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CDA FORESTRY PHASE I
REFUGEE AREAS PROJECT
(649-0122)

Final Evaluation Report

Mogadishu, Somalia
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Preface

Evaluation of the CDA Forestry-Phase I, Refugee Areas Project was undertaken between December 13, 1987 and March 6, 1988. The CDA Forestry Project was evaluated by a team of three: Richard Schmitt, Team Leader, Rod Bowen, Forester, and Omar Mohammed, Ministry of Planning Representative. The team spent three weeks reviewing the numerous files and records of project. During January 1988, all of the areas of project activities were visited. The final report was written between January 29th and March 6th.

The evaluation team had access to all of the projects records and some of the records of the implementing PVOs. Probably due to lack of staff at the time, records of the first half of both projects were scant and some apparently missing.

The USAID management team for the latter half of the projects was still working at USAID. However, no USAID personnel involved in the project design were available to the evaluators. Unfortunately, except for three people, none of the PVOs staff were still in Somalia. The GSDR staff were extremely helpful.

List of Abbreviations

ADU	Anti-Desertification Unit (National Range Agency)
AFWTC	Afgoi Forestry and Wildlife Training Center (referred to in previous documents as Afgoi Forestry School)
CARE	Cooperative for American Relief Everywhere
CDA	Cooperation for Development in Africa
CRDP	Central Rangelands Development Project
CWS	Church World Service
DDD	Domestic Development Department (Ministry of Finance)
FAO	Food and Agricultural Organization
GSDR	Government of the Somali Democratic Republic
ICR	Inter-Church Response for the Horn of Africa (later CWS)
ICRAF	International Council for Research in Agroforestry
IDRC	International Development Research Council
NGO	Non-governmental Organisation
NRA	National Range Agency
NRC	National Refugee Commission (GSDR)
OEF	Overseas Education Fund International
OXFAM	Oxford Committee for Famine Relief
PACD	Project Assistance Completion Date
PP	Project Paper
PVO	Private and Voluntary Organisation (synonymous with the British term NGO; Somali Volag)
RD/RA	Rural Development and Refugee Affairs (Department of USAID)
SCF	Save The Children Federation
SWDO	Somali Women's Democratic Organization
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency For International Development
VITA	Volunteers in Technical Assistance

I. EXECUTIVE SUMMARY
EXPERIENCES AND RECOMMENDATIONS

The CDA project was funded in FY 1983 under the Migration and Refugee Assistance Act. The underlying theme was to provide refugees with income, opportunities and skills, and to address damage to tree resources suffered during the refugee emergency period.

The funding, structure and administrative arrangements for the CDA Forestry Project Phase I have been adequately described in the Project Paper (PP) and the Interim Evaluation Report. This final evaluation has concentrated on the overview: an assessment of the whole, with recommendations for possible future action. More detailed information can be found in the final reports of the various project components.

Principal experience and recommendations are:

The Project Paper

Experience: The goals, purpose, outputs and inputs as conceived in the PP were, in general, achievable, and well structured. A serious weakness exists in the assumption made in dealing with parts of the reforestation and fuelwood production component. The availability of good quality land was over-estimated. There was also excessive optimism about the growth rates of tree species in the harsh environment of Somalia as well as mis-direction regarding species choice.

All PVOs commented unfavorably on the shortness (three years) of the project. It is a serious concern. In arid regions with only one short, acceptable planting season per year, thirty-six months is insufficient time for a forestry project to incorporate even initial findings into improved procedures. Expensively gained and valuable experience is not capitalized upon.

Recommendation: The design phase of future projects, while adhering to the format of the original PP, should be more closely scrutinized for incorrect technical assumptions.

Due attention should be given at the design stage to potential problems of land and tree ownership.

The Project Paper, while stressing the experimental nature of many of the plantings, appears to 'fall-between two stools' in the scale of work called for. The "purer" aspects of research are ignored while the size (and hence, cost) of the plantings is more commensurate with pilot production. The review mission recognizes that the situation of the refugees in 1982 called for a decisive intervention but suggests that future projects be designed to include a clearly defined research component; results should be fed back into the program allowing speedier changes of emphasis.

Forestry projects in arid areas should have a duration of at least five years. If lack of funding is a limiting factor it is worthwhile considering curtailing the breadth of work envisaged at the expense of longer project life.

Institution Building:

Experience: The concept of strengthening NRA Headquarters with key expatriate personnel was correct and generally well executed. However, USAID staff were called upon to carry out duties well outside their intended technical advisory role. These additional duties limited the time available both for traveling to PVO sites and for responding to requests for advice from the PVOs. Additionally, the turnover of NRA counterpart staff has left the NRA's management capabilities little improved.

Initial training of junior forestry technical officers at AFWTC proved well worthwhile. The emphasis of future training should change to extension and agroforestry.

On-the-job training (and study tours) organized by PVOs for junior and middle level staff has in the main, been successful. Lack of GSDR funds and career structure will limit further development.

There is a greatly increased awareness of forestry activities amongst GSDR, potential donors and recipients. This is encouraging.

Recommendation: The necessity to reform pay and career structures should continue to be pressed upon the GSDR: a first stage is seen as the merger of the Forestry Department and the Anti-Desertification Unit within the NRA.

Future forestry project planners must accept the severe shortage of senior and middle level management staff, and the lack of GSDR capabilities to fund new ventures, and then design projects accordingly.

Efforts should continue to train Somali staff at the B.Sc. level in Forestry/Range. Emphasis should be changed to re-training existing junior officers in extension methods and in the management of natural forests (range).

Donor Coordination:

Experience: When this project was initiated, the U.S. had the lead role as head of the Cooperation in Development in Africa (CDA) Forestry and Fuelwood Group. CDA was a multidonor group created in October 1979 in an attempt to coordinate and accelerate donor assistance to sub-Saharan Africa in several sectors. The group included six countries Belgium, Canada, West Germany, France, UK and USA. Somalia was one of the sub-Saharan countries selected for special efforts in forestry and USAID/Somalia committed itself at that time to lead the long-term CDA effort in forestry. Subsequently, the demands on the Mission to reduce the program portfolio and focus on a few high priority sectors, forced the Mission to drop forestry from the CDSS. Thus USAID was unable to fulfill its committment to the CDA Group. The U.K. has subsequently taken the lead role in Somalia.

Recommendation: While multidonor coordination at the country level was admirable and continues, forestry and natural resource projects can take up to twenty years to show meaningful results, and USAID's CDA Forestry Project had no guarantee of long-term follow-through. The Mission feels the five year LOP for this project was too short.

Reforestation and Fuelwood Production

Experience: In the main, the planning and running of nurseries has been good. On-the-job training of staff at all levels has also been satisfactory. Household/shade tree planting with individuals has been well received and carried out. Agroforestry interventions with settled farmers have been enthusiastically executed and welcomed by the communities. Block and strip plantings on public land have failed; partly because of the harsh climate, partly because of unclear rights of ownership to the produce. The exception is the afforestation of sand dunes, which local people accept as 'unproductive' and are hence unclaimed.

Plantations of the correct species in such sites have grown well and offer worthwhile returns, both in preventing further land degradation and in the limited production of fuelwood. PVOs have worked hard to overcome considerable difficulties of late funding by GSDR, slow delivery of equipment and, in the early stages, fuel shortages. Their staffs have received praise for their hard work and enthusiasm. The limited field experience of many forestry staff has been seen in the somewhat rigid approach to tree planting and in a slowness to adopt new approaches and to capitalize on success.

Supplies of good quality tree seed of appropriate species proved difficult for many PVOs to obtain, especially at the outset of their work.

Recommendation Block plantings for fuelwood production on public land should not be continued in future projects. Care must also be exercised before contemplating more limited blocks for shelterbelts/windbreaks. Appropriate site assessment must be carried out and clear understandings reached with local people.

Further shade tree planting should be encouraged, and by increased emphasis on extension services and agroforestry practices, tree planting should be introduced on farmland. The availability of irrigation is an obvious advantage, but with careful design, limited dryland interventions are also worthwhile.

There is a strong case for future projects to examine the balanced use and conservation of the natural vegetation. For example, more attention should be paid to the management of existing bushlands for fuelwood production. Project planners should try to ensure that expatriate staff chosen to execute the plans have relevant and extensive experience in dryland forestry management and production.

More attention should be given to ensuring a guaranteed supply of good quality seed before a project commences and arrangements should be made to continue this supply throughout the life of the project.

PVOs varied greatly in their ability to maintain adequate records of nursery and field practices. Guidance should be given by the initiating agency on the design and expected standard of record keeping.

The success of the hardy species Prosopis juliflora (and to a lesser extent Prosopis cineraria) on dryland is striking; its potential for uncontrolled spread on irrigated land is well documented and it is recommended that great care is taken to prohibit its use in such areas.

Fuelwood Conservation:

Experience: The fuelwood conservation efforts, through design and marketing of more fuel efficient charcoal and wood stoves, appear to have been well carried out and efficiently documented. However, the history of such projects in other third world countries points to difficulties in long-term selling of such stoves owing to the relatively great increase in price over traditional models. Similar constraints were noted by VITA.

The effect of fencing the areas intended as dryland fuelwood plantations has been to allow a considerable recovery of natural vegetation, particularly grass and herb cover. The resource could be utilized.

Recommendation: Consideration should be given to subsidizing the selling price of improved stoves to make them directly competitive with well established models. Subsidies should be gradually reduced as the stoves become popular and local craftsmen more skilled in their construction.

Consideration should be given to allowing the sale of controlled quantities of fodder from within fenced areas. Such a practice would limit illegal incursions to tap a valuable source of livestock feed and generate limited income for the NRA.

Natural Resources Land Use Survey:

Experience: The resource/land use survey contributed much valuable data. It was undoubtedly an essential part of the CDA project. We feel that more attention should have been paid to indexing the data and to providing summaries of the main conclusions and recommendations.
Recommendation Future surveys should be provided with a tighter design calling for the production of position papers on key topics.

Project Monitoring and Management

Experience: As the funding organization USAID met its responsibilities in making its contribution on time and the overall monitoring of the various components took place on a regular basis.

USAID also appears to have met its requirements of providing management assistance, particularly in assisting with the release of DDD funds and in acting as a 'buffer' between PVOs and the NRA while this was considered necessary.

Several PVOs commented on the lack of written feedback from USAID and in one instance, the Gedo Sub-project, there were over-long delays in the procurement of equipment. It is felt that there may have been confusion in the minds of some PVOs between the roles of USAID and NRA. There is no specific recommendation to make.

Past Constraints and Future Activities:

Constraints to CDA forestry centered around the climate and "failures" in infrastructure. Weather problems are intractable but suggestions are made for possible solutions to some problems.

It is recommended that future tree planting efforts concentrate on amenity work which lead through extension to agroforestry activities with settled rural communities. Projects based close to irrigated land offer the easier opportunity. Sand dune planting offers the best prospect of growing fuelwood in reasonable (although still small) quantities on dry land areas.

Block plantation will not provide more than a very small percentage of Somalia's need for fuelwood. This must be met by management of the natural forest.

Unexpected Results

Natural Regeneration Plots

The fuelwood lots failed in the purpose of growing bush or trees to provide firewood. However, they are now natural regeneration plots, by virtue of the period of time they have been fenced in and protected from people and animals. In January 1988 most of them were still being guarded allowing for three to five years of growth. The contrast between the plots and the adjacent unprotected areas is startling. Most of the plots have a covering of 10-20cm high brown grass, this grass canceled surviving tree seedlings. The remaining bushes look similar to the bush on adjacent land because of leaf growth. The immediate reaction is that the plots are a low cost way of providing for the regrowth of the vegetation. However, the three to five years of growth appear insufficient to allow the areas to be reopened to grazing. Moreover, the fencing may increase pressure on surrounding areas. The usefulness of regeneration plots requires further study.

