrived in Khartoum Friday, October 18, 1985. The team was assembled, met with CARE, USAID and CFA officials, reviewed documentation and left for Gadaref on Monday, October 21. October 22-24 was a project overview with site visits to Showak and Abu Rakham. In addition to relevent project staff the evaluation team was accompanied by Charles Tapp, Pim Plantinga, Jim Seyler, and Tahir Qadri for the project overview. The responsibilities of these four persons are identified on the contact list.

The team reviewed appropriate project documentation at the Gadaref office including the project proposal (in its many iterations), the grant agreement between USAID and CARE, the Government of Sudan and CARE agreement, the project implementation letter, the minutes of the monthly, quarterly and annual meetings, USAID project implementation reports, CARE trimestrial project implementation and evaluation reports, financial summaries, consultant reports, weekly extension reports and some correspondence. Non-project documents were also reviewed such as the recently completed multi-donor Sudan Forestry Sector Review, the FAO-managed Fuelwood Development for Energy project program, the CARE Renewable Natural Resources Conservation project concept paper, the CARE Kordofan Agroforestry Extension project proposal and a variety of technical papers.

In addition to the above activities, the social anthropologist designed three survey questionnaires based in part on the 1984 Sociological baseline study and incorporating a variety of socioeconomic issues relevant to ascertain midterm impact and determine areas in need of strengthening. The questionnaires were administered to all of the extension agents and 40 participating households and commercial farmers in the project area. Additionally, the social anthropologist visited over 220 households to informally discuss the project. She also met with village sheikhs, council members and other government officials.

The team returned to Khartoum on Friday, November 1 and presented its initial findings November 3 to project principles including COR, CFA, CARE, USAID and the Dutch government. On November 6, the social anthropologist returned to the project area to conclude on Nov. 15 the second half of the survey work. A draft evaluation was shared with project principals in early January. Their comments, when appropriate, have been incorporated into the final text.

15. EXTERNAL FACTORS

Authority for forestry was recently recentralized so lines of communication have shifted. Creating a National Forestry Commission is being debated. This would have the effect of earmarking forestry revenues for forestry purposes and, therefore it is claimed, creating financial solvency within the government forestry sector. Revision of forestry statutes is also under consideration. the revisions, if implemented, would remove some constraints to project goal realization

Refugee populations in the project area have almost doubled during project life due to both drought and the continuing civil war in Ethiopia. These populations have added to the available labor supply for establishment of plantations. The extension program need is also greater because of higher refugee populations. Pressure on natural resources continues.

A national diesel shortage in May through July, 1985 slowing distribution of tree seedlings to planting sites, was solved in the Abu Rakham area by the project buying private fuel stocks at four times the earlier price. The same diesel shortage contributed to the loss of 228,000 seedlings in the Showak nursery when flooding of the Atbara River destroyed the nursery. The heavy 1985 rains increased tree survival in what was a late planting completion.

Climatic fluctuations especially rainfall were expected in project design. Rainfall amounts were very low and ill-timed in 1984 resulting in a higher than average seedling mortality in plantations and shelterbelts. As a protection from the drought seedling bag volume was quadrupled for the 1985 planting season resulting in higher than anticipated nursery and transport cost. As it turned out, 1985 rains were higher than average, resulting in difficult road conditions and the destruction of the Showak nursery by flooding.

16. INPUTS

Inputs of technical assistance, host government committments of seconded staff and land, commodities, training, and institutional support has, in general with small exceptions, exceeded expectations in timeliness, quality and quantity. Lack of land for plantations in the Abu Rakham area has been a key constraint.

At present level of activity the evaluation team in collaboration with project staff has identified an anticipated deficit or shortfall of US$ 649,045. The evaluation team recommends additional funds be sought from USAID or other donors, including the implementing agency, CARE. If the funds are not available, it is recommended plantation establishment be attempted by sowing seed directly instead of planting seedlings. This would reduce significantly labor costs in the nursery and at the plantation site.

The extension program is only a successful seedling distribution program for plantings in compounds of shade trees and living fences. It can be and should be more. Additional activities in extension are suggested for an additional cost of US$ 414,200. No new expatriate or government staff would be recruited. Inputs include additional local extension agents, one vehicle, fifteen bicycles, media equipment, decentralized mini and micro nurseries, and training for staff at all levels.

17. OUTPUTS

Outputs realized to date are shown in the following table and discussed in number 19 Goal/Sub goal achievements.

Plantations target for the first year were increased from 1000 to 1500 feddans late in the first year. Achievement was 1047 feddans. Project staff plan on establishing 2500 feddans in 1986 instead of the 2000 targeted to make up for the 1984 deficiency.

Shelterbelt/Agroforestry activities have been more difficult to implement than anticipated. Of the to date target of 750 feddans, less than 90 feddans have been successfully established even though 317 feddans were planted. As presently defined, it is unlikely the project would achieve the 2000 feddan target. The evaluation team recommends, however, that it not try.

The extension program was designed to be detailed only "after one or two years of field experience working with the local populace". Achievement has been an extension infrastructure, a new conviction within the government of the importance of forestry extension, and 250,000 trees distributed to individuals.

A strengthened infrastructure exists within the Department of Forestry with fourteen seconded government staff actively working on project activities, in addition to six buildings and twenty vehicles. Increased training of Sudanese staff especially in extension techniques is recommended.

In order to achieve the project purpose outputs should be changed to strengthen and diversify extension activities, commercialize seedling and stove production, increase fruit tree production, add targets in canal side plantings, public place plantings, private orchards/woodlots, compound plantings, living fence establishment, and species and technique test and demonstration.

Brief Objective (Units)	TARGET			ACHIEVEMENTS	
	Total	To Date	%	To Date	%
1. Seedling Production (million)	3.6	1.6	44	1.8*	112
2. Plantations (feddans)	8,000	3,500	44	3,091	88
3. Shelterbelts and Agroforestry (feddans)	2,000	750	37	317 (90)	42(12)
4. Income Generation (man days)	400,000	200,000	50	230,000	115
5. Free distribution of tree (nos.)	-	-		250,000	
6. Training of Forestry Dept. Personnel & Extension workers (continuous)					
A) For Dept. Personnel	14	14	100	14	100
B) Extension workers	-		-	42	
7. Institutional Strengthening of the Forestry Dept.					
A) Vehicles:					
Land Rovers	8	6	75	6	100
Suzuki 4x4	-	-		3	
Toyota Pickups	-	-		2	
Lorries	2	3	100	3	150
Tractors	4	2	50	2	100
Motorcycles	-	-	4		
B) Machinery					
Sub-soiler plows	2	2	100	2	100
Widelevel Disc Seeders	2	2	100	0	0
Mechanical Weeders	2	2	100	2	100
Water Tankers	2	2	100	2	100
Trailers	2	2	100	2	100
Tools & Implements	ON SCHEDULE				
Pumps & Engines	3	2	66	2	100
C) Buildings:					
Office	1	1	100	1	100
Sub-office	2	2	100	2	100
Warehouse	1	1	100	1	100
Nursery Quarters	2	2	100	2	100

*228,000 seedlings destroyed by floods during 7/85 to 9/85.

18. PURPOSE:

The project goal as stated by the CARE - USAID agreement was twofold as follows:

1) "Improve the quality of life and environment of more than 40,000 refugees and rural Sudanese living in the Gadaref District of the Kassala Province within five years of project completion" and

2) "The introduction, and acceptance by rural farmers, both refugee and Sudanese, of the practice of integrating agriculture, forestry, and animal husbandry so as to maximize overall land productivity on a sustained basis, and to maintain the environmental stability upon which production and producers depend".

A logical framework was not done for this Operational Program Grant. The above resembles a project purpose. No similar statement is found in the CARE - Government of Sudan agreement. Statements regarding end of project status are not found in either document.

19. GOAL/SUB-GOAL

The equivalent of goal/sub-goal are stated as intermediate goals and project activity targets in the CARE - USAID agreement as follows:

"- generating income earning employment opportunities over the life of the project for the rural population, particularly the refugee groups;
- demonstrating through physical achievement of planting targets integrated into the agricultural production system, the real potential of forestry support for agriculture in the area;
- providing a proximate source of badly needed fuelwood, fodder, fencing and domestic construction materials for both refugee and Sudanese populations in the area;
- establishing a base for training of local villagers and Forestry Department field staff in the proper integration of agriculture and forestry in semi-arid conditions;
- enhancing the institutional capacity of the Forestry Department to guide and service the demands for sound natural resources management;
- creating further income generation possibilities from the production and sale of wood products; and
- enhancing the rural living environment through the addition of tree shade, reduced wind and water erosion and general protection from the harsh climate."

The general objectives of the CARE - Government of Sudan agreement signed November 29, 1983 differs from the above as follows:

"1 - To provide additional income opportunities for refugees and rural Sudanese by utilizing their labor for intensive tree plantations near their settlements.

2 - To improve the living conditions of both refugees and Sudanese farmers by making fuelwood, fodder, and construction poles available at sites proximate to their dwellings.

3 - To enable private sector agents to harvest wood and charcoal under Forestry Department supervision thereby stimulating the local economy.

4 - To demonstrate the benefits obtainable through the use of agroforestry techniques in terms of increased availability of wood for domestic purposes, and enhanced environmental stability leading to sustainable agricultural production in the area,

5 - To strengthen the capacity of the Forestry Department to provide extension and training services in agroforestry practices to the farmers in the area, both refugee and Sudanese, thereby enhancing the Department's role in fostering appropriate land use policy and practice in the semi-arid regions of the Sudan."

During the design and agreement process, there was considerable debate on the size of the area to be planted to fuelwood plantations, extent of participation by refugees, existence of agroforestry, shelterbelt, or extension components and amount of Forestry Department infrastructure to be established after project completion. The project's only Project Implementation Letter dated March 11, 1984 reconciles the two agreements by changing the CARE - USAID project description to include 8,000 feddans of forestry plantation blocks and 2, 000 feddans of planting of shelterbelts and agroforestry lands. It also provides for the construction of two permanent residences at the nursery sites and an office in Gadaref. Finally, it substitutes the purchase of two tractors for two pickup trucks so as to "minimize the effect of fluctuations in refugee populations on forestry activities."

Project activity targets are listed in a narrative style in the OPG but are displayed in the most recent project implementation report (April 1 to September 30, 1985) as follows (status of outputs updated to November 1, 1985 by evaluation team):

OBJECTIVES/ACTION PROPOSED	STATUS OF OUTPUTS
1. Establishment of two nurseries with production of 3.6 million seedlings over the project period.	1.8 million seedlings production (0.6 in 1984 and 1.2 1985) 228,000 seedlings were destroyed by flood during 7/85-9/85 at Showak.
2. Establishment of 8,000 feddans block plantations over the project period.	3,091 feddans established (1,044 in 1984 and 2,047 in 1985).
3. Income generation for refugees and Sudanese (estimated 400,000 man days)	Over 230,000 man days of employment provided (over 100,000 in 1983/84 and 130,537 in 1984/85 ending 9/85).
4. Extension to demonstrate potential benefits through tree planting and benefits of energy conservation through use of improved charcoal stoves.	In 14 villages/settlements over 250,000 trees were distributed free to the villagers (170,000 in 1984 and 80,000 in 1985). Over 500 improved charcoal stoves were introduced in 13 villages/settlements. Tin-smiths and potters were trained to

	manufacture the improved stoves. Market demonstrations were held.
5. Establishment of shelterbelts/ windbreaks on farmlands and mechanized farming areas.	Approximately 317 feddans of windbreaks and shelterbelts planted (270 feddans in 1985 planting season).
6. Training of Forestry Department personnel, nursery and extension workers.	On the job training provided to 14 Forestry Department seconded personnel and others hired directly by the project. Two Asst. Conservators of Forests and 42 Extension workers were given specialized training in forestry extension.
7. Infrastructure strengthening of the Forestry Department in terms of office buildings, vehicles and equipment.	The project has an office in Gadaref, two nurseries with offices, a warehouse, 20 vehicles, and 10 pieces of large machinery.

20. BENEFICIARIES

Over 230,000 man days of casual labor opportunities have been provided for predominantly refugees (90%) by the project. Most of this work has been associated with fuelwood plantation establishment, the residual being day labor in the nurseries. Though the labor is seasonal, this would convert to 765 work years . The wages provided have been used by the participants to improve the quality of their and their families lives.

Sudanese and refugee full time staff on the project number 73. Besides a challenging work environment and the logistical means to accomplish the work, these staff have received formal and informal on-the-job training. Training is expected to be strengthened during the remainder of the project.

Refugees and rural Sudanese are receiving direct and immediate benefit from the 250,000 trees provided by the project that they have planted in their compounds.

The shelterbelts established have some chance of providing future increases in crop yield as well as fodder and fuelwood.

The fuelwood plantations may provide future forage, fodder, fuelwood, construction wood and commercial gums. Project participants (USAID, CARE, CFA, COR, government of the Netherlands, refugees and rural Sudanese) have different expectations on the disaggregation of the benefits from the fuelwood plantations. Even though these benefits would flow years after project completion, project principal should reconcile these differences. The reconciliation would guide policy decisions, avoid false expectations, and limit future conflict. See chapter II 2.10 for guidance.

Recent refugees (i.e. less than two years in Sudan) have received no benefit from the project.

21. UNPLANNED EFFECTS

There have been no unplanned negative effects of the project.

The enthusiasm for shade and live fence trees on the part of settled refugees and rural Sudanese has exceeded project expectations.

There has been a significant attitude change on the part of the Forestry Department concerning extension, shelterbelts and agroforestry. They, as an institution and as individuals, are now supportive of activities they once opposed. A lessor but none the less important shift is noted from forest production and conservation along traditional forestry lines to a larger view of trees and forest in service to rural society. Project activities have contributed to these changes.

22. LESSONS LEARNED

Refugees and rural Sudanese, even when lacking land and tree tenure, are willing to plant and maintain, often at great personal cost, trees that provide them early benefits such as shade, amenity, live fence or food.

Plantation establishment techniques such as sub-soiling, cross-furrowing, micro-catchments, weed control and mulching were successful in establishing trees in areas dryer than they normally grow.

A number of tree species were tested under varying environmental conditions. New introductions for Sudan that have done well that have done well include Leucaena leucocephala under irrigation and as a compound tree and Parkinsonia aculeata as a dryland plantation species and as living fence.

CARE as an implementing agency has demonstrated the ability to provide timely technical assistance and commodities. The Operational Program Grant has proven an appropriate vehicle for this project.

The evaluation team's scope of work was well designed and can serve as a model.

23. SPECIAL COMMENTS OR REMARKS

The evaluation team recommends the projected budget shortfall for present level of activity be funded by USAID or other donor and the extension program be reorganized and expanded.

Design of follow-on activity after PACD needs to be cautious yet the process needs to be initiated now. The fuelwood plantations need to demonstrate the ability to produce expected yields. A successful shelterbelt/agroforestry system still needs to be determined and demonstrated. The extension program needs to be strengthened, integrated and diversified. Proposed new technical interventions such as commercialized seedling and stove production, fruit tree production, canal side plantings, public place plantings, private orchards/woodlots, compound plantings, living fence establishment, and species and technique test and demonstration need to be tested, demonstrated and assessed. The experience of related project activity under the Dutch/FAO Fuelwood Development for Energy Development Project, the CARE Kordofan Agroforestry Extension project and the CARE Renewable Natural Resources Conservation Project as well as other forestry activities needs to develop and be assessed. The assessment of the project's activities following this evaluation and recommendation for continuation should be done in the fall of 1986 and include the participation of the USAID/REDSO/ESA Regional Forestry Advisor.

The Project Evaluation Summary serves as an executive summary. The evaluation is organised in the four broad areas of management, technical and sociological and extension evaluation.

Chapter II MANAGEMENT EVALUATION

1. PROJECT HISTORY

Intensive mechanized cultivation of sorghum in the Kassala province of eastern Sudan combined with the influx of some 400,000 refugees from Ethiopia led to an almost complete deforestation of a region that was previously an important national supplier of fuelwood and charcoal.

In response to this need, CARE-Sudan prepared a revised and condensed project profile in April, 1982. This was presented to the U.S. State Department refugee program team during their visit two months later, who approved the project in principle and urged CARE-Sudan to prepare a complete project proposal.

The project proposal was submitted to CARE Headquarters and AID/Sudan in July 1982, after a consultancy by ex-CARE forester Michael McGahuey. The proposal addressed certain issues raised by CARE Headquarters and AID/Sudan.

However, in the light of further issues raised by CARE, AID/REDSO and AID/W, a team of three foresters, one from each unit, visited Sudan during November, 1982. This consultancy, addressed the remaining issues sufficient for USAID approval on April 4, 1983 of a five year US$ 5,050,000 project.

It should be noted that during all phases of the project design, CARE/Sudan was in close contact and agreement with GOS Forestry Department, GOS Refugee Commissioner and UNHCR. In addition, extensive visits were made to refugee and Sudanese villages, where inhabitants indicated their willingness to support a reforestation project.

While a draft agreement between CARE and GOS was submitted by CARE to GOS March 22, 1983, it was not until November 29, 1983 the Commissioner for Refugees signed for the government an agreement with CARE. The delay was apparently due to an unwillingness on the part of regional officials to plant less than 10,000 feddans of fuelwood plantations. Eventually a compromise figure of 8000 feddans for fuelwood plantations was determined. USAID concurred with the compromise figure for fuelwood plantations as well as provision for building construction and changing the mix of vehicles with a project implementation letter (PIL #1) dated March 11, 1984. A revised budget consistent with the changes was not prepared.

CARE and the Forestry Department went forward with project implementation while the CARE-GOS agreement was being negotiated with the project manager, co-manager and forester all starting work in July, 1983.

2. STAFFING

As shown in table 1, the Government of Sudan has, at the time of the mid-term evaluation, met its original staffing obligation.

Staffing on August 15, 1984, one year into the project, was 9 of 14 seconded positions or 65%.

table 1

EASTERN REFUGEE REFORESTATION PROJECT SENIOR STAFF
FOREST DEPARTMENT SECONDED STAFF
(as of 30/10/1985)

NAME	TITLE	POST	DATES
	FOREST DEPT.		
El Tayib A. Abdalla	Conservator of Forests	CPM, Gadaref	7/83
Abdul Aziz A. Bashir	Asst. Conserv. of Forests	CEC, Gadaref	8/85
Adam Mohamed Babikar	Asst. Conserv. of Forests	ACF, Showak	7/84
Hassab El Diem	Forest Ranger	Showak Nursery	11/83
Fadal Ibrahim	Forest Supervisor	Showak Nursery	1/84
Baleed Babikar	Forest Supervisor	Showak Nursery	4/84
Mutassim Ismail	Forest Ranger	Showak Plantations	9/84
Mohamed Juma	Forest Supervisor	Karkora Plantations	3/85
Abdalla Adam	Asst. Conserv. of Forests	ACF, Abu Rakham Nursery	8/85
Anwar Abdul Hamid	Forest Ranger	Abu Rakham Nur.	5/84
Adhaw Marig	Forest Supervisor	Abu Rakham Nur.	12/83
Yussuf Mchamed	Forest Ranger	Abu Rakham Plantations	12/83
Osman Al Awad	Forest Supervisor	Wad Awad Plantation	2/85
Izaldin Ahmed	Forest Supervisor	Tenedbe Plantation	3/85
Abdul Rahman Qureshi	Director of Natural Resources	Forestry Advisor	7/85
Dafallah Mohamed	Former Asst. Conservator of Forests	ACF, Abu Rakham	4/84 to 7/85
Husham Muhi El Dien M.	Asst. Conservator of Forests	CEC Gadaref	4/85 to 5/85
	CARE AND OTHER STAFF		
Mohamed Majzoub	CARE	Stoves Coordinator	3/85
Fessaha Girma	CARE	Extension Monitor	7/85
Ali Mohamed	CARE	Karkora Plantations	
Ramadan Mohammed	CARE	Abu Rakham Nursery	
Abdalhakim Ahmend	Dept Horticulture secondment	Chief Extension Coordinator	to 7/85
	EXPATRIATE STAFF		
John Miskell	CARE	Project Manager	7/85
Tahir Qadri	CARE	Project Manager	6/83 to 5/85
Leigh Heart	CARE	Forester	6/85
Gary Burniske	CARE	Forester	7/83 to 6/85
Ben Messer	VSO	Showak Forestry Advisor	9/83 to 9/85
Roger Hodgson	VSO	Abu Rakham Forestry Advisor	9/83 to 9/85
Christine Holding	CARE Intern	Extension Program Manager	8/85
Robert Clausey	CARE Intern	Abu Rakham Forestry Advisor	11/85

2.1 SECONDED CFA STAFF

Allowances for seconded staff have been an issue through most of the project life. Monthly expenditures for seconded staff for travel, hardship allowance, housing, per diem and consultant fees is LS 3420 or US$ 1395. The CFA team, who receive better than average total renumeration for seconded staff, are generally competent, dedicated, and have a deep sense of mission. The evaluation team generally supports this expenditure at present parity.

