



SENEGAL REFORESTATION PROJECT

Contract No. 685-0283

MID-TERM EVALUATION

IQC Contract No. PDC-1406-I-02-0033-00

Delivery Order No. 2

Prepared for:

USAID/Senegal and the Government of Senegal

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OUTLINE OF BASIC PROJECT IDENTIFICATION DATA

1. Country: Senegal
2. Project Title: Senegal Reforestation Project
3. Project Number: 685-0283
4. Project Dates:
 - a. First Project Agreement: August 22, 1986
 - b. Final Obligation Date: FY 87
 - c. Most recent PACD: July 1, 1993
5. Project Funding: (amounts obligated to date in dollars)
 - a. AID Bilateral Funding US\$ 10,000,000
 - b. Other Major Donors US\$ -0-
 - c. Host Country Counterpart Funds US\$ 1,772* in kind

	US\$ 280,000* salaries
Total	US\$ 10,281,772

(*Exchange rate: US\$1 = 250 CFA; amounts shown are per the project paper)
6. Mode of Implementation: Host Country Contract

GOS Ministry of Rural Development and Water Resources
South-East Consortium for International Development (Prime Contractor)
Louis Berger International, Inc. (Subcontractor)
7. Project Designers:

USAID/Senegal
GOS Ministry of Rural Development and Water Resources
Institute for Development Anthropology
8. Responsible Mission Officials:
 - a. Mission Directors: Sarah Jane Littlefield
Julius Coles
 - b. Project Officers: Jim Bonner
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9. Previous Evaluation: None

TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	i
LIST OF DEFINITIONS	v
SECTION I PROJECT DESCRIPTION	1
A. Introduction	1
B. Project Components	1
SECTION II GENERAL ADMINISTRATION AND MANAGEMENT	5
A. Introduction	5
B. Project Management	8
C. Logistical Support for Project Staff	8
D. Logistical Support for Extension Agents	8
E. Interaction between MDRH and SRP	9
F. Forest Service Efficiency	9
G. Recordkeeping	9
SECTION III MATCHING GRANTS PROGRAM	11
A. Introduction	11
B. Financial Assessment of On-farm Tree Planting	11
C. Ecological and Technical Effects	15
SECTION IV ROADSIDE PLANTING	21
A. Introduction	21
B. Economic Analysis	21
C. Management and Administration of the Component	22
SECTION V TRAINING	25
A. Introduction	25
B. Observations and Recommendations	25
SECTION VI MEDIA CAMPAIGN	28
A. Introduction	28
B. Observations and Recommendations	28

TABLE OF CONTENTS
(continued)

	<u>Page</u>
SECTION VII PRIVATE SECTOR PROMOTION	31
A. Introduction	31
B. Observations and Recommendations	31
SECTION VIII POLICY REVIEW	35
ANNEX A TABLES	A-1
ANNEX B SCOPE OF WORK	B-1
ANNEX C LIST OF PERSONS INTERVIEWED	C-1
ANNEX D TECHNICAL DOCUMENTS REVIEWED	D-1
ANNEX E ABSTRACT (SECTION H) SUMMARY (SECTION J)	E-1

EXECUTIVE SUMMARY

The mid-term evaluation of the Senegal Reforestation Project was conducted in November 1990 for USAID/Senegal and the Government of Senegal under IQC No. PDC-1406-I-02-0033-00, Delivery Order No. 2.

The purpose of the evaluation was to assess the continued validity of key project assumptions and determine whether the project purpose is still attainable, to evaluate the management roles of the parties involved (GOS/MDRH, the technical assistance team, and USAID), and to identify any needed modifications in the project.

The overall goal of the project is to improve the environment, economy, and agricultural production of Senegal. The project purpose is to mobilize large-scale popular participation in tree planting with local and private resources. The emphasis is on the potential for economic gain and increased agricultural productivity through planting trees and shrubs. There are six activity areas with measurable project outputs: (1) matching grants program, (2) roadside planting, (3) training, (4) media campaign, (5) private sector promotion, and (6) policy review.

This project was designed to encourage tree planting by groups and individuals, and it has been very successful in this area. It was not designed specifically to address agroforestry, natural regeneration, or all the country's needs in training, as other projects and programs are addressing these needs in Senegal. However, the project support for private sector and roadside planting is not covered by other projects.

The findings, conclusions and recommendations of the evaluation team are described below for each of the six components.

1. Matching Grants Program

a. Financial Analysis of Matching Grants

Acacia albida was chosen as one case from the agroforestry portfolio where data exist on yield increase potential. The block plantation case is based on eucalyptus plantation data, and the mango orchard option was analyzed as a fruit and nut case. The time required for three field trips within a one-month study precluded the analysis of all possible project interventions. The above analysis parallels the analysis in the project paper, allowing the retesting of initial assumptions.

The project will be doing further in-depth financial analysis of other types of planting options. The questions of the viability of various options with and without cost sharing will be answered at that time.

If the original assumption is valid, that matching grants are a mechanism for kick-starting the tree planting process and are not considered as a permanent program, then the assumption is economically viable across the board for all cases and all interventions.

b. Replication

The project is attempting to influence extremely complex social and economic allocation decisions. More study and analysis of these decision-making processes is needed.

To the extent that allocation decisions are based on financial risk and return, the cost-sharing aspect is effectively influencing the decision to plant trees. Complex decisions about which interventions to use are dependent on the availability of technological information. The strengthening of extension capabilities widens farmers' choices.

Women's groups are participating in and benefiting from the project to the extent that they have access to land and technical knowledge about planting trees. Whether they are doing so on their individual crop production fields is not known.

c. Agroforestry

Some agroforestry is promoted by the cost-sharing program. These interventions include live fence, field trees, and windbreaks, along with a general increase in ground cover. Extension agents are more familiar with block plantations, due to their experience and training. The training component is addressing this issue through agroforestry and extension training, which will help agents become more familiar with agroforestry techniques.

d. Natural Regeneration

Protection of natural regeneration is a more cost-effective method of establishing trees, but it was not considered in the project design. It does not lend itself to cost sharing due to difficulties in administering the cost share. This type of intervention could be considered in the design of a follow-on project.

e. Exotic Species

There has long been an emphasis on exotic species, and most block plantations have used them. Agroforestry and soil and moisture conservation techniques use native species to a greater extent than exotics. If the project emphasizes tree planting by individual farmers for improvement of crop yields and protection of soil and water resources,

local species should be emphasized. If emphasis is placed on block plantations for the production of forest products, exotics are appropriate.

2. Roadside Planting

This component is a new approach to tree planting using private sector contractors. Some progress has been made, but time is needed to work out the problems that arise in every new approach.

3. Training and Extension

The team had stronger views on training than any other of the components. They felt that technical expertise for interventions other than block plantations was weak. This need is expected to be met by trained agents as the training program progresses. Additional technical assistance should be provided in this area by extending the service of the forestry advisor for the life of the project and shifting the technical focus to provide more technical support in training.

4. Media Campaign

Outputs to date have been mostly public service messages, with little attention to developing training materials. It is recommended that a media center be established, and a consultant has been hired for this purpose. The media staff should work more closely with the training component to develop materials for extension training.

5. Private Sector Promotion

The goal of this component is to establish a market information service. Many of the basic studies have been completed and in-field information dissemination has started. The important connection between the producer and the buyer is being promoted. Technical assistance for this component should continue for the life of the project.

6. Policy Review

Studies have been done on policy issues and the project is serving as an information support service to GOS policy makers. Changing policy is a long-term process involving many GOS agencies. Continued close cooperation between mission and project is needed to remain focused on this component.

Among the lessons learned through the evaluation process are the following:

- The goal and purpose of the project are valid, but are not achievable within the life of the project.

- The time frame as designed was too short for a forestry project.
- Other objectives in the Project Paper log frame were not realistically measurable.
- Assumptions about the training needs of the forestry service were unrealistic.
- Long-term technical assistance needs were underestimated.

The many recommendations contained in the body of the report should be viewed as suggestions for consideration by the project. The evaluation team has complete confidence in the technical and administrative competence of the project team. Continued support in the form of inputs for technical assistance, vehicles, merit pay, per diem, and fuel assistance will be needed for the life of the project.

LIST OF DEFINITIONS

CIC	Comité Interministériel pour la Coopération
COP	Chief of Party
CTL	Conservation des Terrains Littoraux
CTP	Conseil Technique Principal
DCSR	Direction de la Conservation des Sols et de Reboisement
DEFC	Direction des Eaux et Forêts et la Chasse
DEFCCS	Direction des Eaux et Forêts, Chasse et Conservation des Sols
GIE	Groupement d'Intérêts Economiques
GOS	Government of Senegal
ICRAF	International Center for Research in Agroforestry
IRR	Internal Rate of Return
MDRH	Ministère du Développement Rural et de l'Hydraulique
MGP	Matching Grant Program
MPN	Ministère de la Protection de la Nature
NPV	Net Present Value
ORTS	Office de Radiodiffusion et Télévision du Sénégal
PACD	Project Activities Completion Date
PASA	Projet Anacardier Sénégalc-Allemagne
PRECOBA	Projet de Reboisement Communautaire du Bassin Arachide
PSP	Private Sector Promotion
RSP	Roadside Planting Program
SAF	Service Administratif et Financier
SAT	Service des Affaires Techniques
SECID	South East Consortium for International Development
SRP	Senegal Reforestation Project
UNICOM	Unité de Communication (Ministère du Plan)
USAID	United States Agency for International Development

SECTION I PROJECT DESCRIPTION

A. Introduction

The purpose of the mid-term evaluation was to assess the continued validity of key project assumptions, to determine whether the project purpose is still attainable, to evaluate the management roles of the parties involved (GOS/MDRH, the technical assistance team, and USAID), and to identify whether any modifications in the project are needed.

The goal of the project is to have a positive impact on the environment, economy, and agricultural production of Senegal. The project assumptions are two: first, that only by planting and protecting millions of trees can soil degradation be reversed and the desertification process stopped; and second, that farmers and others will be motivated to plant trees based on perceived economic gain from increased agricultural production, increased fodder production and shade for livestock, from the sale of forest products such as poles, firewood, charcoal, fruits, and nuts.

The project purpose is to mobilize large scale popular participation in tree planting with local and private resources. This is to be done by:

- Increasing the awareness of the Senegalese people concerning the benefits of planting trees;
- Providing the necessary technical knowledge to reap the potential benefits;
- Encouraging the Senegalese people to carry out an increased rate of tree planting with individual resources.

B. Project Components

The emphasis of the project is on the potential for economic gain, including increased agricultural productivity through private investment in the planting of trees and shrubs. There are six activity areas with measurable project outputs: (1) matching grants program, (2) roadside planting, (3) training, (4) media campaign, (5) private sector promotion, and (6) policy review.

1. Matching Grants Program

Goal: 1,000 entities meeting the eligibility criteria.

Accomplishments: 744 grants were realized through 1989, and it is estimated that by the end of the project at least 2,816 will be realized, accounting for at least 4,000 hectares of trees planted.

2. Roadside Planting

Goal: 200 kilometers planted by private entities.

Accomplishments: Through 1989 only 30 kilometers were completed, and 31 kilometers have been planted in 1990, leaving 139 kilometers to be completed in the next three years. This points to the need for continued technical assistance.

3. Training

Goal: 5 M.S. degrees, 20 short courses in the U.S., 750 in-country participants, 200 observational tour participants.

Accomplishments: 15/20 of the planned U.S. short courses and 17/25 of the US 2-week observation tours have taken place. Third-country observational tours are behind schedule (52/175), primarily due to logistical constraints in identifying appropriate institutions and organizing the visits. Staff feel that these problems will be overcome and objectives met by PACD. The 5 master's degree students began their studies; 12 in-country training seminars were held for 201 forestry agents and others participating in the matching grants program and roadside planting.

4. Media Campaign

Goal: 5 television or radio programs or films produced and 10 other media activities developed and used.

Accomplishments: See tables 10 and 11 in annex B.

5. Private Sector Promotion

Goal: 7 studies completed and 75 private nurseries started.

Accomplishments: Completed studies include the first phase of the baseline study on the potential of tree products; marketing studies of sawnwood, treated

and untreated roundwood; the existing capacity of private nurseries; and a feasibility study on wood fencing.

6. Policy Review

Goal: Major policy constraints identified and reported to senior GOS staff.

Accomplishments: A study of the current and proposed forestry codes was completed.

SECTION II GENERAL ADMINISTRATION AND MANAGEMENT

A. Introduction

The Senegal Reforestation Project is based on assistance agreement 685-0283 of August 22, 1986, between the Government of Senegal and The United States. The second part of annex I of this agreement, Party Responsibilities, defines the structural organization of the project. The project was assigned to the Direction of Soil Conservation and Reforestation (DCSR), originally part of the Ministry for the Protection of Nature. The DCSR no longer exists, and the project is now assigned to the cabinet of the Ministry of Rural Development and Water Resources.

The GOS project coordinator works in close collaboration with the technical team of an American contracting entity chosen and regulated by the Government of Senegal. The head of the technical team is designated as the chief technical consultant of the project.

