USAID/Senegal
B.P. 49
Dakar, Senegal

PD-AAT-638
ISN: 45631

UNCLASSIFIED

PROJECT PAPER

SENEGAL REFORESTATION PROJECT

(685 - 0283)

Authorized: Aug. 6, 1986
Amount: $10,000,000

Dakar, July 1986

ACTION MEMORANDUM FOR THE DIRECTOR USAID/SENEGAL

FROM: Joel Schlesinger, Chief
Project Development Office

SUBJECT: Senegal Reforestation Project, 685-0283

DATE: August 1, 1986

I. Problem

Your approval is requested for a grant of $10.0 million under Section 121 of the Foreign Assistance Act of 1961, as amended, to Senegal for execution of the Senegal Reforestation Project. The FY 1986 obligation will be $5.5 million. The remainder of the life of project funding will be obligated in FY 1987. The life of project is seven years.

II. Discussion

A. Program Description and Purpose

The problem is the rapid and vast deterioration of Senegal's land and forest resources. Past and present forestry projects have failed to generate popular participation in tree planting on the scale needed to arrest the deterioration. The problems to involving more people in tree planting are:

1. past anti-desertification activities have been too closely associated with the "fuelwood problem". Planting trees for fuelwood has simply not provided a strong enough incentive to the heads of families who traditionally make decisions regarding land and labor usage to motivate wide-spread tree planting.

2. farmers have insufficient information and training about the variety and values of species, technical information on where to find trees, when and how to plant and maintain them and how to harvest, store, transform and commercialize forest products.

3. the GOS is committed to revising the complex set of policies and codes which regulate the forestry sector. Discussions with farmers indicate that revisions could be made which would stimulate greater interest and investment in tree planting.

4. individual farmers and communities are reluctant to risk limited funds in new activities or investments. Traditionally conservative, Senegalese tend to imitate the successful experiences of others rather than innovate.

The purpose of this project is to mobilize large-scale popular participation in tree planting with local and private resources. The project will shift emphasis from planting for fuelwood to planting for more direct economic reward and increased agricultural production, incentives more likely to appeal to Senegalese farmers. Project outputs include media and training campaigns

which will coordinate motivational, technical and commercial information. Extension agents will begin to integrate farm forestry into their extension messages. The complex of policies and codes regulating the forestry sector will be studied. A covenant requires the GOS to work with project funded technical assistance to develop policies which will stimulate increased participation. As market opportunities for seedlings, sale of forest products and provision of services appear private investors will be drawn more aggressively into the sector with expanded capacity. A covenant requires the GOS to sell seedlings, to the maximum extent possible, at a non-subsidized cost thereby reducing competition with private nurseries. Lastly, a matching grant program will fund those individuals and groups which take the initiative in tree planting. The success of these grants will serve as an example to others to undertake planting activities.

B. Financial Summary

Life of project funding of $10.0 million will be fully obligated in 1986 ($5.5 million) and FY 1987 ($4.5 million). Senegalese contribution all kinds may equal approximately 28% of AID funding. The U.S. contribu is summarized:

- Technical Assistance	3,650,000
- Training	1,330,000
- Matching Grants	2,000,000
- Roadside Planting	600,000
- Studies	300,000
- Commodities	280,000
- Miscellaneous	440,000
- Contingency	500,000
- Inflation	900,000
	10,000,000

A negative 121 (d) determination was certified by the AA/AFR on July 1986.

C. Analyses

1. Economic

The project is based on the assumption that farmers and other will be motivated to plant trees by the promise of tangible economic gain increased agricultural production. Although the project has considerable economic benefits, both measurable and unmeasurable, the nature of the pr as an activity based on private initiative makes it impractical to calcul an overall economic internal rate of return. However, an IRR can be calculated for several representative economic activities that will be promoted by the project.

a. Soil enrichment: If a farmer plants 50 Kads (acacia albida) throughout a one hectare field used for growing millet he can expect incr in production from 12% to 50% per year over the life of the trees. The I rises from 6% at year 10 to 22% by year 20. This example does not includ

windbreaks which have been planted in developing countries as a soil protection measure. In China windbreak effects have accounted for increases in yields of 30-50%.

b. Eucalyptus poles: If a farmer plants one hectare of eucalyptus poles, the IRR at time of harvest in six years equals 17%.

c. Fruit and nut trees: If a farmer plants one hectare of cashew seedlings, the IRR over the life of the trees equals 24%.

d. Animal fodder: A one hectare field planted with 50 Kad trees will produce fodder valued at more than CFA 1.3 million over the life of the trees.

The least cost approach to block tree planting indicates that planting by individuals and the private sector is far more cost effective than planting by the GOS.