The project has requested two additional forest rangers, one to be posted to Showak and one to Abu Rakham. Their responsibility would be to assist the ACFs and the CEC with the extension program. The team's understanding is that there is concurrence at all levels for this action, however, appropriate candidates have yet to be identified.

2.2 CARE STAFF

CARE has moved quickly and efficiently to recruit qualified staff. The project manager and forester were on site and working within three months of the grant authorization and five months before the CARE-Government of Sudan agreement was signed. They both served about two years and have been replaced by two equally competent foresters. The forester (silviculturist) was originally budgeted as a Peace Corps volunteer for US$ 6000 per year of US$ 30,000 LOP. Peace Corps was unable to provide a volunteer so CARE was required to do an international recruitment.

Two foresters from the British volunteer service Volunteers in Service Overseas (VSO) were posted in September, 83 and served two years at the Showak and Abu Rakham sites. They have since been hired by CARE to work elsewhere in Sudan and Ethiopia. Project staff, after repeated efforts, have negotiated for one VSO replacement who is expected to arrive before November 15, 1985.

In part because of the difficulty in locating a VSO or Peace Corp replacement for the earlier VSO's, CARE has hired an intern, Bob Clausey, to work first at Abu Rakham and, perhaps later, as a forester in Gadaref. Another intern recently hired is the extension program manager. She has two years prior experience in Sudan under VSO as an agricultural extension advisor. The first intern position is a one year renewable contract. The second is an intern position to be converted to an international hire position. These positions are outside of the original budget but within the project scope. The evaluation team support the above management decisions.

Beside the local project staff of 11 persons (drivers (4), tractor driver (2), secretaries (2), accountant and messengers (2)) anticipated in the OPG for a LOP cost of US$ 101,500, the project has hired an office manager, an extension monitor, a plantation supervisor, a nursery supervisor, a stove coordinator, an inventory clerk/radio operator, a warehouse keeper, guards (3), truck drivers (3), pump operators (2), eight village extension agents and 32 local extension agents. It should be noted that of the local project staff of 63 people, 30 or 48% are refugees.

2.3. CONSULTANTS

The OPG provided for 18 work months of consultant services for a budget of US$ 180,000. Anticipated was rural sociologist (6 months), forestry extension specialist (4 months), agronomist (2 months) and evaluation specialists (4 months).

The sociologist and extension tasks were combined and were completed by August 1984 with a preliminary sociological report available December, 1983. Cindi Katz's report is entitled "The Social Context of Reforestation: Socio-economic and cultural profile of project area with recommendations for a program of forestry extension." The study and report appear to have provided a good foundation for project activities.

The first Sudanese chief extension coordinator was seconded from the Horticultural Department obviating some of the need for agronomic consulting. The Deputy Project Manager for COR in Abu Rakham is an agronomist by training and is on a retainer of LS 80 a month to provide technical guidance to the project. In addition, the recently hired extension Program Manager has a degree in agricultural extension and economics and should, therefore, also be able to provide some agronomic guidance.

The mid-term evaluation was funded by mission request from the ST/FENR funded Forestry Support Program plus a local hire from mission local currency. The final evaluation is now scheduled for November - December, 1987. The evaluation team recommends this be rescheduled for September - October, 1987 to allow guidance for project transition. The scope of the final evaluation as presented in the OPG is adequate.

Other consultancies executed in support of project activities include a two month local hire contract for LS 806 with Simon H.J. Ripley LLB on "Forestry Law and Policy in Sudan". The study appears to be useful but not widely known. The project should disseminate it more widely. Abdul Rahman Qureshi of Kassala is on a retainer of LS 300 a month to provide forestry advice to the project. Kevin McNally, a Peace Corps Volunteer working on the CARE stoves activity in Kordofan, was detailed for two weeks to the project to provide technical assistance to the embryonic stoves program. The cost to the project was only transport and food costs. Finally, the project has hosted a number of visitors who in addition to gathering information for their own purposes have been generally free in offering advice. Some of that advice has been useful.

3. TRAINING - FORMAL

Tahir Qadri, project manager, and Tyeb Abdulla, project co-manager, attended Sept. 17-29, 1983 the International Symposium on Afforestation Strategies: Let There Be Forests in Wageningen, the Netherlands.

Tahir Qadri, project manager, attended the USAID Africa Bureau Forestry Program Evaluation Workshop May 7-11 1984 in Lome, Togo. The meeting was a review of USAID experience in forestry projects in Africa over the prior five years and discussion of a strategy for future USAID forestry activities. The team feels this was a useful meeting for the project manager's participation.

In February, 1985 The Dutch/FAO Fuelwood Development for Energy project sponsored an workshop entitled, "Methodologies and Techniques in Conducting

Forestry Extension Programs in the Sudan". It was attended by Dafalla Mohamed, former ACF at Abu Rakham, and Adam Mohammed Babikr, ACF at Showak. A second forestry extension workshop is tentatively scheduled for early spring, 86 in Khartoum. The evaluation team recommends the following people attend this workshop: Abdul Aziz, Chief Extension Coordinator; Fessaha Girma, Extension Monitor; and Abdullah Adam Siraag, ACF Abu Rakham. In addition, it is suggested Christine Holding, extension program manager be invited to participate as a presenter in this workshop.

Finally, other formal training opportunities in Sudan and elsewhere should be considered for staff development as they occur.

4. REPORTING/MONITORING/EVALUATION

The monthly meetings of project staff down to the level of forest rangers are a model to be emulated elsewhere. With full participation of Sudanese staff activity status is reported, issues are discussed and decisions made. The minutes of these meetings are valuable as a record of project activity and a good information source for those not actively participating in the project. Distribution has been restrained and uneven. The minutes of the monthly meetings should be distributed to CFA and COR, both at the regional and national level, to USAID/Khartoum, to CARE/Khartoum and CARE/NY and to the Dutch Embassy.

The CARE/GOS Agreement provides for quarterly meetings and an annual meeting attended by top administrators. Two quarterly and two annual meetings have been held, one of each in the last three months. Project staff has proposed and administrators have agreed to two meetings a year. One in April before the start of the planting season and one in September at the end of the planting season.

Position descriptions are written for all project staff. In addition to the existing occasional verbal compliment for a job well done, letters of warning and reprimand and an apparent low tolerance for poor performance, there appears to be opportunities for staff to sharpen their supervisory skills in order to maintain employee motivation.

Project targets and focus have apparently informally shifted over time. After considering the evaluation team's recommendation, project staff should revise and refine project targets in order to achieve project purpose and goals.

5. BUILDING CONSTRUCTION AND RENTAL

The following buildings were constructed under the project for a cost of LS 288,000 (US$ 223,000 at LS 1.29/$ distributed as follows:

NAME & LOCATION	COST OF CONSTRUCTION
Office Building - Gadaref	LS 140,000
Warehouse - Gadaref	LS 15,000
Office-cum-residence - Es Showak	LS 55,000
Office-cum-residence - Abu Rakham	LS 70,000
Tukles, Stores, and Guard hut - Es Showak	LS 5,000
Tukles, Stores, and Guard hut - Abu Rakham	LS 3,000

The OPC budgeted LS 202,500 for building rental and construction. This was modified to a construction budget of LS 250,000 in the CARE-GOS agreement, USAID concurred with this change in PIL No. 1. Building rental expenditures is addition the above include Gadaref office rental while the office construction was underway, residence rental for program manager, forester, the former office manager and the present extension program manager. Initial establishment of the two nurseries was not budgeted as a line item and is not apparent in any other line item. Actual cost for nursery establishment was US$ 65,000 in CARE FY 84.

6. BUDGET ANALYSIS

Recognizing USAID oversight responsibilities on a OPG, it must be noted expenditures in a number of line items have been different from the understood budget. It appears many of these line item transfers and budget category overuns were made by project managers without concurrence of CARE/Khartoum, GOS or USAID. A revised budget developed with current project staff and consistent with the evaluation's team's recommendations is proposed for consideration. In the event tnat resources sufficient to meet the predicted shortfall of US$ 649,055 can not secured the team recommends one of two choices. First and recommended, plantation establishment of 2000 feddans in the Abu Rakhim should be attempted over the next two planting seasons by sowing seed directly instead of planting seedlings. With average or better rainfall and the area protected by barb wire fence and guards successful establishment is a good possibility. This would reduce nursery costs, labor and seedling transport costs, and plantation labor costs. Much of the labor not hired would be refugee labor and, thereby, impact negatively on one of the project activity targets. Alternatively, with a bit of belt tightening, present budget is adequate to get the project through the last planting season in September, 1987 when the project could be terminated six months early. Adequate transition or follow on would be compromised with this choice.

Budget items different than anticipated include 1) Nursery constructions cost were US$ 65,000 and unbudgeted in the proposal 2) Nursery labor force was LOP budgeted at 55,600. FY 86-88 need alone is projected based on past cost at $252,400. 3) Plantation labor was budgeted at $878,000 and are projected at $614,600 for FY 85-88. The evaluation team was unable to isolate plantation labor costs for FY 83-85. 4) Extension activities were unbudgeted, have grown to $70,000 in FY86 and to maintain present activity to PACD (FY87/88) will cost $119,000. 5) CARE/NY overhead rate has increased from 7.42% to 10.34% during the project life. 6) Local CARE staff excluding extension workers has grown from the 11 planned to 22 at midterm (half of which are refugees). 7) of the $180,000 budgeted for consultancies it appears less than $20,000 has been spent. 8) A Peace Corps forester was budgeted LOP $30,000 for five work years, instead an international hire was determined to be necessary resulting in a higher expense. 9) An international hire administrator was budgeted LOP $275,000 instead a local hire was done for a lessor cost. 10) Seconded Forestry Department staff are paid travel, housing and hardship allowances and per diem totalling US$ 1395 per month. This was unbudgeted. 11) The building rental and construction budget was exceeded. 12) The vehicle budget was US $272,000. Actual to date is $220,685. 13) The stoves program was unbudgeted. The program's costs to January 1, 1985 are estimated to total about $6,000. 14) CARE/KHARTOUM administrative debits have exceeded budgeted rate, however, the debits have been slowed so that the LOP budget of $300,000 will not be

exceeded and finally 15) Two project staff attended two international meetings (3 trips) which was unbudgeted. An inflation rate was calculated for the budget which in the opinion of the CARE controller underestimated reality. There was no budget line item for contingencies. The currency exchange rate has increased during project life from 1.28 LS/$ to 2.452 LS/$.

The evaluation team supports most of the expenditures as being reasonable to support project objectives but feels project principals need to be informed when deviations from the plan occur. In view of the above, project staff in collaboration with the evaluation team has recently reviewed budget status and would propose the following budget provided a source of funds could be identified for the predicted shortfall.

Projected Project Expenditures

FISCAL YEAR	USAID FUNDS	DUTCH FUNDS	CARE FUNDS
	4,550,000	523,305	112,425
April - June 1983	39,809	0	14,868
	4,510,191	523,305	97,557
July '83 - June '84	1,006,794	53,893	97,557
	3,503,397	469,412	0
July '84 - June '85	1,309,008	97,993	
	2,194,309	371,419	
July '85 - June '86 projected	781,848	371,419	
	1,412,461	0	
July '86 - June '87 projected	1,199,418		
	213,043		
July - March 88 projected	798,690		
	-569,647	Projected Shortfall	

Proposed Project Budget to PACD

Item	FY '86	FY '87	FY '88	Total
Vehicles (capital costs)	55,000-	-	-	55,000
Vehicles (operating costs)	86,500	104,900	66,900	257,800
Materials&Eqpt (Overseas)	103,000	65,300	58,300	217,600
Materials&Egypt (Local)	51,000	59,200	42,700	153,900
Buildings (Rent & Construction) includes Showak rehabilitation	109,500	49,750	37,400	196,650
Nursery (labor)	95,700	112,700	44,000	252,400
Plantation (Labor)	180,800	246,800	187,000	614,600
Existing Extension Program	70,000	77,000	42,000	189,000
International Staff	123,500	145,800	84,000	353,350
Local staff & Administration	195,000	231,000	136,500	563,000
Totals	1,000,000	1,006,500	656,800	2,663,300
Contingencies (8%)	80,000	80,520	52,544	213,064
Totals	1,080,000	1,087,020	709,344	2,876,364
Dutch Funding	-371,419			371,419
USAID Funding	708,581	1,087,020	709,344	2,504,945
CARE-NY (10.34%)	73,267	112,398	73,346	259,011
USAID Total	781,848 +371,419			2,763,956 +371,419
Grand Totals:	1,153,267	1,199,418	782,690	3,125,375

7. SUMMARY OF RECOMMENDATIONS

Resolve the differences in project goals between USAID/CARE and CARE/GOS Agreements.

Project should continue to focus on regionally-integrated activities, inclusive of both local Sudanese and refugees.

Critical review of current reporting procedures, together with initiating an internal evaluation and reporting system is recommended. In addition separate detailed cost records should be kept for each of the major activities of the project.

Existing staff can be better used by clearly identifying the assignment of each staff member so as to avoid overstaffing in certain jobs and also to expand project activities. Devolve increasing responsibility onto counterpart staff.

Project staff and Forestry Department counterparts re-evaluate agroforestry goals to determine what specific agroforestry activities can be introduced and locally sustained, given constraints both of project staff and local population/resources, as well as the institutional capabilities of the Forestry Department.

Outputs should be changed to strengthen and diversify extension activities, commercialize seedling and stove production, increase fruit tree production, add targets in canal side plantings, public place plantings, private orchards/woodlots, compound plantings, living fence establishment, and species and technique test and demonstration.

Village nurseries should be established during the remaining part of the project life to promote shelterbelts and other agroforestry practices and to continue compound tree planting, however, a more thorough understanding of local economic, marketing, and natural resource constraints needs to be gained.

The project should undertake studies on the technical and economic viability of the different tree establishment techniques currently being used. The species choice for the different plantation locations is now agreed upon with a reasonable degree of certainty.

The Forestry Research Institute should take part in making simple species trials and experiment with planting techniques. The project should keep more detailed records on climatic data, planting stock, maps, sources of seed, tree establishment rates and tree survival.

The project should continue on encouraging the Forestry Department to increase use of fuelwood and other forest products by the small farmers by allocating small manageable plots from the forest reserves on which suitable agroforestry systems could be tried.

CARE staff and appropriate GOS counterparts begin to work out precise mechanisms for future distribution of plantation products to local rural inhabitants -- both refugee and Sudanese.

Project cease community woodlot activities and disband village committees and seek more socially and technologically appropriate ways of introducing forestry activities.

The Forestry Department and the Mechanized Farming Corporation, as agents of GOS, should take measures to enforce the laws regarding shelterbelts establishment, fallow periods and border strips on mechanized farms. The project could play the technical role in enhancing this activity.

Project to develop specific understanding of differentiation within each site and take these into account in the design and implementation of extension activities including gender-based work differences and use of non-Arabic speakers in the refugee camps.

Extension and forestry collaborate more closely in the specific detailing of problems being experienced in the field, and work together in arriving at appropriate solutions including the problem of water-availability and appropriate species given regional water problems and the problem of appropriate fencing given the increasing costs of fencing materials.

Extension activities should be directed towards establishment of demonstration plots within the existing plantation program, on existing forest reserves and, where possible, on farmers plots.

Establish formal guidelines for both hiring and retention of para-extensionists, including obligatory use of agroforestry activities on para-extensionists' own land/compounds.

Recast training to be hand-on and participatory work in the field, instead of class-room bound. Develop relevant, problem-identification and problem-solving reporting procedures for para-extensionists to replace seedling-counts.

Seek funding for developing additional training materials -- these materials to reflect local problems and solutions and involve locals in their design.

Extension program <u>not</u> to expand into studies of women or nomadic groups. The priority-need to reorganize extension activities takes precedence over expanding extension activities into totally new activities. Project to coordinate activities with research now being done on nomadic populations in the area.

Finally, it is recommended that USAID continue to support this project in the light of the proposals made by staff members in charge of the ERRP and the recommendations of the evaluation team.

Chapter III TECHNICAL EVALUATION

1. INTRODUCTION

1.1. PROJECT LOCATION

The project area is part of the extensive clay plains of central and eastern Sudan which are characterized by heavy cracking clay soils. Rainfalls range from about 500mm in the southern part to 250mm in the north. Ecologically the project area falls into two vegetation sub-zones of the Acacia-Tall Grass Savanna Woodland. To the south is the Acacia seyal-Balanites aegyptiaca woodland while to the north is the Acacia mellifera thornland. The two vegetation zones often overlap in the project area where the two main species, A.seyal and A.mellifera succeed one another in a seral succession that is influenced by fire under the natural conditions.

Fire is such an important ecological factor in these regions that the natural stands are often termed as "pyro or fire climax." This is particularly true with respect to A.seyal, the natural regeneration of which is enhanced by fire. The main point here is that the tree species regenerate naturally in these habitats and are only hindered by severe droughts, overgrazing, over-cultivation or, occasionally, very severe fires.

1.2. LAND USE

Land use in the project area before the advent of the mechanized farming in mid-1940s was typically shifting cultivation combined with livestock herding, both sedentary and nomadic, and use of forest resources for fuel, building materials, gum arabic, honey and occasional game hunting. The farmers cultivated small plots with sorghum and sesame varying in area from 5 to 50 feddans depending on family size and resources. There was little conflict, if any, between the nomadic (technically transhumant) livestock herding and the sedentary cultivators because large tracts of unused lands were available for the use of the nomads. Moreover, most of the nomadic herds were confined along River Atbara towards the east and River Rahad towards the west on account of lack of water in other areas during the dry season. In the wet season the nomads quickly moved to their traditional grazing lands in Butana far north of the cultivated areas. Gum arabic was collected in the southern parts of the project areas where natural mixed stands of A.seyal and A.senegal existed.

The mechanized farming grew very fast especially when it was offered encouragement by the government though World Bank support in mid-1960s. It is estimated that a total of 7 million feddans are under cultivation in Gedaref district alone, half of it controlled by the Mechanized Farming Corporation while the other half was grabbed by individuals and, later, leased by the local government authorities. Sorghum cultivation has become the predominant land use practice in the area and has rendered the whole district a treeless landscape. The cultivation is so extensive that transhumance corridors do not exist any longer. Repeated cropping in some areas has lead to soil erosion and impoverishment. Gully erosion and the parasitic weed Striga hermonthica are common features of the area. Fuelwood has become so scarce that people resort to illicit cutting of wood from reserved forests, trapping of wood carried by floods along both the Rahad and Atbara Rivers, and purchase of fuelwood from merchants.