The project is organized into two branches:

- Financial and Administrative Services
- Technical Services, composed of five divisions: Matching Grants, Private Sector, Roadside Planting, Training, and Media

A structural reform of the GOS was implemented in March 1990. The principal reforms were:

- Dissolution of the MPN
- Fusion of the DEFC and the DCSR by the creation of the Direction of Water, Forests, Hunting, and Soil Conservation (DEFCCS)
- Assignment of the DEFCCS to the Ministry of Rural Development and Water Resources (MDRH)
- Assignment of the SRP to the MDRH, which also includes the Directions of Agriculture, the Protection of Vegetation and Water Resources, and various other rural development entities

The projects' original position in the MPN is shown in the organizational chart in figure 1, while figure 2 shows the organization after restructuring.

Figure 1: Organization Before Restructuring

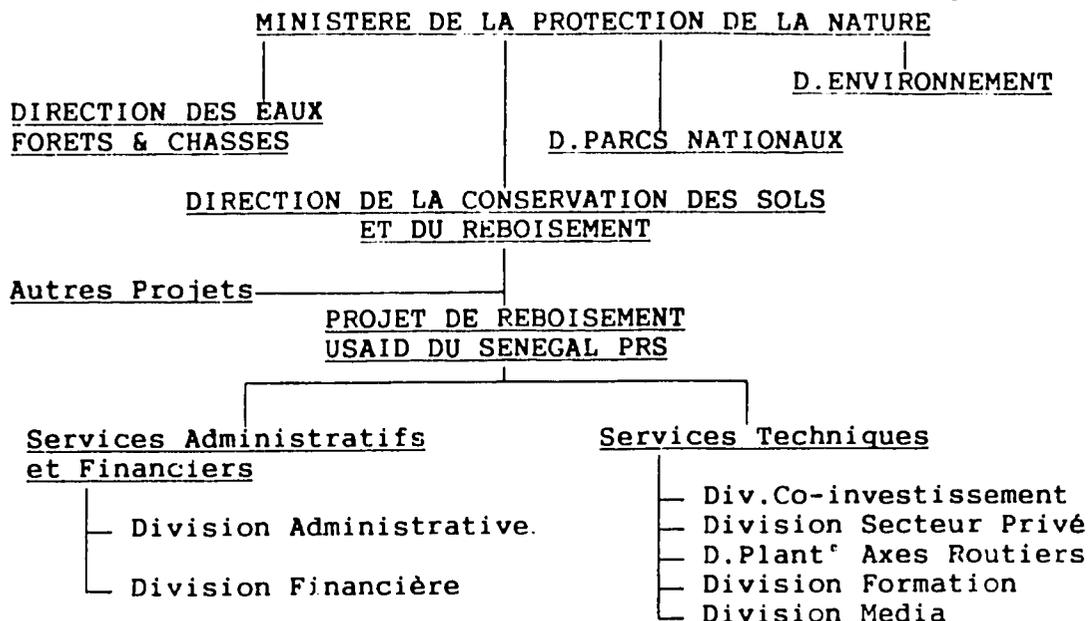
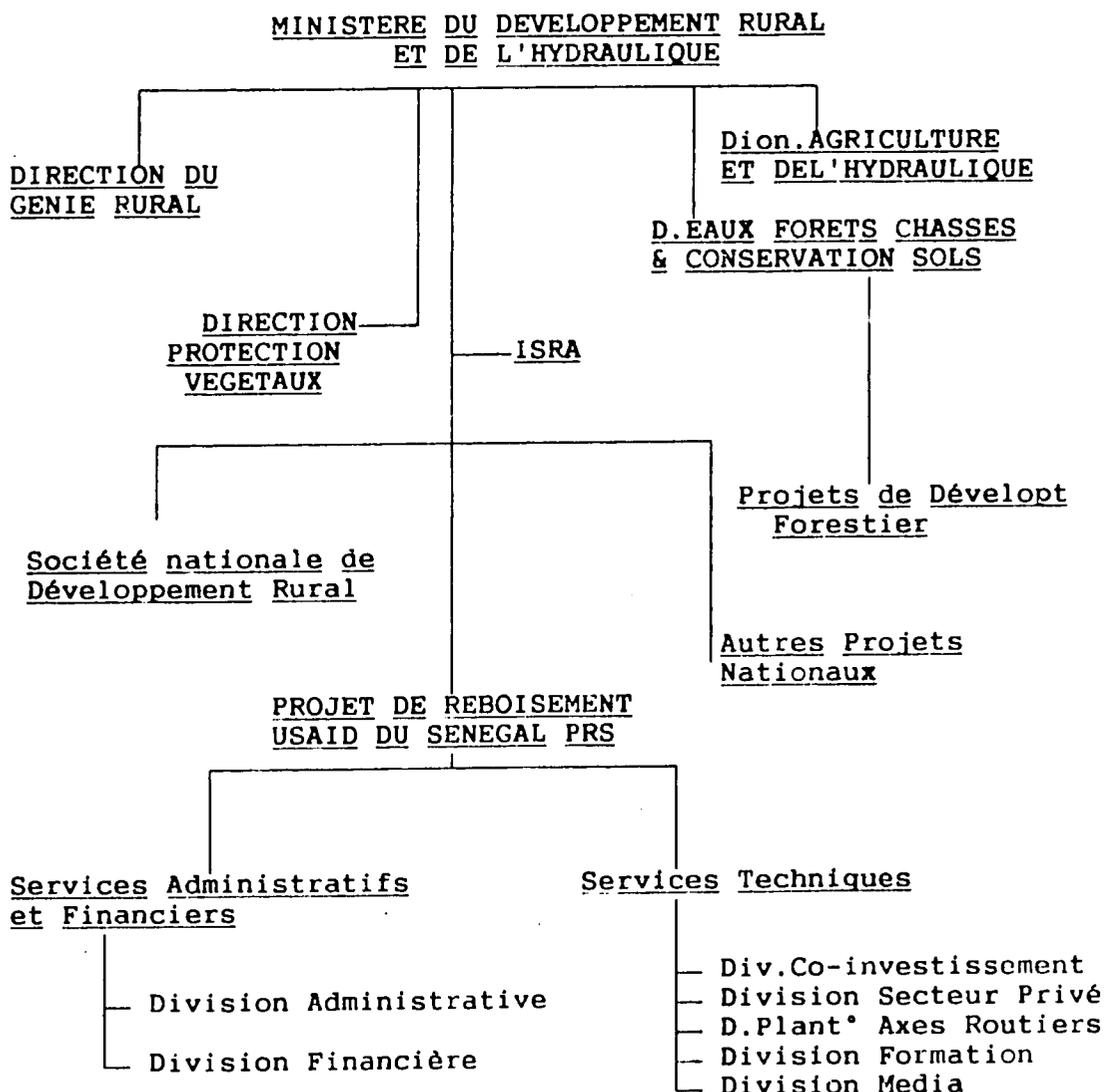


Figure 2: Organization After Restructuring



In the execution of the project, the SRP internal organization that includes the chosen contracting entity, (SECID, LBII joint venture) has effectively adhered to the national reforestation policy as adopted by the DEFCCS.

The SRP also lends support to the extension services of the DEFCCS. Some constraints have been noted due to the limited means (technical and logistic) necessary for the agents to accomplish their community awareness and training objectives.

The approval of decision No. 07897/MDRH also formally replaces the Interministerial Council for Cooperation with a Surveyance Committee composed of:

MDRH, as President

Representatives of:

Ministry of the Interior
Ministry of Public Works
Ministry of Culture and Communications
Ministry of National Education
Ministry of the Economy and Finances
USAID

The Directors of the Divisions of:
DEFCCS
Agriculture

The Director and CTP of the SRP

Recommendation: That the Surveyance Committee be organized and meet as planned to oversee the adherence of activities to SRP philosophy and to facilitate the execution of its mission.

The present lack of an active committee has been compensated for by the close cooperation of the Direction of the DEFCCS and the SRP and by participation in diverse intra- and interministerial meetings. It is advisable that the GOS take the necessary initiatives for the creation and functioning of the Surveyance Committee.

The SRP relies on its working relations with DEFCCS personnel without giving any corresponding support. It was observed during the present evaluation that DEFCCS personnel (inspectors and agents) could only participate in the field trips using transport borrowed from other projects such as PRECOBA, CTL or PASA.

Recommendation: Relations between the SRP and the DEFCCS should be reinforced and formalized, and greater institutional support provided to DEFCCS.

B. Project Management

As required in the terms of reference, the team observed various findings concerning management and administration. There were no major problems. The only major recommendations are those resulting from insufficiencies in the project design. The quality of management and administration are excellent.

Cutting off the per diem and performance payments by USAID, as designed in the project paper, could endanger the achievement of the project goals.

Recommendation: Continued support is needed by the project staff. Items that should be continued are:

- Per diem for staff travel
- Performance payments to GOS staff personnel on a monthly basis

C. Logistical Support for Project Staff

The limited availability of logistical support to the SRP staff is a major constraint to a project that is national in scope. It is estimated that a pool of 10 vehicles in good condition is needed.

Recommendation: The project should proceed with procurement of vehicles to provide a pool of 10 functional vehicles.

D. Logistical Support for Extension Agents

The main constraint faced by extension agents and other forestry service personnel in carrying out their missions has been the problem of transport. The service is generally understaffed and personnel must cover a wide area. Regional Forestry Service offices have at least one vehicle at their disposal, although they are often shared among services. Recently a fuel allotment of 10,000 liters for one year has been granted the project for assistance to regional forestry services involved in the promotion of project programs.

Recommendation: If an efficient fuel-sharing system proves beneficial to project activities over the next year, more consideration could be given to standardizing a fuel assistance scheme in order to help the forest service attain project objectives. Such a program could be linked to the encouragement of long-range policy changes, such as the phasing-out of production and free seedling distribution, with the consequent savings allotted to improving the extension capacity.

E. Interaction between MDRH and SRP

A need for continued interchange was identified between the MDRH and PRIST, specifically at the level of technical advisor, as well as with other projects.

Recommendation: Some version of the project's self-definition, such as that included in the mid-term evaluation compilation, should be circulated.

F. Forest Service Efficiency

Administrative complications and lack of efficiency in contract management are caused by a lack of expertise or insufficient resources at the disposal of forestry agents. The forestry bureaucracy is complicated, and forestry agents are poorly trained in administrative procedures. This may discourage farmers from continuing in the matching grants program and from continuing planting activities after the program, since it may create friction between local forestry service administration and farmers.

Recommendation: The administrative system should be fine-tuned for contract management. Agents should be trained in managing contracts, to help them to clearly explain to participating farmers the steps involved and time frame needed.

Recommendation: The Forest Service should progressively disengage itself from certain activities that can be undertaken by private sector involvement, such as seedling production and reforestation efforts.

G. Recordkeeping

Recordkeeping is generally good, and there is sufficient information tracking to cover all administrative and program needs.

SECTION III MATCHING GRANTS PROGRAM

A. Introduction

The project paper stated that the goal of this component is replicable and sustainable farm-level tree planting, without cost sharing, which provides direct and indirect benefits to the farmer. The strategy chosen by the project to accomplish this is to promote private investment in selected on-farm forestry activities that can maximize long-term sustainable benefits to farmers.

The project paper envisioned matching grants interventions in the areas of soil enrichment, eucalyptus plantations, and fruit and nut tree orchards.

The goal of this component remains valid, but the activities that the project is supporting have changed from the time the project paper was written, due to the information generated by the studies done by the project. The time frame of the project, as designed, was also too short for a forestry project. Thus, the potential benefits associated with the various tree planting activities encouraged by the project will not be realized before the project ends, and the sustainability of these activities cannot be assessed.

B. Financial Assessment of On-farm Tree Planting

The planting of trees is profitable and can add to the productivity of farming and to the income of individuals and groups who undertake this activity. But the goals set cannot be achieved within the life of the project. There is an information gap, as many Senegalese do not know the value of planting trees or the most profitable methods to use. Some types of tree planting are more beneficial to society than others, and this fact provides justification for subsidizing tree-planting activities. The project is successfully carrying out this function at present.

Project paper assumptions were realistic in predicting that private entities would perceive the potential benefits from participation in the project. However, another important consideration is the extent to which the most appropriate land-use decisions are being made to maximize potential long-term sustainable profit. It is clear that private entities often do not use appropriate on-farm techniques.

The economic benefits for the three types of tree planting activities encouraged by the project were estimated in the project paper. Due to the evolution of project priorities, the analysis done by the evaluation team also included a mango orchard activity.

1. Soil Enrichment by Planting Kad Trees (Acacia albida)

Soil enrichment is based upon the planting of kad trees (*Acacia albida*) on rainfed crop fields to increase soil fertility, which results in higher crop yields. Based on past research, it is assumed that if 50 kad trees are planted on one hectare on which millet is grown, the farmer can expect an increase of 12 percent per year in years 6-10 after planting, 24 percent in years 11-20, and 50 percent in years 21-40. These assumptions result in a financial internal rate of return (IRR) of over 6 percent after 10 years, 20 percent after 20 years, and 22 percent after 40 years.

a. Comparison with Fertilizer Use

Planting kad trees to enhance soil fertility and increase crop yields can be compared to a program of fertility enhancement through the use of chemical fertilizers. These two strategies may be appropriate in different agroclimatic zones due to differences in relative profitability. Careful analysis of the project paper results shows that *Acacia albida* field trees may be more viable in lower rainfall zones, while other species and interventions along with cash inputs such as fertilizer and improved varieties would be appropriate in higher rainfall zones.

