

UNCLASSIFIED

SOUTHWEST REGIONAL REFORESTATION PROJECT
(Revised)

USAID/Upper Volta Operational Program Grant
(625-0934)

Amount \$1,005,707
Submitted to AID/W
December, 1983

AGENCY FOR INTERNATIONAL DEVELOPMENT

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**SOUTHWEST REGIONAL
REFORESTATION PROJECT
(REVISED)**

SUBMITTED TO:

U.S. Agency for International Development

SUBMITTED BY:

Africare, Inc. December, 1983

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PROJECT TITLE: Southwest Regional Reforestation Project

TOTAL OPG REQUEST: \$ 1,009,392

PROJECT LOCATION: The Southwest Region of Upper Volta
in the Provinces of Bougouriba & Poni

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DATE OF SUBMISSION TO USAID: December, 1983.

I. PROJECT PURPOSE AND SUMMARY

Africare is seeking a grant of \$1,009,392 from the U.S. Agency for International Development for the implementation of the Southwest Regional Reforestation Project in the Provinces of Bougouriba and Poni; formerly the Department of the Southwest. This project has been prepared by the Africare staff in Upper Volta and Washington, D.C., and the Ministry of Transportation, Environment, and Tourism (MTET), for submission to USAID. During project development several discussions were held with the Director of the Bougouriba ORD, as the official representative of the Ministry of Rural Development (ORD) in the region. The proposal presents a four-year integrated reforestation program and identifies anticipated activities and funding requirements.

The major goals of this project are to build up the present MTET infrastructure in the Provinces of Bougouriba and Poni and to initiate an effective program to counteract the environmental degradation that has been occurring in the region. Activities would include retraining for up to 20 MTET agents within the region, building housing for MTET agents at those posts where no housing currently exists, and expansion of the MTET offices in Diébougou and Gaoua. Two pick-up trucks and three heavy duty trailers will be purchased for the project and up to nine motorcycles and helmets will be made available, on credits; one for each forestry post. A third pick-up truck will be purchased under the project for use by the Africare Project Coordinator. Training for the MTET staff will include the development and utilization of effective extension and sensitization techniques, agro-forestry and other planting activities, soil and water conservation measures, mini-nursery establishment and management, and other subjects.

The first year of activity will focus on building up the MTET infrastructure within the region, identifying various techniques or activities that have been used successfully elsewhere in Upper Volta or the Sahel, and sensitization of villagers and village organizations. Results from the study of activities elsewhere in the Sahel will be used in the planning and implementation of subsequent project activities. No mini-nursery establishment or planting activities will be undertaken until the second year.

Village-level efforts will include a variety of extension and sensitization activities, villager training, establishment of mini-nurseries, and self-help tree planting activities. Initially project personnel will work with the villagers to try indentify what their perceived needs are, and to show them how the project activities will help them address those and other village-level needs.

The first year will be general extension and sensitization of villages in the two provinces to try to identify those villages and villagers that are motivated and interested in participating in project sponsored activities. Beginning in the second year, annual extension, sensitization, education and planting efforts will be focused at those villages and villagers that are actively interested. The types of planting activities envisaged include planting of shade and fruit trees, establishment of windbreaks around and within agricultural fields, the planting of Acacia albida and other appropriate species within fields, planting of live hedges, and other individual and community plantings. The types of plantings actually undertaken will depend on the success of the project extension and sensitization efforts. Every effort will be made to ensure that project activities are not imposed upon the villagers, but rather that they actively seek to participate. The diversity of planting configurations, species used, and the extent of villager participation will depend on the success of project extension efforts. Training for villagers will include tree planting and maintenance techniques, the safe

use of insecticides, wind and water erosion control measures, and other topics. The benefits and limitations of various agro-forestry and other planting activities will be presented.

The long-term success of reforestation/environmental interventions in the region will depend on the development of a well trained, effective forestry organization and an environmentally aware, sensitized population. It is Africare's desire to assist the MTET in the establishment of the needed infrastructure and the types of village-level activities necessary for initiating an effective "Bois de Village" program in the region of Southwest.

II. BACKGROUND

Host Country

Upper Volta is a landlocked country situated in the center of West Africa. It is relatively flat. The mean elevation is less than 400 meters above sea level, with elevations for half the country lying between 250 and 350 meters. Elevations are greater and the terrain more hilly in the southwestern part of the country.

Upper Volta has an area of approximately 274,000 km², 33% of which (89,000 km²) the Voltaic Government considers arable. Agriculture is the key sector in the economy, providing 82% of the national employment, and 87% of all exports. Subsistence farming accounts for 80% of the food produced annually. Increases in food output have been achieved mainly through the expansion of the area cultivated, not through increases in yield 1/. Population densities range from 0-49 people/km² in the north (Gorom-Gorom and Dori areas) to 80-120 people/km² in the Koudougou area and north of Saponé, just outside of Ouagadougou, the capital 2/.

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1/. USAID, Draft Country Development Strategy Statement, FY 1985, Upper Volta, January 1983.

2/ World Bank, Upper Volta Agricultural Development Strategy, 1983, p. 100.

The climate is classified as Dry Tropical or Southern Sahel in the northern part of the country and Semi-humid Tropical or Sudan-Guinean for the southern portion. The rainfall patterns vary spatially and temporally, averaging from 500mm or less in the Sahelian zone to up to 1,400 mm in the southwest.

The Project Area

The Provinces of Bougouriba and Poni (formerly the Department of the Southwest) were identified by the MIET in mid 1982 as the only region in Upper Volta which did not have a "Bois de Village" program either in place or under preparation. The two provinces have a combined area of approximately 17,400 km² and a population estimated at 410,000 people. In recent years there has been an influx of people who are emigrating from the more densely populated heavily degraded regions of the country. These increasing population pressures are becoming evident in the form of increased destruction of the natural forest, a growing scarcity of fuelwood, reduced wildlife populations, increasing soil erosion, and other adverse impacts.

Located in the Sudan-Guinean zone, the natural woodland vegetation, when not degraded, abounds with teak, African mahogany, mangoe, cashew, karité (shea nut), néré, and a multitude of other diverse species. The karité occurs extensively and is vigorously protected by villagers because of the value of its fruit and the derived karité butter.

Compared to the rest of Upper Volta, the region is favored with a higher annual rainfall spread over a longer rainy season. Prior to the drought of the early 1970s, annual precipitation ranged from 900 to 1,400 mm. Post drought averages are between 800 and 1,200 mm per year. The region benefits from normally adequate precipitation, fertile soils, and moderate livestock densities. Population density, about 20 people/km², decreases as one goes from the northern to the southern part of the region. There are approximately 1,085 villages.

Peanuts, cotton, and yams constitute the major cash crops. Food crops include corn, rice, sorghum, and millet. The potential may exist, at least on a limited scale, for fishing and beekeeping to become viable economic activities.

The region has two secondary schools and 65 primary schools. These provide classroom space for only about 14% of the school age population.

There are 48 Young Farmer Training Centers (CFJA), 12 dispensaries with maternity facilities, and one hospital.

Project Evolution

In 1980 the MTET invited Africare to intervene in reforestation efforts in what was formerly the Central-West Department. Apparently this was the only department between latitudes 12° and 13° north where village-level (Bois de Village) activities had not been financed. A working session between Africare and the MTET followed. During this session the Yako Canton was chosen as the area for the proposed project activities.

Between 1980 and 1982, Africare and the Peace Corps, with encouragement from USAID, tried to finalize a reforestation project proposal for the Yako Canton. These efforts ended when the MTET unexpectedly announced that the Canadian International Development Agency (CIDA) had agreed to finance a multi-million dollar reforestation project in the same area. In July 1982 the MTET wrote to Africare and proposed the Southwest region as an alternate project area. It was argued that this was the one remaining department in Upper Volta that did not have a reforestation project financed through the MTET 1/. A pre-project proposal for village and family woodlots was enclosed with the letter 2/. Subsequently Africare assembled a project development team to study the proposal.

1/. See Appendix 13.

2/. See Appendix 6.

Later in 1982, an Africare team visited the Department of the Southwest to contact the local Voltaic administration, MTET, and ORD officials to discuss the project proposal. Discussions with officials and villagers in the department were held to identify and define the problems that existed, and to establish priorities. Several subsequent team visits were made.

The Canton Chief for the MIET, based in Diébougou, identified the following needs: (a) it was necessary to educate the rural population concerning the importance and need for conservation efforts, and to correct the false impressions that fuelwood was plentiful and that the natural resources were not being abused; (b) protect, develop, and manage the 110,700 hectares of classified forest within the department; and (c) he emphasized the need to revegetate/rehabilitate those areas where erosion and desertification were taking place. write
as

The Bougouriba ORD Director felt that the major problems were: (a) not enough existing nurseries and insufficient seed and other materials to establish new sectorial and mini-nurseries; and (b) a need for more, well trained, better equipped ORD and MTET extension agents who could more effectively promote reforestation activities. OTET 5-
PPO

The MIET agents identified the following problems: (a) it was extremely difficult to move about the hilly terrain of the department on mopeds; (b) they lacked adequate housing; and (c) because there were not enough MIET agents, it was impossible to effectively cover the entire department with extension activities.

The Prefet and Sous-Prefet felt the major problems were: (a) the intentional setting of grass and brush fires by the villagers; (b) the clandestine and what they saw as the senseless cutting down of trees by the villagers; and (c) a lack of sufficient numbers of seedlings for reforestation activities.

The villagers and school children expressed the need for shade in market places, around school compounds, and other public areas. Specific problems that they identified included: (a) increasing difficulty in finding fuelwood and building materials; (b) declining wildlife numbers and as a result greater difficulty when hunting; (c) the noticeable decline, year after year, in the productivity of agricultural lands; (d) as arable land become more scarce, many families were emigrating elsewhere in search of more fertile lands to cultivate; and (e) they realized that it was the villagers themselves that were responsible for these problems, through the setting of grass and brushfires, slash and burn agriculture, and other traditional activities. At one meeting a villager observed, "it is man who destroys, therefore man must restore."

A general consensus of opinion is that shade trees, fruit and nut trees, and windbreaks are needed in the sectors of the department to provide fuel, food, and soil protection to retard erosion. Another village level concern is the availability of traditional, non-wood forest products. These include traditional medicines (from Combretum spp., Bauhinia spp., Ficus spp., and others), food from fruits and leaves (Bombax costatum, Parkia biglobosa, Ziziphus spp., and others), bark and fiber products, and the income that is generated through the sale of these products. Such products are very difficult if not impossible to quantify, and therefore assign any monetary value to them. All the same, such products can be important in the daily lives and well-being of villagers 1/ 2/.

Needs such as those expressed by the officials and villagers in the region are common throughout Upper Volta. A major constraint is the lack of the means necessary to meet these needs.

1/. Hoskins, M.W., Community Forestry Depends on Women, UNASYLVA 32 (130): 27-32

2/. Poulsen, G., Important Forest Products in Africa other than Wood and Wood Extractives, A Preliminary Study. FAO. 11/81.

While reforestation efforts are being made in the region, they are not necessarily on an adequate scale, nor necessarily adequate addressing village needs. The Sous-Préfet of Kampti, for instance, told the visiting team that villagers, in attempting to meet their own local needs, were uprooting seedlings that he had planted and were replanting them for their uses.

Except for the 1983 season, when the rains failed, demand for seedlings in the southwest region has always exceeded the locally available supply. Because of transportation constraints, actual demand would be even greater if the means existed in the region to provide seedlings for private/community use in villages that are more distant from the five existing centralized nurseries. This could be accomplished either by increasing the number of nurseries, transporting seedlings to the villages for villager use, or a combination of both.

Villagers actively seek assistance and advice from MIET and ORD agents concerning tree planting and reforestation concerns. These include questions about the selection and preparation of planting sites and the transportation and planting of trees. Villagers seek the on-site assistance of forestry agents, who in turn have transportation constraints (inadequate vehicles and transportation allowances) and who may also lack the technical or extension skills necessary to provide effective assistance at the village level. 1/

1/ Personal communication, MIET Agents.

The Existing Forestry Infrastructure

The MTET has a primary responsibility for forestry and conservation activities in Upper Volta. Because of a current World Bank funded project, the MTET and ORD work closely together on reforestation activities in the region. Both the ORD and the MTET representatives in the region consider this cooperative effort to have been a success.

The Canton Chief currently has ten forestry agents under his direction; one forestry technician, three forestry extension agents, and three ORD extension agents at Diébougou, and one forestry extension agent each in Gaoua, Tinkoura, and Kampti.

There are 108 ORD extension agents participating in forestry activities related to the World Bank project, Bougouriba II. These agents, working at the village level, have contact with approximately 60 pre-cooperative groups.

There are a total of five MTET nurseries either operating or currently under various stages of construction. They are located in Diébougou, Gaoua, Dano, Dissin, and Kampti. It is the MTET's policy to establish a nursery in each of the nine administrative departments within the project area.

Forestry Activities in the Region

Village level forestry efforts are a recent development in the region. Village woodlots and other conservation activities are most evident in the north around Diébougou, Dissin and Dano. This probably because one of the first nurseries established in the region serves this area, and more forestry agents have been assigned to this area. In the southern part of the region some forestry activities have been undertaken, but they are limited.

In general, awareness and extension programs at the village level have been very limited if not non-existent. This is in part because of a lack of financial resources, a shortage of trained personnel, and other institutional/organizational problems. Such problems are not unique to the Provinces of Bougouriba and Poni. However, because of organizational limitations and national priorities, major efforts to correct such problems have until now been directed at other regions. Village level reforestation and conservation efforts in the southwest region have only recently begun, through the combined efforts of the MTET and the ORD. The MTET's Bois de Village program is seen as an important part of this effort.

The Bois de Village program was started in 1979. It has the long-term objective of helping villagers acquire the skills and knowledge needed to effectively utilize, conserve, and renew those natural resources essential in their daily lives and their long-term well-being. Funding for the Bois de Village programs in other regions has come from Switzerland, Holland, Germany, the World Bank, Fonds de Développement Rural, Canada, and Sweden. It is Africare's desire to assist the MTET in establishing an effective Bois de Village program in the Provinces of Bougouriba and Poni.

There have been several diverse natural resources/conservation projects in the region. The French Aid and Cooperation Fund (FAC) financed the construction of the Forest Inspector's office and residence in Gaoua in 1977. The International Bank for Reconstruction and Development (IBRD or the World Bank) has funded forestry related activities as part of the Integrated Rural Development Project, Bougouriba II.

The Bougouriba II project, designated to encourage collaboration between the ORD and the MTET in reforestation efforts, runs from 1981 to 1986. A total of 350 hectare are to be reforested during the life of the project. This project has purchased a Peugeot 404 pick-up and Camico moby-lettes for the forestry agents.

As part of the Bougouriba II project, funds were provided for the construction of a one hectare nursery in Diébougou and another in Gaoua. Both nurseries are operational. Each is fenced, has tools, a well, and storage shed. There are a total of eight manual laborers between the two nurseries. Funding for the nurseries was provided as short term support, meant to get them established and to cover the first year of operation, not for the life of the Bougouriba II project. The annual output of seedlings at the nurseries is respectively 80,000 for the Diébougou nursery and 50,000 for that in Gaoua. 1/.

The MIET has started construction of three other nurseries located at Dano, Dissin, and Kampti. Funding, provided by the FAO, again only covers establishment and the first year's operation. 2/. A Peace Corps Volunteer was assigned to the Dano nursery in November 1982 to assist in its establishment and management. Since the three nurseries are relatively new, together they produced 120,000 seedlings in 1983.

The Center for the Promotion of Rural Women (CPFR) is a rural women's development group. They have been involved in well construction, livestock production, health and sanitation, reforestation, and other activities. The CPFR has a working-model mini-nursery in Dissin. CPFR animators and MIET agents were instrumental in the identification by women's pre-cooperatives of reforestation and mini-nursery establishment as a major priority.

Other activities included the Catholic Relief Services who engage in forestry projects mainly in Dano and Dissin and the American Evangelical Church in Bouroum-Bouroum and Gaoua. There was also a Peace Corps Volunteer working on forestry in Diébougou from 1978 to 1980.

1/. According to data provided by the local MIET representative, "Chef de Cantonnement" in Diébougou.

2/. Personnel communication, Mr. Zongo, Joseph, Director of Forest Management and Reforestation, MIET, June 13, 1983.

III. PROJECT DESIGN AND IMPLEMENTATION

1. Project Design

This project was developed to perform two functions. The first is to strengthen the existing MIET infrastructure within the region. The second objective is to develop and initiate an effective village-level program within the region to begin to counteract the environmental degradation that has occurred, and which will continue to worsen if effective actions are not taken.

Project activities during the first year will involve building up the existing MIET infrastructure in the region, examination of reforestation and extension efforts by other development agencies in Upper Volta and elsewhere, their relative success, and evaluate their potential suitability for inclusion into this project, and intensive villager sensitization/extension efforts. Beginning in the second year the establishment of village-level mini-nurseries and actual outplanting activities will be undertaken, in addition to continuing village-level sensitization/extension efforts and the training of villagers and project personnel.

A. Infrastructure Development

The following activities will be undertaken to strengthen the present MIET infrastructure:

- (a) The Canton Chief's office in Diébougou and the Forest Inspector's office in Gaoua will be renovated and expanded to accommodate project activities.
- (b) Up to seven mud-brick houses will be built to provide housing for the MIET agents assigned to forestry posts.
- (c) Up to nine motorcycles and helmets will be purchased for

the MTET personnel; one for each forestry post. Pick-up trucks and three heavy duty trailers will be purchased.

- (d) MTET agents in the region will receive periodic training or retraining.
- (e) In response to a request by MTET (see Appendix 5), Africare will provide \$48,000 as partial support for the five nurseries that currently exist in the project area. No U.S. Government funds will be used to finance operations at these five nurseries.
- (f) Two American Peace Corps Volunteers will be assigned to the project.

Office Renovation and Expansion

The Canton Chief's office at Diébougou will be expanded (two rooms will be added) to handle project activities and logistics for the northern part of the project area. When a Forest Inspector has been assigned to Gaoua, that office will be expanded with two additional rooms added to it. One room will be for storage of project equipment and supplies, the other will accommodate the increased project activity that will develop.

Housing Construction

A mud-brick house will be constructed at each of the seven forestry posts in the region that currently lack housing. Such housing will only be built after an agent has been assigned to a given post. The design for housing (as well as the office expansions) will be the responsibility of the MTET. Prior to construction, however, the designs must first be approved by Africare and USAID. It is anticipated that local skilled and unskilled laborers will be hired for the actual construction, and the services of

either Travaux Publics or ORD Bougouriba sought for supervision of construction.

Vehicles

Up to nine motorcycles, with helmets, will be purchased; one for each forestry post. The conditions of purchase will be similar to a scheme used successfully by Africare for the Seguenega Integrated Rural Development Project. Forestry agents will be given the option to either purchase a motorcycle and helmet at cost, on credit, or continue to use the mobylettes that are currently available. The project will provide a mileage allowance for the use of the motorcycles for official purposes, but the individual agents will be responsible for all maintenance and repairs.