1.3. THE REFUGEES

Gedaref district is one of the major parts of the country where refugees from Eritrea and Ethiopia have sought sanctuary. The total number of arrivals is estimated at 400,000 out of which only about 30 percent have settled in the settlement camps especially constructed for the refugees. The remaining majority have diffused into the villages and towns of the area as well as other towns elsewhere in the country, mainly Kassala and Khartoum. The Commissioner of Refugees (COR) offices point out the reasons for diffusion as being mainly the limited capacity of the settlements, people's preference to life outside confinements and the presence of relatives who had settled in the country before the recent catastrophe.

The COR offers various kinds of help to the refugees such as food, shelter and health care, mainly assisted by international voluntary organizations. Charcoal is one of the items supplied to the settlements but quite often it is exchanged for firewood which better suits the cooking habits of most refugees as well as generating some income. In addition, the GOS has allocated 5-10 feddan plots of land for each of the families in the settlements. The total land area allocated to COR is 276,000 feddans by a presidential decree in 1975. Much of this land has not yet been allocated to refugees. The GOS plans that refugees will plant trees on their plots and also that some of the unallocated land to be used for forestry plantations in the hope of providing fuelwood for the settlements and the nearby villages.

2. TECHNICAL EVALUATION

2.1. PROJECT DESIGN

The project is well designed with clear goals (purpose) and project activity targets. The goals indicate that the project caters for both rural Sudanese and refugees outside settlements, in addition to taking care of those refugees within the settlements. When the three categories of the populations are offered equal employment opportunities, it is less likely to create grudges, especially from the indigenous population, against refugees on the grounds that the latter have been given lands which were previously available for their use and services better than they receive. Provision of fuelwood, through the creation of fuelwood plantations, also can produce some amelioration of the environment with respect to micro-climate, soil fertility, landscape improvement and provision of diverse other uses such as grazing, browsing, gum arabic, construction wood and recreation.

2.2. CHOICE OF TREE SPECIES

The choice of tree species for planting in compounds was a result of a survey conducted among the refugees and villagers alike who, in some cases, were certain of their choice of the trees they wanted to plant. The forestry plantations, on the other hand, were stocked with species traditionally used for reforestation in the semi-arid zones of the Sudan. Plantation areas in the north of the project area like Karkora and Um Gargour which fall within the "Acacia mellifera thornland" vegetation type adjoining the semi desert and often experiencing similar climatic patterns as the latter, need speciel considerations when afforestation programs are envisaged. In these project plantations A.mellifera might stand out as the more suitable choice under these dry conditions, followed by A.laeta. Acacia seyal seems to be just at

the northern edge of its natural habitat when planted in the project sites as indicated by its growth forms in the nearby Wad Kabu Forest Reserve. It will probably be a successful plantation species especially with the microsite improvement executed by the project. A.senegal, on the other hand, seems to be outside its natural habitat and the chances of its success in the north as a gum arabic or firewood producing tree are not very certain. This is because the species is more vulnerable to drought which, under severe conditions, might completely wipe out the plantation. The forestry staff in both Kassala and Gedaref should have made more detailed consultations with the CFA and Forestry Research Institute staff for the choice of tree species for the project especially for the dryer sites. The evaluation team supports the recent project staff decision to exclude A.senegal from this dryer zone.

2.3. SITE SELECTION AND PREPARATION

The project staff did not have much choice but to use the plots allocated by GOS for the project activities. In order to ensure quick attainment of the project objective of fuelwood production to satisfy the pressing need of the people, the planting sites should have been located in areas with higher rainfall than Um Gargour or Karkora. The sites in Abu Rakham area which receive higher rainfall than the above sites look more promising and more certain in achieving the project objective of fuelwood supply.

Preparation of planting sites, especially at Karkora and Um Gargour, was very elaborate entailing cross ploughing and digging of planting holes. Ploughing adds greatly to the planting costs on top of other operations considered essential for the well-being of the plantations, such as weeding, fencing, and guarding against livestock. This was, however, regarded by the project staff as a measure of making the maximum use of the short rainy season experienced in this part of the project area and to increase initial tree survival.

The cost of site preparation will be reduced by making the more appropriate choice of the species that will require less expensive soil preparation techniques. Local experience in seeding indigenous species shows that good results have been achieved by using direct sowing technique and simple water harvesting operations.

2.4. NURSERY TECHNIQUE

The project established two nurseries, one in Showak and the other in Abu Rakham. The Showak nursery was sited along River Atbara, not far from the town. The Showak nursery had a well and pump installed, cement canals and beds and overhead shade for seedlings. The operations went on in an excellent manner producing over 800,000 seedlings during the first two seasons. It was unfortunate, however, that in August 1985 over 200,000 seedlings were lost to floods. The main reason given for this loss is that fuel was not available in the market to enable transportation of the plants to the field before the floods hit.

A lesson here is that nurseries should be located above the probable flood level if it is to be located near a water course. In planning for such a large scale seedling production the logistics of delivering them at places needed should be considered very seriously.

The Abu Rakham nursery was located near the main canal to the Rahad irrigation scheme from which it is supplied with water by a pump. The species diversity in the two nurseries is such that both the plantations and compound planting demands were met satisfactorily. It is noted during the evaluation that over 22,000 seedlings remained unplanted in Abu Rakham nursery, including some plantation species.

Relatively large plastic seedling containers, 30cm long by 15cm diameter, were used in 1985 in contrast to the smaller ones used the previous year. This was a measure of reducing mortality in the field which was heavy in 1984 planting and partially attributed to the small size of containers. Experience with dry zone acacias shows that small containers can be very efficiently used for raising nursery stock provided sowing is done at the right time of the year such that seedling roots remain in healthy conditions at the time of planting out. Large containers are often difficult to transport to the field as they tend to burst or bend thus endangering the plants. They, also, much increased transport cost per seedling. As it turned out, the 1985 rains were adequate and the extra soil mass not necessary.

2.5. RESEARCH

The project staff, including the advisor Mr. Gorashi of Kassala, pointed out that the species planted in the dryer sites of Karkora and Um Gargour - A.seyal, A.senegal and Azadirachta indica - and also some of the planting methods, were intended as trials to give indications for future activities. This is an important component of the project and is actually called for in the project document. It is felt, however, that research trials should be carried out in a more systematic way that aims at fulfilling specific research goals.

In this regard the Forestry Research Institute at Soba should be called upon to provide needed help. The research program need not be a long one but rather a modest trial involving a number of species known already to grow under similar ecologic conditions. The species should be combined with 2-3 different soil preparation methods.

2.6. EXTENSION

The project extension program has been provided with a good foundation to initiate activities and function. A socio-economic consultancy was already concluded by December 1983 just after the signing of the CARE/GOS project agreement. The consultant's recommendations provided a path for the extension program, which were enthusiastically adopted by the project staff.

The extension program has been most active in household compound planting and, more recently, in school yard planting and improved charcoal stoves. One village woodlot and windbreaks in a number of locations were planted. A very successful Arbor Day was celebrated in June/July, 1985 in the project area where 39,000 seedlings were distributed to villages and settlements.

Since the project objective is to bring about sizable land area under tree cover for the "improvement of living conditions" as well as "provision of fuelwood," it is suggested that the extension program direct greater efforts toward farm forestry/agroforestry/shelterbelts. A program must be designed to expand tree planting activity from compounds in the villages and settlements

to the farmers. Demonstration plots should be established on private farmers' land. Risk guarantees may be necessary.

Carefully planned cropping trials should be made in the existing project plantations in which crops can be planted and owned by the laborers employed in these plantations. It was seen during one of the field trips, that trees appeared to grow better when intercropped with sesame. Cultivators will, however, be more interested to see that crops actually produce more under or between trees before they can be committed to planting trees. Choice of the trees and of the appropriate crops should be made carefully to demonstrate what is claimed of agroforestry is true.

The extension program might also address itself to establishing private nurseries containing forest and fruit tree seedlings in order to continue compound planting and also to encourage, where possible, farm boundary planting for demarcation and windbreaks. It seems that many farmers, especially mechanized farm plot owners, will more readily respond to sowing Acacia senegal which can serve as gum producing and, later, fuelwood trees.

While the extension program is directing its major efforts towards agroforestry/shelterbelts activities, the village and settlement compound plantings can be continued through Arbor Days and other seasonal tree planting activity. These Arbor Days, however, need not be restricted to one day in the whole district. They should rather be in a form of planned visits for each group of villages in order to do it in the most efficient manner. The proposed school nurseries program, on the other hand, should be changed to private nurseries in which school children will have access to and participate in the nursery activities. This is because school nurseries might not be very well looked after and, at the same time, will have little effect in achieving the general objective. Seedling distribution should be concentrated during the planting season.

2.7. PLANTATIONS

2.7.1. FUELWOOD PLANTATIONS

1984 season was a very dry year during which the wetter part of the project area received less than 200mm of rain compared with 600mm received in 1985. These are estimates because rainfall records in the project sites were not available. The planting sites in northern part of the project - Karkora and Um Gargour are said to have received much less than 200mm of rain in 1984. Consequently the rate of establishment of plantations was very low in 1984, below 40 percent in the north while in the south it was slightly better than 40 percent. At the beginning of 1985 rainy season survival count showed that many plants originally considered dead have sprouted and showed that the actual rate of establishment jumped up to 75 percent in the dryer sites of Um Gargour and Karkora.

The second planting season, 1985, was a much better one in which 2,047 feddans were planted, mostly seedlings, in five locations of the project areas (Table 1). Beating up of 1984 plantations with both seeds and seedlings amounted to an equivalent of 430 feddans. This area is not counted in project accomplishments but, of course, was done at a cost to the project. Some of this direct sowing suffered high mortality in the northern sites due to flooding. The 1984 and 1985 seedlings are still fairly healthy.

Some plants, particularly A.seyal in Wad Awad, are putting on vigorous growth and are likely to benefit from the coming cold season.

2.7.2. SHELTERBELTS

Other plantings include boundary sowing of A.senegal and A.mellifera around one mechanized farm plot. The seeds were sown with a seeder which is normally used for sorghum seeding. This is an established practice which has been long used by the Forestry Department for re-stocking with A.senegal to increase gum production potential in cleared areas in the forest reserves in the clay plains. The Gedaref Forestry Division had sown about 6,000 feddans in 1985 in Shashena Forest Reserve. Some of the resulting plants in both the project sponsored area and the Shashena forest are not very impressive in the sense that some lines are hard to locate because of incorrect operation of the machine. Some seedlings are very small due to late sowing or because of severe competition from the weeds and from over-shading of the sorghum.

Shelterbelt plantings in Wad Awad west and east were planted with A.mellifera, A.seyal and A.senegal were intended to become boundary plantings in addition to their value as windbreaks. Those in the west failed because the strip was inundated while the belts in the east still look healthy. The plantings which look most promising are those in the forestry plantation at Karkora and Wad Awad where A.mellifera has been used as live hedge along the metal fence. The trees look very healthy and vigorous and might very soon effectively protect the plantations so that the metal fence can be removed and used in other areas.

2.7.3. VILLAGE WOODLOTS

Only one village woodlot (Mugatta village) was planted under the project. The five feddan plot was fenced, ploughed and planted with A.senegal and A.seyal. The labor for fencing and planting was provided by the villagers while the project provided the fencing materials and the seedlings. The plantation looks rather poor being under severe water stress and some grazing pressure. A possible consequence of this stress is that A.senegal might not be able to survive because it is outside its normal range while A.seyal is likely to suffer heavy mortality. In addition to drought the plants are under continuous threat of being eaten by the hungry goats of the village. This threat will become more serious in the middle of the dry season when there will be little browse elsewhere. Guarding against these animals is a real problem because villagers seem unwilling to volunteer keeping regular watch over the woodlot, the five strand barb wire fence is inadequate and the shepherds have not been instructed by their parents to keep the animals out of the woodlot.

This woodlot offers shows two lessons. First, most fences are not goat proof and do not offer safety to plantations against these animals. The second lesson is that villagers are unlikely to collectively manage a forestry plantation for common benefit.

A second attempt of a village woodlot is being contemplated at Abu Rakham where the villagers showed the intention of establishing a plantation to supply their village with fuelwood and other forest products. Wood has become a scarce commodity around the village as the forests have been cleared for cultivation of crops. Moreover, the forest reserve which exists near Abu Rakham is managed to provide sawlogs to Hawata sawmill. An attempt was being

made to allocate a portion of that reserve to be managed by the villagers for their own use. This request is, however, unlikely to be realized since some Forestry Department officials feel the forest is managed for specific purposes and seem unwilling to consider other uses. It, therefore, remains to be seen whether the villagers are going to agree upon making cash contributions to be paid to the Forestry Department in order to reserve and manage a forest on their behalf. If the villagers agree to this arrangement it might encourage others to follow suit, and the project staff should, in fact, encourage people to think along these lines. It would also be appropriate for the Forestry Department to decide to manage the forest reserve for local instead of external needs.

2.7.4. COMPOUND PLANTINGS

The extension component of the project made remarkable achievement in distributing seedlings to households in both the village and refugee settlements. About 77,000 plants have been distributed in 1985 (Table 3), consisting of several tree species. Planting on the whole, was successful, but there have been a number of problems connected with tree planting. This is despite the fact that most of the people knew the importance of trees - shade, amenity, hedge, and fruit before they were approached by the project extension service

One of the problems is the cost of watering the trees particularly for those who took and planted many seedlings in their houses. At Wad Awad it was said that one donkey load of water brought into the settlement from the nearby main canal of Rahad Scheme cost 50 piasters. If a family has to water several trees it is certain that water will constitute a significant portion of the budget considering the meager cash incomes available, most families having only a few or only one member who is able to take up employment. People should have been advised to take trees to plant in their compounds consistent with water resources available.

Protection against goats, chicken and children is another problem which is partially solved by erecting wooden fences around the trees. These fences are not an easy task since the wood is scarce and the fences are made from the wood otherwise collected or purchased for fuel. The fences are thus liable to be consumed by the stoves at any time.

Another problem which is specific to the refugee settlements is that many people feel that they are being "pushed" to plant trees. Some are not so much interested in planting trees because they are emotionally tied, understandably, to their original home and expect to return home. It is thus unlikely for such people to take considerable interest in trees or anything else of long term benefit. Other people were of high social standing who were not accustomed to tasks of this nature. Some other people are of nomadic origin who never thought in their lives of planting trees. In short, even if the refugees respond favorably to tree planting the extension program should be carefully worked out so that refugees plant trees at their will. When visiting Wad Awad settlement, it was felt that at least some refugees resent being visited by uninvited strangers at frequent intervals unless they come to provide specifically needed service. This was later confirmed by the Assistant Commissioner of Refugees in Gedaref.

2.8. COST OF OPERATIONS

The project documents show records of the total expenses but costing of the different activities is lacking. The arid/semi arid zone forestry specialist attempted to identify from plans and reports the nursery, plantation (i.e. fencing) and labor costs associated with fuelwood plantations. The figures and calculations for nursery costs presented in the evaluation draft were judged incorrect by the person who was the former project manager and is presently USAID forestry advisor in Sudan. From the records available, the evaluation team was unable to determine the total cost of plantations or the costs of its component parts.

It is therefore necessary that the project should revise it's accounting system so that the costs of each operation are recorded separately. The figures indicated, however, are rather high for establishing forestry plantations in this part of the country compared with the cost of direct sowing techniques employed by the Forestry Department. According to information supplied by the Conservator of Forests the average cost of establishing Acacia senegal plantations by direct sowing technique is LS 15 - 20 per feddan. A comparison between the two techniques of establishing forestry plantations need to be made to find out the relative efficiency of each in the rate of establishment, initial growth and the attainment of the final goal at harvest time.

2.9 YIELD PREDICTIONS

Yield predictions are difficult to make because yield data are extremely rare for the main plantation species of the project. The estimates in this report are derived from the figures of measurements made in 1985 at Rawashda Central Forest Reserve which lies within the project area. The figures demonstrated the yield assumptions made in the project paper are valid. The FAO Fuelwood Project has undertaken the task of assessing charcoal production from the Acacia seyal stands in that forest.

The data show number of stems, basal area (BA), mean diameter at breast height (dbh), standing and net volume of the wood, its weight and, finally charcoal produced in kilograms and sacks. All data are calculated for one feddan ($4200M^2$). The trees used for this research fall into two groups, old trees of about 10 - 20 cm dbh and young naturally regenerated stands with dbh 5 - 10 cm. The age of the younger trees is not exactly known but is estimated to be about 8 - 19 years. The older stands are about 20 years old as a result of natural regeneration of Acacia seyal following clear felling in 1964/65 according to information given by the Forestry Department staff.

	Stand Characteristics	
	20 years	8-10 years
1. Stand density, stem/fdn	60	675
2. dbh cm	14.5	n.a.
3. spacing m	8.4	2.5
4. B.A. M^2/fdn	1.0	n.a.
5. Standing volume M^3	6.92	10.40
6. Charcoal produced, tons/fdn	1.48	1.55
7. Charcoal produced sacks/fdn	55.5	57.0
8. Average wt. per sack, kg	26.66	27.33

This information, little as it is, allows for making an important forest management deduction at least on a tentative basis, that is Acacia seyal stands from natural regeneration can be utilized for fuelwood production at a much younger age than they are traditionally being used.

Natural stands are very often irregular as a result of micro-ecological variations of the areas they occupy. It is thus likely to find many more trees growing on a small depression or near a prolific seed producer than on compacted spots or away from seed trees. They are, therefore, irregular with respect to spacing because of the two mentioned factors and several other factors that interact to produce the natural stands. It is also important to note that such stands are generally composed of trees showing wide range of size due to the ecological factors as well as differences in age.

Forestry plantations, on the other hand, are of more regular spacing and rate of growth, the latter as a result of site preparation and, desireably, better seed sources. If Acacia seyal is grown in a plantation of 4m x 3m as practiced in the project a total of 350 trees are planted per feddan. An assumption is made that 100 trees are lost during a rotation period of 8-10 years, the remaining 250 trees per feddan should be able to produce a reasonably large volume of wood. At that age, given that normal ecological conditions prevail, the trees should reach a size of 10-12 cm in diameter with respective BA of 78 and 113 cm^2 or 2.1 - 2.8M^2 per feddan. Using the yields for Rawashda forest where 1.0M^2 BA/fdn produced 6.92M^3 of wood the plantations are expected to yield 14-20M^3 per feddan. The mean of the two figures is 16M^3, and all these estimated are very close to the yield predicted in the economic analysis section of the project agreement document in which an annual increment of 2M^3/fdn is forecast.

Since most of these computations are based on data from an atypical stand, let us expect that the yield of the forestry plantations will be around 15M^3 per feddan at the age of 8 years in order to allow the unforseen losses such as illicit cutting of wood. At the conversion rate of 20 per cent one M^3 of standing wood volume felled and kiln dried produced 214 kg of charcoal. The plantation will therefore produce 3200 kg of charcoal per feddan or 120 sacks each weighing 27 kg.

If the project reaches its target of planting 8000 feddans of fuelwood plantations and if these are managed on 8-year rotation, the annual cut will be 1000 feddans. This will produce 15,000M^3 of firewood and poles or 120,000 sacks of charcoal. Under normal conditions the wood is utilized to give all the three categories of use - building poles, firewood and charcoal.

2.10 HARVEST PLANS

2.10.1 GRAZING AND BROWSING

When plantations are established significant changes in the ecosystem will be realized as early as 3-4 years after establishment. This is the period when the young tree stands require adequate protection against fire and animals so that tree growth is not interfered with, after 3-4 years of age the plantations are expected to reach up to 4 meters in height. Acacia seyal trees planted on good sites have reached one meter of height in one year. If the plantation is well established and favorable ecologic conditions prevail there is reason to believe that this rate of growth is attainable during the first 3-4 years.