It is argued in the project paper that chemical fertilizer is not available at the present time to most Senegalese farmers and requires foreign exchange to be purchased. However, the project will cost US\$10,000,000, and this could be used to buy fertilizer. But fertilizer is not a renewable resource, as are trees if properly managed. The net economic incremental benefits are based on relatively conservative assumptions, although beginning yield levels are overstated, and purport to show that kad planting is beneficial from society's point of view.

The financial net incremental benefits, however, may explain why in higher rainfall zones where the agronomic returns of fertilizer use are greater, farmers are not planting kad trees, but are using fertilizer when it is available. In the project paper analysis, over a 20-year project life, the net incremental financial gains from fertilizer use are estimated at 74,000 CFA, or 63 percent greater than that associated with kad tree planting (this is not an NPV, and assumes the fertilizer price at the former level of subsidy). Even though over a 40-year project life, the net gains from kad tree planting are 190,000 CFA or 50 percent, this is surely too far in the future to be considered by individual farmers. Such future benefits are relevant to society and governments as the custodians of society, but rarely convincing to individuals.

A financial analysis was done with the data generated by the project (see tables 1 and 2 in annex B), as well as with and without reimbursement through the matching grants (tables 3a and 3b). The initial investment in field trees is very small: 6,237 CFA (142 CFA x 44 trees/ha), and the NPV of the returns over a 20-year period from this investment is 5,072 CFA, for a financial IRR of 17 percent. This is a higher IRR than that for eucalyptus, but the net present value (NPV) for eucalyptus, which is the more correct investment

criterion, is much higher. With the reimbursement, the NPV for kad planting increases to only 7,558 CFA with an IRR of 22 percent (tables 4a and 4b). The reimbursement is a small percentage of the overall financial incentive to plant kad trees (figures 3 and 4).

b. Livestock Fodder

Herders are well aware of the forage value of certain tree species, which becomes especially important during the late dry season. It is estimated in the project paper that one hectare with 50 established kad trees can produce approximately 5,000 kilograms (1,000 kg per year) or 200,000 CFA worth of pods (at 40 CFA/kg) used for fodder between years 16 and 20 of tree life. Peak pod production of 1,500 kg per year takes place in years 21-30 of tree life. There is also increased fodder production associated with increased millet yields. This is not the case with groundnuts, since this crop's biomass decreases with increased pod production (as is the case with most legumes).

2. Block Plantation of Eucalyptus

This strategy is based on the planting of one hectare of eucalyptus seedlings costing 95,250 CFA (excluding land value, but including the opportunity cost of family labor). This results in a financial IRR of 17 percent after 6 years. Based on the cost and returns information generated by the project, the financial IRR was recalculated over a 20-year production period (allowing 3 cuttings of poles) and was found to be 15 percent without the incentive provided by the matching grants reimbursement. This is an NPV of 22,365 CFA (see tables 5a and 5b for these results and the underlying assumptions).

With the reimbursement (tables 6a and 6b), the NPV increased substantially to 59,092 CFA, for an increase in the financial IRR to 21 percent. The reimbursement provides a significant incentive to plant eucalyptus. Figures 3 and 5 at the end of this section show that it is much greater than the incentives associated with reimbursement for fruit and field trees. This is because the reimbursement is based on the number of trees per hectare, and this number is highest in a block plantation.

A comparison of block planting by individuals and the government indicates that the individual approach is less expensive. To plant one hectare of eucalyptus by the individual approach would cost approximately 95,000 CFA. In the USAID/Senegal Fuelwood Production Project, the direct GOS costs for planting and maintaining a hectare of fuelwood trees was found to be approximately 291,000 CFA. At this cost level, the GOS cannot afford to achieve the annual planting targets set forth in the Economic and Social Development Plan. Each hectare of private planting stimulated by this project would contribute to a reduction in GOS costs.

3. Fruit and Nut Trees

It is estimated in the project paper that fruit and nut trees will account for approximately 10 percent of the trees planted during the life of the project. At present only 2 percent of project planting activities are fruit trees. Although they may not always be planted in commercial orchards on a large scale, the return can be usefully estimated on a per-hectare basis. Planting one hectare of cashew seedlings can result in a financial IRR of 23 percent over a 20-year period.

Fruit trees can be highly profitable, resulting in an NPV of 922,911 CFA per hectare over 20 years, or an IRR of 51 percent without matching grant reimbursement (tables 7a and 7b). The additional income from reimbursement in the matching grants is only 953,623 CFA or an IRR of 59 percent. The reimbursement is not needed to promote fruit trees (figures 3 and 6). This can be seen in a constant demand for fruit trees by the population even outside the project where there is no cost sharing.

This does not mean that the project should discontinue reimbursement for the planting of fruit and nut trees. From farmer interviews the team believes that social incentives may be playing a larger role in the tree planting decision than economic incentives. Some typical response were:

"I can produce enough without this parcel."

"I am an old man but this is for my sons."

"It is a good thing to do for my country/family/village/association."

"The crops weren't good this year, so we are selling some trees to supplement the food supply."

By comparing the value of the reimbursement with total return of an intervention, the relative incentive can be determined. This ratio can then be compared between interventions. Figure 3 shows the results of this analysis for survival rates from 40 percent to 100 percent. The ratio for fruit plantations is less than 3 percent and has little variation throughout the range of survival rates. Field trees vary from 20 percent to 40 percent at a fairly constant rate.

The ratio for eucalyptus plantations varies widely from over 150 percent at 45 percent survival to about 40 percent of the return at 100 percent survival. This is about the same as field trees in the high-survival range. At between 45 percent and 50 percent survival rates the ratio is over 100 percent of the return. The incentive of reimbursement is the highest for lower survival rates of eucalyptus block plantations.

By far the largest incentive of reimbursement is as an immediate return to the farmer. This represents the high discount rate that is often observed in farmers' economic behavior.

To increase the soil conservation benefits of the project, matching grant reimbursements should be targeted to promote the planting of field trees. In the case of eucalyptus, the reimbursement is a significant private or financial incentive. The reimbursement provides enough incentive that it may in fact make the prospect of eventual economic benefits associated with investment in field trees unattractive in comparison.

4. Program Benefits for Farm Households

The level of potential benefits accruing to project participants is critically dependent on the transmittal of technological information that is not being made available to participants at this time. With the current level of technology being used by participants, the benefits relative to those associated with other income-earning activities may be very low, and the potential income streams realizable too far in the future.

Recommendation: A study should be done to determine why farmers did not adopt more on-farm forestry activities before the project. From this study it can be determined whether the farmers are likely to continue forestry activities after the project. The constraints to adoption of forestry technology by farmers and profitability have to be assessed in the whole farm context. This includes quantifying the relative importance of different forestry activities in the whole mix of income activities carried out by Senegalese farmers. It is not enough merely to show that it is profitable; it may add relatively little to farm income and not fit well within the overall income strategy of farmers. This research will point to strategies that will promote forestry activities.

C. Ecological and Technical Effects

1. Promotion of Agroforestry

Agroforestry in the project is limited to windbreaks, live fence, and some field tree planting. The definition of agroforestry is the one used by ICRAF and the project, i.e., some type of interaction takes place between the woody plants and crop plants which benefits the crop plants. Thus block plantations of eucalyptus would be excluded, as well as block fruit and nut trees, unless there is some interaction such as with windbreaks or long term soil improvement.

The matching grant is an effective vehicle for promoting some agroforestry practices. It is useful for windbreaks and live fence and for the establishment of some field trees. It ignores the establishment of field trees by protection of natural regeneration and the use of vegetation with soil conservation techniques.

Recommendation: The project technical staff should consult on ways and means to include practices other than simple tree planting in the matching grant formula.

Recommendation: To assist the matching grants program in promoting agroforestry options, a team of well-trained agents should be established to oversee and coordinate activities in each region. The designation of regional matching grants coordinators would assist project staff in assuring diversification and increased appropriateness of techniques, as they serve in an advisory capacity to other agents.

Establishing the team of regional coordinators would necessitate heavy follow-up and support from project staff in the initial stages until the coordinators have proven their efficiency and acquired the necessary managerial skills. Logistical assistance to cover activities over a wide area would be vital. Extension agents using various soil and water conservation and agroforestry approaches could thus be rewarded by an increase in status as well as by publicizing their successes.

Forestry extension agents have a fairly high transferral rate, staying at their posts on the average only three years before being reassigned. In some cases this has resulted in a discontinuity in field activities, as the new agent may not understand the technological design of interventions originally extended by his predecessor.

Recommendation: This problem will diminish as more agents are trained. Regional coordinators could insure that sufficient knowledge is transferred to the incoming agent to ensure continuity.

2. Ecological Impact

The ecological impact of the project interventions is analyzed in table 9. Only the cost-sharing and street tree components have any direct ecological impact. The matching grants program to some extent addresses agriculture sustainability. The other components help fulfill the conditions necessary for these on-the-ground impacts to take place.

Long-term effects of eucalyptus monocultures are not known in this ecological zone. Experience from South America and California indicates that in semiarid zones buildup of phenols in the soil suppresses other vegetation. It is not known how long this effect persists after the removal of the eucalyptus.

The objectively verifiable indicators concerning soil loss and crop yields, listed in the logical framework, are not verifiable.

Recommendation: Objective tree analysis should be used to establish verifiable indicators and proxies.

3. Natural Regeneration

Natural regeneration within the framework of the project is applicable only in the case of mixed block plantations and field trees. Protection of natural regeneration is a

much more cost-effective method of tree establishment. This lesson should have been learned from the Bandia project. Cases were observed in the field where natural regeneration was slighted in favor of planted trees. This is encouraged by the cost-sharing mechanism where credit is earned only from planting.

If it is administratively possible and consistent with the goal of the plantation, natural regeneration could be credited for reimbursement the same way as protection costs of planted areas are reimbursed. Part of the cost of each tree planted is the cost of protection. For example, 30 percent of the establishment cost of tree planting is for protection, and for every 6 trees established by natural regeneration, the equivalent credit of one planted tree is given.

The team hesitates to recommend cost sharing for the protection of natural regeneration in the administrative framework of this project. A reimbursement formula can be easily devised for protection of natural regeneration, but there would be tremendous difficulties of administering the cost share by the project. The team believes this is best left to a follow-on project with incentives for protection of natural regeneration included in the design, rather than trying to retrofit the existing project.

4. Spontaneous Replication

The project has so far had no visible effect on the spontaneous replication and adoption of tree planting. The time elapsed is much too short to expect to see any effect. There is, however, a steady growth in the number of participants in the cost-sharing program, as the program becomes better known and expands to new regions.

Recommendation: The project should continue to do studies on the economic potentials of diverse species and associations, and disseminate this information to reinforce the extension process.

5. Species Choice

Exotics have a place in on-farm planting of trees. The evaluation team is concerned about block monocultures, especially eucalyptus, where other possible species should be encouraged.

The distribution of seedlings by region shows a pronounced preference for introduced species such as Eucalyptus, Anacardium, and Casuarina. It would be ideal to maximize the use of local species, but the absence of silvicultural, and transformation and use, information on these species makes it difficult to act on this principle. In effect, twenty years of promoting fast-growing exotics has increased the familiarity of rural populations with these species.

It should not be difficult for the SRP to influence species choice for roadside planting, but here again, fast-growing exotics have been favored over indigenous species. Historically, the first roadside trees established in Senegal were local species.

Recommendation: Further studies on the silvicultural characteristics of indigenous species should be encouraged by the SRP, which should also act to disseminate existing and acquired information.