2. Social

This project seeks to accelerate some deeply rooted changes that are already occuring in the role of trees in Senegalese customs, law, administration and modes of production. The key elements forcing changes in the way people use land are rapid population growth combined with urbanization, settling of the nomads, rapid depletion of tree resources, and exhaustion of the best lands.

Farmers and extension agents are generally aware that old ways of using resources are exhausting them, but that does not automatically lead to a better approach. Land, pasture, water and tree resources were, until quite recently, regarded as inexhaustible public goods. People accordingly became accustomed to using public resources wastefully, managing carefully only what was regarded as private or family property.

Overcoming these problems requires careful attention to policy impacts and education in the planting and care of appropriate species. Many past failures have resulted from imposing global packages on socio-cultural situations that are not uniform. This program will bring detailed knowledge of arboriculture to individuals and use extension services to help them adapt it to their circumstances.

3. Administrative Analysis

The three main institutions involved are the Ministry for the Protection of Nature (MPN), a U.S. contractor (consulting firm and/or university) and USAID. For administrative efficiency, project functions such as the majority of procurement, financial management, and subcontracting are assigned to the contractor.

The newness of the DSCR (established in September 1985) is an advantage in that it is expected to adopt new approaches. It has some potential weaknesses from a management perspective in that personnel are limited in numbers and

working together as a unit for the first time. GOS procedures will not be fully familiar to all personnel. However, MPN has the necessary legal and administrative personnel and experience to negotiate and manage a host country contract. Most project resources will be provided under the contract with the U.S. contractor, who will be logistically self-sufficient, thereby reducing the administrative workload on both the DCSR and USAID.

USAID will designate an Agricultural Development Officer and a Project Officer from the Agriculture Development Office to manage the project. These managers are already on staff and will carry out the usual day to day monitoring of the contractor as provided in the contract and needed for implementation. The Project Officer will also be supported by a Mission Project Committee (PC) composed of staff from relevant offices. The PC may be convened at any time by the Project Officer to examine specific problems.

4. Training Analysis

The main target group is the extension agents in the Centres d'Expansion Rurales because: (a) they are responsible for the planning, implementation and coordination of development activities in rural areas; (b) they will be called on to play a more important role as the rural development agencies phase down; and (c) they will be the leading group in the promotion of agroforestry in rural areas through training of the local people. This principal target group will mainly receive short term local training and some out-of-country observation tours. The training program will introduce and promote the practice of agroforestry by providing training in (a) techniques, management and policy making in forestry and agroforesty; and (b) communication skills to convey information and motivate farmers, community leaders and private sector people.

A manpower study of DCSR will be financed to ascertain long-term training needs beyond the five advanced degrees currently planned.

5. Media Analysis

The media campaign involves information, motivation, education and advertising activities designed to help achieve the project objectives. Its purpose is to encourage and convince many different groups of people to participate in planting trees. It relies on the full range of communication methods in an appropriate mix of communication support. The media campaign will be carried out by DCSR with help from existing GOS and private sector facilities.

The messages will be designed to integrate the tree into basic elements of Senegalese society, religion, the family (both nuclear and extended), the strong reverence for children etc. In addition to "the messages", the media campaign will provide technical information, e.g. how to plant trees, markets for tree products, location of nurseries, how to use living hedges, etc. Thus, the campaign will be a teaching tool at the same time as being motivational.

6. Private Sector Analysis

The analysis indicates that Senegal has considerable unused potential in tree products. Domestic market opportunities exist in establishment of private nurseries in support of tree planting programs and in growing/processing/marketing of various tree products. Export opportunities exist in such products as cashew nuts, various tree gums, fruits, and secondary tree products. Some of the principal constraints to achieving the potential of these opportunities include:

- limited information on supply and markets;
- limited research and analysis.

An in-depth survey should be made of the potential of tree products including identification of the financial, human and institutional constraints, the supply obstacles, production bottlenecks and available markets. Based on the results of the survey, several feasibility/marketing studies of specific areas of investment might be made.

7. Technical Analysis

The combined pressures of land-clearing, fire, desertification, cutting and grazing bring about a loss of forest lands each year. This trend is countered, to some extent, by the spontaneous regrowth of trees on fallow land and in the forested areas. The overriding trend, unfortunately, has been a rather constant decrease in the natural forest resource over the past 15 years, estimated at about 100,000 ha. per year. This trend is accompanied by another unfortunate situation: the more valuable tree species become less numerous, resulting in a loss of volume and quality of the forest resource.