II. Introduction

A. The setting

Most of the land area of Somalia consists of Acacia Commiphora deciduous bushland and thickets. There are large areas of semi-desert grassland and deciduous shrubland in the north and extending a long way south along

the coast. The shrubs are rarely more than 3 meters high. The average rainfall is 500mm, falling in two seasons. The Gu, March - June, has higher rainfall then the Dir, September - October. The mean annual temperature varies between 25 and 28 degree centigrade. Generally, evaporation exceeds precipitation.

The CDA Forestry Project was conceived and initiated as a result of natural and man-made disasters. Desertification was occuring throughout Somalia, due to overgrazing and deforestation. The presence of the large concentrations of people in the refugee camps caused the complete denuding of surrounding areas.

The refugees collected firewood and building materials as far as 10 km from the camps. This additional pressure on the fragile brush and tree ecology has been devastating. The GSDR and others realized that action was needed to provide other sources of fuelwood and to redress the damage.

The GSDR in its draft five-year plan presentations at the ICARA conference in Geneva and presentations at CDA steering group meetings proposed separate plans, and requested funding for reforestation programs. Donors responded informally indicating sizable but overlapping interest in funding.

While policy discussions were still talking place among the CDA donors, USAID/Somalia began exploring options for implementing the CDA initiative. In October 1981, a forestry advisor made a forestry sector analysis. That paper became the basis for a draft Project Identification Document (PID) submitted in January 1982. After revision, the PID was approved on July 14, 1982. During the planning phase USAID used $147,003 from Project Development and Support Funds to continue coordination within the ADU and CDA steering committee and provide start-up assistance pending approval and obligation of funds under this project.

The project paper was completed in November, 1982. The grant with the GSDR was signed on November 2, 1982 with the program goal "to insist the GSDR to undertake a large volume of forestry and fuelwood planting programs, as part of the overall social and development planning efforts." The purposes of the project were:

-- to strengthen the institutional capability of the National Range Agency at headquarters and in the field, so that it can coordinate and manage the larger volume of forestry and fuelwood planting programs which will be initiated under this project and related assistance from other donors.

-- to establish basic decentralized tree seedling supply services together with some out-planting, in refugee camp regions, which can be replicated elsewhere in the country.

-- to test and demonstrate the soil conservation and agricultural productivity benefits of much wider use of agroforestry.

-- to undertake larger-scale tree planting and fuelwood production plantations, beginning on lands neighboring the refugee camps, intended to test and demonstrate the feasibility of major fuelwood supply interventions and meet initially, town charcoal and fuelwood demand.

-- to test the social and economic feasibility of wider diffusion of fuel conserving wood stoves and the substitution of mud-bricks for wood in rural construction.

-- to provide the GSDR (or other fuelwood supply entities) with a source of revenues from the fuelwood plantations, which could cover recurring costs and funds for capital establishment cost of additional plantations.

-- in addition to shade tree planty within the camps, to provide refugees who do not have access to agricultural plots with an opportunity to earn some additional income, through food-for-work incentive programs covering manual labor needed for tree planting along canals, riverbanks and larger fuelwood or shelterbelts plantations.

B. Project Paper

The project design called for 6 components to achieve the project purposes. They were :

1. **Institutional Support to NRA:** As part of a multi-donor effort, the GSDR National Range Agency (NRA) would be strengthened by the addition of a program coordinator in the Anti-Desertification Unit, and one community forestry and one forestry plantations operations officer in the Forestry Department, together with counterparts. This project would finance up to two of these positions, plus training of regional or district foresters, plantation and nursery managers and extension agents through assistance to the Afgoi Forestry School. Third country and U.S. participant training might also be financed. These Project inputs would be AID's contribution to strengthening the institutional capability of the NRA at headquarters and in the field, so that it could coordinate and manage the larger volume of forestry and fuelwood planting programs which would be initiated under this project and related assistance from AID and other donors.

2. **Reforestation and Fuelwood Production:** The project would provide a wide variety of tree planting activities, together with forestry awareness educational programs, and necessary technical on-site training, seedling and water services in regions where refugee camps were concentrated through:

   a the establishment of sub-regional seedling nurseries and satellite mini-nurseries within or near refugee camps.
   b. the establishment of fuelwood plantations adjacent to refugee camps.
   c. the establishment of windbreak, amenity and other plantings within or near refugee camps.

3. **Fuelwood Conservation:** The social feasibility of introducing improved wood stoves, mud brick construction methods, and some fuelwood saving techniques would be tested. Demonstration and promotion of improved stoves together with training of the local population in the construction, use and maintenance of the stoves and other wood-saving technologies would be financed by the Project.

4. **National Resources/Land Use Survey:** The sub-project would provide for the completion of a national natural resources and land use survey and mapping service which would provide a data base for forestry and fuelwood production, as well as for other long-term development planning and projects

5. **Fuelwood Supply/Demand Assessment:** The Sub-project would generate improved baseline data on which firmer long-range GSDR development planning can proceed. An assessment of wood fuel supply and demand systems and markets, including household surveys on conservation and use would be produced

6. **Project Monitoring and Management:** An increased capacity of the parties to the Grant to monitor, evaluate and manage the activities funded by the Grant, as well as companion activities funded by the AID Refugee Self-Reliance Project (649-0123), would be provided through the execution of contracts for persons to be posted to areas of project activities. The estimated cost of the contractors who would assist both in project management and in providing the parties with data on camp conditions and related Food-for-Work activities, would be shared between the two companion projects.

The National Range agency was the GSDR implementing agency for the project. It was to assist with the selection of forestry Sub-projects and technical advisors.

The CDA Forestry Project was funded under the Migration and Refugee Assistance Act of 1962, with funds from the Foreign Assistance and Related Programs Appropriations Act 1982. $6,000,000 was authorized and obligated in November 1982 for the program. An exhaustive midterm evaluation took place in April 1985.

$1,908,000 were to be provided by the GSDR from DDD funds provided under U.S. Public Law 480. PVOs were to make contribution towards their Sub-projects. The projected funding for the project and money committed are as follows:

Financial Plan, Illustrative
By Project Component and Category
($1000)

Component	Tech. Assist. Consul. Servs.	Personal & Training	Commodi-ties	Operat. Costs	Counting Inflat	USAID	GSDR	PVOs	Proj
	Category Inputs)								
I. Institutional Support to the NRA 1/	410		25	15		450	30		48
II. Reforestation and Fuel-wood production Sub-Projects.	651	629	1,031	219	958	3,688	1,833	747	6,26
III. Fuelwood Conservation Sub-Project	150	237	75	170		632	45		67
IV. Natural Resources Land Use Survey/Mapping	500					500		500	
V. Fuelwood Supply/Demand Assessment	400					400		400	
VI. Project Monitoring and Management	330					330			33
Totals ($1000)	2,441	866	1,131	404	958	6,000	1,908 2/	747	8,67

1/ Includes $40 for training workshops under NRA auspices. The Project Agreement (ProAg) will allow for shifting funds to cover the costs of U.S. or third country participant training as determined necessary by AID and AID funded NRA advisors.

2. GSDR distribution includes a food-for-work contribution of $978,000.

C. Project Design:

It appears that the primary goal of the CDA Forestry Project (that of assisting the GSDR to undertake a large volume of forestry and fuelwood planting programs as an integral part of its overall social and economic development efforts) was a worthwhile and a realistic objective. The purposes undoubtedly lead to the goal. The method of achieving the purposes i.e., through the outputs of each of the project components also appears logical. The six components mesh together satisfactorily and none relies on the success or failure of any other. Inputs to the components in terms of money, technical expertise, land and staff/labor also appear to be adequate to permit the required outputs.

Thus, in the broadest viewpoint, the PP was an adequate vehicle for project implementation provided its assumptions were correct.

In retrospect, several of these assumptions were flawed, some of them seriously so. Some problems could not have been foreseen; other problems could, and indeed should have been, anticipated at the planning stage. The weaknesses are particularly noticeable when dealing with the reforestation and fuelwood production component. The paper made incorrect assumptions on availability of land (particularly good quality land), underestimated the harshness of the environment and consequently overestimated the growth rate of trees and the species that would grow. These deficiencies handicapped and misdirected parts of the reforestation and fuelwood production component.

Targets for the PVOs would also have benefited from tighter definition particularly in regards to block plantations. The number of hectares expected to be planted, the spacing of the seedlings and expected percentage survival after one year should have been stated, thus providing a better yardstick by which to judge success.

While clearly recognizing the experimental nature of these block plantations under Somali conditions, the PP fails to stress the need for more formal research, e.g. species elimination trials, and nursery experimentation. While the duration of the project was too short to allow more than preliminary feed back from such experiments, the early establishment of formal trials would have been a valuable addition to the future efforts.

We do, however, recognize that the political and social climate of the time required a bold and imaginative response to forestry problems that could not be answered by an overcautious, research oriented approach. We also recognize that the GSDR was firmly committed to a large block plantation program.

No adequate provision was made for the assured supply to the PVOs of good quality seeds of the appropriate species. This proved a handicap to many Sub-projects. In retrospect, the addition of a small seed unit would have been valuable.

Finally, the overall duration of the project was too short for implementing agencies to "learn from their mistakes." All PVOs commented that they were just reaching full potential when funding was completed. The interim evaluation provided the opportunity to review overall goals and change the accent of the reforestation program.

D. Assessment of Implementation:

The project was implemented according to the design. The major deviation was in eliminating the fuelwood/demand/marketing survey. This did not affect attainment of project objectives, because at the time others had planned to duplicate much of the survey. Part of the money was transferred to the Sub-project component where it was used to fund part of a fifth Sub-project. This Sub-project was important being the only one both in the Northwest and working with a women's group.

USAID implemented the reforestation Sub-project component with the projected number of Sub-projects geographically spread to afford a basis to judge forestry projects throughout Somalia. The area to be planted in fuelwood lots as projected in the PP, 125 ha, was far exceeded. This changed the project from experimentation to implementation on a substantial basis. Looking back, this was a mistake.

The PVO's implementation of the Sub-projects was consistent with the cooperative agreements. They engaged in all of the activities: establishing nurseries, doing outplantings of fuelwood lots, shade tree plantys, agroforestry. The PVOs utilized NRA staff seconded to them and gave them training. Extension activities were undertaken. They appear to have employed both refugees and non-refugees and worked with both communities. The woodlots observed were generally free of animals, and the fences still intact, suggesting that the PVOs had consulted with community leaders and gained the communities' tolerance of the plots, if not support.

Implementation of some components of the project proceeded swiftly while others started slowly and with minor problems. The natural resources/land use survey component and fuelwood conservation Sub-project component were quickly implemented because they were extensions of ongoing projects.

Implementation of the reforestation and fuelwood production Sub-projects were slower and not as effective as they may have been. Problems included: slow recruitment of PVO staff and other management shortcomings, failure to obtain land for the fuelwood lots, periodic fuel shortages, and the slow release of local currency by the Ministry of Finance.

The PVOs were all slow in bringing staff to their sites - often, four to five months after the cooperative agreements were signed and the Sub-projects started. Delays were particularly harmful because there was only one suitable planting season a year, the Gu. The foresters were usually young and inexperienced in semi-arid zone forestry. These problems hampered attempts to establish the fuelwood lots. Commodity procurement by PVOs also were slow.

All of the Sub-projects, with the possible exception of the NRA/Gedo project, appear to have concentrated on the fuelwood lots to the detrement of the agroforestry and extension activities. The training of the extension agents seems to have been particularly neglected by some Sub-projects. This may have been due to a lack of sufficient expatriate and national staff. The large relative size of the fuelwood lots in relation to the less visible extension works may have skewed the Sub-project managers' judgement. Moreover, the agroforestry interventions were generally considered as experimental. As it happened, the shade tree plantys, and agroforestry activities were the relatively successful aspect in each of the Sub-projects. Additional attention and resource allocation may have resulted in greater success.