Figure 3

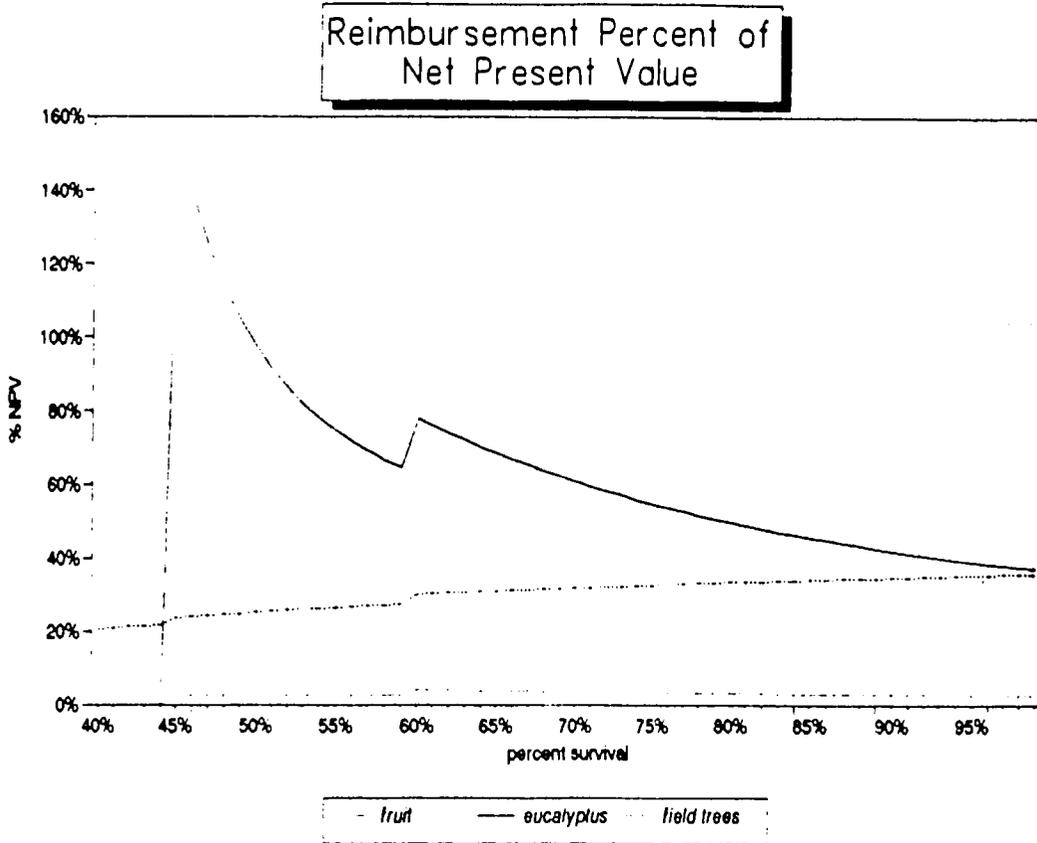


Figure 4

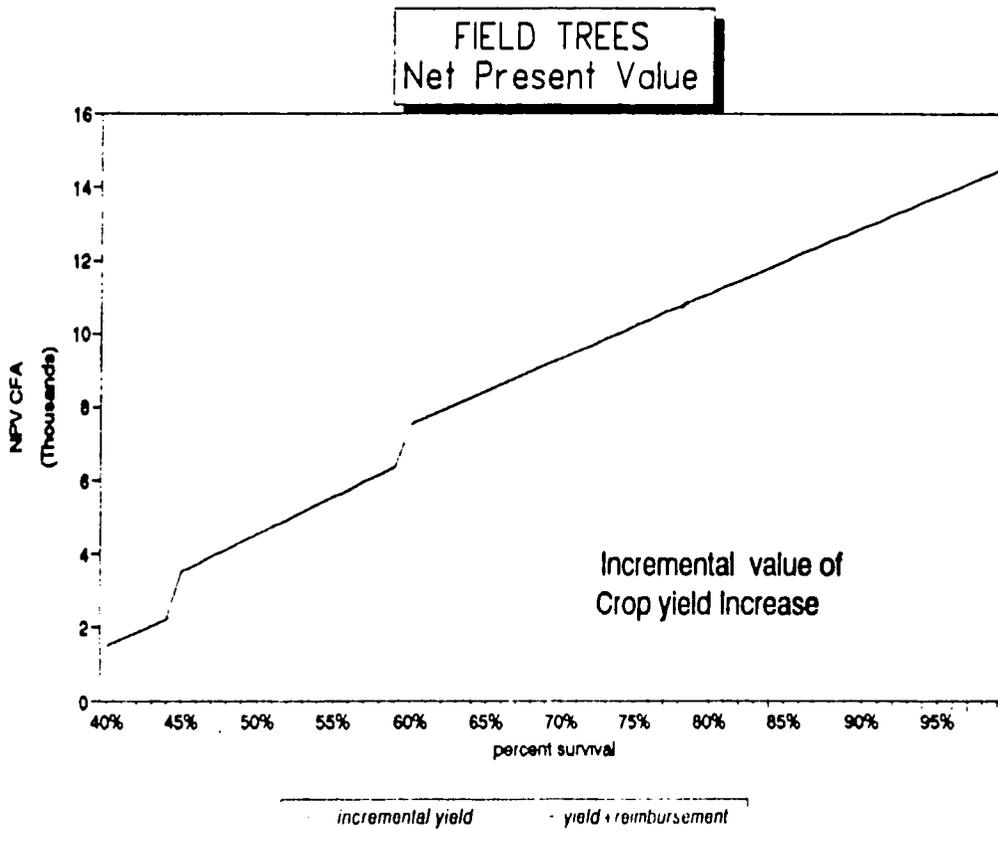


Figure 5

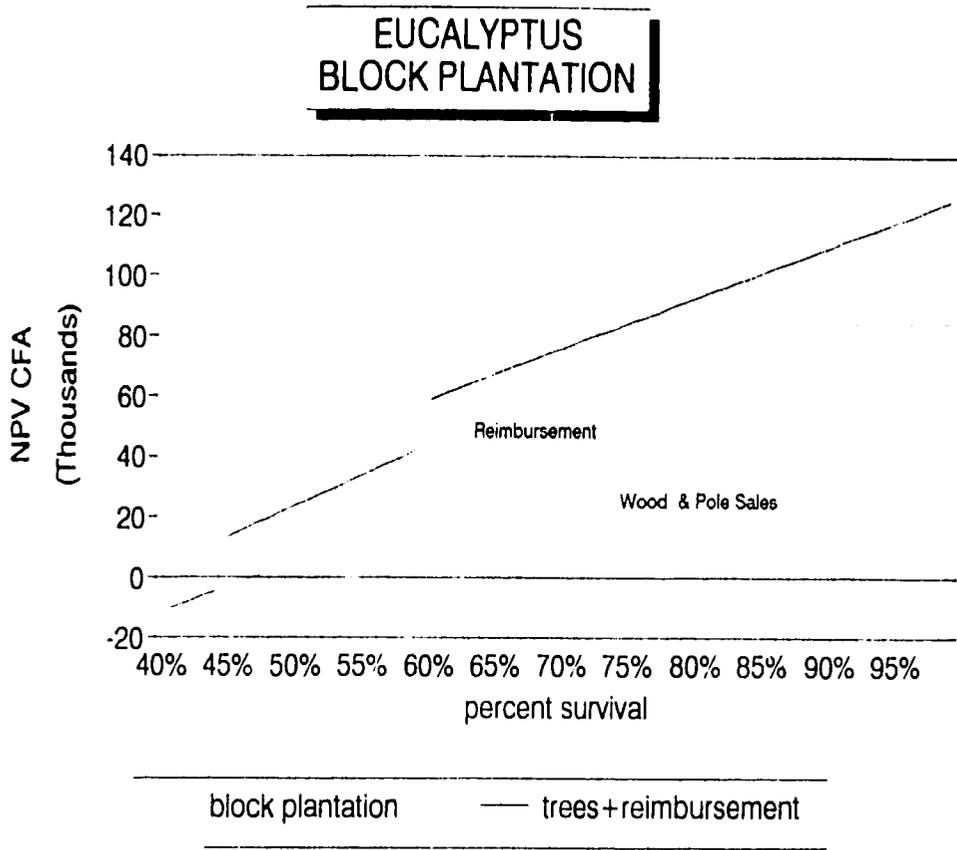
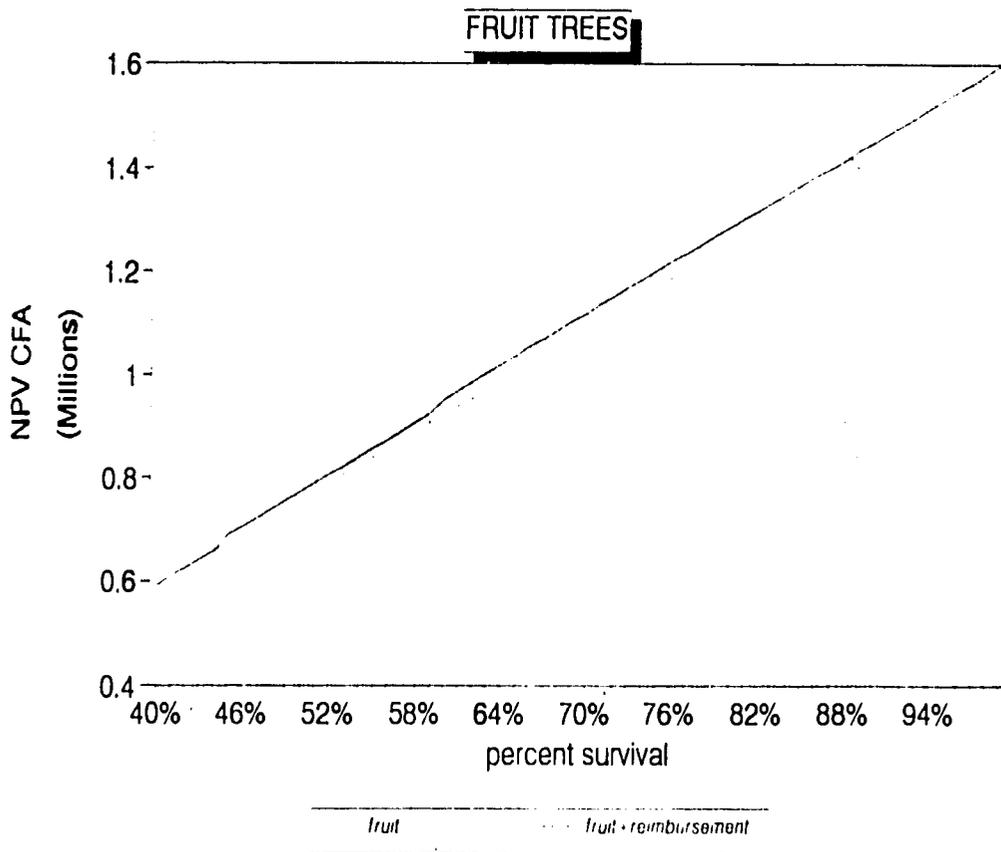


Figure 6



SECTION IV ROADSIDE PLANTING

A. Introduction

The roadside planting component has as its goal the increased reliance of government agencies, including local government entities, on the private sector to undertake roadside reforestation efforts. It seeks to strengthen the capacity of the private sector to meet these needs efficiently and play a role in other reforestation efforts. It also seeks to increase community involvement in these activities.

This program is based on the assumption that government dependency on the public sector to execute its reforestation efforts runs contrary to government policy aiming at reduced unemployment and public expenditure.

Several recommendations are presented, but this component needs to mature. Not enough time has passed to test the concept of private sector entrepreneurs as planting contractors.

B. Economic Analysis

Except for road bank stabilization and some wood and fodder production, there are few directly measurable economic benefits from roadside trees, but considerable positive externalities shared by all of society. The unquantifiable benefits of roadside planting include:

- Aesthetic value
- Noise reduction
- Reduction of dust and sand carried by the wind
- Reduction of heat through shade
- Increased humidity through transpiration

These positive externalities are difficult to quantify and promote through ordinary market channels. Since the economic benefits cannot be captured by individuals and it is difficult to charge them individually, cost-effectiveness is the appropriate measure of whether private or public agencies are more efficient in carrying out such activities. Although government agencies can generally plant trees more cheaply, it is doubtful that all costs of

carrying sufficient equipment and personnel have been considered. The role of the private sector is as a contracting entity to relieve the government of the costs of this equipment and personnel.

The analysis of private versus public entities carrying out these activities, including the cost-effectiveness of this approach, should take place within the context of the overall goals of the project, one of which is to develop a private sector capacity to carry out tree planting.

In the current roadside planting program it is necessary to compare the efficiency of various private entities, such as private firms, GIEs, and women's and youth groups, in carrying out these activities. In the bidding process, market forces are at play and the most efficient entities can be identified. This is dependent upon the ability of the agency evaluating the bids to identify realistic bids by competent entities.

The cost-effectiveness of different entities is also expected to be different in nature depending on local conditions. Thus, in urban areas, private firms may be more efficient than youth groups, but in rural areas groups may be more efficient and private entities may in fact not exist.

C. Management and Administration of the Component

1. Public Sector Competition

Due to competition with the public sector, there may not be a significant impact on the extension of market possibilities for small and specialized enterprises because of work still carried out by the Forest Service and communities.

Recommendation: Market development for enterprises and GIEs cannot be realized except by the disengagement, at least partially, of the Forest Service from certain activities such as seedling production and free distribution. The availability of government-produced trees at no cost to one bidder and not another does not promote stable contracting entities.

2. Contract Duration

The short contract duration of nine months often leads to turnover of plants to the community during the most stressful time of year, i.e., the late dry season.

Recommendation: Increasing the contract duration to 12 months will ensure the survival of trees through one rainy season. However, as this will add to the implementation cost of the project, the economics of this recommendation should be examined.

3. Availability of Finance

New entrepreneurs who participate in the roadside planting program often find difficulty in arranging financing of their activities.

Recommendation: Alternatives should be studied for obtaining financing on a timely basis for the entrepreneurs.

4. Local Participation

The long-term effectiveness of communes and rural communities to continue street tree planting and maintenance is dependent on the availability of funds and trained personnel or contractors. This in turn depends on the demand for street trees by the population.

Recommendation: The project should attempt to ensure the demand by involving the population in the maintenance of street trees. The technique used by an entrepreneur in St. Louis, of painting a number on each tree protector and inviting the population to adopt a tree, is very effective and should be used whenever possible in the street tree program.

5. Protection of Roadside Trees

Protection is a problem especially in the north where crinting is not readily available.