If an agent agrees to purchase the motorcycle and helmet, the MIET will withhold a set amount from the agents salary each month until the vehicle has been paid for. These funds will be put into a revolving fund that will be established to permit future vehicle purchases by other agents. The details of this arrangement will be developed during further discussions between the MIET and Africare. A waiver will be sought to permit the purchase of locally available motorcycles (see Appendix 14).

Two pick-up trucks will be purchased for project use. These vehicles will be used to improve seedling delivery and to support other project activities. One pick-up will be assigned to the provincial headquarters at Diébougou. The second vehicle will be purchased and assigned to the provincial headquarters in Gaoua when a forestry ingénieur has been assigned there.

Training of Personnel

Well trained, motivated personnel are important to the ultimate success of any organization. As such, the training and/or retraining of

the MTET forestry personnel assigned to the project will be an important activity. Each individual's position and experience will determine the types of training that will be most appropriate. More specifically, all professional field personnel, regardless of their assignment, will receive training in but not limited to extension techniques, tree planting and maintenance techniques, agro-forestry applications, and soil and water conservation skills. Where necessary, appropriate training will be provided to develop the minimum level of skills expected of all personnel.

Training of and/or retraining will be provided through formal training organizations such as the Dinderesso Forestry School, CESA0, or GRAAP, as field trips, seminars, and other activities utilizing qualified personnel within the MTET or from other organizations. The Canton Chief and other experienced personnel will provide training in subjects where their professional experience would provide valuable insights. Recent graduates will be able to provide other personnel with information on current techniques and recent developments. The ability to do such in-house training will depend on the subject matter and work loads.

The actual training plans will be determined after the skills of the project staff are assessed and the training needs identified. The following subjects, however, are considered to be potential topics: the animation and sensitization of villagers, the identification and organization of special interest groups, the development and execution of effective village training programs, effective extension techniques, and the identification of village level concerns and methods of addressing them. More technically oriented topics will include agro-forestry and other planting configurations, their advantages, limitations, and influences on the environment. The development of multi-purpose plantings and their exploitation, the

usefulness and limitations of exotic and local species, water and soil conservation measures, the establishment and operation of mini-nurseries, and other topics based upon villagers' expressed and identified needs.

Training will be provided to all GOUV personnel (ORD or MTET) who are assigned to the MTET on a long-term basis, and who are actively involved in this project. The participation of other GOUV personnel in the region who are assigned to this project but who would benefit from such training will be encouraged. However, if there is a limit on the number of trainees that can participate, priority will go to those personnel who are assigned to this project. The training costs for such non-project personnel, such as fees, salaries, per diem, and transportation, will be the responsibility of the sponsoring agency. This project will pay training costs only for those personnel assigned to the project.

Nursery Interventions

The MTET has requested that the operating costs of the nurseries at Diébougou, Gaoua, Dano, Dissin, and Kampti be funded under this project (see Appendix 5). In response to this request, Africare will provide up to \$48,000 for three years to support limited activities in these five nurseries. This will give the MTET sufficient time to completely take over the recurrent costs for the nurseries.

These nurseries are expected to continue to serve two functions. The first is to be a seedling source for project activities. Project sponsored activities will first seek to purchase seedlings from the privately-owned and operated mini-nurseries that will be sponsored by the project. When these have been exhausted additional seedling needs will be met by purchasing them from the existing government nurseries. The second function is to continue to be a seedling source for non-project activities. These include the various needs of the ORD and other organizations in the department as well as private seedling needs.

No additional funds will be provided for these nurseries, either by Africare or from this project. The MTET, the ORD. and Africare will confer in order to determine what level of nursery production will and can be supported each year during the life of this project, given the projected seedling needs in the region and the limited funds that will be available.

Peace Corps Volunteers

Depending on availability, at least two Peace Corps Volunteer foresters will be assigned to this project. While the actual assignments will be developed through meetings between Peace Corps, Africare, and the MTET, it is anticipated that one will be a field forester working out of Gaoua and the other as field forester out of Diébougou.

As support for the volunteers, the project will purchase two motorcycles and helmets for their use for official duties. Fuel and vehicle maintenance and a housing allowance will also be provided.

B. Evaluation of Other Donor Efforts

Early in the project, the Project Coordinator will contact other private and international development assistance agencies. He/she will seek to identify what types of extension and sensitization techniques have been tried or are currently being tried in Upper Volta and elsewhere in the Sahel. These various efforts and other natural resources conservation activities will be evaluated for their relative success, their strengths and weaknesses, and they will be assessed for possible inclusion into the activities to be undertaken by this project. The results of this study will be used in planning and implementing subsequent project activities, including agent training, village extension and sensitization efforts, planting, and others.

C. Village-Level Activities

The efforts of a development assistance project can all be for naught if the people, the intended benefactors, are not interested in participating, or if the project does not address their needs and desires. The goals of the village-level activities in this project will be to initially identify the villager's perceived and real needs, as well as to make the villagers aware of the various benefits that can be derived from, and the need for, agro-forestry plantings, soil conservation efforts, and the other activities that will be promoted during the project. The project will seek to generate active villager participation and support for proposed activities and will seek to develop techniques to maintain that support over the long-term.

The first year of the project activities on the village-level will center around these sensitization and extension activities. No planting or mini-nursery establishment activities will occur in the first year. This period will be reserved for developing the local support needed for subsequent activity. Beginning the second year, limited planting and other technical responses will begin. Throughout the life of the project, continuing village-level extension and education efforts will seek to involve more groups, individuals, and villages in project activities, while attempting to broaden the scope of planting and other conservation activities. Continued follow-up will be an important on-going project activity.

Extension and Education

It is anticipated that initial activities will try to identify what species and planting configurations are desired by the villagers as well as to educate them as to the potential benefits of the activities that will be promoted by the project. These efforts will be concurrent with continuing efforts to identify those villages, villager groups, or organizations, and

individuals who are most interested in participating in project activities. Information will be sought about current tree planting knowledge and practices, attitudes towards planting of trees, the value of planting and other conservation efforts, current use of forest material, and traditional methods of managing the existing resources.

Because the ORD agents in the provinces have been working closely with the villagers in the region longer than have the MTET agents, their assistance and input will be sought in identifying those villages and groups that should be considered as initial targets for extension and sensitization efforts. These recommendations will only be considered as information to be used in determining what activities and where such activities will be undertaken. (ORD agents may receive travel and per diem allowances as appropriate, but no other remuneration will be provided for such assistance). While it is expected that MTET and ORD activities will be coordinated, either formally or informally, the only ORD personnel that will have formal participation in this project will be those who are assigned to the MTET, on a long-term basis, in the provinces.

Depending on how successful the initial efforts are, identification of villages and initial activities will rapidly give way to more traditional extension efforts. Extension activities will include making presentations at markets and other public places and meetings, identification and organization of special interest groups that would want to plant trees for particular objectives, and providing advice on what species to plant, and how to care for the trees following planting. The students and schools in the region will be important targets for the extension efforts to be undertaken with this project.

The assistance of GRAAP will be sought in the development of effective extension materials and techniques. Mobile movie and slide projection equipment and mobile sound equipment, along with other materials, will be used in making extension and sensitization presentations. It is anticipated that villager awareness and sensitization, the introduction of new ideas (agro-forestry, erosion control efforts), conservation education, identification and organization of special interests, and other outreach efforts will rapidly become major extension efforts.

Development of Mini-nurseries

The project staff will promote the establishment of up to 75 privately-owned and operated mini-nurseries, throughout the project area. This will establish self-supporting sources of tree seedlings which will not have to rely on continued external financial support of their operation 1/.

Project personnel will identify individuals or groups that want to establish and run small self-supporting mini-nurseries, and who are presently involved in similar activities. Appropriate individuals would be women, or men, who are already actively and successfully raising vegetables in small gardens for sale in markets, or other similar activities. There may be existing and operating cooperatives or other organizations that would also be appropriate. During the selection of candidates for training in mini-nursery activities, consideration will have to be given to the availability of adequate water supplies and other site factors. A method will have to be devised to select a candidate if two or more equally qualified people express interest. Among the pre-established criteria which project personnel will use might include successful participation in project extension and training activities; demonstrated need; access to land; availability of water; demonstrated ability of villagers or groups to undertake the needed activity;

socio-economic viability of the activity requested in a given area; as illustrated, say, by track records of the villager(s) and groups in other agricultural activities; limitations of project (nurseries) resources; etc.

Those individuals that are identified as suitable candidates would be trained in the establishment and operation of a mini-nursery. Training would include the collection and storage of seed, seed treatment and sowing techniques, raising of bare root seedlings and stumps, raising of potted seedlings in plastic pots and in locally fabricated containers, and other topics. The project will provide additional support for the mini-nurseries by supplying each nursery with the seed and plastic pots needed to raise 500 seedlings during the first and second year of operations.

Planting Activities

There is a range of planting configurations, planting objectives (fuelwood, erosion control, soil improvement), and species choices that are compatible with the overall objectives of the Bois de Village Program 1/. Because we will be seeking to provide a limited response to the diverse needs and wants of different villages and groups and individuals within those villages, as well as promoting various project sponsored planting and conservation activities, it is expected that many different planting activities will occur during the life of this project. The actual diversity will depend upon local needs and the success of the project sensitization and extension efforts.

The types of plantings envisaged are individual household plantings of shade and fruit trees and planting of trees around school yards and other public places for shade and amelioration purposes. The establishment of windbreaks and live hedges around agricultural plots and fields, and planting of individual and community woodlots are expected.

1/. MTEF, Les Techniques d'Intervention Pour l'Action "Bois de Villages", Fiche Technique No. 2, 7/82.

Planting and Mini-nursery Targets
During the Life of the Project

<u>YEAR</u>	<u>EXISTING FACILITIES</u>	<u>MINI-NURSERIES ESTABLISHED</u>	<u>PLANTING ACTIVITIES</u>
1	5 MTET nurseries	none	none
2	5 MTET	5 of 500 tree capacity each	10 villages - 1000 trees per village
3	5 MTET mini-nurseries	20 of 500 tree capacity	30 villages - 1000 trees per village
4	5 MTET 25 mini-nurseries	50 of 500 tree capacity	75 villages - 1000 trees per village
END OF PROJECT STATUS	5 MTET nurseries 75 mini-nurseries		115,000 trees planted in 115 villages.

Seedling Distribution
(Illustrative)

<u>Activity</u>	<u>Nbr. of Trees Total</u>	<u>Trees per Village</u>	<u>Total Area/Units</u>
Live hedges 5%	5,750	50	7 1/4 ha. blocks (2 rows 1/2 x 1/2 m)
Windbreaks 30%	34,500	300	0.5 km/village (2 rows, 3x3 m)
Inter-planting 35%	40,250	350	5 ha of field/ village at 70 trees/ha.
Woodlots 15%	17,250	150	28 ha. or 0.2 ha village (4x4 m)
Household & Community Plantings 15%	17,250	150	

The actual numbers of seedlings planted, the species used, and the type of plantings that will be done will depend on the success of the extension and sensitization activities and the resultant interest of the villagers. The above figures are for illustrative purposes only.

The species to be used will depend on the type of planting and individual site constraints. Both exotic and indigenous species will be used, with multi-purpose species being selected whenever possible. The species that can be used in extensive outplanting efforts are limited to those species where nursery and outplanting techniques are known. It is desirable however to attempt limited nursery and field trials of indigenous species that are of local interest. Any such trials will be coordinated with other prior and current efforts elsewhere in Upper Volta to avoid unnecessary duplication of efforts.

In all cases, site preparation, planting, protection, and maintenance activities will be individual household and community responsibilities (self-help) with the project staff providing appropriate technical assistance. This will consist of instruction in site preparation, planting and maintenance, and assistance in site selection or deselection and species choices, if necessary. In the case of small-scale individual household or community planting activities, the individuals or community groups will be purchasing seedlings from the privately owned and operated mini nurseries that will be promoted under this project and from the existing government facilities. Seedling transport from the nurseries to the planting sites will be provided by the project when necessary, at no cost.

The costs associated with purchasing seedlings for individual household use are not expected to present a problem. However, for large-scale agro-forestry related plantings such as wind breaks, live fencing, or contour plantings, such costs might become prohibitive. The Project Coordinator will examine the feasibility of providing seedlings to individuals or community groups for such multiple tree plantings at either reduced or no cost. Such a subsidy might be achieved through the controlled transfer of seedling sales receipts or through some other controlled mechanism. Prior to implementation of such a subsidy program, it will be presented to the MTET and USAID for prior approval.

The use of insecticides, if necessary, will be in accordance with USAID policies. Only approved insecticides will be used (Volaton or others), and agents and villagers will receive thorough training in the proper use of insecticides, and their hazards, before being issued such materials.

Actual seedling needs for the project are unknown at this time. The current estimated seedling needs are 10,000 seedlings in year two, 30,000 seedlings in year three and 75,000 seedlings in the fourth year.

2. Project Implementation

The implementation of this project will depend on the USAID review processes, the timely identification and recruitment or assignment of personnel to the project, the availability of equipment and supplies and other key linkages. As such, the following outline is presented as a tentative schedule. It is assumed that the project will begin on or about 1 February 1984.

Implementation Planning Outline

December 1983--USAID reviews the proposal and any final adjustments required are made. Africare, the MTET, and Peace Corps finalize the assignment of two Peace Corps Volunteer foresters to the project. The conditions and covenants are finalized between the MTET and Africare. Africare Upper Volta and the MTET begin developing the strategy for providing motorcycles on credit to the MTET forestry agents. The USAID review is completed. Africare Washington begins the identification of potential candidates for the position of Project Coordinator.

January 1984--The project document is signed. The Project Coordinator is recruited. The MTET identifies housing sites at the forestry posts and begins to develop the plans for housing construction and office expansions. Africare places the initial vehicle order. A recognized accounting firm is contacted to establish a USAID approved accounting system.

February 1984--The Project Coordinator arrives in country. Materials and equipment needed for the project are ordered. The MTET submits the construction and expansion plans for Africare/USAID review. The plans are reviewed, any required revisions are made by the MTET, and resubmitted to Africare/USAID. The initial assignment of new MTET personnel is made--up to four forestry extension agents and three assistant extension agents. The MTET identifies candidates for future assignment to the project. Africare hires and trains the local-hire project accountant.

March 1984--Africare and USAID approve the construction/expansion plans. Housing construction begins at those posts where an agent has already been assigned. Additional housing will be constructed as necessary, as new agents are assigned to the project. The expansion of the office in Diébougou is begun. GRAAP, CESA0, and Dinderesso are contacted about the various staff training and extension training possibilities that are available. Initial discussions are begun with the ORD to permit coordination of activities wherever possible. The review and evaluation of other project efforts elsewhere in the Sahel begins. This review will consist of meeting with representatives of other organizations and agencies, examination of project evaluations and other activities as appropriate.

April 1984--Following the assignment of a forest ingénieur, the expansion of the office in Gaoua is begun. The training needs of the project staff are assessed and training plans are developed. The initial assesement of villages for inclusion in project activities is begun with the assistance of the ORD agents. The proposed activities and the implementation schedule are revised to reflect the information developed during the review of the activities undertaken by other organizations.

May 1984--The village assessment with the assistance of the ORD agents continues. A system for tracing activity costs, effectiveness, and other information is developed. Staff training begins.

May-July 1984--General village level extension, sensitization, and assessment efforts begin. Beginning in June the selection of 10 target villages and alternates is initiated. Up to six new personnel are assigned to the project.

August 1984--The 10 target villages and alternates are selected. Intensive extension and training efforts are begun in these villages and will continue through August 1985. A review of staff training is initiated.

September 1984--The results of the staff training review are incorporated into the staff training.

November 1984--Meet with the ORD to discuss the next year's activities.

December 1984--The village evaluation, sensitization, extension, and training efforts continue in the targeted villages.

January 1985--Assess the training needs of the staff and develop plans for the coming year. A two-week social forestry evaluation of the project design and activities takes place. The planned activities, training, and implementation schedule are revised to reflect the findings and recommendations of the evaluation.

March-April 1985--All necessary pre-planting preparations are completed, including the preparation and signing of the "Certificats de Palabre".

May-July 1985--Seedling distribution and planting activities are initiated and completed as soon as possible given the precipitation, labor availability, and transportation constraints. Immediate follow-up on protection and maintenance activities is begun.

August 1985--Continue follow-up on seedling maintenance extension efforts. Review and critique this season's extension and planting activities. Begin the identification/evaluation of 30 target villages and alternates for the coming year.

September 1985--Identify 10 individuals for training in the establishment and operation of mini-nurseries. Initiate staff training. The PCVs either extend or are replaced. The Project Coordinator and Project Director begin meetings with the MTET to discuss planning for continued activity following the end of outside involvement in project activities scheduled for January 1988.

October 1985--Initiate the training in mini-nursery development and operation.

November 1985--The ten mini-nurseries are established and supplied with seed and sacks. Meetings are held with the ORD to discuss the coordination of the coming year's activities.

December 1985--Follow-up on activities at mini-nurseries. The 30 target villages and alternates are selected and intensive village sensitization, extension, and training efforts are begun.

January 1986--The second year evaluation is held. The project implementation plan and activities are revised to reflect the findings of the evaluation. Assess staff training needs and develop training plans. Village level activities continue. The extension activities and planting activities of the previous year (10 villages) are reviewed and any potential problems for the coming year are identified.

March-April 1986--All necessary pre-planting preparations are completed, including the preparation and signing of the "Certificats de Palabré".

May-July 1986--Seedling distribution and planting activities are initiated and completed as soon as possible. Immediate follow-up on protection efforts is begun. The project personnel meet with the mini-nursery operators to assess and critique activities and provide any needed technical advise.

August 1986--Continue follow-up on seedling protection extension efforts. Review and critique this season's extension and planting activities. Begin the identification/evaluation of 75 target villages and alternates for the coming year.

September 1986--Identify 25 individuals for training in the development and operation of mini-nurseries. Initiate staff training. The Project Director, Project Coordinator, and the MTET begin planning for the continuation of activity in the department following the end of the outside assistance scheduled in January 1988.

October 1986--Initiate the training in mini-nursery development and operation. The 10 mini-nurseries receive their second year's supply of seed and sacks.

November 1986--The 25 new mini-nurseries are established and supplied. Meetings are held with the ORD to discuss the coordination of the coming year's activities.

December 1986--Follow-up on activities in all mini-nurseries. The 75 target villages and alternates are selected and intensive village sensitization, extension, and training efforts are begun.

January-February 1987--The major project evaluation occurs. Assess staff training needs and develop training plans. The extension and planting activities of the previous two years are reviewed and evaluated, and any potential problems for the coming year are identified.

March-April 1987--All necessary pre-planting preparations are completed.

May-July 1987--Seedling distribution and planting activities are initiated and completed as soon as possible. Immediate follow-up on protection activities is begun. Project personnel meet with the operators of mini-nurseries to assess and critique activities and provide any needed technical advise.

August 1987--Continue follow-up seedling protection extension activities. Review and critique this season's extension and planting activities. Begin the planning for the coming year's activities. Decide whether to establish 40 new mini-nurseries for the coming year. Decide on the number of villages to be targeted for the coming planting season.