At his stage, it will be possible to allow some moderate grazing by cattle and sheep because these do not tend to browse thorny tree species. Camels and goats, on the other hand, should be strictly excluded from the young forest plantations because their preference is to browse rather than graze. The grazing will also lower the fire risk. The damage caused to Acacia senegal plantations in Rawashda forest by camels warrants absolute prohibition of entry of these animals into plantations in order not to jeopardize the object of management. Camels have eaten up all the leading shoots of the trees and due to repeated browsing during the severe drought years, the trees have been reduced to stunted unproductive bushes. These trees could be producing gum arabic if they were not browsed. Another serious damage to this forest was caused by camel owners who cut down Acacia seyal trees for camel feed.

Grazing for cattle and sheep should only be allowed during the dry season in order not to cause soil compaction that will eventually lead to decreased tree growth. Both the refugees and villagers near the plantations should be allowed to herd their animals inside the forest and must understand the reasons for restriction to seasonal grazing and prohibition against camels and goats. It is only with the understanding and collaboration of the users that the forest can effectively be protected. Camels and goats might be allowed into the forest at later stages when the trees are big enough not to be seriously affected by browsing probably at years 7 and 8 of the rotation. The total grazing potential estimated at one animal unit (A.U.) per feddan will be about 1044 A.U. at age 4 or 1984 plantations,and 3091 at age 5 because 1985 plantations will be ready for grazing. This potential is annually increased according to the rate of planting until the maximum of 8000 A.U/an. is attained.

2.10.2. WOOD UTILIZATION

A system for wood use might be similar to that practiced by the Forestry Department in Natural forests. This system is to issue permits to charcoal burners inside a forest reserve at certain rates of payment. After the charcoal burning is over farmers are allowed to cultivate crops inside the cleared land. Each farmer was given a plot or 5-20 feddans for cultivation of crops but at the same time was asked to sow seeds of the desired forest tree species at the required spacing.

This system was applied at the Gum Research Division in Kordofan. The same division implemented another version of the system in Eastern Sudan on the clay plains of the Rawashda forest. After the forest was cleared 1000 feddans were handed over to commercial sorghum farmer who cultivated the land with sorghum and Acacia senegal. The trial was successful and the Forestry Department tried its application on a large scale such as in Shashena forest but it had to stop it because farmers could not or would not respect with the tree planting requirement.

In the case of ERRP the system should be easier to implement since the project will be dealing with small holdings and with people who have modest resources whether they are refugees or ordinary villagers.

The Forestry Department should give each farmer, refugees and villagers, a plot of ten feddans of the plantation due for felling at-cost price plus a small percentage for stumpage. The farmers should be allowed to sell the wood at market prices before paying the Forestry Department since it is assumed

that they are predominantly of low income groups. The wood is estimated at 150 M^3 per feddan. Felling should start very early in the dry season so that wood harvesting operations will not overlap with the cultivation period. The method used for removing the trees should be up-rooting in the traditional method of clearing mechanized farms. This is because of two reasons, first that coppicing nature of A. seyal has not been studied to show the usefulness or otherwise of adopting a coppice system and, second, to remove stumps so that they do not interfere with the machinery during sowing. Managing the coppice growth rather than having intermediate Sorghum cropping cycle should be tested and if successful, should be the preferred management method. This would keep the land in continuous forest production and eliminate the high cost for destumping and artificial regeneration.

2.10.3. AGROFORESTRY PRACTICE

The farmers should prepare their plots for cultivation of sorghum for the first year and should hire tractors and plows for this purpose from the market or from COR. They should also plant seedlings or seeds provided by the Forestry Department at 3M x 4M and very closely supervised by staff to ensure that the trees are planted in the correct manner. This might be encouraged by providing certain privileges to those farmers who achieve the best rates of tree establishment. The plots should be cultivated during the second season with another crop such as sesame which does not overshadow the young plantations. During the second year the farmers should undertake beating up where necessary. The second year cultivation is primarily intended for reduction of weed growth because dense and tall weeds, such as Sorghum sp. tend to take over abandoned cultivation lands, and also to provide additional income to the farmers.

Sorghum cultivation will be shifted to the next cutting area where the farmer is given a new plot from which wood is harvested first. Production of sorghum on newly cleared lands is quite high ranging between 5 and 10 sacks depending on the climatic conditions and the aptitude of the farmer. By this system the farmer is assured of at least 50 sacks of sorghum and about two kantars (90kg) of sesame per feddan, a total of 900 kg, assuming that the growing forest trees will take considerable space during their second growing season. If the farmer keeps 10 sacks of sorghum for his own consumption then 40 sacks can be sold for cash. With respect to wood the farmer might use up to $10M^3$ for his family needs and sell the rest for cash. He will also have a chance obtaining fodder and grazing for his animals.

Farmers Gross Income/Annum

Item	Quantity	Price/Unit	Gross Revenue
Wood	140 M	20	2800
Sorghum	40 sacks	30	1200
Sesame	900 kg	0.15	135
Total			4135

The income of the project for Forestry Department is composed of the sale of wood, land rent paid by the cultivators and royalty fees for grazing rights. There are many more indirect advantages of adopting this system such as improvement of soil fertility which is the key factor for this system to

remain viable. The system, however, requires careful administration in order not to fail like the one in Shashena CFR where farmers got out of control.

In order to test the applicability of this agroforestry system it should be tried, once more, in Rawashda CFR with a limited number of farmers, half refugees and half of them from the surrounding villages. One project staff member - a Forest Ranger - should be allocated for this assignment. The FR at Showak should be able to do his work without affecting his other duties. Cropping along with planting trees in areas which are currently treeless and falling within the planting program, should be tried wherever possible in order to introduce and encourage agroforestry practices.

The use of shelterbelts and of other agroforestry plantings such as gum arabic plantations are likely to be treated in the same manner "only" if the farmers are willing to adopt rotational cropping. It is felt that the project cannot possibly indulge in this matter because it is outside its mandate and also because the problem is intricate. The relevant GOS departments such as CFA and MFC should see to it that rotational cultivation is followed in order to secure sorghum production in the long run and also to provide other land uses such as grazing, gum production, wood production and amelioration of the environment.

The best arrangement, of course, is to have enough land around each village or refugee settlement in order that each year sufficient land is cleared and planted with trees to accommodate all the farmers. The farmers should plant seedlings of the forest tree species Acacia seyal - so that the process continues in sustention. If these tree plantings produced only two thirds (10 M/fdn) of the volume computed the income generated should be sufficient to improve the quality of life for the families involved.

3. TECHNICAL RECOMMENDATIONS

3.1 PROJECT DESIGN AND OBJECTIVES

No major changes are needed in the design of the project except that the project activities should be extended to cover larger areas in Gedaref district to reach more people for whom the project is intended. The coverage should include small and large farms alike for agroforestry planting. The project objectives are quite adequate and no changes are recommended.

3.2 STAFF ASSIGNMENT

The project is using both expatriate and local staff seconded from the Forestry Department. The interaction of the two groups is highly desirable for the benefit of the project. The project is encouraged to make use of senior expatriate staff with experiences in arid and semi-arid areas relevant to the project activities in order to train the local young staff members. If young expatriate staff members are needed they should have qualifications or specializations not available among the local staff members. It is recommended that the project management clearly identify the assignment of each staff member in order to avoid having two or more people of the same standard doing the same thing in one place.

It is also felt that the project co-manager should be a full time assignment in order to be effective in the project management and assure transition to

GOS management. Moreover, both the project manager and co-manager should have direct technical inputs in the project activities. Training of the staff should be continued.

3.3. NURSERIES

The project is encouraged to continue the program of establishment of nurseries and at the same time seek ways and means of reducing the costs of seedling production. The school nurseries idea should be abandoned and instead, village and private nurseries should be tested and, when successful, expanded. Rehabilitation of Showak nurseries is recommended along lines of the proposal made by the project staff. At Abu Rakham area, where water is abundant close to planting sites, small temporary seedling holding areas near planting sites are recommended to reduce the cost and time of transportation.

3.4. PLANTATIONS

Site preparation techniques should be revised in the light of tree establishment rates in order to find out whether they justify the high cost incurred in cross ploughing and pitting. Choice of species for planting should be guided by the ecological requirements of each species. While Acacia mellifera should be the main plantation species in the driest part of the project area, A. seyal should be used in the wetter areas for fuelwood production. A. senegal which is to be managed for gum production is more suitable in areas with rainfall in excess of 500mm. Direct sowing as a means of establishing plantations should be tried on a modest scale in 1986 plantations at Abu Rakham using both drilling and broadcasting methods.

3.5. LAND TENURE

The land use rights of the commercial farmers require by law that strips of trees should be planted as shelterbelts in each farm plot or strips left before clearing. The farmers, however, are ignoring compliance with this law. In order to bring about extensive tree planting in the project area the MFC in collaboration with the Forestry Department should work towards law enforcement to the extent that trees are actually planted and grown on the farm plots. Thought should also be given to grazing rights and transhumance corridors so that nomads do not trespass on other land use practices.

3.6. RESEARCH

The Forestry Research Institute at Soba should be asked to experiment with planting techniques and species trials in the different ecological zones of the project area. This work should not only come out with the best planting techniques but also with the cheapest one.

3.7. PROJECT RECORDS

The following records are of great importance and should be carefully kept. These are (a) rainfall and other climatic records (b) stock maps (c) correct labeling of trees in both the nursery and the plantations (d) survival counts at end of the planting season and at the beginning of the following rainy season (e) sources of seeds and (f) cost data for each discrete project activity.

3.8. THE EXTENSION PROGRAM

It is recommended that the extension program should be directed towards planting more shelterbelts and agroforestry activities in order to increase the total area under tree cover. Compound plantings should be continued as part of village nursery activities and arbor days but should not occupy much of the staff time. While crop planting along with forestry plantations should be encouraged in the fuelwood plantations the extension program should also establish demonstration plots elsewhere to show the effectiveness of agroforestry practices

3.9. UTILIZATION OF PLANTATIONS

The Forestry Department which will take over the responsibility of all project plantations should make the necessary plans for utilizing these resources. It is recommended that small farmers from both the refugee and villager population should be allocated plots for wood cutting and crop cultivation on the same plots. This practice of taungya system whereby the farmers should also plant trees along with their crops, should be supported by a component of nursery practice in order to use seedlings instead of direct sowing, particularly in the dryer parts of the project area.

3.10. COSTING

In order to allow for an appropriate economic analysis each activity should have detailed records of its costs. The main headings which are recommended at this stage are (a) Administration (b) Nursery (c) Plantations and (d) Extension. It is also desirable to have indications of how much of the administration is required by each of the other three items.

Chapter IV SOCIAL IMPACT EVALUATION

1. GENERAL REMARKS.

The timeliness and success with which the plantations, nurseries, and buildings have been established, in spite of difficulties of floods, muds, and logistics are immediately observable as 'physical indicators' of project success. Indicators of 'social success' -- of the impact of this project on the local refugee and Sudanese population -- are neither as easily, nor as directly measured. For example, should the successful uptake of trees in the family compounds of both villages and settlements be taken as a 'physical indicator' of successful social impact? Certainly, in the villages, market towns, and refugee camps in which extension activities are regularly taking place, one is immediately gratified by the sight of so many project trees 'greening' the otherwise brown, dried compounds of these areas.

And indeed, the greatest success of the extension program to date has been to get the project product -- trees-- out to the people. While this achievement is considerable, it cannot of itself be interpreted as successful application of forestry extension and agroforestry activities. To do so would be to confuse the physical indicator of trees growing in family compounds with successful extension activities and associated positive social impact.

The remainder of this section will discuss the differential impact of the project on recipients: the degree to which extension activities have or have not resulted in both the introduction and local sustainability of agro-forestry practices, and in positive social impact. Specifically, who is benefiting, who is not, why, and what can be done to help adjust the imbalances.

2. IMPACT ON THE REFUGEE POPULATIONS

Refugees do not exist in a vacuum. They are 'refugees' by virtue of being 'out' of their country and 'in' another country--whether temporarily or permanently. With respect to both duration of stay and methods of incorporating refugees into the host economy and society, refugee projects -- as all projects -- can be divided into two general categories:

(1) relief: The goal of relief projects is immediate intervention related to such necessities as food, clothing, housing, medicine, and social welfare. Relief activities may continue for years after entry of a refugee population, particularly when refugees are settled in areas of the host country which are not able to provide adequate farmland or employment opportunities to maintain the refugee population. This is the case of the refugee settlements of Karkora and Um Gargor in the North. The majority of the inhabitants of these two camps have been settled for over six years and some as many as ten years. Relief programs, unlike development programs, do not entail training, technical assistance, or other mechanisms whereby the population can become self-reliant. The primary goal of relief is to provide immediate, short-term 'maintenance' assistance.

(2) Development: The major goal of development programs which are directed to refugee groups focuses on the design and implementation of long-term interventions which will incorporate refugee populations into the socio-economic life of their new country so that they will become increasingly self-reliant, and less dependent on relief assistance. As will be detailed below, there is some misunderstanding among both project staff, GOS counterparts and project recipients as to whether this is a relief project or a development project.

According to the USAID/CARE Agreement, this is a development project. The CARE/GOS Agreement, however, de-emphasizes agroforestry extension and related development goals of institution-building and strengthening, and focuses instead on the purchase and ultimate donation of project equipment, constructed buildings, plantations and nurseries to the Forestry Department. Since this equipment transfer is not directly institution-building, it constitutes a form of relief (not development) assistance to the Forestry Department. Similarly, the distribution of seedlings to family compounds by the para-extensionists can constitute a form of relief (not development) assistance, as discussed below.

In the field survey, with the exception of several wealthy families who had the land and could pay laborers to establish their own small private woodlots using project trees, all Sudanese and refugees stated that trees were desired only in their own compounds for purposes of ornamentation and shade. Only four respondents said that they were interested in the trees for future fodder, fire wood, or building purposes. Respondents expressed confusion about Sudanese laws which regulate whether what trees one is allowed to harvest off of one's own land, and this may be in part the reason why they stated that trees were for the legally innocuous reason of 'shade and ornamentation'. Confusion and ambivalence was expressed with regard to the relation between land-ownership and tree-rights. When asked who had ultimate rights to the trees in plantations or village woodlots, most of the respondents thought the state did. A few said CARE.

The focus on individual trees for shade and ornamentation has indeed 'improved the quality of life' -- both physically and psychologically - in the settlements and villages. In the course of the household rounds, the majority of tree recipients were overwhelmingly enthusiastic about their newly-established 'roots' in the Sudan -- a symbolic commitment to a new life, in a new country.

However much this may appear to be 'development', it should be remembered that (a) the trees are (just as food relief) given to the people, and (b) extension activities have not progressed beyond seedling distribution to substantive agroforestry extension activities incorporated with seedling distribution. In short, agroforestry development activities introduced by the project have not been adopted outside the project, and consequently the long-range development goals of the project, have yet to be realized. These long-range development goals can only be achieved through informed, reflexive project activities which aim both to integrate forestry and extension into sustainable, hands-on agroforestry activities, and which also aim to actively involve the Forestry Department in these activities so that they will be successfully devolved to Forestry by the end of the project.

The confusion between the relief/development aspects of the project are in part related to project emphasis on short-term goals; in part related to the overriding emphasis on relief activities which have to date been directed by the donor community to refugees in the Sudan, and in part due to the fact that CARE is involved in both relief and development activities in the project area. From the village perspective the only organization which people 'see' is CARE -- which gives away food and gives away trees. Even though these two activities are entirely separate both administratively and in terms of implementation. The results of this confusion at the local level were humorously demonstrated at one village, where a village notable came hurrying

out to greet the evaluation team, and proceeded to thank us profusely for our gifts of sorghum! As long as the people continue to assume that trees -- like sorghum -- are relief commodities, the long-range goals of the project -- of integrating forestry with agriculture and animal husbandry through extension activities -- will remain largely unmet.

A final reason for the difficulty in clarifying the difference both in intent and in content between relief and development activities is located in the larger Sudanese political/economic environment. Conflicting goals are set out by both donors and GOS towards the refugee population: on one hand, a desire to assist repatriation, and on the other a desire to help refugees become self-sustaining (while) in the Sudan. Given the complexity of the refugee situation in the Sudan, it will likely take considerable time and effort to sort out priorities, both on the part of donors and GOS, whereby development efforts can be adequately addressed. Part of this 'working out', will entail realizing that development activities and goals are quite distinct -- both in intent and in content -- from relief efforts.

At the point of mid-term evaluation, the overall social-impact of the project -- as relief project -- has been positive. Trees have been given to refugees and equipment has been purchased to be given to the Forestry Department. If however,the project is to be evaluated as a development project -- as detailed in the USAID/CARE Agreement and specified in the terms of Reference of this evaluation, then project goals (of introducing agroforestry activities, whereby equitable social-impact and sustainability among the local settlements and villages participating in the project are obtained) have not been met in the first two years of project activity.

It is recommended that project staff, together with GOS counterparts and appropriate USAID project staff:

(1) Clarify and refocus project goals and associated implementation from relief to development activities. The major changes which will have to be made to achieve this transition are detailed in both this section and the section of extension activities.

(2) Rectify the discrepancies between the USAID/CARE and the CARE/GOS Agreements so that the project is clearly described as a development project in both of these documents, whereby both institution building and institution strengthening results from project activities.

It is important for both CARE and GOS counterparts to recognize that the tension between relief and development is inherently a part of any project -- particularly projects directed to refugees. If pressure is exerted to move the project from its development goal, and towards relief activities only, this needs to be clearly laid out and discussed, so that project activity does not get bogged down by these conflicting goals.

3. NON-REFUGEE PROJECT ACTIVITIES.

Extension activities are about equally directed to refugee settlements and Sudanese villages and market towns. The inclusion of the local population in the project is within project scope and desirable for several reasons:

(a) The environmental issues being addressed by the project are shared by the inhabitants of the region as a whole and, therefore, long term solutions can best be achieved through an holistic approach to the area, inclusive of all of the population. As mentioned before, refugees do not exist in a socio-economic vacuum. Their problems are, in the long-term, the problems of all of the region's population.

(b) Survey results indicate the rural Sudanese small holders of the area are on increasing economic jeopardy, while at the same time they have largely been excluded from donor-assisted projects. Their economic difficulties are due to a series of interrelated factors, including drought; crop failures over several years; increasing prices of basic commodities; decreased soil fertility; increased scarcity of natural resources of wood, brush, and fodder; and increasing dependence on cash, rather than on the traditional subsistence-oriented economy. In the survey questionnaires, these farmers ranked credit as one of their most serious constraints, together with wood, charcoal and seeds. Interest rates to local merchants, through the shayel system range as high as 250 - 300% (The shayel system is a traditional form of local merchant to farmer credit, in which the merchant purchases and pays for the farmer's crops before harvest at a set price -- generally well below the expected market price. The advance payment by the merchant to the farmer may include seeds and other required farming inputs, in addition to cash.)

(c) Local Sudanese perceptions of donor - assistance programs to the refugee populations are mixed -- and increasingly subject to criticism. Considering the above remarks about the increasing deterioration of the economic position of local Sudanese small holders, this criticism is quite understandable. From the local perspective, refugees constitute an additional burden on an already stressed environment, thereby contributing to increasing scarcity and price increases of wood products, brush used for fencing, and grasses used in thatching. The ERRP project is now the only donor project in the Eastern Region which is attempting, on a large scale to encompass both refugee and Sudanese populations in one development project.