Once PVOs brought in staff, management of the Sub-projects by the PVOs was generally smooth taking into account external constraints. The main nurseries were quickly brought up to standards, most producing projected outputs. There are few reports of a lack of seedlings. Unfortunately, only two PVOs started seed collection units. Once land for fuelwood lots were acquired, the areas were fenced in and seedling planting was started. It appears that all PVOs made an honest effort to plant the fuelwood lot areas as specified in the cooperative agreements. Watering was usually performed on these plots by all of the PVOs for a short period of time after planting.

Two of the implementing PVOs had notable management shortcomings. One, because of a failure to have upper management and Sub-project teams in place, lacked direction and was slow in implementing its Sub-project. The second PVO had serious conflicts with local NRA officials which hampered its ability to aquire sufficient land to plant all of its fuelwood lots.

Because the most visible aspect of the Sub-projects - the fuelwood lots - were failures, those projects which were managed with the most flexibility, giving greater emphasis to other objectives, appear now to be the most successful. The NRA/Gedo project is the prime example of this.

A major obstacle faced by most of the PVOs was obtaining land for the fuelwood lots. Pursuant to the project grant agreement, the NRA was to provide adequate and suitable land. By law, the Somali government owns all land. In reality, the right to use land is often determined by traditional law with land not in present use controlled by local traditional groups. Somali law prevents the discussion recognizing the existence of these groups. Consequently, it often took some months to identify land and settle any claims before fencing could take place. OEF encountered the most problems in this area, obtaining only 136 ha of a needed 240 ha. Africare solved this problem due to its national project manager's public relation skills. The delays in obtaining land impacted OEF and CARE sub-projects.

The second issue was suitable land. This is a worldwide subject of debate. Should the better land be reserved for agriculture, the most important use, with more marginal land granted for forestry? The Sub-projects received the more marginal land. OEF, for example, was given a particularly eroded site for planting.

The issue of suitable land may have been overly emphasized by the PVOs which naturally sought every edge in the struggle to establish fuelwood lots. The PP called for reforestation for denuded areas around the refugee camps. The camps were, of course, not placed on prime land. The areas, denuded for some time, were eroded by wind and water. Unfortunately, those were the areas most in need of reforestation.

All of the PVOs included, as part of their Sub-projects, the manufacture and use of fuel efficient stoves. They worked closely with VITA on extension activities The combining of tree planting and conservation efforts had a beneficial impact impressing the importance of conservation.

Large numbers of refugees and nationals were employed as nursery workers and in out-planting and watering. Those refugees with whom the evaluation team spoke, talked about being taught how to plant and water seedlings.

The fuelwood lots have been termed a failure due to faulty design. Correctly or not, the PVOs by association, will share some of the blame for the failure. The cause of the failure can be traced to the overly optimistic assumptions made in the PP as to tree growth under the climatic conditions around the refugee camps. However, the implementing PVOs appear to have agreed to implement projects, admittedly experimental, taking the PP assumptions as absolute truth. A cursory survey of the project sites would have caused most persons to pause and wonder about the possibility of producing 10 to 15 meter^3 per hectare of wood per year, after year four, without irrigation. The average rainfall in these areas was barely adequate to grow any woody perennials. The only project site where there was an appreciable number of trees was Qorioley. Otherwise, there are no similar stands of trees except in the rare tug close to any of the Sub-project sites. The usual vegetation is native acacia spp. Many of these appear by sight observation to be decades old rather than just a few years.

We would suggest that in the future a requirement be stated in the PP requiring PVOs, to make a site inspection and satisfy themselves that the proposed work can be accomplished with the available resources. This would hopefully lead to PVOs raising questions as to the feasibility of projects as proposed, or alternatively, stating what the true cost of project implementation will be. In the matter at hand, to produce the woodlots, the true cost should included the cost of providing irrigation on a long-term basis.

A second expected benefit of a required site visit would be that the PVOs would bring in their forestry experts to examine the sites and make independent cursory determinations of the project feasibility. This apparently did not occur and some of the proposals were drafted by in-country staff or home office staff without forestry training. The foresters employed by the PVOs contributed their youthful enthusiasm

to the projects. Unfortunately, most had little experience in arid zone forestry. This deficiency should have been commented on and better selection insisted upon by USAID under its right to approve project staff as provided in the cooperative agreements. A better arrangement would be to ask the PVOs to submit the names of their proposed staff at the time they submit their project proposals. This would allow for a better judgement of the quality of technical services to be provided. While all PVOs are experienced in a variety of interventions, what was being requested was the provision of high- quality technical assistance of a specific type, rather than a generalist approach to development. It has been suggested that the PVOs should have brought in their own technical advisors when shortfalls first became evident. While PVOs may have wanted to do so for their own reasons, in this case the PP indicated that there would be technical backup from advisors provided to the NRA.

NRA Infrastructure Strengthening

The infrastructure building component, consisting primarily of placing advisors in the NRA headquarters, was slowly implemented. Only one of the two advisors was quickly placed. The advisors funded by other donors did not arrive until much later. The first advisor, and later the second advisor, found that they were compelled to assume administrative tasks which overwhelmed them, both because of the weak infrastructure of the NRA and because of the absence of other advisors. The first two advisors left by March 1985, and there was a gap of five months until a replacement was recruited.

The staffing of the field staff portion of the project by the NRA was sufficient and complied with the grant agreement. In most cases, staff remained at a site through the entire project period. Headquarters staffing was similarly consistent.

The training provided by the PVOs to the NRA staff was primarily on-the-job training. There were two study/observation tours to other countries. Under the infrastructure strengthening component, fourteen NRA staff were sent to either forestry or management training at third country institutes.

USAID Implementation Activities

USAID was slow in approving and attaining final signature on Cooperative Agreements. Overall management of the program was in the hands of USAID. NRA's role was to concur on any administrative or managerial actions. Monitoring was the responsibility of NRA and USAID. Monitoring and technical overview during the entire project period could have been increased.The advisors assigned to the NRA found themselves mired in administrative and management problems at the NRA and were not able to devote the time necessary to the monitoring. REDSO/EA contributed during the first half of the project, but the support seriously diminished during the second half. The causes were a failure to anticipate the demands placed upon the expatriate NRA advisor's time. The problem with the lack of technical expertise was exacerbated during the second half of the project when USAID decided to place only one advisor at the NRA and REDSO/EA decreased its attention to the project. Fortunately, because the project was at midpoint there was less need for technical advise avoiding any project threatening problems.

USAID slipped a little by not anticipating sufficient lead time for the assembly of a mid-term evaluation team. The mid-term evaluation contributed to the shifting of the project focus away from the fuelwood lots. USAID management and the PVOs were lax in not following through on the PP requirement that each Sub-project keep records. Formats for species trial coordination and cost accounting systems for both nursery and out-planting activities were not utilized. The formats were set out in Annex XX to the PP and distributed to potential implementing agencies. CARE and OEF were the only PVOs which reported any cost records on fuelwood lots and nurseries.

While the focus of the Sub-projects shifted away from the fuelwood lots and towards agroforestry interventions, USAID never stated so in writing. Apparently, the GSDR was reluctant to change the focus of the project. Eventually, in the case of the NRA and the Africare Sub-projects, the NRA agreed to reductions in the area of fuelwood lots. A blanket change in focus may have allowed all of the projects to devote more energy to the agroforestry and shade tree planty activities.

The original management team consisted of the project officer and the deputy of RD/RA, both assisted by three Refugee Project Assistants (RPA). This team also managed the Refugee Self-Reliance Project. The RPAs spent most of their time in the field. The advisors working at the NRA headquarters were to provide the technical advice. In early 1984, the deputy of RD/RA, who had shouldered much of the management and administrative duties departed. Management responsibilities were placed on the RPAs who were inexperienced in USAID procedures. Moreover, responsibility for the CDA Forestry Project was shifted four times. The mid-term evaluation stated that management of the project was drifting. At the time of the mid-term evaluation, the relations between USAID and the PVOs were strained. The PVOs felt they were not obtaining sufficient assistance with the Ministry of Finance and fuel shortage problems.

During the first half of the project life, REDSO/ESA provided valuable advisory services to both USAID and PVOs through forestry and energy advisors. The forestry advisor, who had also been a part of the project design team, was particularly helpful. He recommended in a February 1985 memorandum that "...production targets in the cooperative agreements should only serve as guidelines for project implementation." This recommendation was never formally implemented, though some cooperative agreements were amended to reflect the fuelwood lot failures. Management during the second half of the project life was provided by the Chief of RD/RA and two personal service contractors, both of whom were experienced in Somalia. Management, while not without problems, was proficient despite the demands of overseeing both the CDA Forestry and Refugee Self-Reliance projects. Procuring commodities for the NRA/Gedo Project had been a long standing problem. Water pumps and tractors, requested in 1984 still have not arrived and there has been no delivery dates. The problem seems to be in complying with USAID specifications requirements and in bureaucratic delays in USAID/Somalia and Washington, D.C.

Monitoring the Sub-projects has been a problem because of the crush of administrative matters, difficult travel, and the inability of the advisor assigned to NRA to obtain free time for travel. Additional monitoring may have assisted PVOs in being more flexible in their approaches to Sub-project objectives.

Two PVOs have complained of USAID not responding in writing to PVO reports. The PVOs have not identified how written responses would have assisted them with specific problems.

REDSO/ESA did not send a forester after February, 1985. USAID management felt that they could have better managed the project with more technical backup. Because of the press of business at the NRA, the expatriate advisor did not have sufficient time to devote to all the issues that arose.

Interest at REDSO/ESA probably waned because the forester involved with design was re-assigned, and based upon USAID's FY86 Country Development Strategy Statement (CDSS) for Somalia, forestry projects were not going to be continued. All of this resulted in insufficient technical backup for USAID management. An in-house forester at USAID or an additional advisor to the NRA would have assisted better USAID management.

E. Assessment of Results:

The project had some successes. The Natural Resource/Land-Use map fills an obvious need and is essential to the project purposes and goals. The Reforestation and Fuelwood Production component had mixed successes. A chart of cumulative targets for all of the sub-projects follows.

ITEM	Target	Accomplishments
Fuelwood lots	5	18
Fuelwood Lots	250 ha	2774 ha planted, survival poor
Fuelwood Plantations	1,700,000 trees planted	3,215,000 trees planted survival poor
Shelterbelts	225 to 300 ha	237 km and 180 ha
Amenity plantings	1,500,000 trees	886,000 trees
Sand dune fixation	90 ha	72 ha
Woodstoves distributed	10,000	6,328
NRA field staff trained		
Foresters trained	5	11

The Fuelwood Production Sub-project Component:

While by the standard of counting numbers the fuelwood lot component met its targets, the reality is that the fuelwood lot survival rates and growth rates are so low that the lots are not producing usable amounts of wood. All the inputs were made. All the parties made an honest effort.

The reasons for the failure of the fuelwood lots include: a design failure to appreciate the harsh nature of the local climate and a rainfall that is at best marginal for tree planting, the failure to take into account the degraded nature of soils in the proposed areas, and the failure to appreciate the extremely dessicating effect of winds which blow strongly for 10 months a year. This can be largely attributed to overly optimistic projections of growth rates, and the poor selection of species contained in the design. The misappreciation of climatic and soil conditions led to the selection of inappropriate 'fast growth' species. The shelterbelts were failures for the same reasons.