Recommendation: Tree protectors could be one of the major products of a local fence-making operation in each region, to be coordinated with the private sector.

6. Entrepreneurial Training

Some of the entrepreneurs lack technical expertise, which can result in poor survival rates.

Recommendation: A minimum technical capacity of the entrepreneurs should be ensured prior to engaging them, and follow-up technical assistance should be provided where needed.

7. Emphasis on Groups

The emphasis on GIEs and youth groups may not lead to viable, sustainable private entities. These groups rely on the cooperation of their members, and are liable to the same problems as cooperatives. Members may not make themselves available to carry out the work required, yet want to reap the benefits. When working with groups, agents should be prepared to assist members in establishing clear definitions of roles and responsibilities, as well as expectations.

8. Monitoring and Evaluation

Monitoring and evaluation are adequate to serve as a basis for payment to entrepreneurs.

SECTION V TRAINING

A. Introduction

Extension agents equipped with increased technical competence and improved communications, extension, and planning skills will be better able to motivate the private sector to plant and maintain trees on a large scale. In addition, the training program will give a better insight into the interaction between the components of the farming system, thus assisting the extension agent's diagnosis and design of intervention plans that more adequately respond to farmers' overall income objectives.

B. Observations and Recommendations

1. Long-term Master's Degree Training in the United States

The GOS has a clear idea of the eventual placement of the five master's candidates. It is impractical to be specific on future plans due to changing personnel needs, the creation and closing of projects, and structural reorganization. These highly trained specialists will increase the nucleus of technical forestry competence within GOS agencies and projects.

2. Short-term Courses and Study Tours in the U.S.

It is not clear what effect short-term training and study tours have on target groups.

Recommendation: Follow-up surveys should be done to assess changes in attitudes and practices as a direct result of study tours.

3. Third-country Observational Tours

Third-country observational tours are behind schedule (52/175) primarily due to logistical constraints in identifying appropriate institutions and organizing the visits. Staff members feel that these problems will be overcome and the project objectives met by PACD.

Recommendation: The project should promote the full potential of third-country observational tours by organizing seminars for returning participants, thus facilitating the sharing of experiences and information with other participants.

Recommendation: The trips should be more theme-specific in identifying and promoting the agroforestry techniques most adaptable to conditions in Senegal. By striving to demonstrate too much in too little time, the tour may be inefficiently budgeting its time and defeating its purpose by oversaturating the participants and not paying enough attention to instructive detail.

4. In-country Training Sessions

The training program is consistent with project objectives. It is presently divided into three modules:

- Tree-planting techniques
- Extension and communication skills
- Agroforestry

The courses have been organized using CRPPPF facilities with course materials either developed or adapted by project personnel. Reliance on an outside facility has led to considerable inconsistency in quality and presentation, and some problems in the scheduling of courses. The scheduling of in-country training seminars has thus fallen behind the original plan, which was perhaps too optimistic given the number of variables involved. Staff feel that with the recent transfer of CRPPPF to newer and more appropriate facilities in Thies, training will be easier to organize and manage.

Recommendation: Efforts should be made to identify the most effective teaching staff for the various seminars and arrange for their consistent participation.

The agroforestry sessions have so far been given to only a small fraction of the agents. Field observations have shown that many extension agents are unaware of various agroforestry options and persist in promoting primarily eucalyptus block plantations. Little regard is given to tree planting for uses other than pole production, although farmers and agents may be aware of the other benefits. Land-use potential is often wasted through neglect of planting configurations and species associations that could better optimize overall production. Livestock has received little consideration in the design of interventions, other than as a destructive agent.

Recommendation: Training modules should be revised to stress agroforestry from the outset. Greater emphasis should be placed earlier in the seminar series on agroforestry training that promotes an integrated view of the various components of the farming system.

Recommendation: Having the initial module dedicated to fairly basic forestry concepts, although seen as a necessity to promote consistency of technical knowledge among the agents, may be perceived as a professional slight by the target group. A review of basic methods could be worked into the overall agroforestry training program as the need is identified and opportunity arises. Extension skills and communication training should go

hand-in-hand with agroforestry to assure that agents have a viable message to promote with their newly acquired techniques. Inclusion of extension agents from other services, including livestock, in the training sessions with their forestry counterparts will encourage cooperation among the different extension services in promoting agroforestry.

Recommendation: Since there is no formal testing of participant comprehension of course materials during the seminars, a system should be developed to closely monitor changes in agents' field practices.

The team recommends that the project change the mandate of the forestry advisor to emphasize more responsibility for training, and support this with short-term technical assistance with expertise in technical training of agroforestry practices. It is felt that the matching grant program is now going well enough and the forestry advisor will have additional time to devote to technical training. There may also be a need to increase short-term technical assistance for the development of technical materials and follow-up.

A team of well-trained regional coordinators should be selected from among the best extension agents. Once this team is in the field with adequate logistical support, improved monitoring and on-the-job training of field agent activities would be assured. The project management is aware of the lack of technical expertise on the ground.

5. Private Sector Training

It is assumed that training of private sector entrepreneurs in planning and management, while increasing their awareness of the profit potential in forestry related enterprises, will encourage them and others to increase investment in private sector forestry.

The roadside planting program has identified a small group of entrepreneurs (with associated forestry extension agents) who could benefit from such a training session. The course has been developed and will be conducted in December.

Recommendation: A follow-up survey should be performed on entrepreneurs having participated in the next roadside planting campaign to assess the efficiency of those who have undergone training and those who have not.

SECTION VI MEDIA CAMPAIGN

A. Introduction

According to a survey (Sene, April 1989) 92 percent of rural inhabitants learned of the existence of the SRP through various forms of communication, of which 88 percent were informed through radio broadcasts. Training and community awareness are carried out through a variety of media (tables 10 and 11). However, more monitoring of different communications media is needed to maximize the effectiveness of the program.

B. Observations and Recommendations

After six consultancies concerning the media program, additional personnel have been assigned and action is being taken to supply the necessary equipment. These were the limiting factors in meeting the objectives of the media program.

Component output to date has been mostly public service messages concerning project activities and awareness themes. There has been little use of media for the development of training materials.

1. Establishment of a Media Center and Distribution Network

The project paper originally proposed promoting and profiting from close cooperation of the media component with other groups and organizations with the necessary resources. ORTS, UNICOM, and private sector sources were cited. In effect, the project had difficulty organizing production with other parties due to scheduling problems, equipment breakdown, and prohibitive costs.

Recommendation: The recommendations offered by Stith (June 1989) and Stith and Hergert (September 1990) are sound and should be carried out to completion if the media component is to realize its full potential. The establishment of a media center, even at the risk of duplicating other projects' or agencies' efforts, is justifiable to assure that relevant training materials are available as needed. It is of little concern where the center would be located but it is in the project's direct interest to promote and assist with the development and management of an efficient information sharing system. Materials to be collected would include training materials designed for the different target groups (extension agents, entrepreneurs, etc.) as well as equipment and materials that could be lent out and used by agents or other interested parties in their community awareness efforts. A consultant has been hired to assist with the development of the media center.

2. Media Staff Training

Recommendation: As the bulk of the equipment has only recently arrived, it is advisable to offer a training course on the proper use, maintenance, and simple repair of the new equipment to assure longevity, good working performance, and quality of product. The media staff should specify exactly what equipment training needs they have as soon as possible.

3. Media and Training

The media component has so far been underutilized by the training component. To date about two-thirds of the messages offered via mass media (primarily radio and television, representing 43/63 of the outputs) have been concerned with publicizing project activities. Comparatively little has been developed concerning general community awareness on environmental issues or for training purposes. The development of training materials and extension aids should be given a high priority in future media program output. Assistance with the design of training materials to be produced by the media component is another task of the above-mentioned consultant.

Recommendation: The media staff should work more closely with the training component to develop appropriate training materials and aids.

Recommendation: Upon completion of the organization of the media center the extension agents should be familiarized with the availability of materials which could be used for extension training.

SECTION VII PRIVATE SECTOR PROMOTION

A. Introduction

The private sector promotion component has the potential to be an integrating element in the project, since it ensures the ultimate benefits from tree planting activities. The stated goal of private sector promotion in the project is to increase investment in the forestry sector. There is currently little investment in forestry production, with the exception of cashews in some areas of the country. In the marketing of forestry products, investment is taking place in fuelwood, charcoal, gum and mangoes.

When the project began, there was little information on existing opportunities for investment in production and marketing activities. Although previous projects have promoted tree planting, they have seldom promoted tree planting by private entities or the marketing aspect of forestry activities.

The private sector component has chosen to concentrate on identifying and promoting opportunities for private sector involvement, mainly in the marketing of roundwood and sawnwood, by improving the functioning of existing markets, promoting price information, and by developing a marketing extension capacity within the forestry service.

The private sector component has made a good start in these activities, which should have an important effect on the overall goals of the project. These efforts are an essential element of the project since success in the marketing area will to a large extent determine whether the benefits derived from tree planting will be realized. Considerable further work needs to be done to strengthen the private sector activities of the project.

B. Observations and Recommendations

The development of the marketing potential of forestry products is an area in which the project can make an important contribution. It is essential that the services of the private sector advisor be extended for the duration of the project.

1. Marketing of Roundwood

The highest priority of the project is to ensure marketing opportunities for roundwood products, which come mainly from eucalyptus block plantations. Existing plantations are reaching maturity, and if commercial opportunities do not exist to sell these products it will be a serious disincentive to further planting.

Recommendation: The most feasible and practical way to ensure the marketing of these products may be to make use of the existing marketing channels for firewood and charcoal. The ability to collect and transport firewood and charcoal to the urban center of Dakar, where the market for roundwood products is also located, has already been developed by the union of firewood and charcoal exploiters.

2. Small Sawmills

The potential for the proliferation of sawmills that can cut the species emphasized by the project appears to be great, while that of large mills is not.

Recommendation: The project should examine the various types of sawmill options for conversion of small logs.

3. Marketing Capacity Within the Forestry Service

One of the strategies that has been identified to promote the private sector is to develop a marketing information extension capacity within the forestry service. This will necessitate training in this area and the provision of significant incentives to motivate already overtaxed forestry agents to take up this additional activity.

Recommendation: The training of forest agents to carry out a marketing information extension function should be added to the training program.

Forest agents are doing a laudable job, given their lack of resources and training. But the incentive to go into the field has been diminished by discouraging the payment of fines.

Recommendation: New means should be found to encourage forest agents in their role of transmitting production techniques and market development. This could include offering a financial reward for promoting marketing when marketing taxes are paid.

4. Private Nurseries

The continued free distribution of plants serves to discourage the private sector from increasing its tree production capacity.

Recommendation: A nation-wide policy should be adopted for selling trees, even from state nurseries, at a competitive market price.

The log frame calls for the establishment of 75 private nurseries. Based on a study by an independent consultant, this objective has been adequately addressed and the goal of 75 nurseries is no longer necessary.

Recommendation: The goal of 75 nurseries should be removed from the log frame.

Private nurseries are mainly supplying the needs of their owners and are limited in the variety of species of trees grown. This limits the potential for the benefits of agroforestry to be realized.

Recommendation: Seed availability should be monitored in order to guarantee that a wide variety is available.

To maximize gain from the matching grants program, farmers are seeking to minimize cash inputs. In some cases farmers have access to free seedlings from the Forest Service, a project, or another entity. Other farmers have to buy seedlings from existing private nurseries. Still others have found it most cost-efficient to produce their own seedlings. In either of the last two cases, the matching grants program has a definite positive effect on the promotion of private nurseries by increasing the demand for plants or providing the impetus for acquiring the technical know-how to produce them. Farmers unable to produce their own plants most often cited labor constraints as the limiting factor.

Recommendation: Extension agents identify matching grants participants who have the resources to produce their own plants and encourage them to do so with technical assistance and by acting as facilitators in procuring the necessary inputs.

5. Fruit and Nut Products

The profitability of fruit and nut trees far outweighs the benefits from other forestry-related activities. Much needs to be done in developing the marketing aspect since these are often perishable crops with thin markets that result in volatile and low prices.

Recommendation: Increased attention should be given to promoting the processing of perishable fruits and the export of fruits and nuts.

SECTION VIII POLICY REVIEW

Past policy has concentrated on reforestation efforts, mostly implemented and controlled by GOS. This policy was followed by the community reforestation approach. Current policy reforms are favoring a large increase in the involvement of the private sector, especially among individuals. This approach is hampered by the Forestry Code, which does not allow populations to profit from the harvest of their reforestation efforts.

A working group was created and charged with studying possible adaptations of Law 74-46 of 18 July 1974 and Decree 65-78 of 10 February 1965, which constitute the Forestry Code. It has submitted recommendations for reform which are in the process of adoption. The principle modification should be the introduction of the concept of privately owned woodlots. The SRP was not represented in the working group but the director, as a member of the Forest Service, was involved.

In 1989 and 1990 the SRP conducted studies to investigate the effects of the existing Forestry Code on private sector initiatives. These studies found areas lacking in both parts of the future Forestry Code but could not be taken into consideration by the law. Certain results seem disputable (e.g., exoneration of severance tax) in the opinion of some foresters contacted. In any case, the law being a general guideline, can serve the working group in the elaboration of the decree, which is the tool for application of the law.