(d) The status of 'refugee' can, and is some cases should, be extended beyond individuals now residing in the refugee camps, with respect to three different groups served by this project:

i. Refugees in urban areas: The Committee on Refugees unofficially estimates that upwards of 70% of the refugees in the area are residing in towns and some villages. This is evident in Gedaref, where at dusk several of the main streets are turned into overnight camps, with refugees spreading out their blankets and collecting in small groups to cook an evening meal or brew tea.

ii. Recently settled nomadic groups: The five Megatta villages -- the so-called Sudanese villages served by the project in the north -- have been recently settled by several lineages of a nomadic tribe. They were given land by the state several decades ago and these settled members of the tribe continue to interact with their nomadic brethren in a variety of economic activities. During the field survey, project recipients in these villages indicated that most had been there no longer than twenty years, and some as recently as the last few years. Complete reliance on agricultural activities has never been possible in the area farmed by these settlers. In all families, some members continue to move back and forth between settled and nomadic activities, but as the local ecological situation deteriorates under the increasing pressure of expanding commercial farming, it is apparently no longer as easy to make this necessary transition back into herding, and consequently these people are becoming locked into a form of permanent agriculture in a marginal region, without necessary fallow periods, and with decreasing access to supplementary nomadic activities. This situation is resulting in a downward spiral of agricultural production, and an upward cycle of indebtedness.

iii. Hausa villages: The southern 'Sudanese' village in which the project is distributing trees were established by Hausa people. The founders were West African Hausa traders involved in the long distance caravans from West to East Africa, along the southern Sahara route. As this long distance trade disintegrated over the past decades, Hausa moved into agricultural activities to supplement their merchant activities. Marriage continues to be almost totally within the local Hausa community and Hausa continues to be the spoken language. They are in the same economic condition as the nomadic groups settled in the Megatta villages. Their land area is not sufficiently large to allow for the necessary fallow. They are like the Megatta villagers, an island in the sea of large, commercial sorghum farms which encompass almost all of the project sites. Furthermore, the trading activities in which they were formerly involved are being increasing undermined by new urban-based trade.

These nomadic and Hausa villages are inhabited by people who are recent settlers and who continue to perceive of themselves largely as non-indigenous Sudanese agriculturalists. They do not come out of a peasant a grarian lifestyle but have been forced into one. They are 'refugees' in that they are now 'out' of their original country, or economic occupation and 'in' another country, trying to establish themselves in a new occupation of full time agriculture. Whether this transition will be possible remains to be seen. Their plight, in the long run, may be more serious than that of the refugee population in the settlements, since the latter are almost totally supported by international donor relief assistance, while both the settled nomadic population and Hausa receive little by way of donor assistance and are having increasing difficulties sustaining themselves from the lands which they now farm.

Given the difficulties of both the urban refugees and the small-holders above-mentioned, and the associated increasing scarcity (and therefore expense) of forest products, it is recommended that this project continue to focus on a regionally integrated solution to forestry/agroforestry activities in the area -- one which is inclusive of the different populations -- refugees as well as Sudanese. This is an appropriate and responsible use of project resources, particularly in view of the lack of development projects directed to local small-holders.

(2) The Forestry Department. A second category of non-refugee activities involves assistance given by this project to the Central Forestry Administration. At the conclusion of this project, the CFA will assume management of plantations, nurseries, buildings, and project equipment, as well as of extension program activities and staff. The evaluation team is concerned that the process and products from the plantation harvesting be directed to the local population. While profit accrued to the Forestry Department might be greater if the plantation products were bid to the highest bidder, it would result in plantation products not benefiting the local refugees and rural Sudanese. Hence, intended positive social impact -- of providing forest products to refugees and local Sudanese -- would not take place. Yet again, a project intended to benefit the rural disadvantaged would be transformed into a vehicle to serve largely urban and merchant elite interests.

In order to assure that project activities continue to benefit refugees and other members of the local population, it is recommended that CARE and representatives of the Forestry Department, COR and USAID begin now to work out the specific mechanisms whereby products from the plantations and nurseries will be locally distributed -- not distributed to more profitable markets in the urban areas. Equitable distribution could be achieved by a structured clause which would require a certain percentage of the harvested forest products to be sold locally -- not just to Showak or Gedaref market towns -- but to inhabitants of the rural villages and settlements. Unless the products of plantations and nurseries are specifically destined for local, rural populations, the social and economic impact of nursery and plantation aspects of this project will be negative.

4. EQUITY.

This section will detail both the unequal distribution of project resources and the unintended, less-than-optimal, project impact. In each of the categories discussed below, three major problems identified in the field survey -- water, protective fencing, and pest control -- figure centrally into explaining why the project has had unequal impact on recipients, whereby in some instances, relatively, richer families are favored above the poorer, thereby widening the gap between poor and poorer at the local level.

4.1 SOCIO-ECONOMIC FACTORS AND EQUITY.

Nearly everyone wants project trees. They are free and they are desirable for shade and ornamentation. However, as recipients have discovered, the care of trees is not free. In all areas, the distances from water points to individual compounds is often too far to be comfortably walked and, therefore, people will try to purchase water which is delivered by local entrepreneurs owning a donkey, or pay an individual water carrier to fetch and deliver water. The additional water needed for trees, therefore, entails additional expense or time in personally collecting water. This added expense and labor input had not been anticipated by participants, and was a major concern expressed by both participants. For those very poor, the choice must often be, to allow the seedlings to die or to remain stunted because of inadequate water.

Poles and brush used in building enclosures around the young seedlings, are increasingly no longer free, but must, as fire wood, be purchased. This is yet another unintended expense which recipients were anxious to discuss. While all recipients might complain about this expense, it is clear that the poorer families suffer most from this added burden.

In the settlement of Um Gargor, a camel load of brush is ten Sudanese pounds; informants considered four to six loads minimally adequate to enclose a compound; or one camel load as sufficient for perhaps three trees -- depending on how one constructs the enclosure. Further north, in the settlement of Karkora, the same camel load of brush can be twice as much, because the brush from both settlements comes from the same area, to the south of Um Gargor. Hence, fencing in Karkora is yet more of a burden to the poor -- one which many are simply unable to manage -- with the result that many seedlings have died or are stunted due to browsing.

These failures in seedling uptake seem to have been substantially underreported in the seedling count records maintained by the extension program. Few compounds have more than two or three tree, and even if all of the compounds in all project sites each had five trees, the total of 25,775 (5x5055 compounds - number of compounds taken from the social impact document 1983), this figure does not match the 70-80% successful uptake of the 250,000 seedlings which had been reportedly distributed by para-extensionists by midterm evaluation. Eye-counts made during visits to forty or fifty compounds at each project site by the social anthropologist suggest that average successful seedling uptake may be around 40-50%. Also, that an 'average' is very misleading, since the failure appears far greater among poorer compounds than in richer compounds, where families have better access to resources to care for the tree. More data need to be collected on this issue.

Richer participants, on the other hand, are always those with the most trees. They have the money to hire labor to haul water, build the protective fences around the seedlings, purchase the fencing poles and brush, and plant the trees. In several compounds, twenty to thirty seedlings are being grown by richer families as private woodlots within the confines of the compound. Such individual strategies on the part of the richer participants will, if successful, provide nearly free, self-grown forestry products for the them, while the poorer inhabitants of the community, unable to grow personal woodlots because of both labor and financial constraints, will continue purchasing wood products from outside merchants at increasingly high prices. .

If this pattern continues, whereby richer participants are able to grow not only a few trees - but their own personal woodlots for personal use -- while the poorer participants are excluded from these activities because of constraints of either money or time for labor, then the project runs the danger of unintentionally increasing the gap between the rich and poor in the villages and settlements.

Until recent years, all had equal access to the natural resources of the area for their wood-related needs. Poorer inhabitants were just as able to obtain these items as their richer neighbors. The only difference being, that while richer families might be able to hire someone to collect for them, poor families were forced to rely on their own family labor. The important point here is that there generally was equal access to these natural resources, by both richer and poorer, and this is no longer the case since these formerly 'free' items have entered the cash economy.

It is recommended that extension address this problem by first obtaining a more thorough understanding both of the processes discussed above, and secondly by developing a village/settlement-specific profile of the economic differentiation within each village and settlement which will include: The costs of tree growing (both in terms of money and labor) to families of different socio-economic standing; and the costs of purchasing wood commodities, brush and water to families of the different economic states, and take these into account in the design and implementation of extension activities. This profile can be obtained from the data base to be established by the project, as discussed in the section on Extension evaluation

The economic and social profile should be initially developed in one area, and the results used to modify the current seedling distribution and associated extension so that the kinds of unintended economic hardships which seedling distribution has given to the richer, can be minimized. Profiles should ideally be developed in all project sites due to the differences of both environmental and socio-economic conditions within different areas of the region. However, given limited project resources, a profile developed from one site could be used as a very general model. to guide activities in other areas -- remembering that there will be both major and minor differences between sites, and so this model must not be used as and inflexible model.

What will be a 'good' solution for families of one socio-economic standing may be a very 'bad' solution with respect to families of another socio-economic standing. Furthermore, although the inhabitants of a particular village may all appear to be just about at the same economic level, this is never the case. Even in the smallest and most impoverished-appearing villages there will be those 'more' poor (the local poor) and those 'less' poor (the local rich). Poverty is generally relative, and should be treated accordingly in project activities.

4.2 GENDER.

Women are the primary users of wood fuel and charcoal, and often participate in constructing the thatched houses and compound enclosures. Women also take responsibility for water collection and water use within the compound. In past years, when both wood and grasses were generally within walking distance, women were often responsible for collecting them. Now that nearly all fuel, grasses, and poles must be purchased or transported by animal or truck to the compounds, procurement of these items has become primarily the responsibility of men. In the settlements of Karkora and Um Gargor, families must obtain these inputs from so far away, that all sales are now conducted through merchants and entrepreneural middle men, by means of either camel transport or lorry delivery. The entire operation has been forced out of subsistence activities, in which women were the responsible party, and into cash transactions, in which men are the controlling party.

Nevertheless, women do remain the primary users of these items. With respect to project tree seedlings, women are often responsible -- if not for the building of brush fences around the seedlings -- then certainly for a good part of fence maintenance, tree watering, and general tree care.

It is recommended that the extension program take these gender based work differences into account in both the design and implementation of the extension program. Extension activities need to reach women directly. Women should be fully included in such activities as correct watering of trees, methods developed to reduce pest infestations and more economical techniques of building tree enclosures.

The extension program should explore techniques whereby women can be included in activities arranged by male para-extensionists. Some examples might include: pre-arranged group meetings at the home of one of the women, by the agent, with the meeting place changing, e.g. weekly, to different homes, in order that these women would be able to jointly learn from the successes and problems of their neighbors. Another approach might be to have extension agents work in pairs, so that single men are not regularly visiting compounds.

The exclusion of most women from direct participation in the project was explained to me by one informant in this way: "It's acceptable for men (para-extensionists) to come to a compound once in a while, to advise a woman. But regular visits are not possible, since women often are home alone, and this would just not be proper, to have a man regularly visiting a woman who is alone."

While there are women para-extensionists, approaches to a greater inclusion of women must not rest only on having a certain percentage of women extensionists, since women in the compounds served by the male para-extensionists would still continue to be unable to work active with the extension activities, while women in the compounds served by female para-extensionists would be included.

Innovative thinking on the part of project staff will be needed to bring women into this project. A frequent, but erroneous assumption made in many development projects, is that if the men of the compound are informed and trained, that is good enough, since they can 'train' their women. There are two difficulties with this logic: First, women receive second-hand information and their men-folk will often not be able to answer questions which women may have (since questions should be directed to the extensionist) and second, women are automatically transformed into passive recipients of project activities, and are not allowed the opportunity of becoming active partners and contributors to it.

4.3 ETHNICITY.

Of the five settlements participating in this project, two have primarily Eritrean inhabitants (Um Gargor and Karkora, in the north), and three have a far more mixed population: Abu Rakham and Tenedba, in the south, are inhabited by Eritreans, Tigrayans and Ethiopians, while Wad Awad, also in the south, has both Ethiopians, and Eritrean inhabitants.

The resulting language differences have created a situation in which extension activities are least accessible to non-Arabic speakers. The greatest dissatisfaction with extension activities was expressed in the southern, most ethnically hetrogeneous settlements. While the northern settlements are composed of non-Arabic speakers, the populations of these two settlements have been in the Sudan upwards of six years -- and many as long as ten years. Arabic is therefore not as problematic in the northern settlements as it is in the south, where may of the refugees tend to have been in the Sudan two or less years, and therefore less settled in than refugees in the northern camps.

Para-extensionists in the southern settlements complained, with much greater frequency than in either the northern settlements or Sudanese villages that the training was 'too technical', 'can't understand the content of the lectures' (which are translated while the extension director is giving them), and 'doesn't't answer my questions'.

It is recommended that the extension staff work out an alternative style of extension training, so that communication with non-Arabic speakers will be facilitated. This may entail greater coordination between the extension director and the several non-Arabic extensionists, whereby the latter will be trained to assume greater responsibility for training activities in the southern settlements. In order that extension activities do not discriminate

against non-Arabic speakers, the language problem needs to be clearly identified, and solutions sought. Additionally, audio-visual materials, posters, pamphlets, and so forth will have to be developed in the appropriate languages. These activities should commence during the initial phase of extension reorganization in Gedaref, discussed in the section on Extension Activities.

5. SCHOOL EXTENSION PROGRAM

These activities have been recently initiated under the general direction of Muhammed Mahjub in Gedaref and in some rural project sites. During the evaluation three of the Gedaref schools of various socio-economic levels were visited by the social anthropologist. Activities in these schools included planting and care of seedlings within the school grounds by the students and under the direction of Gedaref extension staff and slide presentations on environmental and forestry issues, including demonstrations of the improved charcoal stove which has recently become a part of the project.

The slide show and stove demonstration attended by the team social anthropologist was highly successful. Students not only were clearly interested in the slides and demonstration, but had a variety of questions for the two para-extensionists who organized and ran the event. Muhammed Mahjub and the para-extensionists did an impressive job and their work, together with the technical assistance provided by Christine Holding, should be encouraged and supported.

Six schools were visited by the team social anthropologist during the course of surveys in the rural areas. In all but one, the project had made a substantial impact. Teachers in these schools were very enthusiastic about forestry-related activities. As one teacher in the settlement of Um Gargor said, "Most of the children here will be farmers or will live in the rural areas, and so learning to plant and care for trees as part of their environment is just as important as other school lessons..." This particular school had established its own nursery and small plantation with over fifty second-year seedlings well over seven feet tall and thriving. This impressive activity was made possible by student and teacher dedication, as well as technically by the existence of a water faucet in the school grounds (not common in most of the schools) and by the purchase of several hoses.

In another school in one of the Hegatta villages, students bring a small container of water to school each morning, to water the trees which they had planted and fenced in last year. The social anthropologist, seeing school children carrying little jugs of water, accompanied several of them to school, to find each child carefully pouring his or her small container on to one of the twelve or so trees neatly laid out in front of the school. This kind of local level dedication and participation in project activity should be supported and encouraged. All of the teachers give their time freely to these extracurricular activities. Indeed, in entering the poorest of the schools visited in Gedaref, two of the teachers were placing vertical wires on the old fence surrounding the school, as part of the tree-protection program the school. This activity was unusual, because school teachers were officially on strike that particular day! In that same school, water is a problem, as they have no funds to purchase hoses, and so students and teachers have dug many feet of small irrigation canals from the one watering-point to the areas in the school compound where plantings are taking place.

These are a few examples demonstrating the success of a school forestry program which is now being organized and run with very modest funding and equipment. Indeed, the great popularity of school forestry activities, in spite of modest resources, is a key indicator that this activity deserves continued, and increased, support by the project.

It is therefore recommended that the project increase its support of these activities and seek additional funding for their expansion. These activities should be coordinated with the broader extension program.

In the survey questionnaires directed to both para-extensionists and recipients, people were asked what they thought about project activities taking place in the schools. 100% responded positively; and as one refugee para-extensionist succinctly put it, "our children are our future and they must learn about how to grow trees for the future."

6. COMMUNITY WOODLOTS

The concept of a community woodlot, maintained by the people for their own use, is both a new idea and a radical departure from traditional forms of gathering wood products from the natural environment. It is new, for several reasons. First, what the environment has formerly provided 'free' is now being transformed into a crop. This transformation entails a change in both attitudes about trees, and practices in relation to trees. With the introduction of woodlots, trees are no longer considered as taken-for-granted objects to be collected as needed from the surrounding vegetation, but must be considered as agricultural products, which people must plant, care for, and harvest.

Such a change in both attitude and practice is never easy and, indeed, it may not be made until natural resources have been so seriously depleted that people are literally forced to seek alternatives. It should therefore come as no surprise that the introduction of community woodlots by the project has not met with success. Indeed, the single woodlot established to date -- in one of the five Megatta villages -- languishes in the midst of village disputes over who is to be responsible for both guarding and caring of the trees, and who has rights to harvesting the trees, and who exactly should provide the land for the woodlot -- and what are the rights to the wood of the person(s) providing the land.

Since the trees and fencing materials are distributed free by CARE, and since CARE also administers the free distribution of sorghum and other relief food commodities in the area, villagers conclude that CARE should also administer the woodlot by providing guards and other inputs. Here is a good example of how confusion on the part of some staff and all recipients, as to whether this is a relief or development project intrudes on the successful planning and implementation of each of these two kinds of projects.

Furthermore, some of the wealthier members of the village are unhappy because they feel that if a woodlot is established for 'the community' (which, it appears they have been told, means for 'the poor'), then why can't each of their families have access to the same inputs (fencing, primarily) with which to establish their own family woodlots?!

The disagreements, misunderstandings, and misinterpretations which have been associated with the Megatta woodlot are, unfortunately, not unique. The growing literature on small scale social and agroforestry projects around the world point increasingly to the failure of community woodlots, for a variety of reasons. Two important ones are:

First, the difficulty of moving from a 'gathering' activity carried out by individual families, to a controlled crop of trees, which must (somehow) be jointly cared for, and (somehow) jointly shared by all these individual families, who formerly were responsible only with respect to their own family requirements. In other words, 'the community' is to be responsible. The idea of a community which 'cooperates jointly' in a specific endeavor is, in many development projects, largely an idealized projection of how people 'ought' to cooperate in a village -- sharing equally.

However, as pointed out before, even the smallest and most impoverished villages will have some wealthier and more powerful families which will tend to dominate and have greater access to local resources. Additionally, in all villages, there will be differential access to resources by gender and, in some areas, by ethnic group as well. The largely Western notion that villages are 'communities' devoid of politics and economic differentiation, is as rare in non-Western countries as it is in the West. What is quite different in (at least Sudanese) non-Western villages, is that many village-level political and economic activities tend to be organized along kinship lines -- not along the lines of formal political and economic institutions, as in the West.

'Community woodlots', as well as 'village forestry committee' are formal institutions which project extension activities have attempted to impose on the existing kinship-based structures in the villages. Without extensive ground work, such formal institutions have not succeeded and that is the case in this project.

A second reason for the failure of community woodlots has to do with land ownership. Encouraging people to move from 'gathering' trees to 'growing' tree crops in the village area, embodies a critical switch from gathering in common or government lands, to growing tree crops on land which may be owned by the government, or village elite. Since land-allocation in village areas is generally done by the village shaikh, and since the village shaikh's family is generally more powerful than other village families, then -- by local logic -- the distribution of the products off of this land should be at the discretion of the shaikh and his kin. Indeed, where woodlots have been successful in different countries around the world, this success has most frequently been possible because the woodlots have fallen under the control of the local elite, whose economic interests generally do not mesh with the economic needs of poorer village member and the gap between local rich and poor is thereby (unintentionally) widened.