Establishment of community woodlots was unsuccessful. The PP foresaw the problem of lack of community interest - local or refugee - due to uncertainty over land and tree tenure law. The refugees, neither owning land nor being certain as to how long they would remain in the camps, were not disposed to contributing to the establishment of local woodlots. They were interested in fast maturing fruit trees, and trees for shade. Villagers were also unsure about the rights to harvest trees

grown on community woodlots. By contrast, local farmers who were confident of their right to benefit from trees planted on their farms established woodlots and planted trees along irrigation canals. Based upon the failure of all the PVOs to establish viable community woodlots, without assurances of some benefits to the affected population, it does not seem possible to establish them at this time.

The shade tree plantys though strictly not meeting targets, were successful. More importantly, the shade tree plantys demonstrated to the refugees some of the advantages of trees in their compounds. Perhaps this will lead some to plant additional trees. Moreover, the trees make the camps more habitable.

The agroforestry interventions have shown some of the possibilities and advantages of growing trees in close relation to crops. This provides demonstrations to others. The plantings about farms and along canals were the most promising activities the evaluation team observed. Both the Care and OEF projects felt that one of their most important contributions were the introduction of live fencing. While only a small percentage of farmers experimented it should be the start of general acceptance.

All of the projects were successful in assisting some farmers to start groves of papaya. This is important for income and as a demonstration.

Africare's works on sand dune fixation is important not only for the start at controlling the dunes but also as an experiment in methods to do so. The success should lead to experiments in growing more valuable plants on the dunes.

The training of some refugees as extension workers was successful. OEF trained approximately 35, most of whom were women. NRA/Gedo trained two women. Men were also trained. These people promoted the shade tree plantys. They have now gained a limited knowledge of the skills required as extension agents. CARE was apparently unsuccessful in training refugees as extension agents and later used NRA staff. Moreover, for all of the Sub-projects there is some question regarding the extent of the training given to the extension agents.

There was no target for number of person-days of employment or number of refugees and nationals employed but the reported sizable number so employed permit an assessment that this was a success. There were conflicting reports whether the refugees used this income as capital for increasing their self-reliance prospects. On balance, taking the reports of those with the least self interest, it is probable that refugees did use the income to invest in capital goods.

The sizable number of refugees employed caused money to be either accumulated or pumped into the refugee economy which benefited many through a multiplier effect. It seems evident that the increased capital in the camps as a result of employment provided through the Sub-projects stimulated the economy of the camps and surrounding areas. At the very least, the employment helped by giving refugees meaningful work.
The infrastructure strengthening of the NRA was a partial success. The upgrading of the field staff was successful, while that of the NRA

headquarters was not. The regional foresters to be trained were neither identified nor were the training activities described in the design. Eleven foresters were sent to a six month training course in Pakistan. The participants' report does not describe it as helpful. The problem seemed to have been the need to modify the course to meet the participants' English skills.

NRA field staff were trained by being seconded to the PVO Sub-projects. The training was primarily on-the-job. They received training in nursery and plantation management, seed collection, agroforestry practices and some field research methods. The staff interviewed by the evaluation team stated that the training helped them to do their jobs better and to discuss forestry practices more knowledgeably. The PVO staffs reported satisfaction with the NRA staff achievement.

The NRA field staff acquired administrative and managerial experience. Two Sub-projects, for example, NRA/Gedo and Africare, operated with minimal expatriate presence. Generally, NRA field staff are now better trained and equipped to implement future forestry efforts.

The improving of the infrastructure of the NRA headquarters has not occurred. The central office is not better able to manage, monitor, or evaluate forestry activities.

The design was defective in that the inputs were not sufficient. Five person years of advisors and some management training were insufficient. Training on a more intensive scale over a longer period of time is needed. An overwhelming obstacle to realizing the project's goal is the low civil service pay. This inhibits initiative and job performance. During the advisors' tenure, the salary of their counterparts were supplemented from project funds. The results of this input are not apparent. Observers characterize the NRA as little changed from before the project: high level staff have little effective support staff and there is a resulting departmental inability to plan and monitor projects.

The woodstove component was successful. A stove that was efficient in that it required 20% less fuel was designed and manufactured. The distribution of 6,328 stoves came close to the target. The PVO, VITA, trained artisans in the manufacturing of the stoves. This should also facilitate continued production. The training of extension agents to encourage the use of fuel efficient stoves was apparently successful.

Unexpected Results:

Natural Regeneration Plots:

The fuelwood lots failed in the purpose of growing bush or trees to provide firewood. However, they are now natural regeneration plots, by virtue of the period of time they have been fenced in and protected from people and animals.

In January 1988 most of them were still being guarded allowing for three to five years of growth. The contrast between the plots and the adjacent unprotected areas is startling. Most of the plots have a covering of 10-20cm high brown grass. This grass concealed the surviving tree seedlings. The remaining bushes look similar to the bush on adjacent land because of leaf growth.

The immediate reaction is that the plots are a low cost way of providing for the regrowth of the vegetation. However, the three to five years of growth appears insufficient to allow the areas to be reopened to grazing. Moreover, the fencing may increase pressure on surrounding areas.

The usefulness of regeneration plots requires further study. Some of these studies may be taking place under the Central Rangeland Project.

F. Impact and Lessons Learned:

At the purpose level, many refugees and nationals were contacted by extension agents or given trees. Others were trained as nursery or plantation workers. The effect in the camps, the number of shade tree plantys, and the trees planted along irrigation canals and on private land are evidence of a greater understanding and affinity for trees.

On more than one occasion the evaluation team was told by NRA field staff that at the end of the project they were beginning to see increased interest in obtaining seedlings. For this reason they felt the program was too short.

At the goal level, the project's impact is that it has given the GSDR assistance in administrating forestry activities. Hopefully, it has shown that with the present knowledge and technology fuelwood lots are not economically possible. This should cause the GSDR to seek assistance on programs such as agroforestry, shade tree planting, natural regeneration plots instead of fuelwood lots.

One of the successful impacts of the CDA Forestry, Phase I project was the encouragement it gave to the implementation of other forestry projects. This was CDA initiative. At the time the project was being planned there were only small forestry projects implemented by a few PVOs in the refugee camps. This project, and more particularly, the CDA steering committee meetings appear to have encouraged and coordinated forestry efforts. By June 1984 there were nineteen forestry projects in Somalia. In January 1988 there were nine projects on-going or in the final planning stages.

Unfortunately, the CDA steering committee ceased meeting in late 1984, with the departure of the funded technical advisor. The committee meetings should be revised as a forum for sharing ideas and coordinating projects.

An additional impact is, hopefully, that all parties and observers will be more cautious about trying large scale agricultural projects before smaller scale controlled regional experimental testing. Based upon the lessons learned through this project and the perceived impact, the following thoughts are presented.

Institutional Building:

The necessity to reform pay and career structures should continue to be pressed upon the GSDR: a first stage is seen as the merger of the forestry department and the Anti-Desertification Unit within the NRA.

Future forestry project planners must accept the severe shortage of senior and middle level management staff, and the lack of GSDR capabilities to fund new ventures, and then design projects accordingly

Efforts should continue to train Somali staff at the B.Sc. level in Forestry/Range. Emphasis should be changed to re-training existing junior officers in extension methods and in the management of natural forests (range).

Shade Tree Plantings:

These have been successful in all CDA Sub-projects and there is a large demand throughout the country for tree seedlings supplied by NRA on National Tree Planting Day. Future projects would do well to build on this appreciation of trees and incorporate such activities in their program. Schools and mosques have been willing to plant on a communal basis.

Shelterbelts:

We foresee many of the same difficulties occuring with sherterbelts as we have noted regarding block plantations i.e, villagers are suspicious of their rights to produce, and are unsure about land tenure. Nevertheless, if the confidence of communities is gained through extension agents, limited planting of village shelterbelts may be possible.

Agroforestry:

This must be clearly separated into rainfed and irrigated interventions. Dealing first with dry land, CDA has shown that individual farmers who have successfully planted amenity trees in their compound are often willing to accept trees for live fencing. In the first instance this is often confined to their compound areas and only when satisfied with results does the practice spread to their farms. Again, skilled extension workers can assist. Care must be exercised not to 'over-sell' and raise expectations of dramatic benefits.

On irrigated land, CDA has shown that education and simple demonstration often lead to the quick acceptance by local farmers of the planting of windbreaks and small, 'less favored' cropping sites for pole production. This in turn leads to more 'adventurous' practices, such as alley and inter-cropping. Again, care must be shown not to suggest that trees solve all problems. They do not. While only relatively small areas of the country can be irrigated, agroforestry on these areas offers a high chance of success.

Sand dune plantations:

Only one PVO in the CDA scheme was able to plant on inland sand dunes. The success of these plantings, and those by other projects on seaside dunes, offers the best hope of establishing larger block plantations.

Past projects have concentrated their efforts only on dune stabilization with little thought of how best to manage the resultant plantations for limited quantities of firewood and poles. Further work on the management of such areas may be worthwhile.

Integrated agriculture and forestry:

Within the country, several large scale agriculture projects are active or planned, e.g.: Bay Region Agriculture Project, Libsoma, Juba Valley Authority, Shebelle Water Management Project (SWMP) etc. As far as is known, none incorporate a significant tree planting element. Forestry links with these projects may prove a worthwhile area to explore.

Block Plantation:

Block plantation schemes that hide under the title of village level forestry projects are NOT recommended. Problems of land tenure, tree ownership, slow growth rates and poor survival are almost certain to arise. Block plantings for fuelwood production on public land should not be continued in future projects. Appropriate site assessment must be carried out and clear understandings reached with local people.

Further shade tree planting should be encouraged, and by increased emphasis on extension services and agroforestry practices, tree planting should be introduced on farmland. The availability of irrigation is an obvious advantage, but with careful design, limited dryland interventions are also worthwhile.

There is a strong case for future projects to examine the balanced use and conservation of the natural vegetation. For example, more attention should be paid to the management of existing bushlands for fuelwood production. Project planners should try to ensure that expatriate staff chosen to execute the plans have relevant and extensive experience in dryland forestry management and production.

More attention should be given to ensuring a guaranteed supply of good quality seed before a project commences and arrangements should be made to continue this supply throughout the life of the project.

PVOs varied greatly in their ability to maintain adequate records of nursery and field practices. Guidance should be given by the initiating agency on the design and expected standard of record keeping.

The success of the hardy species Prosopis juliflora (and to a lesser extent Prosopis cineraria) on dryland is striking; its potential for uncontrolled spread on irrigated land is well documented and it is recommended that great care is taken to prohibit its use in such areas.

Fuelwood Conservation:

Consideration should be given to subsidizing the selling price of improved stoves to make them directly competitive with well established models. Subsidies should be gradually reduced as the stoves become popular and local craftsmen more skilled in their construction.

Consideration should be given to allowing the sale of controlled quantities of fodder from within fenced areas. Such a practice would limit illegal incursions to tap a valuable source of livestock feed and generate limited income for the NRA.

Natural Resources Land Use Surveys:

Future surveys should be provided with a tighter design calling for production of position papers on key topics.

III. Evaluation of Project Components:

A. Institutional Support to National Range Agency

1. Description

One of the major purposes of the project is institutional strengthening of the National Range Agency (NRA). The PP foresaw interventions in four areas.

Assistance to the NRA headquarters. This was to consist of two advisors, a forestry technical advisor and a community forestry technical advisor. Vehicles were to be provided.

Assistance in upgrading the NRA field staff. This was to be on-the-job training of nursery foremen and other staff given under the PVO implemented reforestation sub-projects.

Upgrade NRA's technical skills through local and out of country training experience.

Contribute to a national data base through providing a natural resources survey for the southern sector and a fuelwood supply/demand assessment under components II and III of this project.

2. Implementation

Technical Assistance

Expatriates were placed within the NRA main office. A planning and monitoring advisor arrived in February 1982. A technical forestry Advisor was added in April 1983. Both USAID advisors departed by March 1985. There was a five month hiatus until another project funded advisor

was retained. He remained until the end of the project. The three USAID funded advisors assisted with planning, working with potential donors on proposals, advising on administration and organization matters, and formulating training activities. They devoted lesser amounts of time to monitoring and advising on this project. All three ended up devoting substantial amounts of time to everyday NRA administration and management functions.