Recommendation: Given their importance, the studies undertaken by the SRP should be offered for inclusion in the consultations of the working group charged with elaborating the decree of application of the Forestry Code. If invited by the GOS, the SRP should be formally included in this working group.

ANNEX A

TABLES

CHEMONICS

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Table 1

Matching grant 1989 program - forestry plantations								
Average costs per category based on data supplied by field agents								
Region	Fencing	Plants	Transport	Tools	Pesticides	Fertilizer	Small Total	Large Total
Dakar		31250	8635	9998	18685	5369	49883	73937
Diourbel	18004		9032	6702		28688	33738	62426
Fatick	22846	31250					54096	54096
Kaolack	22715	21875	5541	9403	8344	5974	59534	73852
Kolda	20217	37500	8045	19049		15125	84811	99936
Louga	48704	37500	13870				100074	100074
St. Louis		25000	17882	32000			74882	74882
Tambacounda	31679	25000	5984	12964	17279	12283	75627	105189
Thies	42394	43750	4622		7301		90766	98067
Ziguinchor	31279	78125	1180	6148		2787	116732	119519
Average	29730	36806	8310	13752	12902	11704		
Cost per tree	48	59	13	22	21	19	142	181

A-1

Reasonable maximum costs								
Region	Fencing	Plants	Transport	Tools	Pesticides	Fertilizer	Small Total	Large Total
Dakar		31250	17503	17375	18500	12750	66128	97378
Diourbel	34000		30000	15000		45000	79000	124000
Fatick	37500	31250					68750	68750
Kaolack	36000	21875	16533	21000	15000	14000	95408	124408
Kolda	46400	37500	33465	29518		16500	146883	163383
Louga	50000	37500	32745				120245	120245
St. Louis		25000	40000	40000			105000	105000
Tambacounda	44565	25000	12000	45129	17500	23500	126694	167694
Thies	50000	43750	25000		20000		118750	138750
Ziguinchor	82500	78125	1180	28950		4030	190755	194785
Average	47621	36806	23158	28139	17750	19297		
Cost per tree	76	59	37	45	28	31	217	276

31

Table 2

Matching grant 1989 program - fruit plantations

Average costs per category based on data supplied by field agents

Region	Fencing	Plants	Transport	Tools	Pesticides	Fertilizer	Small Total	Large Total
Dakar		49000	8635	9998	18685	5369	67633	91687
Diourbel								
Fatick	22846	19600					42446	42446
Kaolack	22715	88250	5541	9403	8344	5974	125909	140227
Kolda	20217	39200	8045	19049		15125	86511	101636
Louga								
St. Louis		49000	17882	32000			98882	98882
Tambacounda	31679	29400	5984	12964	17279	12283	80027	109589
Thies	42394	39200	4622		7301		86216	93517
Ziguinchor	31279	49000	1180	6148		2787	87607	90394
Average	28522	45331	7413	14927	12902	8308		
Cost per tree	146	231	38	76	66	42	491	599

Reasonable maximum costs

Region	Fencing	Plants	Transport	Tools	Pesticides	Fertilizer	Small Total	Large Total
Dakar		49000	17503	17375	18500	12750	83878	115128
Diourbel								
Fatick	37500	19600					57100	57100
Kaolack	36000	88250	16533	21000	15000	14000	161783	190783
Kolda	46400	39200	33465	29518		16500	148583	165083
Louga								
St. Louis		49000	40000	40000			129000	129000
Tambacounda	44565	29400	12000	45129	17500	23500	131094	172094
Thies	50000	39200	25000		20000		114200	134200
Ziguinchor	82500	49000	1180	28950		4030	161630	165660
Average	49494	45331	20812	30329	17750	14156		
Cost per tree	253	231	106	155	91	72	745	908

Table 3b

		off	Costs			Reimbursement/ ha	
		total	Item	forest	fruit		
400	Avg Kg/ha	14,000cfa	Fencing	(48cfa)	(146cfa)	fruit	0cfa
350	Avg Kg/ha	17,500cfa	plants	(59cfa)	(231cfa)	eucalyptus	0cfa
of ground nut value		7,000cfa	Transport	(13cfa)	(38cfa)	field trees	0cfa
		38,500cfa	tools	(22cfa)	(76cfa)		
			Total	(142cfa)	(491cfa)		
			reimbursement/tree				
			1/2 costs	71cfa	245cfa		

A-4

8	9	10	11	12	13	14	15	16	17	18
5%	6%	7%	9%	11%	14%	18%	23%	29%	35%	39%
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
0cfa										
					0cfa					0cfa
1,040cfa	1,271cfa	1,617cfa	2,079cfa	2,541cfa	3,234cfa	4,158cfa	5,313cfa	6,699cfa	8,085cfa	9,009cfa
0cfa										
1,040cfa	1,271cfa	1,617cfa	2,079cfa	2,541cfa	3,234cfa	4,158cfa	5,313cfa	6,699cfa	8,085cfa	9,009cfa

of

Table 4b

		off	Costs			Reimbursement/ ha	
		total	Item	forest	fruit		
400	Avg Kg/ha	14,000cfa	Fencing	(48cfa)	(146cfa)	fruit	0cfa
350	Avg Kg/ha	17,500cfa	plants	(59cfa)	(231cfa)	eucalyptus	0cfa
of ground nut value		7,000cfa	Transport	(13cfa)	(38cfa)	field trees	3,119cfa
		38,500cfa	tools	(22cfa)	(76cfa)		
			Total	(142cfa)	(491cfa)		
			reimbursement/tree				
			1/2 costs	71cfa	245cfa		

A-6

8	9	10	11	12	13	14	15	16	17	18
5%	6%	7%	9%	11%	14%	18%	23%	29%	35%	39%
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
0cfa										
					0cfa					0cfa
1,040cfa	1,271cfa	1,617cfa	2,079cfa	2,541cfa	3,234cfa	4,158cfa	5,313cfa	6,699cfa	8,085cfa	9,009cfa
0cfa										
1,040cfa	1,271cfa	1,617cfa	2,079cfa	2,541cfa	3,234cfa	4,158cfa	5,313cfa	6,699cfa	8,085cfa	9,009cfa

Table 5a

SENEGAL REFORESTATION PROJECT EVALUATION									
RESULTS			Assumptions				Crop Switch		
IRR		15%	Eucalyptus trees/ ha		650	50% millet		70cfa	
NPV		22,365cfa	Survival rate		60%	50% gnuts		100cfa	
			Growth rate m3/yr.		2	hay		40%	
			poles m/tree		6	avg crops annual value/h			
			poles		60%				
			wood		40%				
			avg coppice rotation		5				
Option Switches			Mango Trees/ha 8Mx8M		157				
			local mango price		16				
Fruit Orchard	off		Mango/ha		30000				
Eucalyptus block	on		Field trees/ha		44				
Field trees	off		1\$=CFA		250				
Reimbursement	off		Discount rate		12.0%				
	Year >	0	1	2	3	4	5	6	7
field tree	% yield increase		0%	0%	0%	1%	2%	3%	4%
fruit	% full production		0%	0%	0%	10%	40%	50%	90%
Returns to producers									
total reimbursement			0cfa						
fruit		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Poles/m	100cfa	(92,141cfa)							
wood/M3	1,000cfa								144,400cfa
crops increment value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
crops total value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Cash flow		(92,141cfa)	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	144,400cfa

Table 5b

		off	Costs	Reimbursement/ ha	
		total	Item	forest	fruit
400	Avg Kg/ha	14,000cfa	Fencing	(48cfa)	(146cfa)
350	Avg Kg/ha	17,500cfa	plants	(59cfa)	(231cfa)
of ground nut value		7,000cfa	Transport	(13cfa)	(38cfa)
		38,500cfa	tools	(22cfa)	(76cfa)
			Total	(142cfa)	(491cfa)
			reimbursement/tree		
			1/2 costs	71cfa	245cfa

A-8

8	9	10	11	12	13	14	15	16	17	18
5%	6%	7%	9%	11%	14%	18%	23%	29%	35%	39%
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
					144,400cfa					144,400cfa
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	144,400cfa	0cfa	0cfa	0cfa	144,400cfa

Table 6a

SENEGAL REFORESTATION PROJECT EVALUATION			
RESULTS		Assumptions	
IRR	21%	Eucalyptus trees/ ha	650
NPV	59,092cfa	Survival rate	60%
		Growth rate m3/yr.	2
		poles m/tree	6
		poles	60%
		wood	40%
		avg coppice rotation	5
		Mango Trees/ha 8Mx8M	157
		local mango price	16
		Mango/ha	30000
		Field trees/ha	44
		1\$=CFA	250
		Discount rate	12.0%
Option Switches		Crop Switch	
Fruit Orchard	off	50% millet	70cfa
Eucalyptus block	on	50% gnuts	100cfa
Field trees	off	hay	40%
Reimbursement	on	avg crops annual value/h	

	Year >	0	1	2	3	4	5	6	7
field trees	% yield increase		0%	0%	0%	1%	2%	3%	4%
fruit	% full production		0%	0%	0%	10%	40%	50%	90%
Returns to producers									
total reimbursement		46,071cfa							
fruit		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Poles/m	100cfa	(92,141cfa)							
wood/M3	1,000cfa								144,400cfa
crops increment value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
crops total value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Cash flow		(92,141cfa)	46,071cfa	0cfa	0cfa	0cfa	0cfa	0cfa	144,400cfa

Table 6b

		off	Costs			Reimbursement/ ha	
		total	Item	forest	fruit		
400	Avg Kg/ha	14,000cfa	Fencing	(48cfa)	(146cfa)	fruit	0cfa
350	Avg Kg/ha	17,500cfa	plants	(59cfa)	(231cfa)	eucalyptus	46,071cfa
of ground nut value		7,000cfa	Transport	(13cfa)	(38cfa)	field trees	0cfa
		38,500cfa	tools	(22cfa)	(76cfa)		
			Total	(142cfa)	(491cfa)		
			reimbursement/tree				
			1/2 costs	71cfa	245cfa		

A-10

8	9	10	11	12	13	14	15	16	17	18
5%	6%	7%	9%	11%	14%	18%	23%	29%	35%	39%
100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
					144,400cfa					144,400cfa
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
0cfa	0cfa	0cfa	0cfa	0cfa	144,400cfa	0cfa	0cfa	0cfa	0cfa	144,400cfa

Table 7a

RESULTS			SENEGAL REFORESTATION PROJECT EVALUATION		
IRR		51%	Assumptions		
NPV		922,911cfa	Eucalyptus trees/ ha	650	Crop Switch
			Survival rate	60%	50% millet 70cfa
			Growth rate m3/yr.	2	50% guats 100cfa
			poles m/tree	6	hay 40%
			poles	60%	avg crops annual value/h
			wood	40%	
			avg coppice rotation	5	
Option Switches			Mango Trees/ha 8Mx8M	157	
Fruit Orchard	on		local mango price	16	
Eucalyptus block	off		Mango/ha	30000	
Field trees	off		Field trees/ha	44	
Reimbursement	off		1\$=CFA	250	
			Discount rate	12.0%	

	Year >	0	1	2	3	4	5	6	7
field trees	% yield increase		0%	0%	0%	1%	2%	3%	4%
fruit	% full production		0%	0%	0%	10%	40%	50%	90%
Returns to producers									
total reimbursement			0cfa						
fruit		(77,052cfa)	0cfa	0cfa	0cfa	28,800cfa	115,200cfa	144,000cfa	259,200cfa
Poles/m	100cfa	0cfa							
wood/M3	1,000cfa								0cfa
crops increment value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
crops total value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Cash flow		(77,052cfa)	0cfa	0cfa	0cfa	28,800cfa	115,200cfa	144,000cfa	259,200cfa