It is recommend that the project cease community woodlot activities immediately, and refocus energies on devising more socially and technologically appropriate ways of introducing forestry practices to the area. Project staff -- both foresters and extensionists, and both international and national staff -- are urged to become more familiar with the growing literature on small-scale social forestry and agroforestry projects from around the world, in order to avoid similar pitfalls in future project activities. These documents should be ordered by the project extension

advisor and funds should be made available to both expand the collection, and to incorporate particularly relevant items into extension training and outreach activities.

7. PLANTATIONS

The three goals associated with the establishment of plantations are (1) provision of forestry products to both local refugee and Sudanese populations, (2) provision of income to the Khartoum-centered Forestry Department, and 3) a short-term goal to provide employment to refugees.

To date, the third goal has been quite successful. 230,000 man days of employment has been generated to refugees over the past two years. It is anticipated that an additional 250,000 man-days will be generated over the coming two years of project life. Since these plantations provide one of the few employment opportunities tc refugees, they have been a boom to the men who have been employed. Interviews with some of the plantation workers indicated that salaries were spent according to the individual needs of the workers. For example, an older man said that he would be using the money to marry off a daughter; a young unmarried man said that he would keep about four pounds for his own personal expenses and would give the remainder to his family; and a third said that his money would be used for needed household commodities; etc..

The first goal of plantation establishment -- the provision of wood products to the local population -- is central to the project's over-all long-term goal of enhancing forestry activities at the local level. However, this goal is unlikely to be achieved unless the precise mechanism by which plantation wood products are disbursed are worked out over the next two years.

It is recommend that appropriate project staff and representatives of GOS work out specific mechanisms for the local distribution of forestry products from the plantations. If the Forestry Department proceeds to grant tenders for harvesting and marketing the plantation products to the highest bidder, then it can be anticipated that merchants will bid in accordance with the highest profit which they anticipate from the harvesting activities -- and that profit will not be found in the economically-depressed areas of the refugee campus and Sudanese villages -- but in the market towns and in Khartoum. If such laissez faire tender and marketing activities are allowed to take place, then the plantation aspect of this project no longer will serve the interests of either the refugees or the local Sudanese, but will serve the economic interests of both the involved merchants and the Forestry Department. A resolution to these conflicting interests, so that project recipients, merchants and the Forestry Department each receive an appropriate share, needs to be worked out before project end.

8. AGROFORESTRY

A major purpose of the project, according the the USAID/CARE Agreement, is:

"The introduction and acceptance by rural farmers, both refugee and Sudanese, of the practice of integrated agriculture, forestry, and animal husbandry so as to maximize overall land productivity on a sustained basis and to maintain environmental stability..."

This purpose was to be attained through establishing 2000 feddans of agroforestry practices in conjunction with extension activities and nursery outputs. As detailed elsewhere, the specific implementation of this goal was refocused to seedling distribution to individual family compounds and associated seedling-counts by para-extensionists, rather than on the intended goal of introducing agroforestry techniques to the local population. The reasons for this shift include: (1) Inexperience of the extension staff in designing and introducing appropriate agroforestry practices; (2) By consequence, an over-emphasis on short-term material outputs as indicators of extension success in achieving goals; (3) logistical and institutional constraints. The project area covers several hundred kilometers and most sites can only be reached by dirt tracks in four-wheel drive vehicles; (4) The degree to which the local system has been disrupted in recent decades, so that dryland agroforestry practices which may be appropriate in other areas of Africa may not be appropriate here due to such factors as distances to fields, absence of household garden plots, monocropping, dominance of large commercial farms in the area, over-browsing by livestock, and increasing harvesting of both wood and brush for urban sale; and (5) Apparent unwillingness during the first two years of the project, on the part of some project staff, to openly discuss implementation difficulties so that appropriate changes in project activities could be made, in order to more effectively address the situation at hand. Namely, to discuss what agroforestry activities <u>can</u> be introduced into the area which are locally self-sustainable, given the socio-economic and environmental constraints of the area. The seedling distribution to compounds, which has been the major thrust of extension activities, provides a measure of 'relief' to the inhabitants, but it does not constitute the introduction of appropriate agroforestry practices.

It is therefore recommended that project staff, together with Forestry Department counterparts, critically re-evaluate original project purpose and goals addressing agroforestry activities, together with specific methods of implementing these goals, with a view to reformulating implementation procedures in line with what has been learned from both the first two years of project life and according to the recommendations set forth in the mid-term evaluation.

9. <u>SHELTERBELTS</u>.

To date, approximately 93 kilometers of shelterbelts have been established. Respondents in both villages and settlements unanimously said that they were unaware of any benefits which could be associated with either of these two agroforestry activities. Some expressed the opinion that neither practice is desirable, since they could be associated with increased use of water, introduction of birds and pests, and taking up scarce farm land.

It is recommended that project staff use base line data which has been, and will continue to be gathered to determine whether either of these two activities can be realistically addressed in remaining project life. If not (which appears to the case) then these specific agroforestry goals should be formerly excluded from the project, and more readily obtainable goals addressed.

A major difficulty in introducing shelerbelts in the area is that fields are often as much as a days walk from home, and for many, plots are small in relation to the amount of land in this region which must be farmed in order to obtain sufficient quantities for subsistence needs. The depletion of trees and brush in the entire area renders attempts at both shelterbelts and other tree planting risky, because of the high demands for any available fodder, fuel, wood, and brush. There is no easy way to protect trees planted in fields given these conditions.

In short, the increasing depletion of natural resources in the area, together with economic and infrastructural constraints at the local level, and the deleterious impacts of the large commercial farms on small-holders, has created a situation in which all attempts at agroforestry need to be carefully worked out on the basis of these constraints. If models from other arid semi-land agroforestry projects are introduced, their applicability to the area should first be determined.

Chapter V EXTENSION EVALUATION

1. THE INTEGRATION OF PROJECT COMPONENTS

While it may have been initially expedient to develop extension as a separate activity during project start-up, this approach has created two separate structures, both administratively and substantively. Due to an over-focus on material inputs and outputs, extension took a marginal role to other forestry activities during the first two years of the project. The lack of integration of forestry and extension was quite evident in the survey results and interviews, at both recipient and staff levels. Para-extensionists did not really understand the working relationship between nurseries, plantations, and local inhabitants. Indeed, most had not been to the nursery, specifically to learn about its role in the project, and seemed to view it rather as a 'market', from which one would be regularly delivered free trees. Successful rural forestry can exist only in the context of informed extension activities, just as successful extension activities can exist only in a context of informed forestry activities. While the two activities may be separated for purpose of discussion -- or by means of an international staff administering certain forestry activities (plantations; nurseries) as CARE now is doing -- long-range successful forestry in the area will be achieved only by means of effective integration.

It is therefore recommended that extension and forestry activities be integrated -- both in terms of administration and in terms of field activities, so that the two are 'partners' in the project, and so that real agroforestry activities can be designed and introduced at the local level. In support of this, foresters need to be included in extension training activities, and extensionists in forestry activities. Throughout the remainder of this section, this critical element of integration will be brought up in a variety of specific contexts and associated recommendations.

2. REORIENTATION OF TRAINING

Field interviews show that both para-extensionists and foresters in the regional offices have been trained that extension activities consist primarily of the following: (1) Short-term 'counting' goals: Counting the number and species of seedlings distributed and the uptake of seedlings and (2) Formal class room lectures on forestry and agroforestry. There has been no sustained, planned focus on participatory, 'hands-on' field work -- of identifying problems in the field and then working out solutions appropriate to the socioeconomic conditions and technological constraints.

These results show that (1) over 85% of extension training have taken place in formal classroom settings, and most para-extensionists had not been taken to local nurseries and involved in nursery activities in order to understand more clearly the relation of nurseries to extension; and (2) that current extension activities have favored underreporting of seeding failure, pest and disease attack, and other problems which were frequently expressed during the course of field interviews. Again and again during in the field interviews, problems at the local level were found to be known -- but were either not worked with at that level by extension, or were not brought to the attention of Gaderef project managers. This apparent unwillingness to come forward either with field problems -- or to feel that it would be 'o.k.' to

suggest possible solutions -- needs to be changed if the extension program (and along with the rest of the forestry program) is to succeed.Some of the extension plans remain filed in Gadaref offices, with little evidence in the field interviews that substantive implementation of these plans took place, or that project administrative staff during the first two years investigated whether or not implementation was taking place according to project directives -- or if not, why not.

In order to reorient extension activities away from this 'numbers game', it is recommended that the project move to recast all training in a hands-on, participatory field context, which would involve least time in classroom, and most time in the following kinds of substantive activities: Regular group visits to participants' compounds, in order to observe problems (and successes!), and to work out appropriate solutions to problems observed; trips to both nurseries and plantations, to work with foresters in them, and thereby understand how these activities fit into the larger project; trips to other villages, settlements and towns, to see what para-extensionists in other areas are doing. Project foresters need to be included in these activities on a regular basis.

It is further recommended that a reflexive reporting system be developed for both the extension director and para-extensionists, which not only encourages -- but insists-- that problems at the field level be reported. Extension activities can then incorporate these field problems into the training, encouraging both the recipients and the para-extensionists to participate in arriving at solutions compatible with available technology, environmental conditions, and Social station. Agents must not continue to think that their own success (as agents) is predicated upon seedling counts -- rather than upon substantive extension activities resulting in implementation of agroforestry practices by their clients.

3. INTERNAL REPORTING AND EVALUATION PROCEDURES

In addition to revising reporting procedures at the local level of extension activities, the general use to which these, and other records in the Gadaref office containing past reports, are put, should be critically reevaluated. The reports are written in a variety of languages (Arabic, English, and a few in Tigranian, Amharic). In reviewing the Arabic and English materials, many of the issues brought out in the course of the field work (e.g., lack of water for trees, pest problems, and certain personnel problems) are either only eluded to, or mentioned only briefly. There is no indication, either in the files or in field work, that critical and sustained follow-up of these written reports has been practiced. The reports appear to serve no effective project purpose other than as file 'fillers'.

A slightly different pattern obtains in monthly reports, with respect to both the extension and the stove program. In reviewing these reports, some of the problems and recommendations which were identified in the midterm evaluation had been thoughtfully laid out by national staff. There was no apparent follow-up taken by project administrators. This is an area of complaint by some national staff, and a cause for low morale amongst those national staff whose attempts at conscientious problem-setting and problem-solving to have often gone either unrecognized, or have not been acted upon.

It is therefore recommended that all filing and reporting procedures of para-extensionists, national forestry and extension staff, and international staff, be critically reviewed and a proper internal reporting and evaluation system be initiated, the purpose of which is not merely to put something on paper, but to generate both data and suggestions which will form the basis of ongoing project improvement, problem-solving, and follow-up. Superfluous reporting activity needs to be eliminated; reports should be treated as a means to an end -- not as an end in themselves. Many current files are useless, due to lack of appropriate contextualization of the data contained in them (e.g., lists of activities of specific agents; lists of tree committee members; etc.. -- kept in no particular order and in no context which renders them of any particular use.) These documents need to be either purged or reorganized, with an eye to both ongoing training and internal monitoring and evaluation/feedback activities.

4. EXTENSION--GENERAL REMARKS.

The project initially hired a sociologist/extension trainer for two months to conduct the base line survey and later, to develop an appropriate extension program. The recommendations made provided a sound guide for project extension activities. Two major difficulties arose in their implementation, which will be discussed here: (1) qualifications of the extension director; (2) attempts to form village forest committees, as had been recommended.

4.1 QUALIFICATIONS OF THE EXTENSION DIRECTOR.

The head of extension (Chief Extension Coordinator) for the first two years of the project had received several months of classroom training in extension work, but did not have either the field or the administrative experience required to implement an extension program as ambitious as the one designed. Extension 'training' by the former head extensionist to the para-extensionists was limited to what he knew: Classroom lectures, taken from university lecture-notes. Survey results and informant interviews show that para-extensionists, particularly in several of the refugee camps, found these lectures too technical -- or, having understood the subject matter, were unable to apply the knowledge to the field, since participatory, hands-on extension activities did not accompany these lectures.

The initial recommendations made for extension activities, rather than being substantively implemented, and reformulated/revised where necessary, were treated as formal, inflexible structures. Hence, while formal weekly meetings were held; seedlings distributed; (with para-extensionists dutifully submitting weekly lists of the numbers and species distributed); and formal lectures were given, the substantive work of hands-on extension was not implemented. Short-term formal, countable goals (numbers of meetings; lectures; seedlings;) were substituted for the required long-term institution-building goals with a focus on problem-identification and problem-solving at the local level.

While the short-term goals of seedling counts and lectures can be more empirically demonstrated than long-term goals which work to institutionalize the content of extension training locally,the short-term goal strategy will, if continued, leave little in place at the local level by way of extension impact', other than some trees growing in some compounds. While this in itself is certainly NOT to be slighted as an accomplishment -- for it is a considerable accomplishment -- the existence of trees in personal compounds cannot be taken as an indicator of successful forestry extension.

Due to an auto accident about a week after the start of the evaluation, in which the current extension director was subsequently hospitalized for the duration of the period of the evaluation, it was not possible to work directly with him. However, based on brief discussions prior to the accident, observing his extension lectures, reading the materials which he has thus far prepared in the extension program, and, finally, based on the results of the questionnaires and informant interviews, it is clear that the new extension director is adopting the same kinds of activities as the former director. He does not come to the job having had the kind of hands-on administrative or extension experience which is necessary for this position. It is unrealistic to expect a person recently out of university to assume responsibility for the kinds of complex activities which are entailed in this position -- including responsibility for over 40 para-extensionists in over 12 locations.

The current solution to this problem has been to hire an international staff extension specialist, who is to work with the head of extension in providing guidance in developing a more realistic and flexible extension program. This has not yet been worked into a fully satisfactory arrangement because of the apparent unwillingness of the extension director to accept necessary guidance; and because of the apparent difficulties which the extension director and the extension advisor are having, in determining a working relationship which is mutually satisfactory. The functional separation of forestry and extension activities has complicated the issue, since this separation has made it possible for both the past and present extension directors to operate separately from forestry activities, and therefore to maintain minor accountability to the project manager and co-manager with reference to substantive extension activities. It should be stressed that these observations are not intended as criticism directed personally to either the past and present extension director, or the current extension advisor. The problem is primarily administrative, resulting from the separation of forestry and extension, as well as other factors which are detailed in the evaluation.

It is recommended that both CARE administrative staff and Forestry Department counterparts direct more attention and informed guidance to central extension staff, in resolving the difficulties which are being experienced in the design, administration, and implementation of extension activities. These difficulties are not new; they are largely part inherited from past project staff.

If significant changes are to be made, CARE and Forestry Department counterparts need to provide the cooperation, support and guidance needed in redirecting the extension program, so that it is no longer marginalized from forestry activities, but is an integral and responsible part of the project.

If personnel changes will be necessary in order to make this transition, then CARE, Forestry Department representatives, and USAID Project Director need to face this possibility professionally and responsibility, remembering that the two parties currently involved are caught in a very difficult situation which is not of their own making.

Additionally, they need to remember that technical assistance given by the current international staff extension advisor is just as necessary as the technical assistance being given by the current international staff forestry advisors to counterpart foresters. If the extension director were already

fully trained and experienced in both designing and implementing an appropriate and sustainable extension program and associated reporting and internal monitoring/evaluation procedures, it would not be necessary for him, as a seconded staff member from the Forestry Department, to operate within this project. One reason that the Sudanese extension director is associated with the project is to receive appropriate technical assistance in developing an extension program -- just as the Forestry Department foresters are associated with the project to receive appropriate technical assistance in developing an agroforestry/extension program.

4.2 CREATION OF VILLAGE FORESTRY COMMITTEES.

The original recommendations for the extension program called for village committees which would be representative of the different segments of the population within the villages and settlements (elite; poor; women; project representatives). While well-intending, this aspect of the extension program has not, for various local political and socio-economic reasons, been successful. Project extension staff rather than recognizing the unworkability of village committees as they were originally detailed in the recommendations, sought to impose these structures on the villages and settlements -- with various degrees of non-success -- for the first two years of project life.

Based on survey results and informant interviews, all but two of the respondents thought that in principal village councils were a 'good idea'. However, the 'idea' of committees which would 'represent' the different economic, political, ethnic, and gender-based interests of a village or a settlement does not coincide with local kinship-based forms of political/economic organization and operation. It is therefore quite understandable why a non-kin based method of organizing local people did not -- and likely will not -- work. The lesson learned here, is that all formal project plans and targeted activities need to be treated in a reflexive way, and formally revised as necessary, in order to adjust them to the abilities and limitations of both project staff and the local population.

It is recommended that the fiction of village committees be recognized, and extension proceed to formulate another method of incorporating both elite and marginal groups into project activities -- a method which is based, optimally, on preexisting forms of social organization in the project villages and settlements. To accomplish this, both foresters and extension staff will need to develop a greater understanding of local systems of organization -- and how these may be different in different villages and settlements. Staff will need to go back to the original social impact document, more thoroughly familiarize themselves with the data in it, and use this as a base to develop more extensive knowledge of the different areas.

5. HIRING PROCEDURES AND WORKLOADS: PARA-EXTENSIONISTS.

Both in field interviews and informal discussions with para-extensionists and project recipients, it became clear that two aspects of personnel management are in need of revision: (1) Criteria by which para-extensionists are hired; (2) What constitutes both 'full-time work' and 'half-time work'.

5.1. WORKLOAD

Para-professionals have been hired on both a full-time and a half-time basis. Current project staff are reorganizing this mix, so that half-time positions will be phased out. This is an appropriate move, since the distinction was not clearly made between what constitutes workloads of half-time people, and that of full-time people. It appeared that full-time people often treated their job as a side-line to regular agricultural or other kinds of work, and therefore could also be classified as part-time workers in terms of actual work load.

In selecting para-extensionists, one important question which project administrators need to ask is: Given the working responsibilities on the person's own farm (or in their own business, can they realistically be expected to work full time? And, full time in all seasons of the year? Remember, too, that 'housewives' are just as burdened with work as are their men-folk; that they are active and full partners in local economic activities. Therefore, extension work will place similar time-constraints on women's activities as on men's activities. In certain seasons, people may be able to manage full time work, whereas in other seasons -- planting or harvesting time, for example -- full-time work may not be possible.

5.2 HIRING PROCEDURES.

A second personnel matter in need of further clarification has to do with the formal criteria used in hiring para-extensionists. Perhaps the area of greatest tension in hiring policy is related to whether -- or how much -- control over the selection of para-extensionists local shaikhs are to have. This tension had erupted into open hostility in one of the market towns. The shaikh of a tribal section instructed his people last year not to cooperate with the project in any way, because the former extension director had, he said, gone behind his back in selecting para-extensionists -- after telling him he could have a say in the matter. People in this part of the town are still angry about the incident, and still refuse to cooperate with the project, although, apparently, extension agents chosen from that section are distributing trees to compounds in other parts of the town.

While there are two sides to this particular story, the important point is that if formal selection criteria had initially been set up, and procedures put in place to assure these criteria were followed and amended as necessary, this misunderstanding would not have taken place.

To address these issues, it is recommended that:

(1) Project staff define what constitutes both full and half-time work loads. To do this, staff need to develop a better understanding of the already existing on-farm (or in-shop) work throughout the different seasons of both current and potential para-extensionists.

(2) Formal hiring criteria need to be established. A minimum level of education; not otherwise formally employed (already a criteria, but apparently not rigorously followed); and so forth.

(3) Concurrence by the local shaikh -- but only of individuals who fall within the formal criteria established by the project;

(4) Openings for para-extensionist positions should be officially announced, as by flyers distributed in villages and settlements, in order that selection is not restricted to word-of-mouth, as is now the case;

(5) It should be made clear to para-extensionists at the beginning of their employment, that they are being initially hired for a probation period.