September 1987--Identify 40 individuals for training in the development and operation of mini-nurseries. Initiate staff training. The Peace Corps Volunteers finish their tours and depart.

October 1987--Supply 25 mini-nurseries with the second year supply of seed and sacks. Initiate the training in mini-nursery operation.

November 1987--The new mini-nurseries are established and supplied. Meetings are held with the ORD to coordinate the coming year's activities.

December 1987--Follow-up on activities at all mini-nurseries. The target villages and alternates are selected and intensive village sensitization, extension, and training efforts begin.

January 1988--Outside funding of the project ends, Africare's involvement in the project ends, and the Project Coordinator departs. The MEET continues activities in accordance with the plans that were developed by the MEET, the Project Director, and the Project Coordinator.

3. Project Monitoring and Evaluation

Before funds are released by Africare for any given quarter, the MTET project representative, in cooperation with the Africare project coordinator, will present to Africare a quarterly calendar of activities with a quarterly budget. Africare will in turn review these documents for their propriety and take the appropriate actions for releasing funds requested. Following each quarter the MTET and the Africare project coordinator will submit a quarterly project activities report and a financial report. These two reports will then be reviewed by Africare and submitted to the USAID. Copies of reports thus submitted to USAID will be shared with the MTET.

In order to determine progress towards achieving the planned project objectives, there will be periodic evaluations of project accomplishment. Evaluators will examine the appropriateness of project design and activities, and assess the factors contributing to the success or failure in achieving planned objectives. The logical framework matrix will be a major guide in measuring actual progress, given the planned project inputs and outputs. Results of these evaluations may necessitate a revision of the project design and implementation plan in the light of planned activities for the purpose of achieving the overall project objectives.

There will be four different levels of evaluation. The first as part of the routine submission of reports to the MTET, Africare, and USAID. A formal social forestry effectiveness evaluation will occur at the end of the first year. An auto-evaluation will be performed at the end of the second year and a major project evaluation is scheduled for the end of the third year.

The routine submission of reports will allow periodic monitoring and provide one means to assess progress. Such reporting hopefully will permit early detection of problems in the project design or implementation which can then be acted upon. Africare/Upper Volta personnel will periodically visit the project sites, interview project personnel, and gather information from other sources to facilitate project implementation and review progress.

At the end of the first year, a consulting social scientist will perform an evaluation of the first year's sensitization and extension efforts and the effectiveness of project training and other activities. He/she will be providing recommendations for improving project extension and training efforts.

The major evaluation at the end of the third year will involve representatives of Africare/Upper Volta and Washington D.C., the MTET, the ORD, USAID/Upper Volta, Peace Corps, and other collaborating agencies. It will also include the participation of villagers, village chiefs, pre-cooperative presidents, forestry agents, and others directly involved in the project. The participation of other outside organizations such as the West African Center for Economic and Social Studies (CESAO) will also be requested. The auto-evaluation at the end of the second year will include representatives of some of the same organizations, but on a smaller scale.

Evaluations will consist of the following phases:

A. Preparation

1. Review of Logical Framework and Implementation Plan
2. Review of Quarterly Progress Reports.
3. Analysis of data from the above documents.
4. Formulation of the evaluation documents and schedule.

B. Evaluation

1. Conduct interviews with project personnel in the field
2. Site visits to selected villages and interviews with villagers.
3. Discussion of evaluation results.
4. Discussion of analysis of progress, problems and potentials.
5. Determination of necessary revisions and strategies for implementation.
6. Development of proposed actions and formulation of final evaluation report.

C. Review and Implementation

1. Submit evaluation reports to all cooperating agencies and request written responses/feedback.
2. Incorporate feasible recommendations into revised implementation schedule.
3. Submit revised schedule to USAID.

Prior to the formal evaluations, the MTET and Africare will prepare scopes of work for the various evaluation participants. The participation of USAID will be sought, if possible, in the development of those scopes of work. Funds are provided in the project budget for the costs of consultants/specialists who will participate.

As part of the project monitoring system, all funds and disbursements will be controlled by Africare. A project accountant will be hired and a formal accounting system will be prepared. This system will be submitted to USAID for approval prior to the start of project implementation.

IV. PROJECT ANALYSIS

1. Technical Analysis

The techniques for successful reforestation efforts in Upper Volta are fairly well understood. Given appropriate species and site selection, adequate site preparation, timely planting, and good plantation maintenance and protection, an acceptable rate of survival can be expected. Often a

critical factor in reforestation projects, especially self-help projects such as this one, is the care provided following planting, care which must come from the villagers themselves.

Using the first year of the project to do the basic groundwork in preparation for subsequent project activities is felt to be an important factor in the eventual success of this project. The identification of successful techniques and activities elsewhere in the sahel and the ongoing intensive sensitization and extension efforts on the village level will help develop the support needed for project success. Such support will not occur until the villagers can identify and appreciate the benefits that will accrue either to themselves directly or the community as a whole. Therefore these preliminary efforts will be very important.

Wherever possible and appropriate, multi-purpose species will be used for planting activities. The use of such species will provide a wider array of benefits and products; fruit, forage, bark materials and other products, as well as fuelwood, poles, or the various protection and conservation benefits sought. A partial list of potential species is given in Appendix 11.

All site preparation, planting, and maintenance activities will be performed through self-help efforts. As such, project personnel will be providing recommendations concerning the types of plantings to use for various purposes and timing, but they will not be directing or performing such tasks. Timely implementation will rest with the villagers.

Because soil erosion control is a major objective, recommended site preparation for multiple-tree plantings will consist of spot clearing (1 m²) not the complete removal of all existing vegetation. Trees will be interplanted among the existing indigenous species and appropriate spacing adjustments made. To promote rapid root development and successful establish-

ment, planting pits of approximately 40 cm x 40 cm x 40 cm will be used. Most trees will be planted either as bare root stock, stumps, or as potted stock. Which type will be determined by the species, and in some cases by site conditions as well. Where conditions will permit, and with appropriate species direct seedling may be utilized. Planting activities should be completed as soon as precipitation, labor availability, and transportation constraints permit. During the actual site preparation and subsequent planting activities, the placement or construction of micro-catchments, diguettes, contour plantings, and other anti-erosion/water control measures will be incorporated when and where appropriate.

Post planting maintenance and protection measures will be case specific. In all situations periodic weeding for one meter around each tree will be done, as necessary, for at least the first three years following planting. This will reduce competitive stress from other vegetation and provide some fire protection.

Protection for the various planting activities will rest with the individuals or groups doing the planting. No funds will be provided by this project for fencing, guards, or other such protective measures. It is felt that if the villagers are truly supportive of the planting activities undertaken, they will protect the trees from the livestock. This assumption is not unreasonable in that villagers presently are using branches and other locally available materials for fencing and protection of trees planted in the Diébougou area. Also, because the region has a much better supply of forage than many areas in Upper Volta, the grazing pressures and resultant hazards to the trees will be less. This assumption is supported in the Diébougou area where there are unfenced plantations of some species which have not required any type of fencing or other livestock protective measures. It is acknowledged that highly palatable species will require some type of protective efforts on the part of the villagers.

A total of \$5,000 will be available, if necessary, to purchase tools needed in support of community planting efforts, such as windbreaks, and other large scale project. These funds will only be used when there is an obvious lack of tools needed to support activity. Approved insecticides will be provided, if the situation at any given planting site warrants their use. Only villagers who receive proper training from project staff on the safe and proper use of pesticides will be issued insecticides, and then only if there is a demonstrated need for their use.

Project personnel will track the effectiveness of various project activities and the actual time and labor costs associated with such activities. This tracking of activities and their associated costs will permit periodic examination of the actual costs and benefits associated with project activities, and will help to develop the information needed for more effective cost/benefit analysis of other such projects. Such periodic self-examination will also permit the project to be more responsive in reacting to obviously successful activities as well as those that are not succeeding.

2. Analysis of Benefits

A wide variety of quantifiable and non-quantifiable benefits are to come from this project. The MTET and the GOUV will benefit from the increased technical competence of their forestry personnel, from an increase in physical facilities, by a change of image for the forestry staff from that of law enforcers to that of a service organization, and from a better informed and motivated citizenry. The people in the region will benefit from increased productivity of their agricultural lands, from an increase in the availability of poles, posts, fuelwood, and other materials, and from an improved living environment.

Building Construction and Vehicles

The expansion of the existing office facilities at Diébougou and Gaoua will permit them to accomodate the increased personnel and activities that will result from the project. Construction of housing at those posts that currently lack housing (after at least one agent has been assigned to the post) will permit agents to reside at their posts, rather than having to live in other areas where housing is available.

Providing the agents with the option to buy a motorcycle, on credit, at project cost, will allow them to perform their duties more efficiently in the hilly terrain of the region. This will also ensure that those people who accept a motorcycle will provide the proper maintenance and care to the vehicle, while reducing the recurrent costs to the government. The purchase of two pick-up trucks and three trailers for the project will improve the transportation of seedlings and other project related needs within the region.

Agent Training

An important aspect of this project will be the periodic training and retraining of personnel. For those agents who have been in the field for several years, training will be supplied to bring their technical knowledge and skills up to date. For all personnel periodic retraining will be provided to keep their skills up to date.

Such periodic training and retraining will improve the technical competence of the MTET staff, both by refreshing prior knowledge and by introducing new ideas. Equally important, it will also help to ensure that all project personnel receive periodic reenforcement of their awareness of the overall objectives of the project, what their roles are in the project, and what the various activities are that fall within the scope of the project.

Outplantings

The benefits from planting activities will depend in part on the various types of plantings that are used. The actual benefits that will accrue are extremely hard to quantify at this time because the types of plantings will depend in part on the initial desires of the villagers and in part on the success of extension efforts.

The introduction of agro-forestry activities is seen as a major objective under this project. These include planting of A. albida and other species, at low densities of approximately 70 trees per hectare, into agricultural fields and the establishment of windbreaks within larger agricultural areas and along the edges of fields. The retention of contour strips of natural vegetation in new agricultural fields and the replanting of contour strips of trees and vegetation into existing fields will be promoted. An effort will be made to introduce live hedging as a replacement for the traditional branch fences and other materials that are currently used locally. (Live hedges will be established around the nurseries, as will other appropriate plantings, to serve as examples for the villagers of some of the types of planting that will be promoted.)

The benefits from agro-forestry plantings will include reduced water and wind erosion of fields and increased agricultural productivity. The plantings will reduce wind speeds, reduce evaporation losses from the soil, and reduce soil surface temperatures. Organic matter will be added to the soil through leaf and litter fall and from the droppings of animals that will gather in the shade during the dry season (after the trees are large enough to no longer require protection). By retarding surface flow of water and by improving the soil structure, such plantings are expected to improve water infiltration and thereby favorably influence local water tables.

The reduced erosion, improved water status, and increased soil fertility are all expected to improve crop yields. The magnitude of the increase is unknown. However, Le Houerou ^{1/} reported studies that found that, at densities of 50 trees per hectare, the shedding of leaves by A. albida was equivalent in fertilization to about 50 tons of manure per hectare per year.

Linear windbreaks and contour plantings could be managed to provide secondary products, such as limited numbers of poles and limited amounts of fuelwood. These would come from controlled thinnings of the windbreaks as the trees grow larger.

Individual household and community amenity planting will be actively promoted. Planting of fruit and shade trees by individual households, and planting of shade trees around markets and other places by community groups will improve general living conditions.

The plantings of individual and community woodlots for pole and fuelwood production is expected. Such block plantings are felt to be of less benefit to the environment than other planting configurations and activities, and as such they will not be promoted with any greater emphasis than other activities. Likewise such block plantings will not be opposed as they will be an available option for those groups and individuals who wish to undertake them.

Potentially significant secondary products from all planting activities will include the production of fruits, leaves and other tree parts used in sauces for cooking or in the preparation of traditional

^{1/}. Le Houerou, H.N. The role of shrubs and trees in the management of natural grazing lands (with particular reference to protein production). FFF/10-0, 1978.

medicines, forage production, increased honey production, and other valued products. Until an intensive study is made of these products and their actual value, however, their monetary value will have to remain unquantifiable.

Villager Training

Training of the villagers will give them the knowledge with which to make wise land and resource management decisions affecting the long-term productivity of their lands. They will begin to appreciate the negative effects associated with uncontrolled burning of fields and grasslands and the complete clearing of agricultural areas. They will become aware of what options are available and they will acquire the means with which to make long-term plans/decisions in the utilization and management of their environment.

Training in tree planting and maintenance will provide the skills needed to undertake the kinds of planting activities that are most beneficial to themselves. It will reduce the risks (probability of failure) associated with tree planting. Training in agro-forestry techniques and soil conservation methods will give them the knowledge and skills to counteract the decrease in agricultural productivity experienced in recent years. The villagers will be able to increase the returns on their labor and improve their personal well being.

Establishment of Mini-nurseries

The establishment of mini-nurseries will initiate a system of small, dispersed self-supporting nursery facilities throughout the southwest region. Such a network will provide a more accessible seedling supply for villagers, as opposed to a few number of larger centralized government nurseries. They will also not be dependent upon outside funding, and as such will not be vulnerable, as the government nurseries are, to having their funding cut.

Benefits Distribution

In order for the villagers to support and take part in project activities, they must benefit from those activities, both directly and indirectly. Rights of ownership and management will remain with people who undertake individual planting activities; they will be purchasing the trees, they should retain control over them. For community sponsored projects, whether amenity plantings, village woodlots, or other activities, the management and distribution of benefits will remain with the community organization or its designated agents. The project staff will be available to provide information and advice on management options (this information will also be presented during extension efforts), but the project will not be imposing any management regimes or benefit distribution schemes.

Economic Analysis

There are two major goals of this project. The first is to establish an effective, trained, and equipped MTEF forestry agent network in the region. The second is to assist the Government of Upper Volta in establishing an effective system in the region to begin to counteract the environmental degradation that has occurred, and which is increasing. A third goal is to begin to educate the population of the region as to their role in influencing the quality of their environment and its productivity, and the options that they have in influencing that environment. The benefits that will be derived from these efforts are unquantifiable and do not lend themselves to a good quantitative economic analysis.

Five planting options were presented in Appendix 15. They ranged from establishing only fuelwood lots to a mix of woodlots and agro-forestry to all household and community shade and fruit tree plantings. A discount rate of 10% was used. The analysis indicated that in addition to being environmentally less desirable, pure fuelwood plantings will probably be less profitable than other planting options.

Recurrent Costs

This project will be working within the existing MTET structure, therefore the additional recurrent costs that will result from the project will be less than they would be otherwise. The additional costs that the MTET will inherit at the end of this project will include the salary of one accountant (if retained), the maintenance of two expanded offices and seven houses, the costs of operating and maintaining three pick-up trucks & trailers, & mileage allowances for the MTET agents who purchase motorcycles under the project.

By promoting the development of privately owned and operated mini-nurseries, rather than building additional centralized nurseries, and by limiting the level of production at the existing nurseries, the recurrent costs to the GOUV are reduced even further. It is expected that the operators of the mini-nurseries will be able to cover the recurrent costs of their facilities through the sale of seedlings. They will also have the added advantage of being able to produce materials for small, localized needs, something that the centralized nurseries would not be able to do.

The analysis in Appendix 15 would indicate that the villagers would be able to recover their cost and labor investments in the various planting activities that they undertake. It should be noted that individual tree planters do not get free seedlings from the MTET. Seedlings, however, are available freely for collective planting, especially in response to national tree planting campaigns (e.g., "tree month") during the rainy season. Therefore, no adverse competition is foreseen for individual mini-nurseries operators or for other individual investors in the planting of seedlings.

3. Social Analysis

The people who will be affected by this project come from diverse cultural and ethnic backgrounds. There are ten ethnic groups that live in the project area. The Dagari and Wilé (numbering about 110,000) and the Lobi (about 140,000) are the largest groups present. The Birifor, Pougouli, Dian, Gan, and scattered groups of Mossi, Fulani and Dioula are also represented. The Dagari, Wilé, and Birifor have similar languages and customs, and are believed to be descendants of the Mossi.

The Lobi, Pougouli, and Dian are still very traditional and closed groups, clinging to their animistic beliefs and not receptive to innovations. On the other hand, the Dagari, the Wilé, and the Birifor seem to be more receptive to change and innovation. In the Gaoua region, many villages are ethnically mixed, and inter-marriage among the Dagari, Birifor, and Lobi is common.

The population density in the Administrative department of Diébougou is an average of 24 people per km². In the more densely populated area around Dissin and Dano, population densities will reach 90 people per km². In the Gaoua administrative department, the average population density is closer to 17 people per km².

In addition to the original resident diverse ethnic groups, the Mossi from the Mossi plateau have also been steadily migrating to the project area especially in the departments of Dano and Dissin farther north in search of more arable land. Owing, too, to adverse conditions (e.g., lack of water and pastures) in the northern and Sahelian regions of the country, cattle herders are increasingly moving their animals to the more agreeable project area. In most cases the herders are the Fulani. With the immigration, then,

of the Mossi and the Fulani into the project area, one would expect a certain degree of cultural invasion. For instance, whereas, the Fulani are largely nomadic and very close to their animals, the Mossi are sedentary farmers who cultivate land, and trade in fuelwood and other commodities.

For herders, their greatest desire is to have fresh grazing lands for their animals. They, as well as other ethnic groups, believe that if grass and other bush lands are not burnt, fresh grass will not grow for their animals to feed on. It is therefore no wonder why a visitor to the project area can see extensive areas of grassland and forest areas burnt down during the dry season.

There is also a general belief among peasant farmers, especially in the project area, that if farmer X does not burn grasslands or forests in his immediate farming area, it will not rain in his area during the next rainy season. Another apparent reason for setting fires by villagers in the project area is the belief that if valuable economic trees such as the Karité (for fruit and butter) and Néré (for fruits, soft drinks, and seeds for condiments) are not "stressed" through burning, they will not be productive during the following season. The villagers, however, fail to realize that while "stressing" a Karité or Néré tree they are destroying millions of other hard-to-replace forest resources such as wild fruits, traditional medicines, breeding grounds for animals they could hunt, freely available firewoods, etc.

Slash and burn farming practices in the project area are also another reason for brushfires that destroy. On the Mossi Plateau this traditional farming practice is used less. But lack of sensitization and education in the project area has left the traditional farmer on his own to continue the destructive activity as before.

We mention on the foregoing pages the various ethnic groups of the project area, coupled with the immigration of the Mossi and the Fulani from the north in order to underscore the fact that this project will impact on various socio-economic groups in various ways.

Sensitization and education will reduce and eventually eliminate bush fires. Their perpetrators will certainly resist this change. But their resistance may not be so crucial as to risk the implementation of the project. Slash and burn farming practices are well entrenched. But, whereas the perpetrators may at first resist, education and sensitization will finally convince them that they could produce equally and even more without necessarily burning.