A-11

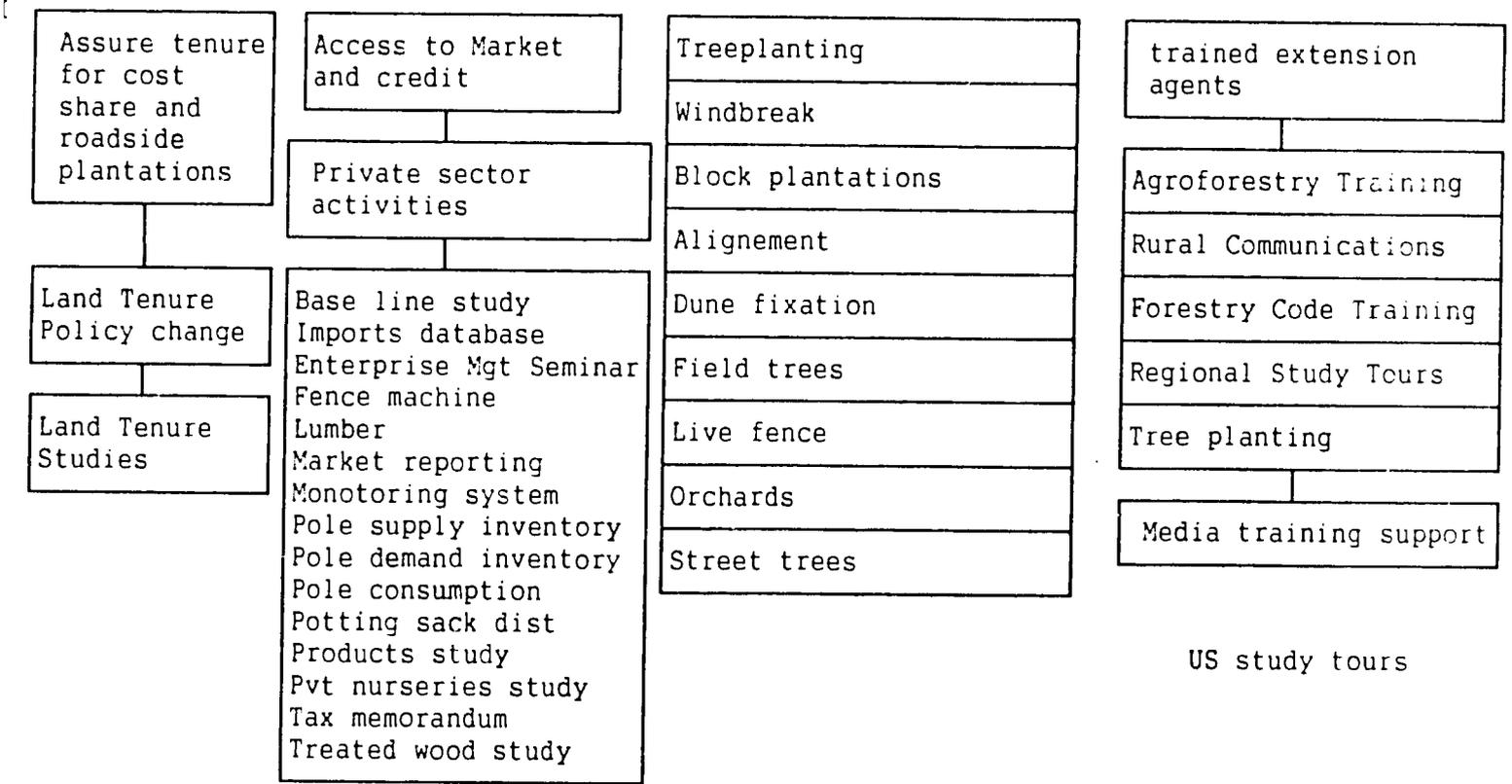
11

Table 8a

SENEGAL REFORESTATION PROJECT EVALUATION										
RESULTS			Assumptions				Crop Switch			
IRR		59%	Eucalyptus trees/ ha		650	50% millet		70cfa		
NPV		953,623cfa	Survival rate		60%	50% gnuts		100cfa		
			Growth rate m3/yr.		2	hay		40%		
			poles m/tree		6	avg crops annual value/h				
			poles		60%					
			wood		40%					
			avg coppice rotation		5					
Option Switches			Mango Trees/ha 8Mx8M		157					
			local mango price		16					
Fruit Orchard	on		Mango/ha		30000					
Eucalyptus block	off		Field trees/ha		44					
Field trees	off		1\$=CFA		250					
Reimbursement	on		Discount rate		12.0%					
	Year >		0	1	2	3	4	5	6	7
field trees	% yield increase			0%	0%	0%	1%	2%	3%	4%
fruit	% full production			0%	0%	0%	10%	40%	50%	90%
Returns to producers										
total reimbursement			38,526cfa							
fruit		(77,052cfa)	0cfa	0cfa	0cfa	28,800cfa	115,200cfa	144,000cfa	259,200cfa	
Poles/m	100cfa	0cfa								
wood/M3	1,000cfa									0cfa
crops increment value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
crops total value		0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa	0cfa
Cash flow		(77,052cfa)	38,526cfa	0cfa	0cfa	28,800cfa	115,200cfa	144,000cfa	259,200cfa	

Table 9

II Tenure	Finance	Technology	Technical assistance
Land and Tree Tenure assured	increase in Co-ops Bank credit	increase in access to production technologies	Trained extension agents in the field



Infrastructure
Construction

Table 10

Number and type of media used by year				
Type of media	1988	1989	1990	Total
Television	1	6	5	12
Radio	11	14	6	31
Press	6	1	0	7
small media	4	3	2	9
Awareness/visits	0	3	1	4
Total	22	27	14	63

* small media = stickers, handouts, t-shirts,
posters, slide shows.

Table 11

Number and theme of message produced by media type						
Message theme	TV	Radio	Small media	Press	Awareness /visits	Total
Promotion:						
-Roadside Plant.	3	1	0	0	1	5
-Matching Grant	3	7	0	1	0	11
-SRP publicity	0	10	6	5	1	22
-Private Sector	3	0	0	0	0	3
Tree planting	0	3	3	1	0	7
Env. protection	3	10	0	0	2	15
Total	12	31	9	7	4	63

ANNEX B

SCOPE OF WORK

CHEMONICS

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53

Delivery Order No. 2
PDC-1406-I-02-0033-00

S C O P E O F W O R K

ARTICLE III - STATEMENT OF WORK

- A. Project Management - The Contractor will review and assess:
1. General Project Management Practices and Issues;
 - a. The collaboration among the staff of the TA contractor, GOS, and USAID.
 - b. The institutional structure in which the project operates, i.e. degree of integration.
 - c. The GOS, TA contractor and USAID administration and management of the project, including logistical and financial support.
 - d. Whether additional time and/or resources will be required to achieve project objectives and defined or modified in line with evaluation recommendations. The duration of long-term technical assistance should specifically be considered in evaluating the positions of the private sector advisor and junior forester.
- B. Technical Programs - The contractor will review and assess:
1. Matching Grant Program:
 - a. The clarity of project objectives and the specification of project purpose. Do they permit effective management and objective evaluation in technical (including ecological) economic and social terms?

- b. The appropriateness and sustainability of promoting popular participation in reforestation through a matching grant formula. Is this intervention cost-effective? What are the full financial costs and administrative requirements of administering this program? Are these costs sustainable in the absence of donor support? What are the opportunity costs of these resources?
- c. The project's impact to date on the national reforestation effort and the potential for future impact.
- d. Whether collective action in the form of groups (rural communities and communes) is the appropriate focus of interventions versus working with individuals.
- e. The extent to which the program is promoting net additional private investment in reforestation and the probability that such investment will continue after the PACD. What are the factors that affect non-project supported replication by individuals and groups? What can be done to enhance the project's impact on adoption of reforestation practices by those who do not participate in the Matching Grant Program?
- f. The promotion of trees as part of the farm economy. Is the matching grant an effective vehicle for promoting agro-forestry? How can this aspect of the program be enhanced?
- g. The promotion of private nurseries as a result of the program.
- h. The program strategy of working on a national scale (i.e., all ten regions) and with a wide variety of tree species. In terms of project administration and impact, is such a strategy effective and efficient? How could the strategy be improved? What is the feasibility and desirability of selectively focusing on particular types of interventions, i.e., fruit and nut trees, fuelwood species, lumber species, agro-forestry interventions etc.?
- i. The role and effectiveness for the field agents (Dept of Water & Forestry personnel). Is their role compatible with project objectives? What role do they play in transferring technology associated with establishing, maintaining and harvesting trees and tree products? Are institutional roles and lines of authority well defined and compatible with other services such as extension? Do field agents have access to

resources (including transport) and technical information to effectively carry out project defined responsibilities? Can these agents realize the project objectives without the support of the project? If not, what type of support could it be?

j. The adequacy of the project's monitoring and evaluation plan. What impact has the project had and how will (should) future assessments be made of:

- The rate and amount of replication and adoption of tree planting technology demonstrated by the matching grant program?
- The net impact on household and groups' income?
- The internal rate of return on investments including indirect benefits and multiplier effects?
- The ecological impact of various interventions and their contribution to sustainable agriculture?

k. The rate and method used for reimbursement. Does the matching grant formula provide an appropriate incentive structure, given project objectives of planting, survival rates and impact of reforestation activities?

l. Record keeping. Are they adequate for administrative and programmatic purposes?

m. The cost effectiveness of tree planting versus natural regeneration. Under what circumstances is natural regeneration of woody species a cost-effective alternative to planting trees? If desirable, how might the project promote natural regeneration, at least on an experimental basis?

2. Roadside Planting Program:

a. The development impact of this component; what are the economic, social and ecological benefits of this program? What is the estimated average internal rate of return for this program?

b. The appropriateness of the program to promote and increase the capacity of the private sector to participate in tree planting activities.

c. The long-term role of the commune and the rural community regarding their ability to take over the program upon completion of the contracts. Are roadside plantings maintained and sustainable in the long run following end-of-project financed interventions?

- d. The logistical support for the field agents.
- e. The type of planting operations and the specific objectives; i.e. urban beautification, erosion control, road bed protection, forestry production.
- f. The quality of the technical information and training being provided to the entrepreneur.
- g. The technical prescriptions now being used.
- h. The promotion of private nurseries as a result of the program.
- i. The cost effectiveness of this component.
- j. The impact of this component in terms of employment generation. How can employment impacts be enhanced which are compatible with project objectives?
 - The adequacy of monitoring and evaluation plans for this component.

3. Training:

- a. The appropriateness of the training objectives to promote the private sector on the one hand, and to develop forestry, on the other hand.
- b. The training program and plan designed to address the lack of understanding of farm, forestry and tree integration in livestock activities by rural extension agents.
- c. The training program and plan designed to address the lack of technical and community relation skills of the forestry, agriculture and livestock extension staff.
- d. the quality and capacity of the training institutions in Senegal being used by the Senegal Reforestation Project (SRP).
- e. The course contents of the seminars now being administered in Senegal.
- f. The impact of the training program on field operations.
- g. The USA and Third Country short courses and study tours.

4. Media:

- a. The appropriateness of the strategy of providing communication support in the form of information, motivation, education, and advertising using mass media, small media, materials, and person-to-person communication.
- b. The recommendations of the short term consultants, regarding the present media strategy.
- c. The technical capacity of the component.
- d. The content and impact of the TV and radio messages to date.
- e. The logistical support.
- f. The relationships between this component and extension.

5. Private Sector:

- a. The interventions and priorities as established by the project staff and the short-term technical assistance with regard to the Project Paper (PP) objectives.
- b. The strategies adopted and actions taken to promote the marketing of roundwood and lumber (market surveys, policy recommendations, market organizations, price formation, product development).
- c. The continued validity of project objectives pertaining to the creation of private sector nurseries, taking into consideration a recent consultant's report on private nurseries.
- d. The manner in which technical assistance is provided and private sector investments are monitored, the feasibility of the nationwide SRP being based exclusively in the capital city vs. regional projects which have a continuing field presence in the geographical areas where investment opportunities identified by the SRP are being implemented.
- e. The economic analyses contained in the Project Paper, including a recalculation of the internal rate of return, factoring in the opportunity costs entailed in not planting traditional cash crops.

f. The ways in which permanent linkages can be established between the DCSR and economic operators involved in the forestry sector, and the means which will help institutionalize the private sector implementation of project activities.

g. Examine the adequacy of the technical assistance time-frame in view of the goals established.

6. Policy:

a. Whether the project has involved itself sufficiently in policy dialogue with the GOS relating to the forestry code and the effect this dialogue has had.

b. The appropriateness of the tree tenure studies the project has undertaken and how these studies can be used to advance the project's objectives.

The evaluation report is to provide empirical findings to answer the above-mentioned questions, conclusion (interpretations and judgments) that are based on the findings, and recommendations based on an assessment of to results of the evaluation exercise. The evaluation report is also provide lessons learned emerging from the analysis.

Methods and Procedures

Methodology

The evaluation methodology will include, but not be limited to, reading project documentation at USAID PRS, briefing by Agriculture Development Office and project staff, and in interviewing USAID and MDRH staff and beneficiaries. Field trips will be made to assess the impact of the matching grant component and other components as needed.

Timing

The full evaluation team will be in country for 4 1/2 weeks. The team leader will spend 5 1/2 weeks in country; the additional week is for finalizing the draft report. The final report in English and French shall be delivered to USAID/Dakar no later than 120 calendar days after the work under this delivery order is initiated.