The first technical advisor was able to rise above the press of other matters and provide monitoring and advice on the CDA project. The first two advisors did have counterparts. As a result of the training provided, the counterparts were later designated as 'national managers' of different programs.

Staff Training

Two staff were sent to Washington D.C for a one month course in management.

One individual was sent to Michigan University for a month long course in administration.

One individual was sent to the University of Nairobi for a 12 month graduate degree course in management.

Eleven staff were sent for a six month course at the Pakistan Forestry Institution. The middle level NRA staff participants' report of the program indicated that it covered silviculture, resource management, soil science, plant physiology, and research methods. The participants stated that the course was simplified due to their problems with English and, therefore, did not increase their knowledge as they all held diplomas in range management.

Eleven staff made a month long study tour of Pakistan. The report of the study group indicates that they viewed many activities of the Pakistan Forestry department. The participants were most impressed by the extent of community forestry whereby farmers maintain woodlots and shelterbelts on their land.

In-country training primarily consisted of a five day course offered by the International Council for Research in Agroforestry (ICRAF) in September 1985. The course covered possible uses of agroforestry in rangeland productivity, irrigated farmland, and reclamation of sand dunes. The course was attended by NRA management and staff of PVOs and GSDR ministries. The course was reported to be very well received.

On-the-job training

Field staff of the NRA received on-the-job training when seconded to PVO implemented Sub-projects. The training was primarily in nursery techniques and woodlot management. Some staff received training in management. This was particularly true of the staff assigned to the Africare Sub-project and the NRA/Gedo Sub-project where there was very little expatriate involvement. Staff salaries were supplemented by Sub-project funds.

Graduates from the Afgoi Forestry and Wildlife School were assigned to Sub-projects to obtain practical experience.

A study tour was organized by SCF to Kenya, which included [illegible] NRA field staff participants. This tour viewed different forestry sites including arid regions of Kenya. A NRA sponsored nursery workshop was also held.

3. Assessment:

Technical Assistance to NRA:

The three officers who filled this position in turn performed well in coordinating inputs, advising senior NRA staff and giving technical advice to the Sub-projects. In view of the key nature of the appointment and the quantity of work involved, more than one person at a time may have been required. It is clear that the task of supplying technical back-up to five, widely-spaced PVO projects, plus advising senior NRA staff on CDA Forestry matters plus assisting with many other aspects of NRA work, proved to be too great to allow adequate site visits or many written recommendations.

Despite the support provided in the project, the number of professional officers within the NRA has declined. While in 1983 there were three graduate Somali foresters, by 1988 none remained in government service.

Staff Training:

The AFWTC (partly funded by CDA) from 1983 to 1987 supplied sufficient numbers (76) of junior technical officers trained in the basics of tree planting to act as nursery and field managers in the PVO Sub-projects. These certificate holders were well received by PVOs and we feel that these junior staff provide a welcome addition to the forestry expertise available to the GSDR.

However with the current decrease in reforestation projects and the de-emphasis on block plantation, the balance of teaching at FRAWI (formerly AFWTC) should change to one of in-service training. Former students should be recalled and updated in range management, extension and agroforestry techniques, nursery work, field planting and daily management.

More formal training through lectures and discussions was not undertaken by most PVO's. Almost all NRA staff attached to projects expressed the opinion that they had benefited by the informal training and were enthusiastic about the results that 'their' project had achieved.

It is sad to record that the majority may well have this interest diminished through lack of adequate funding for future projects, lack of a career structure in which to exercise their new skills and lack of personal incentive reflected in a totally inadequate wage.

On-the-job training:

It is apparent through our meetings with staff and through study of project documents that on-the-job training of junior and middle level staff attached to the PVOs has been a success. Many of these young officers are now in a position to undertake, with minimal supervision, elementary project planning.

Awareness:

An increased awareness of forestry activities, although difficult to quantify, has been one of the undoubted successes of this component under the CDA approach. The Government through the Ministry of Forestry, Livestock and Range is increasingly aware of the importance of the nation's forests as a vital natural resource needed to maintain the ecology, rather than as an inexhaustible source of fuelwood for domestic use and gums and resins for export. However, much remains to be done.

Potential donors (government and private) have also been made aware of the country's needs via the CDA initiative. Funds are now more readily available. The challenge is to direct the attention of planners away from fuelwood block plantations and more grandiose village woodlot schemes, to more realistic, smaller interventions at the agroforestry level and in the management of the natural woodland. The harsh realities of slow growth rates of both planted and natural woodlands has yet to be grasped by many project planners and forestry consultants.

It is difficult to say how the 'average' Somali feels about tree planting activities. Certainly many are now aware that such projects exist and the demand for tree seedlings around National Tree Planting Day (April 17) is high. Many settled farmers on irrigated land have also been quick to incorporate windbreaks and small fuelwood lots into their systems. Inter-cropping is also taking place on a small scale.

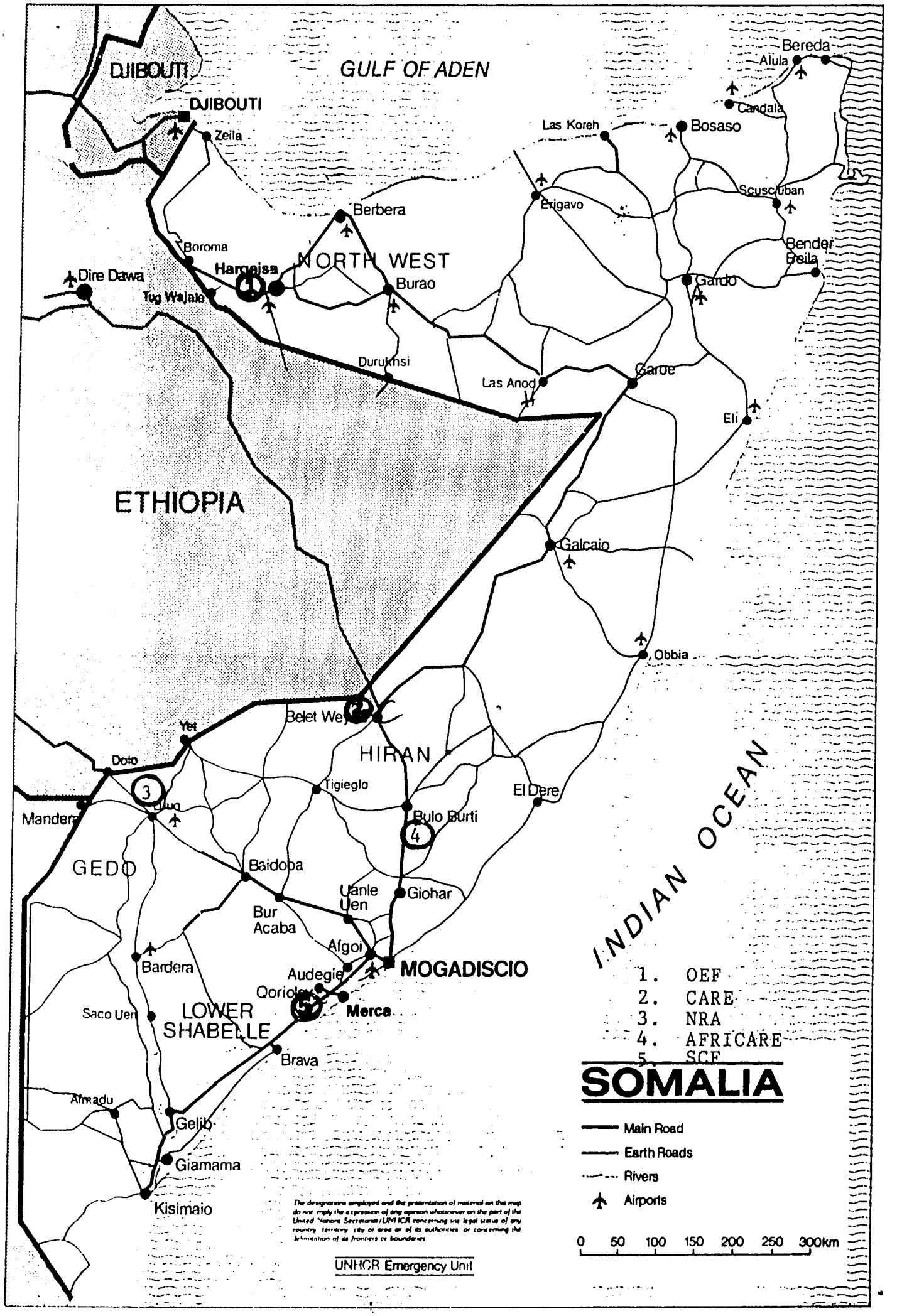
Within the refugee areas and surrounding villages where the Sub-projects worked there is clear evidence of the appreciation of trees. Most compounds have planted and tended amenity trees - often for shade and fruit but some also for supplementary fodder and building poles. All this suggests heightened awareness of the potential benefits of forested land.

B. Reforestation and Fuelwood Production Sub-projects:

1. Description:

This was the centerpiece of the project, projected at 55% of USAID funding and 66% of the total funding. The component was to consist of a number of Sub-projects implemented by PVOs. They were all to implement a "... common technical 'package' of seedlings, training and species testing, to provide several different kinds of tree planting activities, ranging from amenity household shade and fruit trees to larger scale fuelwood." (PP, p. 8.)

The Sub-projects were all to be situated adjacent to refugee camps to begin reforestation in the areas denuded by firewood collection (See Map).


DJIBOUTI
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Las Koreh
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Boroma
Hargeisa
NORTH WEST
Bender Beila
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ETHIOPIA
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HIRAN
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Tigieglo
El Dere
Mandera
Luuq
Bulo Burti
INDIAN OCEAN
GEDO
Baidoba
Uanle Uen
Giohar
Bur Acaba
Afgoi
Bardera
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MOGADISCIO
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SOMALIA
Main Road
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Airports
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The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the United Nations Secretariat/UNHCR concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries
UNHCR Emergency Unit

The Sub-projects were also to employ large number of refugees as nursery and woodlot workers. Five kinds of tree planting activities were proposed in the PP.

Larger scale plantings: In management units of 25 to 50 hectares of intensively planted fuelwood lots or less densely planted shelterbelts, together with the requisite tree seedling nursery. For units of 25 hectares, intended to be planted at one time in the year, a nursery with a capacity of about 87,500 seedlings will suffice. The project was to include up to five such larger scale fuelwood plantations and possibly three or four major shelterbelt plantings.

Agroforestry: To test and demonstrate soil conservation and agricultural productivity increases possible through interplanting of nitrogen fixing trees and agricultural crops on agricultural land farmed by refugees. Three or four of these demonstration plots of up to 75 hectares each were to be included.

Tree Planting for specialized tasks: For soil conservation or other purposes, not directly benefiting the refugees, such as roadside, canal and river bank planting, green fencing or windbreaks at the perimeter of the camp.

Amenity planting: Shade, fruit or ornamental tree planting in individual refugee family enclosures, or around schools and other public buildings within the camps.

Research and Seed Production: At least two research test and demonstration plots were to be established in each of the three regions in which activities are undertaken by this project, concurrently with the operational programs. This would enable site-specific tests of indigenous and exotic species so that improvements and cross-breading could take place without delaying the larger scale fuelwood planting efforts.

In addition, to the above requirements, the project paper included a technical feasibility report (p 19 and annex III to the paper) all of which indicated that it was technically possible, despite constraints of rainfall and soil, to establish fuelwood lots. Further, that within four years these lots would become productive and show a positive rate of return from the sale of firewood.