Ignorance through lack of sensitization, education and the lack of the appropriate means for the MIET personnel in the region have left the villagers to superstitious beliefs that their environment is deteriorating because the ancestor spirits are angry at their offspring. But during visits to a roughly selected sample of eight villages in the project area, the villagers expressed the need to do something positive about their deteriorating environment. The stated objectives of this project are therefore a response to the expressed needs of the communities concerned. The project will certainly bring cultural and social gains to the participating communities and individuals. It will enable residents to participate with least risk to themselves.

Land tenure

The land tenure system in the region is not significantly different from elsewhere in Upper Volta. Here, as elsewhere, the land custodian (Chef de Terre) plays an important role. Land is not sold, rather it is allocated by the land custodian at virtually no monetary cost to the recipient. The land, which is administered by the land custodian, continues to belong to the past, present, and future generations, and to

the land spirits. The traditional chiefs and land custodians therefore have personal interests in any present and future ownership of the land.

Land will be needed in the implementation of this project: as sites for the nurseries, as sites for building construction, as sites for various anticipated planting activities, and for other project activities. There are two public laws in Upper Volta which give authority to the government to claim any thinly populated piece of land for development purposes. These are law No. 77/60 of July 1960 and law No. 29/63 of July 1963. These laws will not be invoked to seize lands that may be needed for project purposes.

The land custodians and traditional chiefs will be called upon to provide the lands needed for this project. Project activities will probably increase the value of the lands used for project purposes. Because of this, there is the hazard that, eventually, a legitimate but silent owner may come forward to reclaim rights to and use of the lands used by the project. To ensure that this does not happen, a piece of land will only be used after the collective consent of the land custodians, village chiefs, and the general population of the appropriate villages has been received. After this collective consent has been given, the project managers will call upon the Prefets to prepare a formal written document, a "Certificat de Palabr ", which will be signed by all parties concerned. Copies of this document will be retained by all parties for future reference in case of disputes or problems. This document has been used successfully by Africare for acquiring lands under the Seguenega project.

Local Participation

It is believed that if the project staff carefully selects the villages and groups that are to be targeted for project activities, active participation, including subsequent protection and maintenance, will occur.

By showing the villagers how the proposed activities do in fact benefit them as opposed to imposing project activities upon them, it is believed that this vital participation and support will come about. The fact is that there has been some tree planting done in the region by villagers in some villages, so it can not be assumed that the villagers either won't have the time or inclination to participate. It is important, however, that the types of plantings undertaken, and the scale of effort required, take into consideration any possible time and labor constraints.

The Role of Women

Women play a significant role in the social and economic activities of village communities throughout the South-west region, as well as the rest of Upper Volta. They are responsible for the care and rearing of children, the preparation of meals, and other household chores. They fetch water and fire wood, often going long distances from their homes and villages. Women actively participate in the preparation of fields for sowing, they weed and help harvest, as well as tending small scale vegetable gardens that are used to meet family needs. In the region women are active participants in the market economy as well. They gather and sell karité and other wild fruits. They gather and sell firewood. They sell yams, grain, vegetables, and other produce, and they manufacture and sell various articles.

The support of the women will be actively sought during the village targeting efforts and subsequent extension activities. The women's inputs and concerns will be sought, not just those of the men. In addition to working with the individual women themselves, the project will seek to work with women's groups, such as the CPFR, in order to better be able to address women's concerns and to gather their support. Their support will be sought not only because they will be among the beneficiaries of the project, through increased agricultural productivity, increased supplies of fuelwood, and other products, but as active partici-

pants in village life, and as the gatherers of fuelwood and other forest products. If the women do not support the project and its activities, the project is more than likely to fail.

B U D G E T S U M M A R Y

	Year 1	Year 2	Year 3	Year 4	Total
Personnel	53,030	52,657	51,797	52,939	210,423
Travel & Allowances	54,566	43,325	41,375	53,798	193,064
Equipment & Supplies	78,742	21,840	15,723	16,743	133,048
Construction	28,000	21,000	-0-	-0-	49,000
Training	17,933	16,583	16,583	16,583	67,682
Other Direct	24,448	24,448	24,448	24,448	97,792
Subtotal Direct Costs	256,719	179,853	149,926	164,511	751,009
Indirect A - 21.45% (Personnel, Travel & Allowances, Training & Other Direct)	32,170	29,389	28,787	31,696	122,042
Indirect B - 10.7% (Equipment & Supplies & Construction)	11,421	4,584	1,682	1,792	19,479
Subtotals	300,310	213,826	180,395	197,999	892,530
Inflation at 10% per year	-0-	21,383	36,079	59,400	116,862
TOTALS	300,310	235,209	216,474	257,399	1,009,392

PROJECT COST SUMMARY

(a) U.S. Contribution

Personnel	210,423
Commodities	133,048
Training	67,682
Travel & Allowances	193,064
Construction	49,000
Other Costs	356,175
Subtotal	1,009,392

(b) Host Country Contribution ^{1/}

Government Personnel (MEET Agents)	52,000
Villager Participation	245,000
Subtotal	297,000

(c) Other Contributions

U.S. Peace Corps ^{2/}	143,328
Africare - Proposal Preparation	10,000
- Support for Nursery Operations	48,000
Subtotal	201,328

TOTAL PROJECT COST 1,507,720

1/ Derivated from Appendix 6

2/ 160,000 less the 16,672 in Volunteer Support provided by the project.

SOUTHWEST REFORESTATION PROJECT

	<u>Personnel</u>	Year 1	Year 2	Year 3	Year 4	Total
01	Africare Forester	32,000	32,000	32,000	32,000	128,000
02	Africare Field Hire Acct.	3,429	3,429	3,429	3,429	13,716
03	Africare H.Q. staff	9,950	10,070	10,202	10,336	40,558
05	Africare Consultants	3,000	4,000	3,000	4,000	14,000
15	Social Security (6% 01,03, 18.5% 02)	3,151	3,158	3,166	3,174	12,649
22	Recruiting	1,500				1,500
	Subtotals	53,030	52,657	51,797	52,939	210,423
	<u>Travel & Allowances</u>					
23	Orientation	1,500				1,500
24	Travel Incidentals and Immunities	350	350	350	350	1,400
25	Relocation: Freight	5,673			5,673	11,346
26	Relocation: Transportation	4,000			4,000	8,000
29	Household Furnishings	5,500				5,500
30	Housing Repair & Maintenance	1,000	3,500	3,500	3,500	11,500
31	Housing Allowance - Forester	2,800	2,800	2,800	2,800	11,200
	PCV's	800	800	800	800	3,200
32	General Transportation & Fuel	21,093	19,175	19,175	19,175	78,618
33	In-Country Subsistance	4,000	4,000	4,000	4,000	16,000
34	Repair/Service Staff Vehicl.	600	1,200	1,500	2,000	5,300
36	Home Leave Travel			2,000		2,000
37	International Transport	4,000	6,000	4,000	6,000	20,000
38	International Subsistance	3,250	5,500	3,250	5,500	17,500

SOUTHWEST REFORESTATION PROJECT

		Year 1	Year 2	Year 3	Year 4	Total
	<u>Equipment & Supplies</u>					
40	Project Equipment A. Trailers (3)		6,000			6,000
41	Project Equipment B. Audio Visual Equipment	6,000				6,000
42	Project Equipment D. Planting tools		588	1,471	2,941	5,000
43	Project Equipment D. Office	2,000	3,000	1,000		6,000
46	Technician Equipment	350	250	250		850
49	Project Vehicles I Trucks (3) & Spare Parts	51,000	4,500	6,000	6,000	67,500
51	Project Vehicles II Mortorcycles (11) & spares for PCV's	16,992	1,152	1,152	1,152	20,448
54	Equipment Repair (41-43)	100	300	500	500	1,400
56	Supplies A: Seed, Sacks, Insecticides at \$40 ea.		200	1,000	2,800	4,000
57	Supplies B: Office	2,000	5,500	4,000	3,000	14,500
65	Photographic Supplies, Print	300	350	350	350	1,350
	Subtotals	78,742	21,840	15,723	16,743	133,048
	<u>Construction</u>					
75	Housing & Office Exp.	28,000	21,000			49,000
	Subtotal	28,000	21,000			49,000

SOUTHWEST FORESTATION PROJECT

		Year 1	Year 2	Year 3	Year 4	Total
	<u>Training</u>					
78	Foreign Language Training (local for forester, French for spouse)	1,400				1,400
79	Technical Publications	200	250	250	250	950
80	Training Materials	5,445	5,445	5,445	5,445	21,780
82	Workshop Travel & Allow.	10,888	10,888	10,888	10,888	43,552
	Subtotals	17,933	16,583	16,583	16,583	67,682
	<u>Other Direct</u>					
84	Freight	4,200	4,200	4,200	4,200	16,800
85	Insurance	500	500	500	500	2,000
86	Taxes & Duties	300	300	300	300	1,200
87	Legal & Audit	12,666	12,666	12,666	12,666	50,664
89	Telephone & Telex	682	682	682	682	2,728
90	Postage	600	600	600	600	2,400
95	Bank Fees & Exchange Losses	5,500	5,500	5,500	5,500	22,000
	Subtotals	24,448	24,448	24,448	24,448	97,792
	Subtotal Direct Costs	256,719	179,853	149,926	164,511	751,009
98	Indirect Costs A: 21.45% (Personnel, Travel & All., Training, & Other Direct)	32,170	29,389	28,787	31,696	122,042
99	Indirect Costs B: 10.7% (Equipment & Supplies & Construction)	11,421	4,584	1,682	1,792	19,479
	Total Direct & Ind. Costs	300,310	213,826	180,395	197,999	892,530
	Inflation at 10% per year		21,383	36,079	59,400	116,862
	T O T A L	300,310	235,209	216,474	257,399	1,009,392

Appendix 1

AFRICARE EXPERIENCE

Africare Experience

Africare is a private, non-profit, tax-exempt organization, headquartered in Washington, D. C. which is dedicated to the improvement of the quality of life in rural Africa, with major concentration in the areas of food production, water resource development, rural health care delivery, and emergency assistance to refugees. In 1971, when Africare was founded, West Africa was experiencing one of the worst droughts in its history, Africare has undertaken both short and long-term programs designed to protect against further encroachment of the Sahara Desert and to restore the physical vitality and human dignity of millions of people affected by the drought.

Africare has field offices currently in Ouagadougou, Upper Volta; Bamako, Mali; Niamey, Niger; Dakar, Senegal; Mogadishu, Somalia; Lusaka, Zambia; and Harare, Zimbabwe.

Short-term assistance has been in the form of foodstuffs, medical supplies, small equipment, wells and nutrition recuperation centers. Long range projects include water resource development (wells, dams and irrigation systems), food production, range management, maternal and child health programs, paramedical training, and construction of rural dispensaries and rural health department buildings.

Presently, Africare's major involvement is in integrated rural development projects. The Tara Hydro-Agricultural project in Niger and the Seguenega Integrated Rural Development project in Upper Volta are representative of Africare's large-scale capability in this field.

Africare has been assisting central and local reforestation activities in the country of Senegal since 1978. Two projects have been carried out by Africare, both originally designed to alleviate serious firewood shortages in several villages. An evaluation in December of 1981 led to some interesting observations.

Also in Upper Volta, assistance was provided to the Forestry Service in helping to restore a one-hectare tree nursery at the village of Tikare in 1975. When originally established, the nursery had been situated on low-lying land to ensure adequate water from the well during the dry season. As a result, however, the nursery would wash out in places each rainy season. With Africare support, it was possible for the forestry service to cut adequate drainage trenches around the three sides of the nursery to curtail flooding during the rainy season. Also, a barbed wire fence was installed, a storage shed built, and the basic garden tools purchased as required for nursery operation.

In 1978, the Regional Development Organization of Yatenga requested funds from Africare to assist villagers in establishing a four-hectare reforestation plot in Sittigo over a period of two years. Villagers were expected to clear the land, dig holes for the seedlings, gather fence posts, construct a fence, and water the seedlings. Africare provided funds for the purchase of materials to construct fencing, hand tools and watering cans as well as for the transport of materials. Work began in 1978 and 883 Neem, Nere and Prosopia trees were planted on two hectares.

Since 1978, revegetation and soil conservation activities have been integrated with the other work under the Seguenega Integrated Rural Development project (e.g., intercropping and windbreaks), and are being undertaken on small village plots with ORD support. Of a total of about 150 hectares to be reforested throughout Seguenega over the five-year period, 65 have been planted. The selection of trees and other vegetation is being made according to fruit, firewood, medicinal plant, forage crop and soil conservation needs; and priority consideration is being given to plants of indigenous species. Seedlings are supplied from project-improved nurseries at Seguenega and Ouahigouya, which are vestiges of earlier private funding revegetation efforts of Africare now serving the larger U.S. Government-funded project.

In the Thies/Kaolak region, local communal organizations, with assistance from the Forestry Service, established several "woodlots" (between 5 and 20 hectares each). Thanks to excellent cooperation between the regional agents and the local population, stands were established and maintained with a minimum of "outside" inputs and costs. Weeding, protection against animals, and fire maintenance is carried out by the local people. The woodlots in the Djourbel region are prepared with and turned over to villages quasi-cooperatives contributing labor on a self-help basis. The members of the cooperatives are being trained by the Forestry Service and U.S. Peace Corps Volunteers to maintain the lots and to control the harvest of wood for fuel and for construction purposes.

The earliest efforts of Africare in revegetation and soil conservation have been in Upper Volta. In 1974, support was provided for a government tree nursery in the town of Ouahigouya, which serves as headquarters for the Northern Department. Funds were used to renovate the well at the nursery and to purchase badly needed fencing and plastic pots. At a time when re-forestation was of a lower priority than other emergency needs and when local finances were severely strained by the effects of the drought, the assistance by Africare was particularly critical to the functioning of that nursery. This support to the nursery had been planned and undertaken through the Yatenga ORD, with which Africare had been collaborating in other rural development efforts.

In 1975, a small-scale integrated rural development project was initiated in the Seguenega Sector of the geographical zone covered by the Yatenga ORD. This project consisted of constructing wide diameter wells at each end of designated hectares of land, watering the land manually for vegetable production, and planting trees around the perimeter of the land. The trees were to serve not only as windbreaks and for keeping out animals, but also as a soil conservation measure. On maturity, the trees would provide firewood for villagers in an area where presently firewood to cook food costs more than the food itself.

SUMMARY OF AFRICARE'S REFORESTATION PROJECTS

SOMALIA:

- 1) Adele Sand Dune Stabilization:
Donor: Presiding Bishop Fund \$25,000
Contact: Rev. Samie Habiby
Presiding Bishop's Fund
The Episcopal Church Center
815 2nd Avenue
New York, NY 10017

Africare is assisting the Adele local community in its efforts to stabilize shifting sand dunes in and around their town. Under the project 40 hectares will be stabilized over a 12 month period.

- 2) Brava Sand Dune Stabilization:
Donor: Presiding Bishop Fund \$20,400
Contact: See above

Africare is assisting the Brava local community to tackle the problem of sand dunes by providing tools, implements, diesel fuel credits and tea money. Labor will be provided in the form of self-help.

SENEGAL:

- 1) Village Woodlot Firewood Production (9/80-12/83):
Donor: USAID \$211,344
Contact: Dave Shear
USAID Mission Director
Dakar, Senegal

This project is to assist the Government of Senegal and inhabitants of rural areas to establish individual wood lots at the rate of 9 hectares or 5,625 trees per year in each of 40 participating villages.

- 2) Reforestation Project in Five Rural Villages:
Donors: USAID \$126,230
Contact Person: Dave Shear
USAID Mission Director
Dakar, Senegal

Al Dir'iyyah Institute \$25,000
Contact: William Marvin, Executive Director
1925 N. Lynn St. #1148 (703) 522-1170
Arlington, VA 22209

Africare has been working with the forestry service and villagers around Mbellonguithe to establish a twenty hectare reforestation zone. A related grant received from AID in enabling Africare

to support the forestry service in establishing one hundred hectares of reforestation in five villages of the Thies and Sine-Saloum Region.

UPPER VOLTA:

1) Small Scale Rural Development at Seguenega:

Donor: Lilly Endowment \$50,000
Contact: Mr. Richard O. Ristine
Lilly Endowment Inc,
2801 N. Meridian St.
Indianapolis, IN 46208
Tel: (317)924-5471

Africare received a grant from Lilly to undertake construction of wide-diameter wells at each end of designated hectares of land for watering vegetables manually, and of planting trees around the perimeter to serve as windbreaks and keep out the animals. The trees assisted in soil conservation and, upon maturity, will provide firewood in a locale where wood to cook presently costs more than the food being prepared.

2) Seguenega Integrated Rural Development Project:

Donor: US AID \$ 5.9 million
Contact: John Becker
USAID/OUAGADOUGOU, AGRICULTURAL PROGRAMS OFFICER
SIRD

A five year AID financed project for Seguenega reforestation and soil conservation activities are being integrated with general rural development, extension, cooperative organization village credit, well construction, Young Farmer training, functional literacy, vegetable and livestock production. The project intends to plant a minimum of 150 hectares throughout Seguenega over the five year period.