ANNEX C

LIST OF PERSONS INTERVIEWED

CHEMONICS

**2000 M St., N.W.
Suite 200
Washington, D.C. 20036**

**Tel: (202) 466-5340 or 293-1178
Fax: (202) 331-8202
ITT Telex: 440361 CHNC UI**

60
p

LIST OF PERSONS INTERVIEWED

DAKAR:

Cheikh A.K. CISSOKHO, Ministre du DRH,
Julius COLES, Directeur de l'USAID et ses collaborateurs,
Bocar Oumar SALL, Directeur des EFCS,
Abdoulaye KANE, Coordonnateur du PAFS,
Abdou DIOP, Coordonnateur national du Picogerna,
Mamadou BA, UPA du MDRH,
Amadou M. NIANG, Direct. PRS et Equipe du Projet

Dr. Ruth Harris, Training Consultant
Dr. Irma Sylva-Barbeau, U.S. Training Coordinator
Wendy Dufour, Media Consultant
Mme. Koume, Rural Forestry Project Coordinator
Papa Malamine Badji, ATEF Chef de Pépinière, Mbao

THIES:

Amadou Mbaye NDIAYE, ITEF/IREF
Ibou BADJI, ITEF/Adjoint IREF
Mansour DIOP, ATEF responsable reboisement
Mamadou DIEME, ATEF, Chef brigade de Pout
Djiby NDIAYE, ATEF, Chef Brigade Thiénaba
Momar Talla FAYE, ATEF au poste CTL/Sud de Notto
Bineta DIENG, Chef d'entreprise Axes Routiers DEYMAN
Mbagnick NDIAYE, Chef d'entreprise Axes Routiers EBN
Baba SALL, Pdt comité de gestion du bois de village de Thialle

SAINT LOUIS:

Etienne Manga, ITEF/IREF
Abdoul Aziz LOPEZ, ITEF/Adjoint IREF
Thiécouta TRAORE, ITEF
Ansoumana BADJI, ITPN, Chef secteur forestier de Dagana
Abdoul Aziz DIENG, Administrateur Commune de Saint Louis
Maby SARR, Président GIE Axes Routiers CADRA
..... NDOYE, Membre GIE Axes Routiers UGEN
Abdou Karim FALL, Directeur Entreprise Axes Routiers CJE
Cheikh DIOP, Directeur Entreprise Axes Routiers KEUR CHEIKH
Abdoulaye DIOP, menuisier à Dagana

F A T I C K:

Serigne M. THIOUNE, IEF/IREF
Ibrahima KANE, IEF/Directeur du PRECOBA
Ansoumana BODIAN, ITEF
Dibocor DIONE, ITEF/Chef secteur forestier Gossas
Birame DIENG, ITEF/PRECOBA
Modou DIOP, ATEF Chef Brigade Niakhar
President Communauté Rurale de Niakhar
President Communauté Rurale de Banghadji

K A O L A C K:

Gora NDIAYE, IEF/IREF
Matar CISSE, IEF/Directeur PASA
Uwe OHMSTEAD, Assistant technique PASA
Sékou MANE, ITEF/Adjoint IREF
Mamadou S. SYLLA, ITEF/Adjoint Directeur PASA
Mahmoudane FALL, ITEF/Chef Secteur Forestier Kaffrine
Khaly SYLLA, Chercheur-Vulgarisateur PASA
Maxime NGOM, Chercheur PASA
Moustapha LO, ATEF
Mademba SY, ATEF

T A M B A C O U N D A:

Babacar DIAHAM, ITEF/IREF
Mamadou FALL, ITEF Chef Secteur Forestier Tambacounda
Djibril CISSE, IEF/Composante régionale PICOGERNA
St Laurent Gomis, ATEF chargé du reboisement à l'IREF
Abdoulaye DIAO, ATEF/Chef brigade de Koumpentoum
Issaga SIDIBE, ATEF à Koumpentoum
Dialimakhan CISSOKHO, ATEF à Koumpentoum
Yaya AW, Agronome/composante régionale PICOGERNA
Le Sous-Préfet de Koumpentoum
..... RIYAD, Exploitant forestier
Agné DIALLO, Pdt régional des Exploitants forestiers
Dielimakhan CISSOKHO, ATEF Koumpentoum
Deux exploitants forestiers

ANNEX D

TECHNICAL DOCUMENTS REVIEWED

CHEMONICS

2000 M St., N.W.
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87

PROJECT REPORTS BY PROJECT COMPONENT

1. MATCHING GRANT

- Guide de Terrain/SRP (1988, 1989, 1990)
- Rapport de Synthèse 1988 - 1989/SRP

2. ROADSIDE PLANTING

- Programme Plantation Axes Routiers 1988/SRP
- Rapport de Synthèse 1988 - 1989/SRP
- Guide de Terrain 1990/SRP

3. PRIVATE SECTOR

3.1 Studies

3.1.1 Baseline

- Baseline Study/Livingston (EOT 1)
- Etude de Base/ABC
- Analyse Etude de Base /ABC
- Analyse Etude de Base/SRP

3.1.2 Tree Products

- Exécution et Evaluation Produits Forestiers/DIOP
- Tree Products Study/Kernan (EOT 2 & 10)

3.1.3 Marketing-General

- Marketing/Bender (EOT 6)

3.1.4 Marketing of Roundwood

- Etude Bois de Service/INFOCONSEIL
- Etude Bois de Service/SRP

3.1.5 Marketing of Sawnwood

- Etude Bois d'Oeuvre/INFOCONSEIL

3.1.6 Marketing of Treated Roundwood

- Etude Bois de Service Traité/INFOCONSEIL

3.1.7 Feasibility of Appropriate Tech Fence Making

- Etude de faisabilité de la Gambian Fence Maker
KHOUMA & Yoro DE

3.2 Policy

- Forest Policy and Legislation/Lawry & Elbow (EOT 15 & 21)
- Promotion of Private Sacteur Tree Nurserie Groenick (EOT 16)

3.3 Contracting Procedures

- Contracting/Thomas (EOT 4)

4. TRAINING

4.1 General

- Training Plan 1989 - 1993/SRP
- Training/Harris (EOT 7, 9, 13, 14, 17, 18.
- Atelier sur Agroforesterie/SRP
- Atelier sur Agroforesterie (Etude)/SRP
- Seminar techniques de reboisement/CF
- Seminar animation et vulgarisation/CF
- In-Country Seminar Programs and Evaluations Reports)

4.2 Participant Reports

- Training Summary/Barbeau VPI-SU

4.2.1 USA Study Tours

- March 1989 Management and Training Systems
- June 1989 Politiques et Gestion de Ressources Naturelles

4.2.2 USA Short Courses

- March 1989 Media Techniques
- June 1990 Land Tenure
- June 1990 Development Management

4.2.3 Third Country Study Tours

- January 1989 Burkina Faso
- August 1989 Kenya - Nigeria
- January 1990 Burkina Faso
- Juin 1990 Burkina
- Juin 1990 Mali

5. MEDIA

- Media/Sulkousky (EOT 3)
- Media/Sene (EOT 5, 11)
- Media/Trudel (EOT 8)
- Media/Stith (EOT 12)
- Media/Stith and Hergert (EOT 19)
- Media Strategy/SRP
- Media Activities List/SRP

ANNEX E

**ABSTRACT (SECTION H)
SUMMARY (SECTION J)**

CHEMONICS

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67

ABSTRACT

H. Evaluation Abstract (Do not exceed the space provided)

The project purpose is to mobilize large-scale popular participation in tree planting. The project is implemented by the Government of Senegal Ministry of Rural Development and Water Resources and USAID/Senegal. This mid-term evaluation was conducted by a GOS/USAID/Senegal team and encompassed interviews with relevant GOS, USAID/Senegal and project team personnel, site visits, and a literature review. The purpose was to assess the continued validity of key project assumptions, determine whether the project purpose is still attainable, evaluate the management roles of the implementing partners, and identify any needed modifications in the project. The major findings and conclusions by project component are:

- 1) Matching Grants Program - Natural regeneration should be considered in a follow-on project; use of native species should be promoted for agroforestry while use of exotic species should continue for block plantations.
- 2) Roadside Planting - More time is needed to work out problems arising from this new approach to tree planting.
- 3) Training and Extension - Additional technical assistance should be provided.
- 4) Media Campaign - A media center should be established whose staff would help develop extension training materials.
- 5) Private Sector Promotion - Technical assistance should continue for the life of the project.
- 6) Policy Review - Continued close cooperation between USAID/Senegal and the project is necessary.

The following lessons learned are noted in the evaluation report:

The goal and purpose of the project are valid but are not achievable within the life of the project.

Assumptions about the training needs of the forestry service were unrealistic.

Long-term technical assistance needs were underestimated.

COSTS

Evaluation Costs					
Name	1. Evaluation Team	Affiliation	Contract Number OR TDY Person Days	Contract Cost OR TDY Cost (U.S. \$)	Source of Funds
Mission/Office Professional Staff Person-Days (Estimate) _____			3. Borrower/Grantee Professional Staff Person-Days (Estimate) _____		

A.I.D. EVALUATION SUMMARY - PART II

SUMMARY

J. Summary of Evaluation Findings, Conclusions and Recommendations (Try not to exceed the three (3) pages provided)

Address the following items:

- Purpose of evaluation and methodology used
- Purpose of activity(ies) evaluated
- Findings and conclusions (relate to questions)
- Principal recommendations
- Lessons learned

Mission or Office: USAID/Senegal	Date This Summary Prepared: March 8, 1991	Title And Date Of Full Evaluation Report: Mid-Term Evaluation of the Senegal Reforestation Project, March 8, 1991
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The mid-term evaluation of the Senegal Reforestation Project was conducted in November 1990 for USAID/Senegal and the Government of Senegal under IQC No. PDC-1406-I-02-0033-00, Delivery Order No. 2.

The purpose of the evaluation was to assess the continued validity of key project assumptions and determine whether the project purpose is still attainable, to evaluate the management roles of the parties involved (GOS/MDRH, the technical assistance team, and USAID), and to identify any needed modifications in the project.

The overall goal of the project is to improve the environment, economy, and agricultural production of Senegal. The project purpose is to mobilize large-scale popular participation in tree planting with local and private resources. The emphasis is on the potential for economic gain and increased agricultural productivity through planting trees and shrubs. There are six activity areas with measurable project outputs: (1) matching grants program, (2) roadside planting, (3) training, (4) media campaign, (5) private sector promotion, and (6) policy review.

The findings, conclusions and recommendations of the evaluation team are described below for each of the six components.

1. Matching Grants Program

a. Financial Analysis of Matching Grants

Acacia albida was chosen as one case from the agroforestry portfolio where data exist on yield increase potential. The block plantation case is based on eucalyptus plantation data, and the mango orchard option was analyzed as a fruit and nut case. The time required for three field trips within a one-month study precluded the analysis of all possible project interventions. The above analysis parallels the analysis in the project paper, allowing the retesting of initial assumptions.

The project will be doing further in-depth financial analysis of other types of planting options. The questions of the viability of various options with and without cost sharing will be answered at that time.

If the original assumption is valid, that matching grants are a mechanism for kick-starting the tree planting process and are not considered as a permanent program, then the assumption is economically viable across the board for all cases and all interventions.

b. Replication

The project is attempting to influence extremely complex social and economic allocation decisions. More study and analysis of these decision-making processes is needed.

To the extent that allocation decisions are based on financial risk and return, the cost-sharing aspect is effectively influencing the decision to plant trees. Complex decisions about which interventions to use are dependent on the availability of technological information. The strengthening of extension capabilities widens farmers' choices.

Women's groups are participating in and benefiting from the project to the extent that they have access to land and technical knowledge about planting trees. Whether they are doing so on their individual crop production fields is not known.

c. Agroforestry

Some agroforestry is promoted by the cost-sharing program. These interventions include live fence, field trees, and windbreaks, along with a general increase in ground cover. Extension agents are more familiar with block plantations, due to their experience and training. The training component is addressing this issue through agroforestry and extension training, which will help agents become more familiar with agroforestry techniques.

d. Natural Regeneration

Protection of natural regeneration is a more cost-effective method of establishing trees, but it was not considered in the project design. It does not lend itself to cost sharing due to difficulties in administering the cost share. This type of intervention could be considered in the design of a follow-on project.

e. Exotic Species

There has long been an emphasis on exotic species, and most block plantations have used them. Agroforestry and soil and moisture conservation techniques use native species to a greater extent than exotics. If the project emphasizes tree planting by individual farmers for improvement of crop yields and protection of soil and water resources, local species should be emphasized. If emphasis is placed on block plantations for the production of forest products, exotics are appropriate.

2. Roadside Planting

This component is a new approach to tree planting using private sector contractors. Some progress has been made, but time is needed to work out the problems that arise in every new approach.

3. Training and Extension

The team had stronger views on training than any other of the components. They felt that technical expertise for interventions other than block plantations was weak. This need is expected to be met by trained agents as the training program progresses. Additional technical assistance should be provided in this area by extending the service of the forestry advisor for the life of the project and shifting the technical focus to provide more technical support in training.

4. Media Campaign

Outputs to date have been mostly public service messages, with little attention to developing training materials. It is recommended that a media center be established, and a consultant has been hired for this purpose. The media staff should work more closely with the training component to develop materials for extension training.

5. Private Sector Promotion

The goal of this component is to establish a market information service. Many of the basic studies have been completed and in-field information dissemination has started. The important connection between the producer and the buyer is being promoted. Technical assistance for this component should continue for the life of the project.

6. Policy Review

Studies have been done on policy issues and the project is serving as an information support service to GOS policy makers. Changing policy is a long-term process involving many GOS agencies. Continued close cooperation between mission and project is needed to remain focused on this component.

Among the lessons learned through the evaluation process are the following:

- The goal and purpose of the project are valid, but are not achievable within the life of the project.
- The time frame as designed was too short for a forestry project.
- Other objectives in the Project Paper log frame were not realistically measurable.
- Assumptions about the training needs of the forestry service were unrealistic.
- Long-term technical assistance needs were underestimated.

The many recommendations contained in the body of the report should be viewed as suggestions for consideration by the project. The evaluation team has complete confidence in the technical and administrative competence of the project team. Continued support in the form of inputs for technical assistance, vehicles, merit pay, per diem, and fuel assistance will be needed for the life of the project.