The authors of the PP hoped that there would be up to six Sub-projects.

2. **Implementation:**

All of the Sub-projects included one main nursery, up to 100 ha of fuelwood lot of fast growing species, shade tree plantys, and agroforestry interventions. Expatriate staffing usually included a Sub-project director and a forester.

The PP called for all the PVOs to include in their Sub-projects a site specific social analysis addressing social feasibility and impact. Requirements were set out in the PP Annexes. Unfortunately, because of the political resistance from GSDR personnel, sample survey and baseline

household economic data could not often be collected. As a result, only observational studies of the refugee camps and surrounding areas could be carried out by four of the Sub-projects. These studies were reportedly helpful to the PVOs' staff. Equally important, the studies are additions to the body of knowledge on refugee needs, aspirations and resources. These studies contribute to the purposes of this project and the Refugee Self-Reliance project.

The SCF study deserves mention because it was done by a four person team: three Somalis and an expatriate. This produced a good report and provided substantial research experience for the national members.

The Role of the PVOs

The use of PVO's to implement four out of the five Sub-projects is difficult to assess. On the one hand, many of these organizations already had experience in dealing with the GSDR, an asset not to be dismissed lightly. Costs for PVO projects are also lower than those implemented by contracting organizations. On the other hand, it is hard to escape the conclusion that the experience of PVOs in forestry was limited. Delays in staff recruitment, frequent staff changes and the employment of relatively inexperienced personnel all appear to have been handicaps at one stage or the other.

Among the PVOs, lower than average professional salaries often led to the use of young people who either had only allied forestry experience, eg. agriculture, or were just starting on a career in forestry. Often those hired had no prior knowledge of operating in arid conditions. This lack of professionalism is manifested by the unquestioning attitude taken to the more doubtful assumptions of the original project paper, by the slower than average start-up time and by the slow response in changing the project emphasis away from dryland block plantations to more profitable issues, and by the poor techniques. To an extent, these deficiencies were offset by the obvious enthusiasm with which most of the work was carried out, by the kind comments of the staff that they trained and in rarer instance, by high quality work.

Future projects must ask for PVOs to provide fully qualified and experienced expatriate staff.

The following are descriptions and assessment of implementation of the PVO Sub-projects.

a. Hiran Refugee Reforestation Sub-project:

CARE/Somalia was appointed implementing agent in June 1983 for the Hiran Refugee Reforestation Sub-project. This project was completed and handed over to the NRA in August 1986. The refugee settlements in the Hiran region are spread over a considerable area along the length of the Shebelli River. The review mission was unable to visit all sites in the time allocated. The following table of goals and accomplishments is taken from the final independent evaluation report prepared in February 1987. At the time of the present mission's visit, many of the original staff had been re-assigned to other areas and the project was under the supervision of the CRDP.

The following is a table of quantitative objects and the results as reported in the Sub-project Final Evaluation.

	Goal	Achieved
Plantation		
NRA woodlots	770 ha	685 ha
NRA shelterbelt woodlots		84 ha
Community woodlots	36 ha	18 ha
Shelterbelts		
NRA land	32 km	unspecified
Private land	24 km	12 km
Amenity Plantings		
Refugee camps	53,600 seedlings	32,000
Villages	48,000 seedlings	56,000
Woodstoves	85	500+

Nurseries: The nursery at Crash/Coqane was visited by the review mission. Although only unplanted seedlings remained, the general impression was of a well-run site with good design and layout. During 1987 the river inundated the area for several months. It is difficult to see how such disasters could be avoided, as no alternative site would avoid these periodic floodings.

The second nursery at Luuq Jelow was assessed by the independent review mission in 1986. They reported an equally well-run site. Total capacity is around 500,000 seedling per year.

Block Plantations: The wisdom of trying to establish block plantations in an area of such low average annual rainfall (ca. 250mm per year) is open to serious doubt. Below average rainfall in the early years of the project's life, together with an initial poor choice of species, compounded difficulties. It is therefore ironic that prolonged flooding of many sites after CARE's departure has added to the problems.

Given the difficulties, the present mission shares the view of the earlier end-of-project assessment that CARE "made an honest effort to meet targets." We do not share their strictures of the over-dependence on the exotic, Parkinsonia aculeata, which was an obvious choice for such an area. There are also recorded instances of indigenous species suffering serious insect infestation problems when grown in plantation. Only young, drought-stressed plants appear to have suffered serious loss, albeit in a highly visible area near the airport.

Technical points noted include the lack of catchments and other water harvesting techniques in early plantation, a deficiency that was not repeated in later areas which are technically sound. It also appears that the project planted in the Der season. Graded growth can be seen in some areas, which correspond to later and later plantings. Such practices, always doubtful, cannot be condoned in areas of such low average rainfall.

Supplementary watering was used in many instances but found not to be cost effective, although it undoubtedly aided seedling survival and these effects are still visible.

The overall impression in early 1988 is that the well protected areas are showing promising signs of recovery, with grass, herbs and some regeneration of indigenous tree species. The planted seedlings make a welcome addition to this recovery but the areas are unlikely to ever produce a large yield of fuelwood.

As noted by the early review, there is no difference in layout between areas designated as fuelwood plantations and windbreaks.

Shelterbelts/Windbreaks; As noted above, shelterbelts for the refugee camps were, in effect, small block plantations and included as such in final totals. We saw no windbreaks, although 12km of single row trees are claimed in the final report.

b. Jalalaqsi Reforestation Sub-project (Africare):

The original agreement signed in April 1983 appointed Africare as implementor of this Sub-project. Targets were revised in April 1985 and the effective life of the project was extended until July 1986. A further extension was granted in 1986 at no cost to USAID, and the project finally ended in June 1987.

The specific goals appear to have been:

1. Establish 170 ha of fuelwood plantation.

2. Protect 30 ha of land to allow natural regeneration for eventual use as fuelwood lots.

3. Plant 180 ha (45,000 trees) of shelterbelts on agriculture land.

4. Stabilize 72 ha of sand dunes with trees and plant 65 km of windbreaks on the dunes to assist with stabilization.

5. Distribute 78,000 fruit and amenity trees to refugees and local villagers.

6. Improve an existing main nursery and establish four satellite nurseries.

7. Train NRA personnel in nursery and plantation management.

8. Employ refugee and local labor in above work.

No independent evaluation of the project was carried out. By the time of the review mission visit almost all the original staff had left the area. This made it impossible, given the constraint of time, to verify with any accuracy to what extent the goals were met. Africare's hand-over report to the NRA is short, and does not evaluate the project.

Nurseries: The main nursery (capacity 60,000 seedling per year) is located on the site of an older NRA facility. A water tank was erected late in the project life to supply the seedlings and was fed by pump from the nearby River Shebelli. The arrangement appears satisfactory, although the water was reported as saline towards the end of the dry season.

The seedling beds are extremely heavily shaded by stick walls and roofs. No hardening off area was seen and opinion of local staff was confused as to whether this vital process took place before field planting.

A small satellite nursery (10,000 capacity) was sited in each of the four refugees camps. All are now abandoned. The one visited was well sited on the banks of the river, enclosed in a small grove of planted trees. A water tanker and pump were originally in store. Two of the sites are said to have experienced water shortages.

Block Plantations: Established on non-irrigated, windswept land of marginal agricultural value the block fuel wood plantations appeared to have experienced difficulties. Rainfall was poor in 1984 and 1985 and insects and rodents are also reported as attacking exotic species. Some supplementary water was given by donkey cart but the practice ceased owing to high costs and the poor increase in survival rates. The Africare report prepared in April 1986, requesting a no cost extension, notes that survival of local, drought hardy species (Acacia nilotica, Acacia tortilis, Ziziphus mauritiana and Balanites aygptiaca) as "very good".

Two sites totalling some 35 ha were visited by the evaluation team out of the 118 claimed as planted. Almost no surviving seedlings were seen, either exotic or indigenous although there had been reasonable recovery of natural vegetation and the ground cover of grasses and herbs was improved owing to protection from grazing.

It appears that it will be many years before fuelwood can be harvested from these sites. They should now be treated as the natural regeneration reserve noted below.

Natural Regeneration Reserve: The 30 ha site protected and set aside as a fuelwood production area is showing good but slow signs of recovery.

Amenity Plantings: Shade and fruits trees were distributed to local villagers and refugees families for planting in their compounds. A variety of species was noted including Azadirachta indica, Eucalyptus camaldulensis, Leucaena leucocephala and Parkinsonia aculeata.

Many of these were well established and growing strongly (except the L. leucocephala), clearly benefiting from better wind protection and extra water. Fewer refugee families appear to have planted trees in Jalalaqsi than families in camps in other regions, although this may be an erroneous impression. Name recognition was poor among refugee women - possibly because of the similarity of sound between Africare and CARE, which also operates in the area.

Shelterbelts/windbreaks: as in many other Sub-projects the terms windbreak and shelterbelts are confused. The original target called for 45,000 trees to be planted, equivalent to 180 ha, as shelterbelts on irrigated agricultural lands. With the abandonment of the irrigation scheme the shelterbelts were also dropped from the program.

Around 250 m of single row windbreak has been planted along one side of a private, irrigated fruit farm. Most trees are Eucalyptus camaldulensis which have grown rapidly to 12 meters in height. The fruit trees were also supplied by Africare. A similar row of mixed species was planted on a farm run by the RAU.

Commiphora cuttings were set on the sand dunes as part of the effort to stabilize the mobile sand. Africare reports claim these as windbreaks. While certainly a valuable standard tool in such efforts, it is a moot point if they constitute windbreaks in the sense implied in the project paper. Around 50 km of such lines are said to have been inserted. Survival is now patchy at best.

Sand Dune Fixation: Around 94ha of mobile sand dunes are said to have been stabilized by tree planting. The area visited (planted 1984) showed excellent growth of Prosopis juliflora, with many stems of 4 m, crusting of the sand surface and a most encouraging growth of grass beneath the tree canopy. This is certainly one of the most successful aspects of the project and has checked the advance (said to have been 50 - 100 meters a year) of the dunes onto potential agricultural land near the refugee camps.

Staff Training: We were unable to evaluate the staff training component of the Sub-project as the NRA staff are now disbursed. However, nursery managers, extension staff and more senior personnel are known to have visited other projects on study tours and to have attended a two week course at AFWTC

c. Qorioley Refugee Forestry (Save the Children)

While the Sub-project reached its target of block planted seedlings, a large portion of these plantings failed, and the results are at best a qualified success.

Seedling growth in the beds was most uneven, being noticeably better on the south, less shaded edges of the beds. It appears, however, that under SCF supervision that the nursery was well tended and capable of meeting its target output.

Dryland plantation: An area of approximately 100 ha. was planted between 1983 and 1984. Owing to particularly low rainfall in these years and poor species choice, no more than 10 seedlings now survive. The area should continue to be protected and allow natural regeneration a chance to reclaim the site.

Irrigated Plantation: Around 50ha of irrigated plantation were established in 1984 - 1986, mainly at close spacing, to five species, Leucaena leucocephala, Cassia siamea (?sturtii), Melia azadirachta, Eucalyptus camaldulensis and Casuarina equisetifolia.

At the time of evaluation, the great majority of surviving trees were Leucaena leucocephala at 1x1 m. spacing. Irrigation had always been irregular and now appears to have ceased. All trees were checked and in the long term few are likely to survive.

Protection of the area should continue allowing natural regeneration to take over the site. However, the first woody vegetation appearing is likely to be the low value Dicrostachys.

Amenity Plantings: Amenity plantings in the refugee camp areas have been noticeably successful. Most of the houses had at least one tree growing strongly, many had three or four. Favored species are Melia azadirachta (Azadirachta indica) and Leucaena leucocephala. Villagers seem to be aware of the benefits of trees in terms of increased shade and the lessening of dust. Small additions to available building materials, a little fodder and some fuel wood were also appreciated.