Appendix 2

LOGFRAME

PROJECT DESIGN SUMMARY

LOGICAL FRAMEWORK

Project Title & Number: South-West Regional Reforestation Project

BRIEF SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Project Goal</u></p> <p>Goal of the Southwest Regional Reforestation Project is to develop the ability of MPET to effectively assess the environmental degradation that is occurring in the South-west region and to initiate an effective village-level intervention system (Bois de Village system).</p>	<p>MPET agents have training and experience in effective village sensitization and extension techniques. They are experienced and knowledgeable in the benefits and uses of various agro-forestry techniques as well as those of other planting configurations. They are trained and knowledgeable in various tree planting and maintenance techniques and in soil and water conservation methods.</p> <p>MPET agents have the materials and equipment needed to permit them to effectively perform their assignments throughout the region.</p> <p>The extension activities and outplantings are actively supported by the villagers themselves, who actively participate in the planning and implementation of activities.</p> <p align="center"><i>BEST AVAILABLE COPY</i></p>	<p>Examine the training records and training plans for the agents.</p> <p>Examine the project evaluations and the various reports that are generated during the life of the project.</p> <p>Examine the equipment and supplies available to the MPET agents.</p> <p>Examine project related activities in the target villages the amounts of outplantings, their diversity, success (post-planting maintenance and protection), and the extent to which soil and water conservation activities have been incorporated into agricultural and other village activities.</p> <p>Talk to the MPET agents and villagers to get their opinions of the project, its weaknesses and strengths. Seek their inputs.</p>	<p>The GOUV will continue to support project activities.</p> <p>The proposed project activities will improve the wellbeing of the villagers.</p> <p>There are no climatic or political events which will threaten continuation of the project.</p> <p>Funds provided for this project are used for their intended purposes.</p>

BRIEF SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Project Purpose</u></p> <p>to counteract the environmental degradation that is taking place in the region of the southwest because of increasing population pressure on agricultural production while protecting and utilizing the existing resources (soils, water, natural resources).</p> <p>to inform villagers as to their options on their environment and to discuss options that they have vis-à-vis land utilization and management. Provide appropriate training and information on such options.</p>	<p><u>Conditions that Indicate Success</u></p> <p><u>EOP Status</u></p> <p>Active community participation in project sponsored activities.</p> <p>Up to 115,000 seedlings of various species distributed in 115 villages during the life of this project. Plantings consist of windbreaks, live hedges, contour plantings in fields, planting of appropriate species into fields, fruit tree and amenity plantings, and fuelwood lots.</p> <p>Contoured strips of natural vegetation will be left in new areas cleared for agriculture, and replanted into existing fields. Contour planting of crops will be practiced, and various soil and water conservation measures, such as construction of micro-catchments and diguettes will be practiced.</p> <p>Agricultural productivity/crop production will be increased because of the above activities.</p>	<p>Observe the villages and towns.</p> <p>Observe plantings in agricultural areas.</p> <p>Discuss crop production trends with the villagers, and compare future official crop production figures as they become available to production in the department prior to the project.</p> <p>Discuss with the villagers the types of training and information that they are receiving and the methods by which it is being presented.</p>	<p><u>Assumptions Affecting Purpose to Goal Linkage</u></p> <p>The villagers accept that the proposed activities will benefit them and it is in their interest to participate.</p> <p>The villagers have the time, labor, and land needed to permit project implementation.</p> <p>Effective training and extension techniques are developed and used by project personnel.</p> <p>Project personnel are successful in identifying those villages and villagers most motivated and willing to participate.</p> <p>The villagers actively participate in the planning and development of project planting and villager training activities.</p>

BRIEF SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
	<p>Up to 3,000 villagers will be sensitized and have received training in agro-forestry, soil and water conservation, and other subjects.</p> <p>Villagers from non-targeted villages will be seeking to be involved in future project activities. Those from target villages will seek additional activities.</p>		
<p>ts</p> <p>MTET has an effective forestry organization in and functioning in provinces of Bougouriba and Ni.</p>	<p><u>Magnitude of Outputs</u></p> <p>Up to 20 Forestry Agents and one Accountant are trained and experienced in the region.</p> <p>Up to seven additional agents houses are built for those posts where housing does not currently exist. The two MTET offices are expanded to accommodate greater MTET activity in the department.</p> <p>Two additional pick-up trucks, three trailers, and up to nine motorcycles and helmets are available for MTET needs in the region.</p> <p style="text-align: center;"><i>BEST AVAILABLE COPY</i></p>	<p>Observation of MTET facilities, training records, reports, and visits to the target villages.</p>	<p>Continued MTET support.</p> <p>Continued villager support.</p> <p>The MTET assign the necessary staff to the two Provinces.</p>

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p data-bbox="58 327 451 477">n effective village-level reforestation/conservation program is in place and functioning (Bois de Village Program)</p> <p data-bbox="58 1103 478 1186">system of small, privately owned mini-nurseries is initiated within the region.</p>	<p data-bbox="529 327 1045 477">Up to 115 villages participate in tree planting activities: 10 villages in the 2nd year, 30 villages in the 3rd year, and 75 villages in the 4th year.</p> <p data-bbox="529 512 1018 662">Up to 3,000 villagers are sensitized and receive training and information about agro-forestry plantings, and other conservation techniques.</p> <p data-bbox="529 695 1060 1065">Up to 115,000 seedlings could provide live hedging for 7 1/4 ha blocks, 0.5 km of windbreak in each village, 5 ha per village of crop lands that have <u>A. albida</u> and other species planted at 70 trees per ha, and up to a total of 28 ha of village or private woodlots planted. An additional 150 trees per village would be available for fruit tree and amenity planting.</p> <p data-bbox="529 1099 1054 1252">75 privately owned and operated mini-nurseries (500 tree capacity each) are established. 5 during the 2nd year, 20 during the 3rd year, and 50 during the 4th year.</p> <p data-bbox="592 1375 898 1405">BEST AVAILABLE COPY</p>		

I/VE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<u>s</u>	<u>Magnitude of Inputs</u>	<u>Means of Verification</u>	<u>Important Assumptions</u>
<u>tribution</u>			
ersonnel	210,423	Periodic reports to the agencies concerned, reporting expenditures and achievements.	Continued GCUV/MTET support.
raining	67,682		
ommodities	133,048		
onstruction	49,000		
ther Costs	356,175		
<u>Country Contribution</u>			Continued USAID support.
ersonnel	52,000		Villagers willing and able to participate in self-help projects and support project activities.
villager Contribution	245,000		
<u>Contributions</u>			
ce Corps	143,323		
are	48,000		
	<i>BEST AVAILABLE COPY</i>		

Appendix 3

LIST OF PERSONS CONTACTED DURING PROJECT DESIGN

List of names of people contacted
during project design mission

1. Mr. B. Sylvestre Ouédraogo, MTET
2. Mr. Joseph Zongo, Director of Forestry Management and Reforestation, MTET
3. Mr. Alfred Zongo, Chief of Reforestation, MTET
4. Mr. Mamadou Ouédraogo, Regional Director of the Environment and Tourism, Bobo-Dosso
5. Mr. Zackaria Sawadogo, Chief of the MTET Canton of Diébougou
6. Mr. Sibiri Jean-Emmanuel Tiendrébéogo, Forestry Agent at Gaoua
7. Mr. Théodore Séogo, Forestry Agent at Kampti.
8. Mr. Geroges Emmanuel Ky, Prefet, Department of the Southwest
9. Mr. Ignace Ouédraogo, Secretary-General, Department of the Southwest
10. Mr. Barnabé Kaboré, Sous-Prefet, Kampti.
11. Mr. Salam Yaméogo, Representative, Ministry of Planning at Gaoua
12. Mr. Jacob Coulibaly, Director, Bougouriba ORD
13. Mr. Schlader, Assistant and Technical Director, Bougouriba ORD
14. Mr. Sibiri Traore, ORD Sector Chief, Dissin
15. Mr. Pierre Sakonde, Forestry Agent at Dissin
16. Mr. Desire Some, ORD Forestry Agent at Diébougou
17. Mr. Marcelin Some, Forestry Agent at Diébougou
18. Mr. Oscar Poda, Technical Forestry Agent at Diébougou
19. Mr. Thiron Kieta, ORD Nursery Specialist at Diébougou
20. Mr. Loren Somda, Chief Animator and Project Coordinator for CPER (Center for Rural Feminine Promotion) in Dissin
21. Sous Prefet, Dano
22. Mr. Adama Baye, ORD Sector Chief, Dano
23. Mr. Kevin Mullally, USAID Ag Program Officer, Ouagadougou
24. Mr. John Becker, U.S. AID Programming Specialist, Ouagadougou
25. Mr. Wayne McDonald, Associate Peace Corps Director, Forestry and Fisheries, Ouagadougou
26. Mr. Issa Coulibaly, Regional Director, MTET, Bobo Doso.

Appendix 4

VILLAGER-SURVEY QUESTIONS USED IN INITIAL
PROJECT DEVELOPMENT PHASES

Survey Questions Used in Project Design

- 1 a) How many crops do you plant per year, what kinds?
 - b) How far are your fields from your village?
 - c) Were they at one time closer?
 - d) How far will go next year? How far will your children have to go to plant their food?
 - e) Has the village environment (land, water, trees) changed much since you were a child?
 - f) Can you do anything about those changes?
-
- 2 a) Are there people in the community who have a special interest in the problems of the land?
 - b) Can those people form an organization or a committee that would identify and propose solutions to natural resource problems?
 - c) The people on this committee would receive training, would they be willing to leave the village for 4-5 weeks?
-
- 3 a) What are your favorite trees?
 - b) How do you use them?
 - c) Would you buy seedlings to put in your garden?
 - d) How much could you pay for them?
-
- 4 a) How much wood do you use to make your food?
 - b) How far do you have to go for it?
 - c) How far did you have to go 1 year ago?
2 years ago? 4 years ago?
 - d) How far will you have to go tomorrow? 2 years from now?
 - e) What will your children do for firewood?
 - f) Would you like to plant trees for wood so that 6-7 years from now you would have your own supply?
-
- 5 a) Have you ever seen an improved woodstove? Would you like to buy one?

Appendix 5

REQUEST FOR INTERVENTION
IN NURSERY OPERATIONS

DIRECTION DE L'AMÉNAGEMENT
FORESTIER ET DU REBOISEMENT

N° 121 D/A:F/R

Ouagadougou, le 14 FEV. 1983

*Le Directeur de l'Aménagement
Forestier et du Reboisement*

Reçu le 15 FEV. 1983

à Monsieur le Représentant Résident de AFRICARE
à OUAGADOUCOU

OBJET : Projet de Reboisements Villageois
et Familiaux dans le Département du Sud-Ouest
DIEBOUGOU.-

Par la présente, j'ai l'honneur de vous demander ce que devient le projet ci-haut cité en référence dont votre Organisation recherche le financement.

A notre niveau, nous déployons toujours des efforts pour installer et faire fonctionner cinq (5) pépinières (Diébougou, Gaoua, Dano, Dissin, Kampti) avec le ferme espoir que le projet AFRICARE prendra la relève dès le 1er Janvier 1984 au plutard.

Lors de nos différentes discussions, il m'avait semblé que l'US.-AID avait déjà obtenu pour le défunt projet YAKO des sommes pour le démarrage des travaux. Peut-être serait-il indiqué que ces sommes soient mises à la disposition de AFRICARE en attendant que les démarches officielles viennent couronner nos efforts.

Dans tous les cas, nous comptons sur vous pour une issue heureuse de notre requête et vous assurons de notre entière disponibilité à vous apporter toute information que vous jugerez nécessaire./-


ZONGG Joseph
Ingénieur des Eaux et Forêts

Appendix 6

DOSSIER DE PRESENTATION
PROJET DE REBOISEMENT VILLAGEOIS ET FAMILIAUX
DANS LE DEPARTEMENT DU SUD-OUEST

MINISTÈRE DE L'ENVIRONNEMENT
ET DU TOURISME

--oo0--oo0--

DIRECTION DE L'AMÉNAGEMENT
FORESTIER ET DU REBOISEMENT

--oo0--oo0--



REPUBLIQUE DE HAUTE-VOLTA
Unité - Travail - Justice

--oo0--oo0--



OSSIER



E



RESENTATION



PROJET DE REBOISEMENTS VILLAGEOIS ET FAMILIAUX
DANS LE DEPARTEMENT DU SUD-OUEST

GAOUA - DIBBOUGOU

Année souhaitée pour le
démarrage du projet

: 1er Janvier 1982

Durée du projet

: 1982 - 1986 (5 ans)

Organisme du Gouvernement

: -Ministère de l'Environnement et du Tourisme
- Direction de l'Aménagement Forestier et du Reboisement

Financement

- Contribution villageoise : : 115.200.000 F.CFA
- Contribution Gouvernementale : : 15.600.000 F.CFA
- Aide sollicitée : : 256.800.000 F.CFA

MARS 1981/

La coordination, la gestion et le suivi des actions du projet seront assurés par l'Unité "Bois de Villages" travaillant au sein de la Direction de l'Aménagement Forestier et du Reboisement. L'essentiel cependant des activités du projet sera réalisé par l'intermédiaire des structures déjà en place ou à créer ; Inspection Forestière du Sud-Ouest, Cantonnement Forestier, Postes Forestiers pour le travail sur le terrain.

II. - CADRE ET JUSTIFICATION

2.1. Généralités

La Haute-Volta est un pays essentiellement agricole, 95 % de sa population vit de l'agriculture. Pour les villageois l'approvisionnement en bois de feu et de construction et autres produits forestiers est un volet très important de la satisfaction des besoins en produits de première nécessité : le bois est pratiquement l'unique source d'énergie à disposition pour la cuisson des aliments, le bois est un matériau de base essentiel pour l'habitat et les activités agricoles, les produits forestiers accessoires (fruits, baies, feuilles, fibres etc.) représentant une source non négligeable de produits pour la cuisine et les activités domestiques.

Les ressources forestières en Haute-Volta consistent principalement en boisements de type savane arborée et boisée de densité variable mais en général faible, particulièrement dans les zones sahélienne et soudanienne du pays. En effet, là où les demandes de bois sont fortes, les ressources ont déjà disparu. La consommation excède l'accroissement et il est certain que la déforestation s'accélère très rapidement en Haute-Volta. Uniquement pour Ouagadougou, les surfaces déboisées annuellement dans les campagnes autour de la capitale ont été évaluées entre 6.000 et 13.000 ha (Rap. SALD N° 40). Cette situation est inquiétante pour le milieu rural :

- les boisements naturels tendent à disparaître suite à l'exploitation exagérée qui en est faite sans que les exploitants prennent des mesures pour la reconstitution de ceux-ci ;

- la source de combustibles à grande échelle obligeant à parcourir de longues distances pour s'approvisionner en bois. Ce qui amène les paysans à utiliser les tiges de mil et la bouse de vache comme combustible, contribuant ainsi à l'épuisement des sols dans un pays où l'emploi de l'engrais est rare et onéreux ;
- le couvert arboré disparaissant, le micro-climat devient peu propice aux activités humaines (chaleur, vent desséchants, etc) mais en revanche favorise l'érosion, la perte de productivité agricole, la dégradation de l'environnement.

Les Autorités Voltaïques ont entrepris un programme important de plantations dites "Industrielles" destinées avant tout à approvisionner les grands centres urbains. Mais, de par leur nature, ces plantations doivent être surtout concentrées sur des surfaces importantes, d'un seul tenant, situées sur des domaines étatiques. Les résultats de cet effort national seraient incomplets si, parallèlement, le monde rural n'y participait pas dans la même mesure, sur les terres privées et communautaires.

III. - OBJECTIFS DU PROJET

Les objectifs du projet sont multiples.

Dans l'immédiat, il s'agit de permettre la réalisation d'actions de reboisements dans le cadre des opérations de développement rural.

A moyen et à long termes les buts principaux sont :

- contribuer à la satisfaction des besoins de la population rurale en combustible et bois d'œuvre, l'exploitation du bois pouvant commencer environ 5 à 10 ans après la plantation ;
- favoriser la reconstitution d'un environnement propice aux activités sociales (ombre, marchés, etc.) et agricoles (lutte contre l'érosion hydrique et éolienne micro-climat, augmentation de la fertilité, etc.) ;

- contribuer à fournir aux villageois des produits destinés à la consommation (fruits), au bétail (arbres fourragers), à la pharmacopée (feuilles, écorces, etc.) et à l'artisan ;
- dans certains cas créer des ressources complémentaires de revenus (vente de bois, fruit, tanin, etc.) ;
- à long terme, un des buts les plus importants étant d'apprendre et de donner aux villageois les moyens de prendre en main eux-mêmes la conservation et la reconstitution de ces ressources naturelles essentielles à leur vie domestique et à l'équilibre écologique des terroirs.

IV. - PLACE DU PROJET DANS LES CADRES INSTITUTIONNEL ET OPERATIONNEL NATIONAL

Le projet s'inscrit dans le cadre des objectifs du pays visant la satisfaction des besoins en produits locaux de première nécessité et répond aux directives gouvernementales concernant la lutte contre la désertification.

Il s'intègre complètement dans le cadre des institutions existantes et de leurs opérations. Plus particulièrement :

- la Direction de l'Aménagement Forestier et du Reboisement (Ministère de l'Environnement et du Tourisme) et les Inspections Forestières ,
- les Cantonnements Forestiers,
- les différentes sortes de groupements villageois.

V. - DESCRIPTION DES OPERATIONS

Les opérations décrites ci-dessous découlent, pour une grande part, des expériences faites lors de différentes actions de reboisements villageois réalisées précédemment en Haute-Volta.

.../...

Il est important de préciser qu'il s'agit ici de description générale des opérations prévues et qu'il n'y aura pas lieu de s'y conformer strictement. En effet, une des leçons principales des expériences précédemment citées est que chaque village constitue un cas qui doit être considéré individuellement avec ses besoins et possibilités particuliers.

5.1. Sensibilisation

Cette étape est cruciale pour la réussite des opérations. Tout d'abord il est nécessaire que les responsables administratifs et leurs Agents sur le terrain soient conscients des problèmes, de l'attitude à adopter et des techniques à suivre lors des campagnes de sensibilisation sur ce sujet particulier auprès des villageois. Des tournées d'explication, séminaires de formation et enquêtes seront organisés à cet effet.

Après contact et information auprès des Autorités régionales et locales l'essentiel des campagnes de sensibilisation et de la mise au point de l'action dans chacun des villages sera réalisé par les Agents Techniques, les Préposés. Cette action devra se réaliser par le canal des structures des villages : Chefferies, organisations ou associations communautaires, familiales, (organisation de palabres).

Afin de faciliter la prise en main des opérations de reboisement par les villageois, il est essentiel que ceux-ci soient d'une part, bien informés sur les conditions de réalisation de l'opération (travaux à faire, à qui cela profitera-t-il et comment se feront les récoltes, responsabilité d'entretien etc) et, d'autre part, qu'ils aient la possibilité d'avoir leur mot à dire quant au choix des priorités, grandeur et nature des travaux, essences à planter (y compris arbres fruitiers) etc... Enfin si l'attitude de la population est positive et qu'elle n'est pas encore structurée pour réaliser de tels travaux il faudra l'aider à s'organiser d'une manière adéquate.

5.2. Choix des villages

Dans les Sous-Préfectures de Gaoua, Batié, Dano, Diéboug, Kampti, Nako, les villages ont bien compris la nécessité du reboisement et ont répondu nombreux à l'appel lancé.

Le système de la plantation familiale a été bien accepté par les paysans et pour les raisons suivantes :

- propriété privée revenant à la famille
- protection plus suivie par les membres de la famille
- difficultés rencontrées pour l'obtention d'un terrain pour la plantation communautaire en particulier au Centre du pays où les terrains de cultures font défaut.

5.3. Reboisement

5.3.1. Conditions et possibilités

Pour avoir des chances de réussite il faut que les villageois puissent assurer l'opération :

- du choix d'un terrain de qualité raisonnable (ne pas envisager des plantations vouées à l'échec) ;
- de la fourniture d'une main d'œuvre volontaire suffisante (environ 200 hj/ha) ;
- de l'entretien des plantations durant les 3 premières années (nettoyements, entretien des pare-feux, clôture etc) ;
- d'un gardiennage adéquat.

En foi de quoi le projet pourra offrir en particulier les possibilités suivantes (en fonction de chaque cas spécifique) ;

- en première étape la fourniture gratuite des plants (en deuxième étape la fourniture des moyens pour que les villageois produisent eux-mêmes les plants : mini-pépinières) ;

- la possibilité de les planter en partie en lots communautaires et en partie sous forme de plantation individuelles ;
- la possibilité de réaliser certaines plantations en cultures associées (Toungya) ;
- dans certains cas la possibilité de protéger des boisés encore existants et d'y réaliser des regarnis
- la fourniture d'un certain nombre de plants fruitiers
- la fourniture d'outils et d'insecticides ;
- la fourniture des moyens destinés à faciliter le gardiennage (clôtures fils barbelés/zéribas, grillage haies vives) ;
- dans certains cas la fourniture de moyens de transport et d'arrosage tels que charrette, âne, citernes et de matériaux pour amener l'eau, puits etc. ;
- une subvention pour des repas collectifs.