(6) Rather than continuing to increase salaries, beyond levels which the Forestry Department could possibly maintain, as is now the case, project staff need to examine alternative forms of remuneration, perhaps initiating an incentive system. Para-extensionists did complain about their salaries -- which already are far above what most para-extensionists could hope to make in either the private or public sector. Unrealistic salary expectations are linked to the commonly-held belief that CARE is rich. Initiating an incentive system, whereby successful para-extensionists have salary increases, should be explored as one possibility that would link salary increases real achievement. The current policy of across-the-board increases will only serve to undermine efforts to work towards long-term sustainability of extension activities;

(7) In addition to formal selection criteria, extensionists should be selected ?only? if they are willing to incorporate project extension activities on their own land or in their own compounds, as test plots. This includes, for example, shelterbelts, new forms of improved fencing, different watering techniques, pest control -- all developed on the basis of what materials are locally available. By seeing that new techniques are employed successfully by para-extensionists, locals will be more readily convinced that the problems of increasing environmental degradation and wood scarcity can be successfully addressed by individuals at the local level. Persons who are unwilling to actively participate in these activities should not be hired, and current para-extensionists who are unwilling to participate should be released from the project.

6. EXTENSION ACTIVITIES -- HANDS-ON AND PROBLEM-SOLVING.

In order to develop a program of agro-forestry extension which takes into account the different conditions of this complex region, it is recommended that forestry and extension collaborate in identifying the difficulties now being experienced in each area, and work jointly to find solutions to these difficulties. This will be a good start in learning to develop a hands-on, problem-solving extension program. For example:

(1) Pest infestations: In four of the five Mugatta villages (the four which are closest to the Atbara River), termites are a major problem and have killed or stunted large numbers of seedlings. The use of driftwood from the Atbara River for fencing around the young seedlings is the most likely culprit responsible for these termite infestations. This is precisely the kind of localized problem which para-extensionists should have been identifying and reporting on -- and then joint efforts made by extension and forestry to introduce appropriate fencing materials which are both economically and technically feasible, given the constraints of the local people and their environment.

(2) Water: Obtaining water for compound seedlings is another problem which has gone largely unreported -- and unstudied -- in all of the project areas. In the settlement of Tenedba, I talked with women at the water-stands who said that they stood an average of an hour to obtain one jirkin (container) of water for their compound. The water-stands in Tenedba are frequently in need of repair, having broken faucets and low water pressure, in addition, they are overused because of apparently fewer than needed water stands. These problems also are found in other settlements, to varying degrees, and need to be more fully understood by project staff in order to determine limitations imposed on different project activities by water insufficiency.

Poor families cannot afford to pay the five (or so) rivals charged by donkey-owners, to have water delivered to their compounds. Only richer families can afford this luxury. Poorer families rely on their own labor to obtain the additional needed water for the seedlings, and this needed labor is generally drawn from the women and children of the family -- an additional and unanticipated burden about which tree recipients have not been informed.

It is recommended that the project explore more thoroughly the area of water availability and possible improvements to existing supplies in the different villages and settlements. This should be done with an eye to distances from water points to compounds; who fetches the water (women; children of the compound? Pay by donkey load, or pay a professional water-carrier?); relative poverty of tree recipients -- including the degree to which poorer members of the different project areas may, because of either lack of money to purchase water, or labor constraints in fetching it, be excluded from the program; methods and costs of transporting water; amounts of water consumed weekly in a compound and the amount of this water which is used on the trees; the kinds of trees being planted and amounts of water being given to them.

Since the Committee on Refugees is responsible for water in the settlements, the project should work with representatives from COR in detailing these water-related problems and seeking solutions to them.

Several further points relating to the water issue: (1) People were not always well-informed as to the amount or the periodicity necessary for tree-watering. (2) Tree species which were in need of more water were indiscriminately given to people, regardless of their level of wealth (which largely determines whether water would be purchased, or whether scarce family labor would have to be used in obtaining water); (3) The differing conditions of soil and water-availability were not systematically taken into consideration in seedling distribution. For example, in the settlement of Wad Award, inhabitants complained of overly-excessive cracking and porosity of the soil whereby excessive amounts of water were necessary to get the young seedlings established, in spite of attempts to fill the cracks.

(3) <u>fencing</u>: Except for a few compounds of the rich, who are able to afford sturdy fencing around their entire compounds, all tree recipients must build individual fences around the seedlings to protect them from being browsed. This involves expense in purchasing fencing materials since, with the exception of the Megatta villages where driftwood is obtained from the Atbara River, most brush and wood poles used must be purchased. For the poor this is a hardship; and even those who are able to afford purchasing the needed materials do not always construct the most efficient barriers.

It is recommended that the extension program begin to systematically document the fencing difficulties being experienced in each of the project sites, and participate with recipients in devising the most efficient fencing at the least cost. Some recipients have come up with fencing techniques which appeared to be more effective than others, and these kinds of local innovations need to be looked at with a view to incorporating the soundest methods of fence construction into extension activities.

These are a few examples, gathered during the course of field surveys, of local-level problems which the extension program should have identified and been working towards solutions. Extension needs to be in the field -- not in the classroom -- in order to work with para-extensionists in developing economically and technically appropriate methods of dealing with what locals have identified as major problems.

6. TRAINING MATERIALS AND GROUP EXTENSION ACTIVITIES.

In all project areas, both para-extensionists and project recipients unanimously expressed the need for more written materials, in the form of brief hand outs, pamphlets, posters, and poster-papers. This project has a great opportunity for reaching the people with messages directed to forestry and the environment, but the effort needs to be well-planned and administered, linking into the specific needs and problems of the people, as identified through extension activities.

It is therefore recommended that funding be sought to obtain training materials for both the staff and for the local population. Both time constraints on the already overburdened central staff, and lack of detailed/adequate base line data are constraints which will have to be addressed. Current work by Christine Holding and Muhammed Mahjub on poster-papers and posters in schools and settlements are an excellent beginning and should be encouraged. The newsletter IRSHAD CARE is off the mark and should be either stopped or substantially revised.

In addition to written materials, extension should be reaching the people by means of group extension activities in villages, settlements, and market towns. Expensive slide and movie projection equipment is not needed for these kinds of group activities. For example, Muhammed Mahjub regularly conducts weekly market demonstrations for his improved stoves, with the aid of some stoves, a portable loud speaker, a few posters, and several assistants. In the schools program, he has begun to organize a series of demonstrations and slide shows, using available CARE equipment. These kinds of demonstrations can and should be being regularly set up in villages and communities; only a portable generator and a small slide projector and screen are needed.

It is therefore recommended that: (1) Demonstrations be organized on a regular basis for the villages, towns and settlements of the project area; (2) Audio-visual aids used in these demonstrations and activities be kept at a low technology -- one which can be maintained in the project area after the project terminates. The project has expressed a desire to obtain an audio-visual van for these kinds of activities. However,not only is this an expensive item both to purchase and to maintain (it would require a special, full-time operator, vehicle maintenance and gas), but also, experience in other remote area projects directed to the local population shows that when 'status' equipment of this type is brought in, it often ends up being used for the interests of a few -- at the expense of the wider population for which it is intended. Additionally, maintenance will not be easy, considering the rugged terrain of the area and the many kilometers between project sites. Equipment needs to be locally sustainable, to the greatest possible extent.

(3) That the project obtain market stalls in the market towns of Showak, Abu Rakham and Gadaref. These stalls can be used for weekly demonstrations; seedling dispersals (or sale); and dissemination of written extension materials appropriate for the public. Para-extensionists in the market towns should be responsible for these stalls. In discussions with para-extensionists in Showak about the use of market stalls for the project, a variety of good ideas were given, as to what activities they though would be appropriate. This is the kind of 'bottom up' extension staff participation in designing extension activities which should be employed, in order to move project activities from a top-down approach, to one in which both problems and solutions -- and necessary alterations in project design -- are generated from both the local level and from the project administrators.

7. TRAINING REORIENTAION AND EXTENSION PROGRAM REORGANIZATION

As detailed in the above sections, field survey results and informal discussions with project participants show that the goals of the extension program had been refocused during the first two years of project life away from the original recommendations which called for a participatory, hands-on and locally-sustainable program, to short-term goals of seedling distributions and seedling-counts. All para-extensionists said that the amount of training which they received has not been adequate. They are anxious for more training and for more information, many realizing that these short-term goals are not the way to address conservation and reforestation issues.

Currently, each village or settlement is visited by the head extension agent on the average of once a week. The session generally consists of a formal lecture, and a discussion of personnel matters and other issues which may have come up over the course of the last week -- in addition to collecting the seedling-distribution sheets from the agents.

Respondents reported that 0-5% of training time was spent in nurseries and plantations, and 15% or less of training time was spent in compounds -- both of these activities constitute the kind of 'hands-on' work which is critical in developing extension activities beyond the level of classroom lectures. While agents knew about certain plant diseases; species; and soil types; they were often unclear about the application of appropriate procedures in the field.

The analogy here would be of a trained physician, who may have the best book-knowledge of medicine, together with knowledge of the modern technology associated with it, but who is suddenly placed in a remote field hospital having little of the modern equipment or medicine which has been learned about in medical school -- and no hands-on experience in diagnosis, treatment, or operation procedures.

In order to most effectively address this issue, as well as the other recommendations made in the section, it is recommended that the extension program be restructured immediately This will provide the necessary environment for planning and coordination amongst forestry and extension senior staff, and amongst extension staff of different levels, to work out the following:

(1) Administrative procedures , whereby extension and forestry activities are integrated, and responsibilities of staff in different positions and at different levels are clearly defined, including a formalized hiring policy for para-extensionists and mechanisms to assure reasonable accountability.

(2) A working plan for extension training and related activities, which should be reflective of staff strengths/limitations, logistical problems (e.g distances between project sites) the differing abilities of project recipients to respond to the kinds of extension training being devised, and environmental constraints of the different project sites.

(3) Actual mechanics to be used in integrating forestry and extension activities . Both foresters and extensionists need to be involved in this, as well as other aspects of this reorganization.

(4) Informed planning of appropriate training materials , to be reflective of what has been learned to date about local conditions, and the needs of project participants.

(5) Reformulate the goals and associated substantive activities of the extension program , so that short-term 'counting' goals will be subsumed under long-term goals of instituting participatory extension activities at the local level.

(6) New reporting procedures ,.which will both encourage and insist that para-extensionists and principal extensionists document field difficulties-- and successes in solving them -- rather than reducing reports to seedling counts.

(7) Begin to define reasonable workable parameters of substantive, participatory extension activities , considering, e.g., distances which need to be covered, rough terrain and seasonal difficulties (some areas are only accessible by four-wheel drive -- all areas, with the exception of the market towns, are nearly impossible to work in, except in a restricted way, during the rainy season.); trade-offs between travel time and training time: The numbers of sites being covered, and how much can really be accomplished if there is only one, three hour session a week in each site; heterogeneity of the population; staff unfamiliarity with problems encountered (pests, water, fencing) lack of experienced extension principals, and so forth.

During this period, seedling distribution can continue in the field, but preferably under the supervision of international and national staff permanently stationed at Showak and Abu Rakham. This will be a way to immediately begin to implement two previously-made recommendations: devolving more responsibility onto national staff, and incorporating foresters more centrally into extension activities. The most difficult aspect may be to work out payroll procedures, whereby payments to para-extensionists can be done by regional staff, who come into Gadaref to collect payroll, rather than extension principals and project administrators in Gadaref spending so much of their time in this activity as is now the case.

The payroll now managed by project international staff is considerable. A method of payroll distribution which would divest them from this activity should be explored with Forestry Department counterparts, so that at the end of the project para-extensionists will be able to continue as Forestry Department employees. If forestry is not now able to begin to take over this responsibility, the procedure needs to be worked on beginning now, so that at end of project the para-extensionists (of whom there are over forty) do not end up unable to continue the tasks for which the project is investing considerable time and expense training them to do.

The current weekly rounds to project sites being made by the principal extensionist need to be terminated during this period of reorganization. Extension staff need to work together in Gadaref during this period, including working out travelling arrangements which do not require the amount of time

traveling now necessary. A cogent and agreed upon program of site visits -- which is internally coordinated with evaluation and reporting procedures -- needs to be formulated in Gadaref amongst all concerned principals. The newly organized procedures should be treated as a 'working program' -- i.e., subject to constant revision, based on inputs from all levels of staff, as well as from local project recipients.

Training sessions now involve lecture and collection of seedling-distribution sheets, in addition to discussion of personnel matters. Administrative issues should not constitute part of the formal training period. Staff need to consider how to divest themselves of these activities, as for example having one or two sessions a month which are devoted only to personnel matters.

Job descriptions for all level of staff should be written to reflect both staff capabilities and project working constraints. The job descriptions currently in use are taken directly out of one of the appendices of the social impact and extension program document. As previously mentioned, these, as other recommendations made in the original extension program document, have been inflexibly imposed as extension activity goals, even though they are overly-ambitious for the project. Consequently, many of the tasks which are listed could not be implemented and, therefore, these formal lists do not reflect what staff at different levels of responsibility and training are <u>in fact</u> doing.

During the period of reorganization, the revised extension activities should take place first in Gadaref, in order to assure adequate supervision, follow-up, and revision. It may well take several months before the revised program can begin to be effectively decentralized, and implemented in outlying regions. At that time, decentralization should take place <u>only</u> in one area -- either the sites at Abu Rakham or the sites at Showak. Thereafter, moving to which ever area will be last included of the two.

One major problem of the extension program as it now stands is logistical -- extension principals spend 11-20 working hours weekly just driving to and from the various project sites. Driving conditions over the dirt tracks are in themselves so exhausting, that even though all senior staff have, or have access to drivers, the physical and psychic energies spent just in 'getting there' detracts considerably from the energies needed for the work one came to do. How to work out a better mix, between travel time and work time, should be resolved during this period of reorganization.

To reiterate, given these conditions, in addition to (a) the overall newness of most of the international and some of the national staff, and (b) the need to substantively revise extension to a new level of involvement and content beyond seedling-dispersals to compounds, extension activities and principal extension staff need to be drawn into Gadaref, in order to re-evaluate, revise, and reformulate both the administrative aspects and the working procedures of extension activities.

When the two new extension foresters are seconded to the project, they should be involved in this reorganization in Gadaref, and not sent directly out to the field. Difficulties created by placing inexperienced people in the field, without the necessary guidance, has already been experienced. This problem should not be repeated. It will only damage the project, in addition to placing new, potentially good staff, in unfair working conditions which do not provide the necessary support, guidance, and accountability that these new staff must have in order to work successfully.

The period of consolidation, planning, and trials in Gadaref should be spent in training the two new forestry agents/extensionists -- in conjunction with the two new international volunteers -- to run the extension training/personnel/payment activities from Showak and from Abu Rakham offices. This will free the extension principals so that they can maintain a more reasonable schedule, combining visitations and supervisory extension activities and reporting/review. And for the international extension advisor to have a better opportunity to develop -- in conjunction with counterpart staff -- appropriate non-formal training materials, visual aids, and coordinate extension activities with other GOS and NGO extension-related activities. It will also encourage decentralization of project activities and devolution of responsibility to lower-level staff.

Project staff have expressed an interest in expanding extension activities to include data-gathering in two new areas: women's activities and nomadic groups of the area. While these two topics are of considerable importance, it is more important now for extension and forestry to work over the next months towards an effective agroforestry development project, towards institution-building activities, and towards developing methods whereby project activities can be sustained after the project terminates. Current time constraints on staff are already heavy and it is likely that adding on two new activities would over-extend staff capacity to deal effectively with these additions.

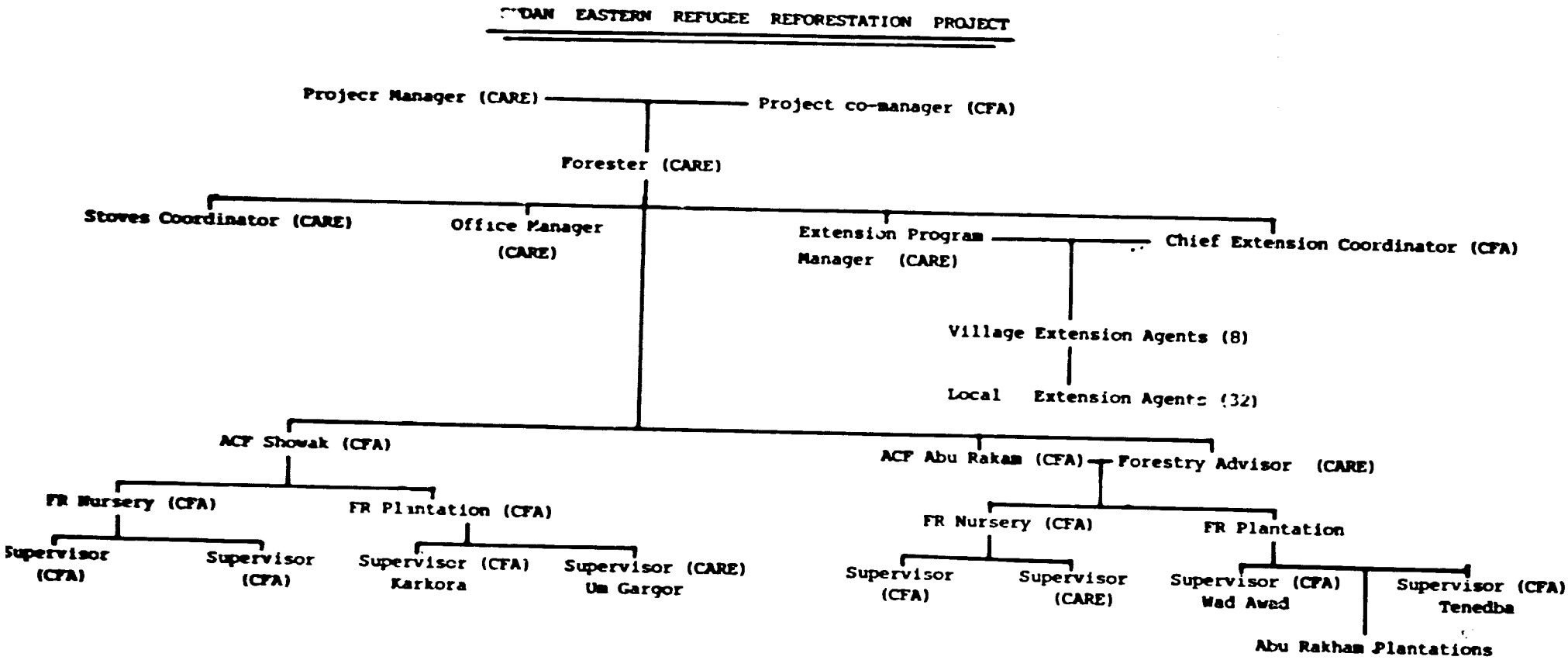
It is therefore recommended that the project not extend activities to include studies of women's issues and nomadic groups at this time. Instead, the project should seek to coordinate their interests in these areas more closely with Khartoum University staff who are now conducting an ambitious study of nomadic groups in the project area. The social anthropologist has sent materials to project staff about this study.

With the proper assistance in integrating forestry and extension, and getting an internal monitoring and evaluation system established and running, there is little doubt but that the current staff both in Gadaref and in the Abu Rakham and Showak can perform an outstanding job in moving this project into a new phase of activity. After this project ends, it will be the extent to which locals have developed a greater awareness of their active place in relation to the environment -- and have learned from the project appropriate methods for dealing with environmental issues -- that the success of the extension activities will be measured. The administrative and extension-related activities recommended in this section are intended to assist in achieving this kind of success.