Agroforestry and demonstration plots: Several farms in the surrounding area (nonrefugee) planted windbreaks, fruit trees and small demonstration (fuelwood and pole) plots in 1984 and 1985 on irrigated land. These appear to be successful, with a reported yearly increase in areas planted as other farmers follow by example.

Effective species are Casuarina equisetifolia, Eucalyptus camaldulensis, Parkinsonia aculeata and Leucaena leucocephala. All are planted as single row windbreaks.

A 0.5 ha. plot of Leucaena leucocephala planted privately, but using trees supplied by the Sub-project, is well established and the farmer is confident he can sell poles and thinner stems for building purposes. Regrowth under the trees provides supplementary fodder in the dry season. The same man is inter-cropping maize with Leucaena and is happy with the results.

Training: We were unable to determine numbers of people trained in nursery and out-planting techniques but the project appears to have paid adequate attention to the supervision of attached NRA staff. The latter asked for further 'top-up' classes in extension and agro-forestry techniques. Training and technical assistance given to farmers have undoubtedly been of a good standard and are an areas of success.

Income for the refugees was generated both in the nursery work and during the out plantings.

d. Gedo Region Community Forestry (National Range Agency)

The targets and reported achievements of this Sub-project are listed in the following table:

	Target	Achievement
Nurseries established	8	6
Plantations		
NRA block (dryland)	70 ha	70 ha
Cooperative block (irrigated and supplementary water)	24 ha	19.5 ha
Cooperative woodlots	5 ha	nil
Windbreaks on farm	150 km	160 km
Amenity plantings	192,000	223,000
Protected areas	100 ha	100 ha
Training		
NRA staff	10	9
Farmers	10	22
Villagers	20	17

The project was operational from October 1984 to December 1987. It differed from the other four Sub-projects in being implemented by the NRA with the assistance of an expatriate forestry advisor, rather than by a PVO.
The Gedo project is widely reported as the most successful of these five interventions; a view we share with certain reservations. Throughout the life of the project there has been close and successful cooperation with ICR (now CWS) which shared the site of the main nursery complex. The various activities are commented upon in the following paragraphs.

Nurseries: The evaluation team visited only the main nursery complex and one 'on-site' nursery set up by ICR but assisted by the Sub-project.

The instant impression of the main nursery complex which contains housing, offices and stores, is one of vigorous greenery. Considerable efforts have been made to establish plots of many species, both as demonstration/trial areas and as future seed sources. Irrigation has been regular and plentiful and tree growth consequently rapid. The area has amply fulfilled its purpose of creating interest in forestry among local people.

The nursery itself is of appropriately simple design and relies on natural shade from surrounding trees. When visited, activity appeared to be at a much lower level than previously, when up to 100 people a day (mostly refugees and with a high percentage of female labor) were being employed. Lack of adequate NRA funding is likely to enforce this lower pace of production for the foreseeable future.

During our visit many people (private individuals and representatives of organizations) called to collect trees for on-farm and shade tree plantys. Over-large pot size has recently limited the quantity each vehicle can collect (down from 500 to just over 100 seedlings per pick-up load). Staff are aware of this problem and working to obtain small bag sizes.

Block plantation: The 70 ha. block acquired from ICR is on a harsh, denuded site. As elsewhere, such plantings can best be considered of limited value. Tree survival is reported as 50 percent. Our impression was rather less and confined in the main to Prosopis juliflora with some Parkinsonia aculeata.

Limited supplementary water was given by bowser at a high cost in monetary terms and in equipment damaged. Growth rates, as are to be expected, remain extremely slow. Lack of soil working equipment possibly reduced survival and growth. Rodents also attacked some species, attracted by the only surviving vegetation in the vicinity.

The site should continue to receive protection and thus allow natural regeneration to continue its slow but obvious progress.

Cooperative block plantations: The most successful of these is on 4 ha. of irrigated land at Al-Jazira. Watering is less intensive than on farm land and tree growth is thus slower. It appears to have a good chance of success and may serve as a source of supplementary income from the sale of poles and some fodder.
Three of the other nine small blocks were visited, those at Ali Matan, Horsed and Halba. The preferred species is Leucaena leucocephala, although a variety of others are represented. Watering is usually by bowser and the future outlook appears doubtful.

Protected areas: It was not possible to visit the 100 ha. of protected land at Gedo Weyne. However, similar areas established by CWS close to refugee camps were visited. Protection is by three strands of barbed wire plus watchmen. Local people appear to accept the restricted access and there is a noticeable increase in both ground cover and re-sprouting of cut stumps. Progress will undoubtedly be slow but the increase in vegetation cover is desirable and the method relatively cheap.

Amenity plantings: These have been carried out in close cooperation with CWS and are aimed at supplying free trees to refugee families to plant around their houses. Fruit and shade trees are popular with some demand for live fencing.

It was impossible to verify the claimed total of 223,000 seedlings supplied but many houses in the camps now have trees growing near by. We feel that this aspect of the work has been successful, with a reasonably appropriate choice of drought tolerant species supplied.

Windbreaks/Shelterbelts/Agroforestry: The agricultural land around Luuq is confined to a narrow (50-150 meters) strip along the Jubba river banks. It is extensively cropped (mainly onions and maize) and

heavily irrigated. The Sub-project has been highly successful in encouraging farmers (both local villages and more recently refugees) in the establishment of windbreaks around their fields and in some cases to practice limited alley-cropping.

The preferred species is undoubtedly Leucaena leucocephala at close espacement for harvest as thin poles used in local house construction. However, thicker, poles from Leucaena and Eucalyptus camaldulensis are in evidence as sources of building material and fuelwood.

Casuarina equisetifolia, Dalbergia sisoo, Conocarpus lancifolius and Azadirachta indica are also reasonably well liked and provide supplementary fodder, poles and fuel.

The demand for 'on-farm' trees appears to remain at a high level with farmers now learning that they can direct-sow many species into the final location. We are confident that their initiative will continue in the future.

Training: During our brief visit we were unable to satisfy ourselves fully on the training aspect of the project. However, from informal talks with the remaining NRA staff we see no reason to doubt that both farmers and villagers (including some refugees) have been adequately trained in techniques of tree raising and planting. Extension agents have been recruited locally (lower costs and more commitment than recruits from Mogadishu) and appear to be effective.
Conclusion: The project was fortunate in being managed by enthusiastic NRA staff (including one East German trained diplomat in forestry) and to have had a fully trained and progressive expatriate technical advisor. We feel that they achieved a good balance by concentrating efforts on those parts of the plan that would most likely be successful.

They pursued the plan in a careful and flexible manner throughout. The lack of staff turnover and their combined forestry experience undoubtedly went a long way to ensuring the success of the project.

We hope that NRA funding is sufficient to continue the work, albeit at a reduced level. NRA staff would benefit from future in-country short course training, particularly in extension and agroforestry techniques and efforts should be made to meet this demand. Individuals would also benefit from short study tours and further overseas education.

e. Community Forestry in Refugee Areas (Overseas Education Fund):

This Community Forestry Sub-project was carried out by OEF between December 1984 and December 1986.

The OEF team of two consisted of a female project manager and a young forester. Local officials found both appointments culturally difficult to accept. OEF appears not to have fully appreciated the position of the NRA as partners to their agreement. Difficulties arose over the correct lines of approach to other government agencies and in particular to the SWDO.

However, in view of the short time-frame for the project, the distance between Mogadishu and the projects headquarters in Hargeisa, and the scattered nature of the operation around Hargeisa, OEF made substantial progress.

Nurseries: Four nurseries were established, at Arabsiyo and at Agabar in the Refugee Camps, and two in Hargeisa Town. When visited neither of the camp nurseries had functioned since OEF's departure. However, both were well laid out with excellent live fencing, adequate water supply and good bed design. The growth rate of demonstration trees planted at Agabar in particular was impressive

The central town nursery (the old NRA area) has now been taken over by German Technical Assistance (GTZ) and it was impossible to judge OEF's contribution, apart from an extensive wall built around the area. Reports, however, indicate that a good standard was maintained.

The second small nursery ("26 June") in Hargeisa run by the SWDO, was established with OEF help. Two women continue to raise trees for private sale. The number of trees sold in 1987 is unclear but probably in the region of 3000. This operation appears to be moneymaking, although they have to compete with trees given away by the NRA around National Tree Planting Day. The area is well fenced and the quality of the growing stock is adequate.
Block Plantations: Although not meeting their target in terms of area planted, block plantations were established near Arabsiyo and Agabar camps. OEF realized that the eroded nature of both sites meant that growth rates would be slow and that neither area was likely to meet the need of fuelwood production.

From a technical viewpoint both sites serve as good examples of treating sheet, gully and wind erosion by tree planting. Species choice (mainly Prosopis juliflora and Parkinsonia aculeata) was appropriate and the sites were well prepared by V-bunding, U-shaped catchments, together with stone water checks as required.

Seedling survival rates are as good as could be expected, some 65 percent, despite damage by hares. And natural vegetation is regenerating slowly. Since watchmen have not been paid for at leaset six months some domestic animal incursion threatens to undo the achievements.

Halaya Grazing Reserve, some 19 km east of Hargeisa, was also visited. Limited boundary line planting for windbreaks was seen. Survival was good but the area is now untended.

Amenity Planting: Many trees were distributed among the people in both camps for shade. Schinus molle has been particularly successful, especially in Agabar, but Eucalyptus camaldulensis and more drought hardy species are also doing well. There is some complaint by villagers that thorn trees provide poor shade and are disliked. However, both camps have benefited: live fencing is also common around individual compounds and survival rates are high.

Windbreaks, Live fencing, Agroforestry: It was not possible to fully appraise this aspect of the work owing to constraints of time. At Agamso Community Agroforestry Farm near Arabsiyo, on the banks of a large tug, there was clear evidence of trees planted as windbreaks (Leucaena leucocephala cut for poles) among the vegetable and citrus plots, plus live fencing. The abandonment of the nursery has halted further planting. Similar efforts, although on a smaller scale, were also seen at Agabar. Both appear reasonably successful.

OEF reported considerable success with the establishment of live fencing. Prosopis and Parkinsonia seen by the mission around compounds and farm plots were growing strongly. Such fences appear to form both an effective barrier to livestock incursions and are popular with local residents.

Staff Training: We were unable to check OEF claims for the impressive list of staff and labor trained, as personnel are now widely disbursed. However, two farmers mentioned that they had received seedlings and advice from the project and the women running the SWDO nursery also felt that they had benefited from training.

An AFWTC graduate and NRA employee, originally working with OEF at Arabsiyo, is now nursery manager with GTZ. He spoke well of the instruction he had been given by OEF.

C. Fuel Conservation:

The goal of the National Woodstoves Program was to help in the conservation of Somalia's wood resources through the development and distribution of fuel efficient cooking stoves. These were of both the wood burning and charcoal burning varieties. The former were made from clay (ceramic stoves), the latter from soapstone. Both stoves were intended primarily for family use, although models were also developed for small business users e.g. in bakeries. Work started in March 1983, with VITA as the implementing agency, and continued until January 1986 when the project passed to local management.

Approach and results:

The program was developed along two lines, initial survey followed by the designing of more efficient stoves.

Initial surveys were carried out to:

- Compile descriptive data on current stove models, cook's preferences and cooking techniques.

- Provide fuel consumption estimates for project sites; these were used to calculate costs and benefits of new models, and

- Provide a data base for other agencies concerned with wood scarcity.

Only when the first two objectives had been attained could the designing of the stoves take place.

Surveys took place in Mogadishu and the Lower Shebelle and Gedo Regions. Within Mogadishu, sampling was carried out in different housing and income districts. In the provincial areas, both refugee and settled village families were sampled.