5.3.2. Travaux

L'envergure des travaux sera adaptée aux possibilités humaines et foncière du village. En règle générale il s'agira d'une plantation annuelle de l'ordre de 2 hectares. Les techniques de plantation seront en principe celles appliquées généralement pour le reboisements faits manuellement et évoquées brièvement ci-après.

- prise des dispositions pour la fourniture des plants. Soutien aux pépinières, commande de plants forestiers et fruitiers, au besoin récolte de graines, semis, production de plants en pots et à racines nues ;
- préparation des plantations dans les villages ; Débroussage, piquetage, trouaison et façonnage de l'emplacement en fonction de la situation (techniques conservations des Eaux et du Sol), réalisation d'un pare-feux, clôture.
- Mise en place des plants :
Transport des plants aux villages, traitement du trou de plantation contre les termites (suivant l'espèce plantée), plantation.

- semis directs (suivant les essences choisies) ;
- un désherbage durant la saison des pluies et à la fin de l'hivernage ;
- gardiennage.

5.3.3. Les essences à employer

Il ne s'agira pas d'imposer une essence à toute situation. Le choix dépendra de la station et des buts visés par les villageois (production de bois, ombre, fruits, agro-foresterie, lutte contre l'érosion etc.) Cependant il faudra faire une part importante aux essences dont la technique de culture est maîtrisée ; ceci tout en réalisant des essais avec certaines essences qui correspondent aux vœux des villageois et qui semblent bien adaptées aux stations.

D'une façon générale, l'essence forestière qui a rencontré le plus grand succès dans les reboisements villageois jusqu'à présent est le neem (*Azadirachta indica*).

Mais, suivant les caractéristiques des stations et les buts visés, d'autres essences introduites et locales, pourront être utilisées ou essayées tels que :

- pour le bois et l'ombre :

Eucalyptus sp.
Cassia sp.
Acacia sp.
Gmelina arboreau
Dalbergia sissoo
Bombax costatum
Khaya senegalensis
Anogeissus leiocarpus, etc.

- pour les fruits, des arbres typiquement fruitiers, tels que manguiers et citronniers, mais aussi des espèces de type forestier :

Parkia biglobosa (néré)
Butyrospermum parkii (karité)
Tamrindus indica
Balanites aegyptiaca
Anacardium occidentale

- pour les boutures :

Acacia sp.
Balanites aegyptiaca
Combretum sp.
Grewia sp.
Bauhinia sp.
Zizyphus mauritiana
Prosopis sp.
evt. Ailanthus excelsa

- pour les feuilles, fibres et autres produits :

Adansonia digitata (baobab)
Borassus sethiopium (rônier)
Bombax costatum.
Ceiba pentandra

- pour les haies vives :

Euphorbia sp.
Parkinsonia aculeata
Moringa pterygosperma
etc.

Dans la mesure du possible les plants seront produits en sachets plastiques (par semis direct ou repiquage après germination mais pour certains il sera plus avantageux de réaliser un semis direct avec une bonne protection par la suite.

5.4. Le Suivi

Il s'agit d'une étape non moins importante que les autres. Bon nombre d'actions de reboisements villageois ont abouti à des échecs après quelques années parce qu'ils n'avaient pas fait l'objet d'un suivi adéquat. Celui-ci peut se résumer de la façon suivante :

- visites régulières, conseils et soutien aux opérations d'entretien, de protection, de regarnissage
- enquêtes périodiques afin d'apprécier le degré de succès, l'état réel des plantations, des coûts etc. ; cette auto-évaluation conduisant à décider des changements à apporter dans la poursuite des opérations ;

- formation et aides à quelques villageois, y compris les femmes, en vue de l'établissement de mini-pépinières pouvant assurer l'autonomie du village en matière de fourniture de plants (maîtrise complète de toutes les opérations) ;
- recyclage périodique des Agents de développement ;

VI. - Encadrement

Pour l'exécution du projet, l'encadrement se fera à deux niveaux :

6.1. Niveau Central

La supervision générale du programme de reboisement sera assurée par "L'Unité Bois de Villages" de la Direction de l'Aménagement Forestier et du Reboisement.

6.2. Niveau Régional

L'Inspection Forestière de Gaoua assurera la supervision technique, la sensibilisation de la population en collaboration étroite avec les Chefs des différents Postes Forestiers.

6.3. Personnel disponible en 1980

Tous les postes forestiers sont dotés d'agents. Au début du projet, il faudrait :

- un (1) Contrôleur des Eaux et Forêts
- sept (7) autres agents forestiers pour assurer une meilleure exécution du projet.

VII. - Estimation des coûts du Projet

Les coûts se situent aux niveaux suivants :

- 1°/ Entretien et fonctionnement des pépinières
- 2°/ Encadrement
- 3°/ Protection des plants
- 4°/ Construction
- 5°/ Formation des agents et évaluation du projet

7.1. Entretien et Fonctionnement Pépinière

- nombre de pépinière : 5
- nombre de main-d'œuvre : 50
- coût: estimé/an/pépinière : 5.000.000 F.CFA
- coût total/an/5 Sous-Préfectures : 25.000.000 F.CFA

7.2. Encadrement

- Niveau régional

- a) Achat d'une camionnette 404 pour le Chef de Cantonnement : 1.800.000 F.CFA
 - b) Fonctionnement véhicule/an : 1.000.000 F.CFA
 - c) Achat de 7 motos H.T. plus fonctionnement : 1.000.000 F.CFA
 - d) Indemnités diverses : 600.000 F.CFA
- Total = 4.400.000 F.CFA

7.3. Protection des Plants

Le taux de réussite d'une campagne de reboisement villageois et familial est lié à une série de facteurs plus ou moins contrôlables.

Le facteur le plus important et le plus imprévisible est la répartition pluviométrique durant les mois de plantation i.e. aux mois de Juillet-Août. Une mauvaise répartition pluviométrique est catastrophique pour l'ensemble de la campagne. Par contre une trop forte pluviométrique rend difficile d'accès les sites à rebois et augmente de ce fait le taux de pertes des jeunes plants entreposés.

Les autres facteurs qui jouent un rôle important dans la réussite des plantations sont :

- l'entretien des zones reboisées. Un bon entretien de plantations dépendra de l'intensité de l'effort d'encadrement auprès des populations ;

.../...

- la protection des jeunes plants contre les feux de brousse. Cette protection est facilement réalisable par la confection des pare-feux ;
- la protection contre les attaques d'insectes surtout des termites. Ceci nécessite la mise à la disposition des paysans des produits phyto-sanitaires ;
- la protection contre les animaux, les plantations autour des habitants devront nécessairement être clôturées ou tout au moins bénéficiées d'une surveillance soutenue ;
- les résultats enregistrés dans d'autres projets de reboisements villageois varient entre 0 et 90 % de réussite. Le taux moyen de réussite est de l'ordre de 50 %. Nous pensons qu'en assurant une protection efficace des jeunes plants contre les attaques des insectes, et des animaux, ce chiffre pourrait être ramener entre 70 et 80 %.

Plusieurs méthodes de protection des plants sont en expérimentation (utilisation de fil barbelé, grillage, répulsif chimique, haie vive etc.) En attendant les conclusions de ces expériences, seule l'utilisation du grillage apparaît comme l'alternative valable, cela coûte cher.

- Nombre de Cantonnement	:	1
- Nombre d'hectare/an	:	60
- Nombre de mètre de grillage nécessaire pour 60 ha	=	60 x 400 = 24.000 m
- Coût du grillage/mètre	=	600 F.CFA
- Coût total du grillage 24.000 m x 600 F	=	<u>14.400.000 F.CFA</u>

7.4. Construction

Il est prévu la construction et l'équipement d'un bureau et de deux (2) logements dans chacune des Sous-Préfectures.

.../...

- Préparation du terrain	75 hj
- Piquetage	4 hj
- Touaison	25 hj
- Plantation	6 hj
- Entretien	50 hj
	160 hj

Le taux horaire actuel est de 90 F.CFA pour une durée de 8 heures/jour soit : $90 \text{ F} \times 8 \dots\dots\dots$ 720 F.CFA

Le coût d'un hectare de plantation est de :
 $720 \text{ F} \times 160 \text{ hj} \dots\dots\dots = 115.200 \text{ F.CFA}$

Pour les 1000 ha en cinq (5) ans

a) Nombre d'hommes jours
 $160 \text{ hj} \times 1000 \dots\dots\dots = 160.000 \text{ hj}$

b) Coût exprimé en F.CFA
 $160.000 \text{ hj} \times 720 \text{ F.CFA} \dots\dots\dots = \underline{115.200.000 \text{ F.CFA}}$

Récapitulation Générale du Coût du Projet pour l'Année
de Démarrage 1982

A) Aide sollicitée

- Pépinière	= 25.000.000 F.CFA
- Encadrement	= 4.400.000 -"-
- Protection des plants	= 14.400.000 -"-
- Construction	= 40.500.000 -"-
- Formation et évaluation du projet.	= 500.000 -"-
	84.800.000 F.CFA

B) Contribution Gouvernement . 3.120.000 F.CFA

C) Contribution Paysanne 23.000.000 F.CFA

.../...

L'aide sollicitée pour les années suivantes se situe au niveau de la pépinière, de l'encadrement, de la protection des plants, de la formation et de l'évaluation du projet.

Pour 1982 - à 1985 les Coûts sont les suivants

- Pépinières	: 25.000.000 x 4	.....	= 100.000.000 FCFA
- Encadrement	:	.....	= 14.000.000 -"-
- Protection des plants	:	.....	= 56.000.000 -"-
- Formation et évaluation	:	.....	= 2.500.000 -"-
			<hr/>
Total....			= 172.500.000 F.CFA

Coût Total du Projet en Cinq (5) Ans

Aide sollicitée	.....	= 256.800.000 F.CFA
Contribution Gouvernement	.....	= 15.600.000 F.CFA
Contribution Villageoise	= 115.200.000 F.CFA
<hr/>		
TOTAL GENERAL	= 387.600.000 F.CFA
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Appendix 7

PROPOSED CONDITIONS AND COVENANTS

PROPOSED CONDITIONS AND COVENANTS

1. Before any disbursements of funds or commitments under the Project Agreement are made the GOUV will designate a GOUV official who will serve as the GOUV Project Director. This individual will reside in Diébougou, the project headquarters seat of the Department of the Southwest.
2. The Government shall recruit and place all Voltaic personnel supported under this project according to the implementation schedule.
3. The MTET will be responsible for the overall coordination of project implementation.
4. Before any disbursements or commitments are made under the Project Agreement, the GOUV will submit evidence in form and substance satisfactory to Africare that the necessary MTET personnel required by the project will be in place in the proposed project area according to the implementation schedule.
5. All funds, equipment and personnel supported or supplied under this project will be employed exclusively in the Department of Southwest on project activities unless otherwise specified in the project document or agreed to by Africare.
6. The GOUV will receive all funds, equipment, and materials or services committed by Africare at the end of this project
7. The GOUV will prepare and submit to Africare quarterly progress reports in such detail as Africare may request.
8. The GOUV will develop the necessary blueprints, engineering studies and cost estimates for all buildings (offices and other facilities) and submit them to Africare and USAID for approval prior to allocation of funds for renovation or construction.
9. The GOUV shall implement this project as defined in the

project document. Any changes in the scope or direction of the project will be done with consultation and approval of Africare.

10. Direct project expenses in the field (project area) shall, first be approved by the Voltaic Project Director and the Project Coordinator, but check signing authority shall be reserved for Africare or its designated representative.
11. All equipment, vehicles, materials, or supplies shipped to Upper Volta or purchased in Upper Volta for use in this project shall be exempt from all duties, excise, or other taxes.
12. All other additional conditions as set forth in the general Africare agreement with the GOUV dated November 29, 1974 apply to this project.
13. The GOUV will open project accounts at a recognized bank in Gaoua or Diébougou and that any interests earned on those accounts shall be remitted to USAID/Upper Volta.
14. The GOUV covenants to make available for project activities office spaces and sufficient quantities of land as called for in the project document.
15. Seedlings from the existing nurseries will be made available first for this project's planting needs, and any excess seedlings then going for other departmental needs.
16. One of the pick-up trucks purchased under this project shall be for the use of the Project Coordinator (Africare Expatriate) in project activities.

Appendix 8

ENVIRONMENTAL ANALYSIS

Environmental Analysis

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT COUNTRY: Upper Volta

PROJECT TITLE: Southwest Regional Reforestation Project, Upper Volta

FUNDING: (FY 1984)

LIFE OF PROJECT: 4 years beginning FY 1984 through FY 1988

IEE PREPARED BY: Robert E. Wilson and LeRoy D. L. Duvall, Jr.

DATE: July 20, 1983

ENVIRONMENTAL ACTION RECOMMENDED:

Concurrence

Country Environmental Officer's Decision

Concern:

Request reconsideration:

Date:

Contents of Initial Environmental Examination

1. Examination of Nature, Scope, and Magnitude of Environmental Impacts.

A. Description of Project

This project will build up the present Ministry of Transportation, Environment, and Tourism infrastructure in the region of the Southwest, and initiate an effective program to counteract the environmental degradation that is occurring in the region. These goals are part of an overall effort to establish land use practices in the region which will stabilize and preserve the natural resources in the area while providing an increased availability of locally important products (fuelwood, fruits, medicinal materials, building materials) on a sustainable basis. Project activities will reduce soil erosion while increasing soil fertility, thereby increasing productivity of agricultural activities. During the life of the project, the planting of shade and fruit trees by individuals and community groups, the establishment of windbreaks, interplanting of appropriate species into agricultural fields and other agro-forestry plantings, and the planting of individual and community woodlots are envisioned.

B. Identification and Evaluation of Environmental Impacts

This project is not an activity that will negatively affect the human environment of the region. The project contains education and training elements and various outplanting activities, but poses no negative threats to the environment. The requirement for an environmental assessment does not apply at this time. An initial environmental examination and threshold decision to this effect is attached.

II. Recommendation

This project should receive a "Negative Determination" because its likelihood of having any significant deleterious impact on the environment is negligible. Therefore, no further analysis is required at this time.

IMPACT IDENTIFICATION AND EVALUATION FORM

<u>Impact Areas and Sub-areas 1/</u>	<u>Impact Identification and Evaluation 2/</u>
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population -----	N
b. Extracting natural resources -----	N
c. Land clearing -----	L
d. Changing soil character -----	N
2. Altering natural defenses -----	L
3. Foreclosing important uses -----	N
4. Jeopardizing man or his works -----	N
5. Other factors: Lands cleared for tree <u>planting but agroforestry techniques</u> <u>will be employed.</u>	N
B. WATER QUALITY	
1. Physical state of water -----	N
2. Chemical and biological states -----	N
3. Ecological balance -----	N
4. Other factors: Insecticides may be used during this project. They will not be adjacent to or on streams or other water courses. <u>Surface or ground waters will</u> <u>not be contaminated by dumping of excess pesticides,</u> <u>cleaning of equipment used in pesticide application,</u> by improper storage, or other project activities.	L

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

- | | |
|--------------------------|-------|
| 1. Air additives ----- | N |
| 2. Air pollution ----- | N |
| 3. Noise pollution ----- | N |
| 4. Other factors: | |
| _____ | _____ |
| _____ | _____ |

D. NATURAL RESOURCES

- | | |
|--|-------|
| 1. Diversion, altered use of water ----- | N |
| 2. Irreversible, inefficient commitments ----- | N |
| 3. Other factors: | |
| _____ | _____ |
| _____ | _____ |

E. CULTURAL

- | | |
|--|-------|
| 1. Altering physical symbols ----- | N |
| 2. Dilution of cultural traditions ----- | N |
| 3. Other factors: | |
| _____ | _____ |
| _____ | _____ |

F. SOCIOECONOMIC

- | | |
|---|-------|
| 1. Changes in economic/employment patterns ---- | N |
| 2. Changes in population ----- | N |
| 3. Changes in cultural patterns ----- | N |
| 4. Other factors: | |
| _____ | _____ |
| _____ | _____ |

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

- | | |
|---|------------------------------|
| 1. Changing a natural environment ----- | <u> N </u> |
| 2. Eliminating an ecosystem element ----- | <u> N </u> |
| 3. Other factors: | |
| _____ | _____ |
| _____ | _____ |

H. GENERAL

- | | |
|---------------------------------|------------------------------|
| 1. International impacts ----- | <u> N </u> |
| 2. Controversial impacts ----- | <u> N </u> |
| 3. Larger program impacts ----- | <u> N </u> |
| 4. Other factors: | |
| _____ | _____ |
| _____ | _____ |

I. OTHER POSSIBLE IMPACTS (not listed above)

- | | |
|---|-----------------------------------|
| <u>Long range provision of firewood</u> | <u> N </u> |
| <u>Construction of soil control erosion</u> | <u> </u> |
| <u>Infrastructure</u> | <u> N </u> |

If necessary, approved pesticides may be used during project activities. Only approved pesticides will be used, and only those villagers and MTET agents that have received appropriate training in their safe and proper use will be issued pesticides. All pesticides will be stored in accordance with current USAID policies, and any excess pesticides, empty pesticide containers, and other contaminated materials will be disposed of in accordance with USAID policies.