ANNEX 1


SUDAN
EASTERN REFUGEE
REFORESTATION PROJECT
ERIT
Haiya
Berber
Atbara
Ad Damer
Derudeb
NILE
Shendi
KHARTOUM
Degheim
New Halfa
KASSALA
Keru
Kashmol
Gimbe
Kilo 26
Teseney
Karkora
Um Gargur
Showak
Wad Hassan
Abuda
Um Ali
Rufaa
El Hasaheisa
WAD MEDANI
Central 2
Central 1
Um Gaba
Tewawa
EL GEDAREF
Hilat Hasuma 2
Fau 3
Fau 2
Fau 1
Tenedba
Abu Rakham
Wad Awar
Jebel en Nehal
Doka
Wad Kowli
Um Rakuba
Sennar
Kilo 7
Ed Suki
Singa
Dinder National Park
ED DAMAZIN
Roseires
GONDER
Paved Roads
Secondary Roads
Earth Roads
Tracks
Roads impassable during the rainy season
Railways
Rivers
Airports
Air Strips
Regional Boundaries
Refugee Settlements
Reception Centres
UNHCR Field Offices
UNHCR Presence
N
80
100
150 km

ANNEX 2


SUDAN EASTERN REFUGEE REFORESTATION PROJECT
Projecr Manager (CARE)
Project co-manager (CFA)
Forester (CARE)
Stoves Coordinator (CARE)
Office Manager (CARE)
Extension Program Manager (CARE)
Chief Extension Coordinator (CFA)
Village Extension Agents (8)
Local Extension Agents (32)
ACF Showak (CFA)
ACF Abu Rakam (CFA)
Forestry Advisor (CARE)
FR Nursery (CFA)
FR Plantation (CFA)
Supervisor (CFA)
Supervisor (CFA)
Supervisor (CFA) Karkora
Supervisor (CARE) Um Gargor
FR Nursery (CFA)
FR Plantation
Supervisor (CFA)
Supervisor (CARE)
Supervisor (CFA) Wad Awad
Supervisor (CFA) Tenedba
Abu Rakham Plantations

Annex 3

Expansion of Extension Activities

Project staff presented the evaluation team with a request to consider a consolidation and expansion of its extension program during the remaining two years of the project.

In the present program the major efforts of the extension agents are directed toward the distribution of tree seedlings and associated advice on the planting of those trees. As discussed in the technical and sociological analysis, it can be and should be much more.

From the list of program elements presented by ERRP the team supports 1) continued tree distribution activities , however, major activity should be concentrated during the rainy season 2) inclusion of extension responsibilities in the job descriptions of all senior project staff (to level of supervisors) 3) the Gadaref nursery establishment 4) small scale agroforestry appropriate to compounds and small (less than 25 feddans) agricultural plots 5) linkages with the improved wood and charcoal stove program 6) sociological studies of tree and tenure and related needs of nomads, pastoralists, and women 7) private individual/family woodlots and 8) Guarding and management of existing forest by a village organization.

The team would not recommend the following program elements considered by the project staff: 1) Community woodlots where labor and benefits are shared communally. 2) School nurseries unless the school has successfully established and maintained a school tree planting. 3) Support to large farming scale shelterbelt establishment programs beyond the provision of tree seed and technical assistance and 4) finally the term would recommend substantial revision of the newsletter IRSHAD CARE. The team would also suggest project staff disband village forestry committees feeling that they are an artificial construct lacking in decision making and organizing capabilities.

The team would suggest project staff consider for inclusion in their program the following elements: 1) Encouragement and support for small private nurseries (in lieu of school nurseries) 2) production of native and exotic fruit trees in the two existing nurseries, the new Gadaref Nursery and the proposed private nurseries 3) Employment of refugees for the planting and care of trees in public areas in settlements and villages 4) Employment of refugees for canal side plantings and short term protection. 5) creating a cash value for fruit and other tree seedlings to the level the market would bear 6) Sociological studies of entities participating in mechanized farming activities.

A budget for these proposed activities is shown below for guidance to project staff. The project staff should consider the recommendation of the evaluation team and develop a proposal to submit to prospective donors.

PROPOSED
BUDGET FOR EXPANDED EXTENSION PROGRAM
2 YEARS SUMMARY - JANUARY 1986 - MARCH 1988

YEAR 1	US. $
Construction	71,500
Personnel	22,000
Vehicles	31,900
Photographic	15,840
Publications	22,000
Nursery	88,770
Workshops	18,150
	270,160
YEAR 2	
Construction	
Personnel	24,200
Vehicle Maintenance	12,705
Photographic	5,000
Publications	26,620
Nursery	31,064
Workshops	21,945
	121,534
	391,694

YEAR 1

Construction of house and extra office space at existing office		65,000
	+10% contingency	=71,500
Personnel		
8 LEA		6,000
1 Field Monitor		2,500
1 Artist/educationalist		2,500
2 FE		3,500
1 Technician (cinema)		2,000
1 Driver (cinema)		2,000
Cadaref agent upgrading		1,500
		20,000
	+ 10% contingency	=22,000
Vehicles		
Toyota landcruiser, station wagon with generator and loudspeaker system		15,000
Fuel, spare parts, maintenance for landrover		7,000
Fuel + maintenance for two motorcycles		3,500
Fifteen bicycles and spares		3,500
		29,000
	+ 10% contingency	=31,900

Photographic and film materials	
1 Cinema projector, Stand + accessories	2.5,00
1 Slide projector	500
1 Large screen	250
Slide library facility/Spare carousels	500
1 Photocopier with enlargement/reduction facility	25,000
Opaque projector	1,600
Portable overhead projector and supplies	1,500
Punch binder, plastic bind and accessories	2,000
Film, developing, printing and enlargement	3,000
	14,000
+ 10% contingency	=15,840
Publications and art materials	
Posters - 3 awareness creation, 1000 of each, 40 x 55 cm.	2,000
Info sheet - 3 "how to" 1000 of each, 40 x 55 cm.	2,000
Booklets - 2 issues, 1000 copies of each (School nursery Fuelwood)	6,000
Art materials	10.000
	20,000
+ 10% contingency	=22,000
Nursery establishment, seedling transportation	
i) Gadaref nursery	
Borehole	45,000
Nursery	3,000
Store + office	9,000
Tools	3,000
Staff permanent	5,500
Staff seasonal	3,700
	69,200
ii) 15 private nurseries	4,300
iii) Shelterbelt seed provision (diesel provided by NFC/recipients)	1,000
iv) Seedling transportation - 100 trips @ LS 150	6,200
	80,700
+ 10% contingency	=88,770
Workshops/Staff training	
3 day training for 8 new LEA agents in Gadaref	300
Khartoum workshop attendance - 6 people x 21 days (e.g F.A.O/S.R.E.P) cinema training omdurman for cinema tech)	4,000
Nairobi workshop attendance 6 people x 7 days (CARE extension unit/CARE East Africa confs/study tours)	8,500
Arbor day programme in six towns	3,700
	16,500
+ 10% contingency	=18,150

TOTAL YEAR 1 = 278,410

YEAR 2

Construction - Complete

Personnel	22,000
+ 10% inflation	=24,200
Vehicles	
Fuel, spare parts, maintenance for landrover	7,700
Fuel+ maintenance for two motorcycles	3,850
	11,550
+ 10% inflation	=12,705
Photographic + film material	
Contingency, spare parts, accessories, films + developing	5,000
Publications and art materials	24,200
+ 10% inflation	=26,620
Nursery establishment, seedling transportation	
Gadaref nursery staff	10,120
30 private nurseries	10,200
Seed provision shelterbelts	1,100
Seedling transportation	6,820
	28,240
+ 10% inflation	=31,064
Workshop/Staff training	
Khartoum workshop - 6 people	4,400
Nairobi workshop - 6 people	9,550
Arbor day in six towns	4,000
Specialist workshop Gadaref for staff	2,000
	19,950
+ 10% inflation	=21,945

TOTAL YEAR 2 = 135,834

Annex 4

INDIVIDUALS CONTACTED

Name	Organization	Function
John Miskell	CARE-ERRP	Manager
Tyeb Abdulla	CFA-ERRP	CO-Manager
Leigh Heart	CARE-ERRP	Forester
Christine Hodling	CARE-ERRP	Extension Program Manager
Abdul Aziz A. Bashir	CFA-ERRP	Chief Extension Coordinator
Adam Mohammed	CFA-ERRP	ACF Showak
Abdullah Adam	CFA-ERRP	ACF Abu Rakham
Mohammed Majzoub	CARE-ERRP	Stoves Program Coordinator
Anwar Abdul Hamid	CFA-ERRP	FR Abu Rakham Nursery
Hassabu Adam	CFA-ERRP	Nursery Supervisor Showak
Yousef Mohomood	CFA-ERRP	Nursery Supervisor Abu Rakham
Moutasim Ismael	CFA-ERRP	Plantation Supervisor UM Gargor
Samir Fahmi	CARE-ERRP	Office Manager
Abdul Rahman Qureshi,	Director of Natural Resources Eastern Region	ERRP Consultant
Emil G. Steinkrauss	CARE-Sudan	Director
William R. Brown	USAID	Mission Director
Ken Lyvers	USAID	Agriculture Development Officer
Tahir Qadri	USAID	Forestry Advisor
Charles Tapp	CARE	Natural Resources Advisor Khartoum
Jim Seyler	USAID/REDSO/ESA	Regional Forestry Advisor
Tony Pryor	USAID/REDSO/ESA	Regional Energy Advisor
Jim Ball	FAO	Fuelwood Development for Energy Project-Project Manager
Abbas Ballal	CFA	Deputy Director General
Hassan Attiya Musa	COR	Commissioner for Refugee
Ahmed Gozoli	COR	Deputy Project Manager Abu Rakham
Tageldin Hussein Nasroun	Forestry Research Center	Director
Tom Catterson	USAID	Africa Bureau Forestry Advisor
John Michael Kramer	CARE/NY	Natural Resources Coordinator
Mike McGahuey	Chemonics/WASHDC	original project designee

Numerous CFA, CARE and USAID employees as well as many Sudanese and refugee individuals who patiently answered our questions.

ANNEX 5

ABBREVIATIONS AND ACRONYMNS USED

AID, USAID	-	United States Agency for International Development
ACF	-	Assistant Conservator of Forests
AU	-	Animal Unit
BA	-	Basal area
CEC	-	Chief Extension Coordinator
CFA	-	Central Forest Administration
cm	-	Centimeter
COR	-	Commissioner of Refuggess (Sudan)
CPM	-	Co-project Manager
ERRP	-	Eastern Refugee Reforestation Project
FAO	-	Food and Agriculture Organization
Fdn	-	Feddan
FR	-	Forest Ranger
GOS	-	Government of Sudan
km	-	Kilometer
kg	-	Kilogram
LEA	-	Local Extension Agent
LDC	-	Lesser (Least) Developed Country
LOP	-	Life of Project
LS	-	Sudanese pounds
m	-	Meter
MFC	-	Mechanized Farming Corporation
mm	-	Milmeters
OPG	-	Operational Program Grant
PACD	-	Project Activity Completion Date
PIL	-	Project Implementation Letter
PP	-	Project Paper
REDSO/ESA	-	Regional Economic Development Services Office /East and Southern Africa
SREP	-	Sudan Renewable Energy Project (USAID)
ST/FENR	-	Science and Technology/Forestry Environment and Natural Resources
UNHCR	-	United Nations High Commission for Refugees
VSO	-	Volunteers in Service Overseas

Annex 6

Terms of Reference for the Mid-Term Evaluation of the CARE Eastern Reforestation Project (650-0064)

Background

The Eastern Refugee Reforestation Project is an OPG managed by CARE in the Eastern Region of the Sudan. The project is headquartered at Gedaref, approximately 420 kilometers from Khartoum. The field stations are at Showak and Abu Rakham. The OPG was signed in April 1983. The actual implementation started in June 1983.

The purpose of the project is to enhance the quality of life for the refugees and Sudanese living in the area through increase in local fuelwood supply, income generation, increase in the productive capacity of soil and improvement in the institutional capacity of the Forestry Department.

The specific objectives of the project are:

1. Establishment of nurseries and production of seedlings

2. Establishment of plantations near the settlements

3. Income generation (through employment) for refugees and rural Sudanese

4. Extension - to demonstrate potential benefits derived through tree planting in terms of greater fuelwood/charcoal supply, environmental amelioration, and benefits of energy conservation through use of improved cooking stoves.

5. Training of Forestry Department personnel, nursery workers and extension workers

6. Institutional strengthening of the Forestry Department

The purpose of this evaluation is to assess the timeliness,, appropriateness and effectiveness of USAID and CARE inputs provided under the grant and in cooperation with GOS the effect these have had in achieving Project goals, purposes and objectives. Specific evaluation objectives are:

- to assess then continuing relevance of project goals and activities to the changing refugee situation;

- to assess the progress to date of the Project towards achieving the intermediate goals as stated in Project Paper, identifying constraints and describing lessons learned which would be of value to the remaining project activities;

- to review project implementation and rate of expenditures to determine further accomplishments which can reasonably be expected through the remaining life of the project;

- to recommend directions and actions for the remainder of the Projects;

- to assess programmatic issues with respect to further support to CARE; e.g., should USAID support to CARE be continued beyond the Project Assistance Completion Date (PACD)? If so, what areas, what level of effort and what would be the most appropriate modalities for such support? On what basis should this be justified?

USAID/Sudan envisions a three week evaluation (with the exception of the rural sociologists/anthropologist who should be available for four weeks and plan to arrive one week before the rest of the team) and will call on the services of a USAID/CARE/GOS evaluation team to review the Project and prepare a written report. The team will consist of the following members:

- Forestry Program SPecialist/Team Leader (funded by USAID);
- Arid/Semi-arid Forestry Specialist (funded by USAID - local currency)
- Rural sociologist.anthropologist (funded by USAID);
- Senior Central Forest Administration Representative

The team will be expected to work together and individually to reach the above mentioned objectives, address the issues and fulfill all evaluation requirements herein described. The evaluation will emphasize the lessons learned from activities to date and present specific recommendations for remaining project activities. Cost and personnel implications of proposed changes and modifications, if any, will be presented in the final report for USAID, CARE and GOS consideration.

SCOPE OF WORK

Forestry Program Specialist - The leader's duties and responsibilities will include but not necessarily be limited to the following:

- review all project documentation including the OPG proposal, Grant Agreement, project progress reports and studies;
- visit Project sites and Central and Regional Forest Administration Offices; interview CARE and USAID Project Staff and Central and Regional Forest Administration personnel involved with the Project;
- coordinate the efforts of team members in report preparation and time and activity scheduling; coordinate all logistical arrangements;
- act as principal liason between the team and USAID, CARE/Sudan and GOS;
- assume responsibility for the preparation and presentation of all reports required under this evaluation;

Substantive areas of evaluation for which the team leader is primarily responsible for investigating and reporting are:

- the relevance of project design to changes in the refugee situation particularly as these relate to Mission policy since project inception;
- the appropriateness of project design and an assessment of assumptions initially made to attain project objectives;

- an assessment of project management to CARE, USAID and the GOS including reporting, documentation, coordination and implementation;

- presentation of lessons learned from the activities carried out to date under the project and suggested use of these findings for continued or modified program implementation and and monitoring;

- an assessment of CARE's efforts to enhance the institutional capacity of the Forestry Department to guide and service the demands for sound natural resource management;

- an assessment of CARE's efforts to enhance the integration of agriculture and forestry through project activities;

- in collaboration with other team members, and analysis of implementation bottlenecks and recommended solutions;

- evaluate the coordination of project operations from a technical standpoint among USAID, CARE, GOS and the Refugee Office and the field areas where project activities have and will be undertaken;

- suggest alternative sources for financial and technical inputs if the requirements are beyond the resources of the Project;

- assistance with the technical aspects of the evaluation.

Qualifications

- Senior Forestry Program Officer with minimum of 7 years experience in forestry project design and evaluation;

- proven ability to coordinate and lead group tasks and assume responsibility for coordinating group activities;

- proven ability to write appropriate evaluation reports in a manner that will facilitate the implementation of evaluation findings.

ARID/SEMI-ARID FORESTRY SPECIALIST

The technical specialist's duties will include but not necessarily be limited to the following:

- review all project documentation including the OPG proposal (PP), Grant Agreement, project progress reports and studies at both USAID, CARE and Central and Forest Administration Offices;

- visit project sites and Central and Regional Forest Administration Offices; interview CARE and USAID project staff and Central and Regional Forest Administration personnel involved with the Project;

- evaluate the technical, economic and financial appropriateness of the Project based on the experience gained by the implementors;

- evaluate the accomplishments of Project activities with specific emphasis on the success of meeting scheduled implementation targets and projected outputs by PACD;

- evaluate technical and management constraints facing Project activities, how these constraints were dealt with by CARE and identify which lessons learned would be of benefit to project continuation and follow-on activities;

- make recommendations for future project directions including but not limited to modifications or extension of activities in order to better meet project goals, or, revise those goals if deemed appropriate; make recommendations for future technical adaptive research, if necessary;

Qualifications

- minimum M.Sc. in Forest Science with at least five years on-the-ground arid/semi-arid forestry experience, preferably in Northern Africa, the Middle East or the Sahel;

- familiarity with USAID project design and evaluation procedures would be useful.

RURAL SOCIOLOGIST/ANTHROPOLOGIST

The rural sociologist/anthropologist will be responsible for assessing the overall community/extension dimensions of the Project including an assessment of the success of the Project to fulfill the refugee/villager needs, their attitudes and perceptions of the Project, both as individuals and as larger groups or communities Particularly important topics to be assessed are ownership and disposal rights of individual trees, plantations and shelterbelts, distribution of benefits and protection issues. Additionally, this person will assess the potential integration of livestock, agriculture and forestry in view of local farming systems and how this might impact on the Project's outplanting and extension activities. Specifically, the social scientist will:

- review all project documentation with particular emphasis on social and analytical literature and conduct interviews and site visits as necessary;

- assess the nature and extent of men and women's participation in the various project activities;

- assess project sociological studies done to date and make recommendations for further implementation oriented research, if necessary;

- assess the design of the project with regards to local systems of management and its potential for continuation and longevity; make recommendations for post project management if revisions appear desirable;

- assess social forces likely to ensure or preclude sustainability of the Project, common social constraints and positive experiences in project implementation which will aid (or hinder) project replicability;

- assess the effectiveness and the impact of the Project's extension program; make recommendations for modification if appropriate;

- make recommendations for implementation which will provide practical methods for improving social and economic benefits to be derived from this Project.

Qualifications

- Ph.D or equivalent in Social Science of Anthropology with previous experience in the design and evaluation of forestry/natural resource projects;

- previous experience in rural extension/community development techniques in LDC's;

- at least five years Africa/Middle East experience;

- previous Sudan experience preferred.

SENIOR CENTRAL FOREST ADMINISTRATION REPRESENTATIVE

The Forest Administration representative will form an integral part of the evaluation team. His responsibilities will include but not be limited to evaluating, along with other team members, the technical, social and economic aspects of the Project with particular emphasis on the Central and Regional Forest Administrations' role and responsibilities in project implementation.

He will also accompany team members to all field sites and provide assistance to the team leader in logistical arrangements. He will make such suggestions, evaluation and report inputs as may be required to further improve project implementation and coordination from the stand point of the Forest Administration and the GOS.

REPORTING REQUIREMENTS

The final report will be prepared in draft and submitted to USAID, CARE and the Central and Regional Forest Administrations no later than three working days prior to the departure of the team from SUdan. Using this draft report, the team will present an oral presentation on evaluation findings and recommendations to the Director, USAID/Sudan, the Director, CARE/Sudan and the Directors of the Central and Regional Forest Administrations and/or their appointed representatives.

Based on discussion of the draft report, the team leader will be responsible for submitting a final report (5 copies) to the Director, USAID/Sudan, no later than one month after the team's departure from Sudan. USAID/Sudan will ensure distribution of the report to concerned parties and follow-up of recommendations.