Charcoal is the major fuel in Mogadishu. Elsewhere (with the seasonal exception of Luuq) firewood is used almost exclusively. Average per capita consumption of charcoal in Mogadishu is stated to be 0.82 kg. per day, while fuelwood consumption was said to vary between 1.00 and 1.14 kg. depending on the region.

Sampling procedures appear to have been adequate and the data obtained was relevant to the ultimate goal. The importance of the data collected is clearly written-up and presented. The estimated average per capita charcoal consumption figure for Mogadishu of 0.82 kg. does, however, appear to be high and out of line with other estimates. Average annual consumption for the town, using a population figure of 750,000, works out at 225,000 tons; over four times greater than GSDR figures and around twice that of other estimates.

Testing of traditional and prototype improved stoves appears to have been extensive and well carried out, both in field user trials and in the laboratory. A total of five charcoal and seven wood burning stoves were developed and tested, and one of each chosen for full scale dissemination. Significant fuel savings of between 20 and 40 percent are claimed for these stoves.

Marketing:

One of the project goals was to encourage private sector production of the stoves, while promotion of the benefits was carried out in the public sector - mainly through the NRA.

A total of some 2,000 ceramic (wood burning) stoves and 5,400 soapstone (charcoal) stoves were manufactured and sold through traditional wholesale and retail traders by the time the project ended. This achieved amended target figures for the ceramic stoves and comfortably passed the 4,000 soapstone stoves envisaged.

Extensive publicity and extension efforts prepared the market to accept the new stoves.

Problem Areas:

On the technical side, the project experienced considerable difficulties in convincing traditional craftsmen of the benefits of the new designs and in ensuring that the finished products met a consistently high standard of quality. Education and strict quality control has helped but difficulties remain.

Production of the metal grate required for the soapstone stove also proved difficult but a satisfactory solution was found in cast bronze.

The relatively high cost of new stoves proved a deterrent to potential buyers but it was expected that costs would reduce as artisans became more skilled in production methods.

Conclusion:

The project appears to have met its goals and made a positive contribution to fuelwood conservation efforts. The emphasis on extension work, publicity, local production and marketing should all contribute to an on-going saving in fuelwood cutting.

D.**Natural resources/Land Use Survey:**

The survey of the southern rangelands of Somalia was undertaken by Resources Management Research (RMR), a private company, on behalf of USAID.

The voluminous quantity of data accumulated is now housed in the Documentation Centre of NRA.

The layout of the reports follows that of two earlier surveys by the same company. The quantity of data acquired is impressive and includes information on water resources, geology, geography, distribution of livestock and livestock numbers, human habitation, land use, vegetation type, cover and uses.

Such a survey was undoubtedly needed to complete a broad overview of the country. We have no doubt that the work was carried out accurately, or that it serves its essential purpose of aiding long-term planning.

The report would benefit considerably from further indexing, and short summaries of the main findings. Its users are said to experience considerable difficulty in locating and interpreting relevant information.

Fuelwood Supply/Demand Assessment:

This component was not carried out as a discrete entity. Part of its task was absorbed into component 3 (fuelwood conservation) and part of its objectives were foreseen and carried out by other projects. These three studies concentrated on the demand side of the equation.

On the supply side, the British Forestry Project Somalia (BFPS) is nearing completion of a comprehensive survey of fuelwood resources in the main charcoal production region of Bay.

On the demand side it appears that official GSDR figures underestimate the consumption of charcoal in Mogadishu. Contrary to widespread belief, the production of charcoal in the Bay Region is technically efficient. For other regions (and until the BFPS figures are published) there is little data on efficiency, supply or demand.

F.Project Monitoring and Management:

The Project Paper calls for CDA Forestry to be evaluated at two levels:

- national, in the NRA and other ministries involved in project activities; and,

- regional/ district, in and around refugee camps, i.e. in the target area.

Evaluation is seen as an integral part of project management and is aimed at improving design and execution, and to assess the impact and relevance of design, with emphasis on those facets which determine success or failure.

In essence this consisted of periodic reports from the PVO's to the NRA and USAID. These were to be coordinated and recommendations passed on to all interested parties, that each may benefit from the experience of the others.

Three parties are thus involved. At the first level, individual Sub-project managers provided written reports which were sent to the second and third parties, i.e. (1) to the General Manager of NRA and through him to the USAID funded Forestry Adviser, and (2) to the Project Manager of USAID and through him/her to Project Monitors in Mogadishu and the Forestry Adviser based in Nairobi.

We feel that, in general, the reports were submitted on schedule and contained relevant information. Regular meetings of the 'CDA group' helped to coordinate action and share results with all three parties involved.

The NRA-based Forestry Adviser(s) carried out moderately frequent visits to Sub-project sites, as did the USAID monitoring staff.

A formal USAID-sponsored interim evaluation mission submitted its report in April 1985. This report concluded that, to a large extent, work was proceeding well, particularly the shade tree planty and agroforestry aspects of the PVOs' task. Difficulties over land tenure, slow arrival and high cost of equipment from overseas, and fuel shortages are noted as constraints. Importantly, the report also notes the difficulties experienced with attempts to grow block plantations on rainfed land, and recommends a change away from 'fast growing' exotic, to drought-tolerant indigenous species.

We feel that the monitoring/management side of the project worked satisfactorily, despite the difficulties of communications occasioned by poor local infrastructure e.g., the time and expense needed to convene meetings of technical personnel in Mogadishu, and for advisers to visit Sub-project sites.

Some confusion appears to have arisen over the roles of the NRA based adviser and those of the USAID based staff. In retrospect we feel that either two people should have been placed in the NRA to handle the large work load, or that USAID should have employed a full time forestry expert based in Mogadishu.

G. Past Constraints and Future Activities:

Past Constraints:

Several constraints have been repeatedly mentioned by PVO's as contributing to difficulties and, in some instances, shortfalls in meeting reforestation targets. These constraints include 1) shortage of fuel early in the Sub-projects life, 2) atypically dry weather in 1983 and 1984, (3) slow arrival of imported equipment, (4) lack of technical back-up from NRA, (5) difficulties in land procurement, and (6) late release of DDD funds.

We feel that all project managers made an honest effort to overcome these difficulties as they arose and we have few suggestions to make as a result of their experience.Weather is of course beyond control. Experience suggests that in such unreliable rainfall conditions the use of only very drought hardy species should be contemplated. To a degree, the effect of periodic fuel shortages can be lessened by holding larger reserves. If these become too large the PVO comes under great pressure to 'lend' stocks to less prudent organizations.

Delay caused by slow arrival of imported equipment can be lessened by allowing a larger lead-time between the signing of the project agreement and ordering and full importation of the equipment.

Lack of technical back up had been commented on in Chapter 2. The solution is obvious.

Land procurement difficulties could be eased by ensuring that designation of approved sites by the NRA before agreements to proceed are signed.

Late release of DDD funds is likely to prove a chronic difficulty; good working relationships between USAID and the relevant government department(s) greatly assist in obtaining the monies.

Future Activities:

We feel that the CDA experience has pointed the way to several possible directions for future tree planting activities. All of these pre-suppose that continued expatriate assistance is available at NRA.

Amenity Plantings:

These have been successful in all CDA Sub-projects and there is a large demand throughout the country for tree seedlings supplied by the NRA on National Tree Planting Day. Future projects would do well to build on this appreciation of trees and incorporate such activities in their program. Schools and mosques have been willing to plant on a communal basis.

Shelterbelts:

We foresee many of the same difficulties arising as with block plantations i.e, villagers are suspicious of their rights to produce, and problems of land tenure. Nevertheless, if the confidence of communities is gained through extension agents, limited planting of village shelterbelts may be possible.

Agroforestry:

This must be clearly separated into rainfed and irrigated interventions. Dealing first with dry land, CDA has shown that individual farmers who have successfully planted amenity trees in their compound are often willing to accept trees for live fencing. In the first instance this is often confined to their compound areas and only when satisfied with results does the practice spread to their farms.Again, skilled extension workers can assist. Care must be exercised not to 'over-sell' and raise expectations of dramatic benefits.

On irrigated land, CDA has shown that education and simple demonstration often lead to the quick acceptance by local farmers of the planting of windbreaks and small, 'less favored' cropping sites for pole production. This in turn leads to more 'adventurous' practices, such as alley and inter-cropping. Again care must be shown not to suggest that trees solve all problems. They do not. While only relatively small areas of the country can be irrigated, agroforestry on these areas offers a high chance of success.

Sand dune plantations:

Only one PVO in the CDA scheme was able to plant on inland sand dunes. The success of these plantings, and those by other projects on seaside dunes, offers the best hope of establishing larger block plantations. Past projects have concentrated their efforts only on dune stabilization, with little thought of how best to manage the resultant plantations for limited quantities of firewood and poles. Further work on the management of such areas may be worthwhile.

Integrated agriculture and forestry:

Within the country, several large scale agriculture projects are active or planned eg: Bay Region Agriculture Project, Libsoma, Juba Valley Authority, Shebelle Water Management Project (SWMP)etc. As far as is known, none incorporate a significant tree planting element. Forestry links with these projects may prove a worthwhile area to explore.

Block plantation schemes that hide under the title of village level forestry projects are NOT recommended. Problems of land tenure, tree ownership, slow growth rates and poor survival are almost certain to arise.

Sources of Technical and Financial Inputs:

Only three projects currently operating in Somalia (January 1988) offer experienced dry land foresters on their staffs. ODA (Education and Training; Research), GTZ (Planting and Extension), and UNSO/DANIDA (Sand dune fixation). CRDP is well staffed with range managers capable of advising on the natural forest. However, several projects are due to become active in 1988. These are:

1. FAO - Strengthening of NRA headquarters (one man) and regions (one man in each of Lower and Middle Jubba).

2. FAO - Foresty expert posted to Ministry of Planning.

3. DANIDA - Mangement of the natural woodlands on the stable sand dunes between Mogadishu and Merca.

4. FINNIDA - Village level forestry based in Jowhar-Middle Shebelli Region.

5. FINNIDA - Lower Shebelli Region inventory of natural forests, research and education components.

6. IGAD - Seed collection and handling. Network based in Djibouti.

7. DANNIDA - National Seed Centre.

All the projects are likely to contribute experienced arid-zone foresters.

Besides the above donors UNDP and EEC have contributed funds to past forestry activities. ICRAF (International Council for Research in Agroforestry) and IDRC (International Development Research Council) among others have expressed a willingness, provided NRA can contribute the necessary infrastructure.

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FOOTNOTE.

There is a marked reluctance in Somalia to accept the reality that rainfed (and almost certainly, irrigated) block plantations will never be capable of meeting more than a small fraction of the country's need for fuelwood, either as charcoal or firewood on anything approaching a realistic economic analyses. There is a danger that money will continue to be squandered in pursuit of a myth. In the words of F. Weber commenting on CDA dryland plantations, "We have been there and it does not work."

A relatively small proportion of funds ($30,000-50,000) remains uncommitted. It is worth while considering if these could be properly and profitably disposed before the project life ends in July 1988.

Sectors that may benefit markedly from small grants include:

1. Education and Training.,e.g. Short (1-3 months) courses for NRA employees who have not previously undertaken certificate level training and would benefit from training in particular disciplines such as extension, agroforestry sand dunes fixation techniques etc.

   Women's groups, farming cooperatives on school teachers may also benefit from a formal introduction to tree planty activities.

2. Educational establishments wishing to update libraries laboratories and workshops with appropriate text books and equipment., e.g. FRAW based at Lafoole

3. Organizations wishing to establish small seed orchards to help ensure a readily available supply of good quality seed of appropriate indigenous and exotic species for use by future projects.

4. Seminar/workshops organized and run by visiting lectures on limited topics for specialised groups of NRA (and other agronomists) staff members.