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Appendix 9

DEMOGRAPHY OF THE SOUTHWEST REGION

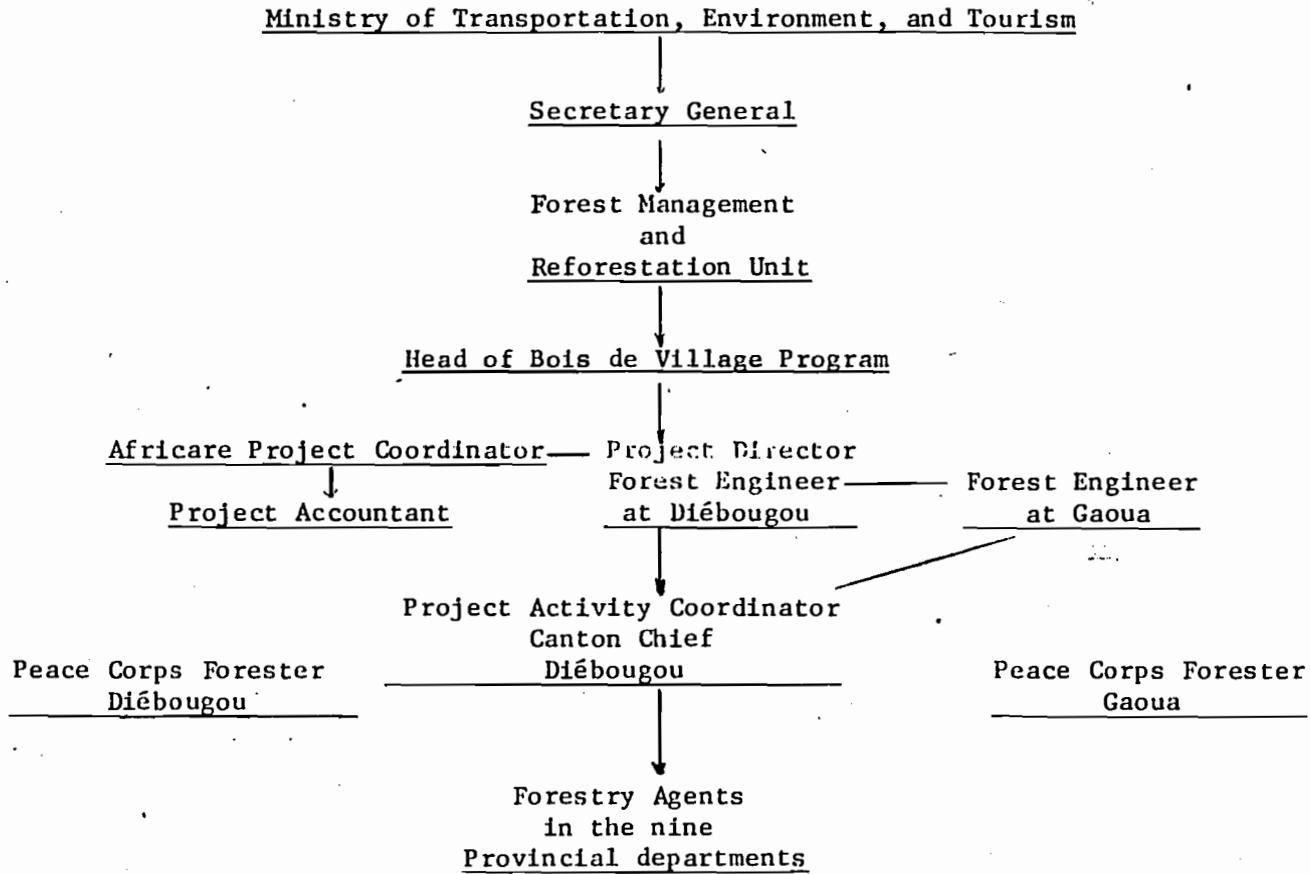
South-West Regional Afforestation Project Zone Demography

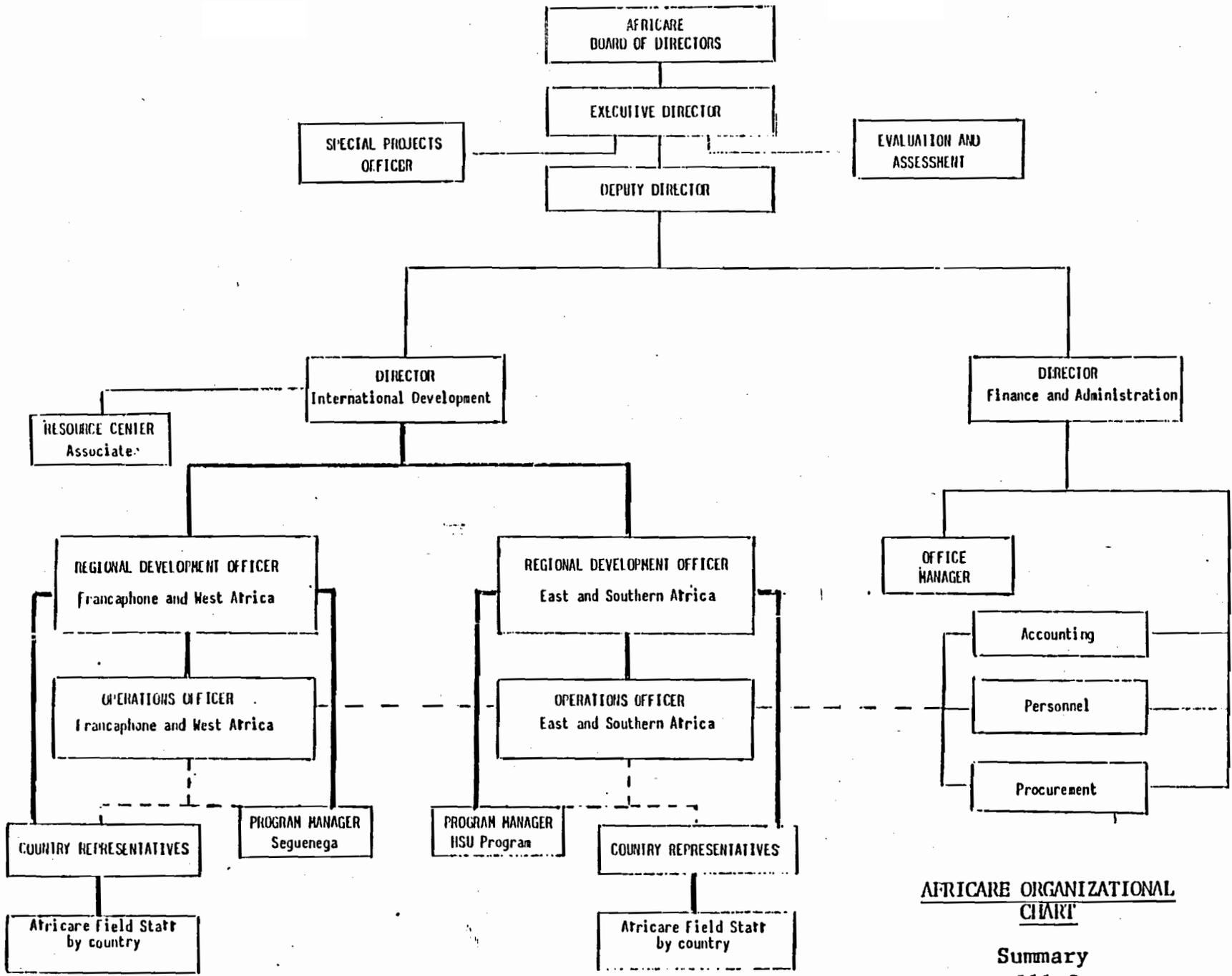
Sous-Préfecture	Villages	Population	Average/ Village
<u>BOUGOURIBA</u>			
Dano	107	100,160	936
Diébougou	58	42,630	735
Dissin	40	41,400	1,035
Tiankoura	80	19,480	244
Sub-Total	285	203,670	715
<u>PONI</u>			
Batié	226	36,920	163
Gaoua	215	65,970	307
Kampti	172	41,630	242
Loropéni	71	27,400	386
Nako	116	35,170	303
Sub-Total	800	207,040	259
GRAND TOTAL	1,085	410,760	379

Appendix 10

ORGANIZATIONAL DIAGRAMS

PROJECT ORGANIZATIONAL CHART





AFRICARE ORGANIZATIONAL CHART

Summary
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Appendix 11

PARTIAL SPECIES LIST

Partial List of Species Adaptable to Recreative Activities
Within Scope of South-West Regional Afforestation Project

For firewood and shade:

Acacia spp.
Anogeissus leicarpus
Azadirachta indica
Bombox costatum
Cassia simea
Dalbergia sissoo
Eucalyptus camaldulensis
Gmelina arborea
Khaya senegleusis
Leuceana leucocephala

For fruit:

Anacardium occidentale (cashew)
Balanites aegyptica
Butyrospermum parkii (Karité)
Lannea acida
Parkia biglobosa (Néré)
Tamarindus indica
Zizyphus mauritiana
Mangos, lemons, guavas, papayas

For forage:

Acacia spp.
Balanites aegyptica
Banhivia spp.
Combretum spp.

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Greuvia spp.

Leuceana leucocephala

Prosopis spp.

Zizyphus mauritania

For leaves, fibres, and other products:

Acacia spp.

Adansonia digitata (Baobab)

Bombax costatum (Kapok)

Bonassus aethiopicum (ronier: termite-proof construction wood)

ceiba pentandra

For line fences:

Acacia spp.

Commiphora africana

Euphorbia balsamifera

Moringa ptesygosperma

Parkonsonia acculeata

Prosopis juliflora

Zyziphus mauritana

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Appendix 12

ILLUSTRATIVE SCOPES OF WORK

Appendix 13

MTET CORRESPONDANCE RELATED TO THIS PROJECT

NO 00201

MAI
Ouagadougou, le 03 MAI 1982

03 MAI 1982

Objet : Votre lettre
du 27/04/1982.

*Le Ministre
de l'Environnement et du Tourisme*

à Monsieur Leica G. Faith
Représentant Résident de Africare en Haute-Volta
à OUAGADOUGOU

J'accuse réception de votre lettre datée du 8/4/82 et je vous remercie beaucoup de l'intérêt sans cesse grandissant que votre Organisation porte au vaste programme de lutte contre la désertification établi par le Gouvernement.

Je prends bonne note de votre entière disponibilité à apporter votre concours technique et financier aux différentes actions de reboisement.

À niveau de mon Département, mes Services Techniques sont en train de faire le bilan des zones touchées par des projets et ceux qui ne le sont pas. Nous ne manquerons pas de vous tenir informé de leurs conclusions et des zones possibles qui devront bénéficier de projets.

Veillez agréer, Monsieur le Représentant Résident, les assurances de ma considération distinguée.-


B. Sylvester MUNDILOKO

00-366 /E/D/A.F.R.

Ouagadougou, le 16 AOUT 1982

*Le Ministre
de l'Environnement et du Tourisme*

16 AOUT 1982

à Monsieur le Représentant Résident
de Africare

OUAGADOUGOU

J'accuse réception de votre lettre datée du 2 Août 1982. Je me réjouis vivement de la disponibilité de votre Organisation à tout mettre en œuvre pour que le projet que je vous ai soumis connaisse un aboutissement heureux dans des délais acceptables.

S'agissant de l'étude de faisabilité du projet, je puis vous rassurer que les techniciens de mon Département se feront un agréable plaisir de vous fournir toutes les informations sollicitées et de vous accompagner là où il faudra dans le Département du Sud-Ouest.

Je dois cependant attirer votre attention sur le fait que compte tenu de nos moyens très limités, mon Département n'est pas en mesure de vous fournir ni un véhicule, ni l'essence nécessaires à vos divers déplacements.

Il est par conséquent vivement souhaitable que des dispositions utiles à cet effet soient prises au niveau de votre Organisation ou en celui de L'US.-ATD pour remédier à cet inconvénient.

Tout en vous remerciant pour les efforts inlassables que vous déployez en faveur de mon Département, je vous prie d'agréer, Monsieur le Représentant, les assurances de ma considération distinguée./-



00327

20 JUIL. 1982

Ouagadougou, le 19 JUIL. 1982

*Le Ministre
de l'Environnement et du Tourisme*

à Monsieur le Représentant Résident
de l'Afrique

OUAGADOUGOU

OBJET : Projet de Repoisements
Villageois et Familiaux
dans le Département du
Sud-Ouest (OUMH-DINEGOUROU)

DIRECTION DE L'AMENAGEMENT
FORESTIER ET DU REBOISEMENT

N° 812



Coumboukou, le 12 OCT. 1982

*Le Directeur de l'Aménagement
Forestier et du Reboisement*

12 OCT. 1982

à M. le Dr. Sahr J. WAGLE Représentant Résident
Africain à - OUAGA -

J'accuse réception de votre lettre datée du 11 Octobre 1982 par laquelle vous m'informez de votre intention de visiter Bobo-Dioulasso et le Sud-Ouest dans le cadre de notre projet de reboisement dans le Département du Sud-Ouest.

Je vous remercie pour mon accord et j'informerai les responsables concernés de votre arrivée dans leurs localités respectives.

Je voudrais vivement insister s'agissant du cas précis des visites à Diébougou, Coumbou et Kempti quelles doivent se faire en liaison du Chef de Cantonement Monsieur SAKISSA MACHARIE qui est actuellement chargé à Kempti. Il sera à visiter à Diébougou le 17/10/1982.

C'est le seul moyen de faciliter le déplacement de Monsieur North.

S'agissant des rendez-vous sollicités je vous prie de nous rencontrer le Mercredi 13 à 8 heures l.m. au lieu de Diébougou. La date du 27/10/1982 je serai à l'écoute de votre point de vue même si je dois me rendre à Ouagadougou le 23/10/1982.

En attendant, je vous prie d'agréer, Monsieur, l'assurance de nos sentiments.

SECTION DE L'AMENAGEMENT
FORESTIER ET DU REBOISEMENT

N° 921



Ouagadougou, le 30 NOV. 1982

*Le Directeur de l'Aménagement
Forestier et du Reboisement*

30 NOV. 1982

à Monsieur le Représentant Résident de
AFRICARE

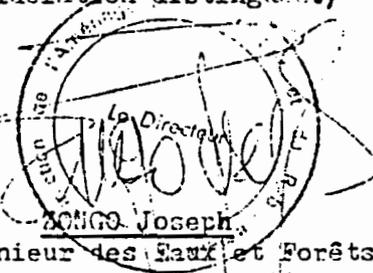
OUAGADOUGOU

Suite à la rencontre que j'ai eue le 29/11/1982 avec votre
représentante, j'ai l'honneur de vous transmettre :

- Les documents "Bois de Villages"
- L'effectif du personnel forestier

Nous comptons vivement sur votre concours pour une issue
heureuse de notre projet commun.

Veuillez agréer, Monsieur le Représentant Résident,
l'assurance de ma considération distinguée./-


ZONGO Joseph
Ingénieur des Eaux et Forêts

Appendix 14

REQUEST FOR WAIVER
FOR
MOTORCYCLES

Waiver Request and Recommendations

In submitting this Southwest Regional Reforestation Project proposal, Africare is requesting a waiver related to the procurement of motorcycles as described below.

Problem: The implementation of the Southwest Regional Reforestation Project requires the procurement of a number of vehicles, including eleven motorcycles. In order to allow such procurement, you are requested to grant a source/origin waiver from Geographic Code 000 (U.S. only) to Code 935 (Special Free World).

A. COOPERATING COUNTRY	Upper Volta
B. AUTHORIZING DOCUMENT	
C. PROJECT	Southwest Regional Reforestation Project
D. NATURE OF FUNDING	Grant
E. DESCRIPTION OF GOODS	Eleven 125 cc motorcycles; trail-bikes
F. APPROXIMATE VALUE	\$18,000
G. PROBABLE SOURCE	Upper Volta
H. PROBABLE ORIGIN	Japan
I. VALUE, MISSION-ISSUED WAIVERS TO DATE FOR THIS PROJECT	None issued

Discussion: The project proposal provides for purchasing up to eleven motorcycles. These vehicles will be needed to permit the MTET agents at nine posts in the department, and two Peace Corps Volunteers to be assigned to the project, to perform their assignments in the hilly terrain of the Department of the Southwest.

In accordance with AID Handbook 1B, procurement of commodities from Code 935 requires a waiver. Handbook 1, Supplement B, Chapter 5B 4a (2) states that a waiver may be granted if "the commodity is not available from countries or areas included in the authorized Geographic Code". A key component in the success of the Southwest Regional Reforestation Project will be the availability of adequate transportation to permit the MTET agents and Peace Corps Volunteers to perform their assigned functions throughout the department. There are no American-made motorcycles available in Upper Volta. The only American manufacturer, Harley-Davidson, does not manufacture an appropriate sized motorcycle. There are also no available spare parts, servicing facilities, or trained mechanics familiar with American motorcycles.

The lack of a viable local dealership for essential service and parts support, would greatly shorten the useful life of these motorcycles and would therefore not be a cost-effective use of project funds.

Recommendation: Pursuant to Redlegation of Authority 140, as amended, we request that you 1) Approve a procurement source/origin waiver from AID Geographic Code 000 to Code 935, and 2) Certify that exclusion of procurement country and countries included in Code 941 would seriously impede the attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program, and further, certify that special circumstances exist to waive the requirement of section 636 (i) of the Act.

Approved _____

Disapproved _____

Date _____

Appendix 15

ILLUSTRATIVE ECONOMIC ANALYSIS

In this economic analysis, five hypothetical planting options are considered. Option I assumes that all available seedlings are planted in fuelwood plantations. In Option II it is assumed that 50% of the trees are planted in woodlots, 25% in windbreaks, and 25% are interplanted into agricultural fields. Option III assumes that the seedlings are evenly distributed between woodlots, windbreaks, interplanting, and household/community fruit and shade tree plantings. In Option IV 50% of the trees are planted in windbreaks, 25% are interplanted into field, and 25% are used for household/community activities. In Option V all seedlings are assumed to be used for household/community planting activities.

The following basic assumptions were used in the analysis. A total of 115,000 seedlings are planted and all survive. It takes 100 worker days (WD) at 720 F CFA/WD to prepare the site, plant, and maintain 625 trees during the first year. A figure of 10 WD/ha at 720 CFA/WD is used as maintenance costs during years 2,8,9,16, and 17. Seedling cost is set at 75 F CFA each. The crop production value is assumed to be 35,000 F CFA/ha/yr. Windbreaks spaced 100 m apart are expected to improve crop yields by 10% beginning in year 10. Interplanting at 70 trees/ha is assumed to increase crop productivity by 25% beginning in year 10. A nominal benefit of 75 F CFA/yr/tree is given to household/community plantings beginning in year 10.

The assumptions above are hypothetical values. However, studies done elsewhere would indicate that the values are conservative. A windbreak study in the Majjia Valley, Niger, reported that millet yields increased 25% five years after windbreaks had been planted. ^{1/} A study in Senegal reported that millet production was 100 to 240% greater under A. Albida trees than in those areas where no acacias were present. In the same study, peanut

^{1/} ELS BOGNETTEAU-VERLINDEN, Study on impact of windbreaks in Majjia Valley,

production was 75% greater when grown in association with A. albida. These yield increases exceeded that which was achieved using artificial fertilizers.^{2/} Le Houerou's study, reported earlier, also indicated the potential increase in productivity that can occur with interplanting of acacias. A fertilizer application study in the Diébougou area showed that significant production increases were possible if artificial fertilizers were added to agricultural fields. None of the above studies addressed the question of production losses that will occur over time if wind and water erosion of crop lands goes on unchecked, or from declining soil fertility resulting from overuse of the existing agricultural lands.

In calculating fuelwood it is assumed that the MAI is 5 m³/ha/yr. A rotation of 24 years is used, with harvests in years 8, 16, and 24. The total volume is assumed to be distributed as 30%, 45%, and 25% in the respective harvests. A m³ of wood weighs 450 kg with a stumpage value of 7 1/2 F CFA per kg. The stumpage value is the price that the landowner can sell the standing timber for, to another party who will then harvest and market the wood. The total fuelwood values are increased by 10% to represent the increase in value from the poles and pots that will be harvested. It is assumed that any fuelwood plantations are planted on fallow land. No attempt was made to determine the value of secondary products such as leaves and bark products, honey, forage values, and others which become available because of the planting activities. A nominal value of 75 F CFA per tree was assigned to trees that are used in household/community activities, and begins to accrue in year 10.

^{2/} Fiche Monographique - Bilan, Acacia albida Del., in the proceedings of the III Comité de la Recherche Forestière held in Ouagadougou, 30-31 Nov. 1982. USAID No. 661, Local No. 932.

^{3/} FAO, Programme Engrais de la FAO en Haute-Volta, Rapport Annuel, Saison Culturelle 1981, Mai 1982.

Appendix 16

FAO PROJECT DOCUMENT FOR SIX NURSERIES IN THE
SOUTHWEST REGION

OPTION I

All 115,000 Seedlings are planted in woodlots.

Seedling costs = 115,000 trees x 75 F CFA/seedling = 8,625,000 F CFA

115,000 trees / 625 trees/ha = 184 ha.

Planting costs = 184 ha x 100 WD/ha x 720 F CFA/WD = 13,248,000 F CFA

Subsequent periodic maintenance = 184 ha x 10 WD/ha x 720 F CFA/WD

= 1,324,800 F CFA/yr

Fuelwood values = 184 ha x 5 m³/ha/yr x 24 yrs x 450 kg/m³ x 7 1/2 F CFA x 1.1

= 1,324,800 F CFA/yr

Fuelwood values = 184 ha x 5 m³/ha/yr x 24 yrs x 450 kg/m³ x 7 1/2 F CFA x 1.1

= 81,972,000 F CFA

<u>Years</u>	<u>Establishment & Maintenance</u>	<u>Harvest value</u>	<u>Net</u>
1	-21,873,000	-	-21,873,000
2	- 1,324,800		- 1,324,800
3 - 7			-0-
8	- 1,324,800	24,591,600	23,266,800
9	- 1,324,800		- 1,324,800
10 - 15			-0-
16	- 1,324,800	36,887,400	-35,562,600
17	- 1,324,800		- 1,324,800
18 - 23			-0-
24		20,493,000	20,493,000

Discount rate used = 10%

NPV = -1,242,136 F CFA

Internal Rate of Return = 9.48%

OPTION II

Tree distribution: 50% woodlots, 25% windbreaks, and 25% interplanting

Establishment costs (same for all options) = 21,873,000 F CFA

Subsequent maintenance (same for all options) = 1,324,800 F CFA

Fuelwood value = 50% of Option I = 40,986,000 F CFA

Crop production increase from windbreaks =

28750 trees / 66 trees/ha = 436 ha x 35,000 F CFA/ha x 10% = 1,526,000 F CFA

From interplanting:

28750 trees / 70 trees/ha = 411 ha x 35,000 F CFA/ha x 25% = 3,596,250 F CFA

Potential crop production increases = 5,122,250 F CFA/yr from year 10.

<u>Years</u>	<u>Establishment & maintenance</u>	<u>Crop Increases</u>	<u>Fuelwood value</u>	<u>NET</u>
1	-21,873,000			-21,873,000
2	- 1,324,800			- 1,324,800
3 - 7				-0-
8	- 1,324,800		12,295,800	10,971,000
9	- 1,324,800			- 1,324,800
10 - 15		5,122,250		5,122,250
16	- 1,324,800	5,122,250	18,443,700	22,241,150
17	- 1,324,800	5,122,250		3,797,450
18 - 23		5,122,250		5,122,250
24		5,122,250	10,246,500	15,368,750

Discount rate used = 10% NPV = 5,063,829 F CFA

Internal Rate of Return = 11.67%

OPTION III

Tree distribution: 25% woodlots, 25% windbreaks, 25% interplanting, and
25% community household

Establishment costs = 21,873,000 F CFA

Maintenance costs = 1,324,800 F CFA

Fuelwood value = 50% that in Option II = 20,493,000 F CFA

Crop increases = ..% that in Option II = 5,122,250 F CFA

Nominal value of household plantings = 75 F CFA/tree x 28,750 trees =

2,156,250 F CFA/yr beginning in year 10.

<u>Years</u>	<u>Establishment & maintenance</u>	<u>Crop increases</u>	<u>Fuelwood value</u>	<u>Nominal value</u>	<u>NET</u>
1	-21,873,000				-21,873,000
2	- 1,324,800				- 1,324,800
3 - 7					-0-
8	- 1,324,800		6,147,900		4,823,100
9	- 1,324,800				- 1,324,800
10 - 15		5,122,250		2,156,250	7,278,500
16	- 1,324,800	5,122,250	9,221,850	2,156,250	15,175,550
17	- 1,324,800	5,122,250		2,156,250	5,953,700
18 - 23		5,122,250		2,156,250	7,278,500
24		5,122,250	5,122,250	2,156,250	12,401,750

Discount rate used = 10% NPV = 6,780,196 F CFA

Internal Rate of Return = 12.08%

OPTION IV

Tree distribution: 50% windbreaks, 25% interplanting, and 25% household

Establishment costs = 21,873,000 F CFA

Subsequent maintenance costs = 1,324,800 F CFA

Crop production increases from windbreaks:

1,526,000 F CFA x 2 = 3,052,000 F CFA/yr

From interplanting:

3,596,250 F CFA/yr

Potential crop production increases = 6,648,250 F CFA/yr

Household planting values = 2,156,250 F CFA/yr.

<u>Year</u>	<u>Establishment & maintenance</u>	<u>Crop increases</u>	<u>Nominal value</u>	<u>NET</u>
1	-21,873,000			-21,873,000
2	- 1,324,800			- 1,324,800
3 - 9				-0-
10 - 24		6,648,250	2,156,250	8,804,500

Discount rate used = 10% NPV = 8,163,575 F CFA

Internal Rate of Return = 12.4%

OPTION V

Tree distribution: 100% to household and community plantings

Household planting values = 115,000 trees x 75 F CFA/tree = 8,625,000 F CFA

<u>Year</u>	<u>Establishment & maintenance</u>	<u>Nominal value</u>	<u>NET</u>
1	-21,873,000		-21,873,000
2	- 1,324,800		- 1,324,800
3 - 9			-0-
10 - 24		8,625,000	8,625,000

Discount rate used = 10% NPV = 7,526,657 F CFA

Internal Rate of Return = 12.23%

PROJECT DIRECTOR

The Forest Engineer assigned to Diébougou shall be the Project Director, and shall work closely with the Project Coordinator the Forest Engineer in Gaoua, and the Canton Chief in the activities of this project. His/her responsibilities shall include the following:

1. Overall administrative responsibility for the project.
2. Work with the project accountant in the monitoring of project funds, and maintain an inventory of project financed supplies and equipment.
3. Together with the Project Coordinator, approve disbursements.
4. Maintain liaison and provide direction for the Canton Chief and other project personnel. Together with the Project Coordinator, maintain liaison and coordination of project activities with the other cooperating agencies and Ministries both within the project area and elsewhere.
5. Together with the Project Coordinator and the Canton Chief, assess the training needs of project staff, identify appropriate training sources, and develop annual training plans.
6. Assist in the strategy development for identifying and motivating the villages to be targeted each year .
7. Monitor project activities.
8. Participate in the training function as appropriate.
9. Perform other project related activities as necessary and appropriate.

PROJECT ACTIVITY COORDINATOR

The Canton Chief will be responsible for coordination of project activities. His duties will include:

1. Together with the Project Director, the Forest Engineer at Gaoua, and Project Coordinator, assess the training needs of the project staff, identify appropriate training sources, and develop training plans. He shall be responsible for the coordination and implementation of these training plans.
2. Assist in the development of sensitization, extension, and planting activity planning. He shall be responsible for the overall coordination of such activities, and for providing direction for the MIET agents.
3. Provide direction and assistance to the Peace Corps Volunteers assigned to the project.
4. Participate in the training function as appropriate.

Project Coordinator - 2

to prepare and train the Project Director to assume control of departmental and project related activities during the life of this project, to enable the Project Director to continue effective management of activities following the end of the project and the departure of the Project Coordinator at the end of the fourth year.

3. Provide overall technical assistance in the organization and management of existing and future nursery facilities.
4. Develop a record keeping and reporting system that will track the costs and accomplishments associated with various activities undertaken under this project. This reporting system will permit the development of accurate benefit/cost analyses of various project efforts, will identify MTEF activities and accomplishments within the project area, and will serve as an information source for future activities and efforts.
5. Maintain liaison and coordination of project activities with the appropriate personnel of cooperating agencies and Ministries both within the project area and elsewhere.
6. Provide supervisory assistance to project staff and provide technical assistance in the managerial, administrative, and technical aspects of the project.
7. Review and revise project objectives and implementation schedules as needed.
8. Assist in the strategy development for identifying and motivating the villages to be targeted in each year's extension and planting activities. Assist in the development of the sensitization, extension, and villager training activities.
9. Supervise the purchase of equipment and supplies for the project, and monitor project funds and accounting procedures.

PROJECT COORDINATOR

A Project Coordinator will be assigned to the project for four years. He/she must have a B.S. in Forestry, Natural Resources Conservation, or in a field that is related to and appropriate to the needs of this project. He/she must be experienced in forestry extension, arid land reforestation, plantatic management, and nursery techniques. He/she should have a minimum of five years professional forestry experience, of which at least two years must have been acquired in the Sudano-Sahelian zone of Africa. He/she must have a demonstrated ability to guide and assist field technical operations associated with reforestation and/or natural resources conservation projects. Effective organizational and management skills are necessary, and he/she must be able to communicate effectively in French. An FSI level 2 plus or better reading and speaking ability is required.

The project Coordinator is expected to work closely with the Project Director, (his/her Voltaic counterpart), the Forest Engineer at Gaoua, & the Canton Chief. Specific responsibilities for this position include:

1. Working with the Project Director and Canton Chief to assess the training needs of project staff, (including those of the Project Director, the Forest Engineer at Gaoua, & the Canton Chief) identify the appropriate training source or sources, and develop annual training plans.
2. Work closely with the Project Director to develop his/her expertise in all phases of effective administration, this is to include the establishment of goals and objectives, effective time and personnel management, delegation of authority, and other management skills.

One of the primary responsibilities of the Project Coordinator will be

Project Coordinator - 3

10. Submit monthly activity program reports and annual program evaluations to Africare. Participate in the preparation of other reports and evaluations.
11. Provide logistical support for Africare staff as needed.
12. Participate in the training of project staff and villagers as appropriate.
13. During the first six months of the project, contact the representatives of other organizations and agencies in Upper Volta or elsewhere in the Sahel and identify what types of extension/sensitization/reforestation activities have been tried successfully elsewhere, and identify how and if they can be incorporated into this project.
14. Perform other activities as appropriate and necessary.

PEACE CORPS VOLUNTEERS

Two Peace Corps Volunteer foresters shall be assigned to the project. One shall be assigned to the MTEP Office in Diébougou, the second to the MTEP Office in Gaoua. They shall be expected to assist in the planning, coordination, and implementation of various on-the-ground activities throughout the department. Among their responsibilities shall be:

1. Assist in the coordination of the nursery establishment and seedling production activities at the nine sectoral nurseries.
2. Provide technical assistance for various project activities, including the planning and coordination of the extension and outplanting activities, and assisting in the extension and assessment efforts of tree maintenance follow-up after planting.
3. Assist in the development of the extension and training program content for village activities, and assist in the training function as appropriate.
4. Assist the MTEP agents as needed for project related functions.

The final assignment descriptions shall be developed during joint discussions between the Peace Corps, the MTEP, and Africare.



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
 ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE
 ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION
 منظمة الأغذية والزراعة للأمم المتحدة

TECHNICAL COOPERATION PROGRAMME

PROGRAMME DE COOPERATION TECHNIQUE

PROGRAMA DE COOPERACION TECNICA

برنامج التعاون الفني

Pays: HAUTE-VOLTA
 Dénomination du projet: Création de dix pépinières
 Numéro du projet: TCP/UPV/2201 (Md)
 Date de début: Septembre 1982
 Date d'achèvement: Août 1983
 Ministère chargé de l'exécution du projet: Ministère de l'environnement et du tourisme
 Contribution de la FAO: 100 000 dollars EU

Signé: Bangré Sylvester GAMBRAOGO
 Ministre de l'Environnement et du Tourisme
 (Ministère de l'Environnement et du Tourisme)

Signé: P. Edouard Saouma
 Directeur général
 (pour la FAO)



Gerard Philippe Auguste
 représentant de la FAO
 en Haute Volta

Date de signature: 20-SEP-1982 Date de signature: 20-SEP-1982

I. GENERALITES ET JUSTIFICATION

La Haute-Volta, pays sahélien par excellence, accorde une extrême importance à la reconstitution de son milieu naturel au profit des populations et du développement rural.

Malgré les nombreuses difficultés qu'elle rencontre - manque de cadres et de moyens de travail, sécheresse, etc. - la Haute-Volta a pu lancer avec succès de très vastes programmes de reboisement tant industriels - près de 20 000 ha depuis 1975 - que villageois et familiaux (2 000 ha).

Ces résultats encourageants ont été obtenus grâce au soutien des pays amis et des organismes internationaux et surtout grâce à :

- la maîtrise des techniques de reboisement mieux adaptées aux différentes conditions écologiques du pays qui ont permis de restaurer et d'enrichir le couvert forestier;
- la participation active et soutenue des populations rurales et urbaines aux actions de reboisement et de gestion du couvert forestier.

Cependant, beaucoup reste à faire car les besoins des populations en bois de chauffe, de service et d'œuvre sont énormes.

En effet, basée sur les estimations PNUD/FAO (1978), d'un besoin de 0,700 m³/habitant/an, la consommation en bois de chauffe était en 1974 de 1,9 millions de m³.

En 1980 elle était de l'ordre de 4,5 millions de m³ et pour l'an 2000 on escompte plus de sept millions de m³.

La satisfaction de tels besoins commande l'établissement d'une politique forestière cohérente qui soit s'articuler autour des points suivants :

- reboisement villageois et familiaux faisant appel à la participation consciente des populations;
- aménagement des forêts classées et reboisements industriels;
- recensement, expérimentation et vulgarisation des foyers améliorés.

En 1982, neuf départements sur les onze que compte la Haute-Volta sont dotés d'un projet de reboisement villageois et familial. L'objectif fondamental poursuivi par le Gouvernement est de doter chaque département d'un projet de reboisement villageois.

Le reboisement suppose l'existence de pépinières pour la production de plants et qualité et en quantité suffisante pour répondre aux besoins des populations.

Les pépinières forestières manquent énormément en Haute-Volta, alors qu'avec la sensibilisation des populations rurale et urbaine on assiste à une mobilisation générale pour le reboisement. Cette mobilisation est telle qu'avec l'institution par le Gouvernement du "mois de l'arbre", l'année 1981 s'est traduite par un manque de plants bien que 3 300 000 arbres aient été plantés. Afin de ne pas décourager les populations rurale et urbaine qui ont répondu positivement à la lutte contre la désertification, afin de ne pas ralentir leur motivation pour le reboisement, il faut créer et équiper des pépinières pour rapprocher les plants des demandeurs et diminuer ainsi les distances de transport qui sont préjudiciables à la survie des plants. La création et l'équipement des 10 pépinières deviennent une nécessité. Elles viendront en appui aux efforts déployés par le Gouvernement pour mobiliser les populations autour de son vaste programme de lutte contre la désertification. Les actions de reboisement ainsi menées contribueront à préparer les populations à des actions plus vastes mais surtout contribueront à leur apprendre comment protéger leur environnement tout en tirant le maximum de biens et de service de lui.

Enfin, l'existence et le fonctionnement de ces pépinières aideront le Gouvernement dans le cadre de sa politique nationale d'équipement en pépinière de chaque département de continuer les actions du projet soit sur ses fonds propres ou avec le soutien de l'aide bilatérale ou multilatérale.

En résumé, le présent projet est nécessaire pour permettre:

- a) la mobilisation des populations autour du vaste programme de lutte contre la désertification ou de la satisfaction continue de leurs besoins en bois de service, d'œuvre et de chauffage, spécialement dans les deux départements qui n'ont pas de projets de reboisement villageois mais qui, compte tenu de la démographie, de l'industrialisation, de la culture itinérante et des feux de brousse sont aux prises à des problèmes sérieux de désertification;
- b) la redynamisation et le recyclage des agents forestiers dans les secteurs du reboisement et des pépinières;

- c) au Gouvernement de généraliser plus facilement sa politique d'installation et d'équipement de pépinières en vue d'initier d'autres activités plus grandes de reboisement avec ses propres moyens ou avec l'aide bilatérale ou multilatérale.

II. OBJECTIF DE L'ASSISTANCE

L'objectif essentiel du projet est d'apporter un support matériel et technique à la Haute-Volta en vue de la création et de l'équipement de dix pépinières forestières dans les départements de la Komoé (Banfora) et du Sud-ouest (Gaoua-Diébougou).

L'objectif secondaire est de former et sensibiliser les populations rurales concernées dans les pépinières à l'exécution de programmes de plantations et d'aménagement des forêts, et de redynamiser les agents du reboisement par l'action dans les deux départements.

III. PLAN DE TRAVAIL

Pour que les plants soient disponibles pour le reboisement en juillet 1983, il faut que les pépinières soient installées dès le 1er septembre 1982. Avec la saison des pluies, le travail du sol est plus facile, ce qui favorise l'établissement des planches et leur ensemencement.

La formation des agents forestiers aura lieu en novembre ou décembre 1982 et durera 10 jours. Cette formation aura pour but d'apprendre aux agents les techniques de semis, d'irrigation, d'entretien, bref de gestion d'une pépinière, formation des populations rurales, novembre 1982 - juin 1983.

Le stage de formation sera assuré par un cadre supérieur national du Service du reboisement de la Direction de l'aménagement forestier et du reboisement, assisté du chef de la pépinière nationale. La formation aura lieu à tour de rôle dans les deux départements.

En résumé:

1er septembre 1982	Démarrage du projet
1er au 30 septembre 1982	Achat du matériel
1er au 30 octobre 1982	Installation de 10 pépinières de $\frac{1}{2}$ ha et préparation des planches pour les semis (500 000 plants)

Novembre 1982 .. juin 1983

Semis, arrosage

Juin .. août 1983

Plantation de 800 ha

Formation de 10 agents dans le domaine
des pépinières

Novembre 1982 .. juin 1983

Formation de 20 représentants des popu-
lations rurales.

IV. APPORTS DE LA FAO

Les apports de la FAO s'expriment selon les catégories suivantes:

- Déplacements et voyages pour la formation
- Matériel pour la formation
- Matériel pour l'installation des pépinières à concurrence de
25 000 dollars EU
- Main-d'œuvre et frais généraux pour l'installation des pépinières.

V. RAPPORT

La Direction de l'aménagement forestier et du reboisement préparera les états de dépenses périodiques relatifs à la création des pépinières et à la formation.

A l'issue du projet, elle adressera à la FAO un bref rapport sur le déroulement du projet et ses résultats.

VI. CONTRIBUTION ET SOUTIEN DU GOUVERNEMENT

Le Ministère de l'environnement et du tourisme est responsable par l'intermédiaire de la Direction de l'aménagement forestier et du reboisement de l'exécution du programme. Il assurera pendant la durée du projet les services d'un technicien supérieur national.

BUDGET DU PROJET COUVRANT LA CONTRIBUTION DE LA FAC

(en dollars EU)

PAYS: HAUTE-VOLTA
DENOMINATION DU PROJET: Création de dix pépinières
NUMERO DU PROJET: TCP/UFV/2202 (HA)

40. Frais généraux d'opération	4 000
50. Matériel et fournitures	26 000
80. Dons et formation	70 000
TOTAL	<u>100 000</u>