The techniques available for reforestation and natural forest management are well enough known to justify the activities which the project proposes to carry out. The trees to be used for farm planting will build on the widespread knowledge already existing among much of Senegal's rural population. The most outstanding example is that of the "kad" tree, Acacia albida. The re-introduction of "kad" trees is an important factor, particularly on the depleted soils of the peanut basin.

The project proposes to also make use of the technical knowledge developed by previous reforestation programs and to keep abreast and apply the results of current research.

8. Evaluation

Monitoring of the Reforestation project will be one of the major on-going tasks of the USAID project officer. In particular the first year internal review should consider the project's basic assumptions to insure that they remain valid. The project as a whole will be formally evaluated in its third and sixth years of operation. A final evaluation will take place after the PACD.

9. Human Rights

Senegal is a functioning democracy and no issues exist with respect to human rights.

D. Conditions Precedent (CP) and Covenants

1. Conditions Precedent

a. Prior to the first disbursement, the GOS will provide the names of authorized GOS representatives and the required legal opinion.

b. Prior to the first disbursement for the matching grant program, the GOS will submit the criteria for eligibility for matching grants and procedures for review and payment. The criteria will include, but not be limited to, minimum size, availability of water and adequate soil, types of organizations and individuals who are eligible, and recommended fixed amount reimbursement rate per tree.

c. Prior to the first disbursement for roadside planting, the GOS will submit a plan for contracting, supervising and paying the private contractors.

d. Prior to the first disbursement for training other than observation tours the GOS will submit a training plan for the life of project

2. Covenants

The GOS will covenant:

a. To engage in discussions and carry out studies as needed on policies which affect forestry practices, pricing of tree products, and other relevant activities to ensure that these policies will stimulate mass participation in tree-planting operations.

b. To encourage the sale of seedlings at their real cost to rural communities and groups which undertake reforestation activities. The GOS will also encourage, to the maximum extent possible, the sale of seedlings at their real cost to individuals who invest in reforestation activities for their own benefit.

c. To provide payment of GOS staff per diem and performance awards after year 3 of the project.

E. Implementation Plan

Project management responsibility is placed in the Ministry of Protection of Nature, Division of Soil Conservation and Reforestation (DCSR). The DCSR will be supported by a U.S. contractor under a host-country contract. The GOS will provide management staff and counterparts for the contract technical assistance. Most of the project resources will be included under the contract

to facilitate purchase of commodities and other disbursements such as the matching grants (which will be handled on a Fixed Amount Reimbursement (FAR) basis). The media campaign and roadside planting program will be contracted directly by the GOS with payments made by the contractor. Construction of an office block to house project staff will be under direct AID contract and carried out by the USAID before the contract team arrives. USAID will also undertake a survey of tree products potential and a manpower needs assessment of the DCSR to determine long term training needs. An annual internal review is planned.

F. Major Implementing Agencies

The Ministry of Protection of Nature (MPN) Direction of Soil Conservation and Reforestation will be the project manager. AID officers responsible for the implementation of this grant are:

James Bonner
Agriculture Development Office
USAID/Senegal

Cameron Pippett
AFR/PD/SWAP

III. Waivers

The source/origin of goods and services under this project is U.S. (000) and the cooperating country. A code 935 source/origin waiver is required for purchase of non-U.S. manufactured vehicles. The waiver is attached in Annex K and may be approved under the authority delegated to the Mission Director per Delegation of Authority 140, Revised.

IV. Congressional Notification

A Congressional Notification for the Reforestation project was sent to Congress on July 17, 1986 and expired without comment on August 1, 1986.

V. Clearances

The AID/Washington ECPR held on April 4, 1986 to review the PID for this project was chaired by Lois Richards, DAA/AFR. That ECPR approved the PID and reaffirmed Mission authority to approve the PP in the field.

The Mission project committee met on June 27, 1986 and concluded that, following certain minor modifications, the PP be forwarded to the Director USAID/Senegal for authorization.

VI. Recommendation

That you sign the attached Project Authorization thereby approving the Reforestation Project (685-0283) and life of project funding of $10.0 million.

Clearances:

RLA : EDragon EAD
ADO : RHarvey (draft)
PRM : HLubell (draft)
RCON: GZegarac (draft)
DDIR: CTyson CT

PROJECT AUTHORIZATION

COUNTRY: SENEGAL

PROJECT TITLE: REFORESTATION

PROJECT NUMBER: 685-0283

1. Pursuant to Section 121 of the Foreign Assistance Act of 1961 as amended, I hereby authorize the Senegal Reforestation Project for Senegal ("Cooperating Country") involving planned obligations of not to exceed $10,000,000 in grant funds over a two year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process to help in financing foreign exchange and local currency costs for the project. The planned life of the project is seven years from the date of initial obligation.

2. The project purpose is to mobilize large scale popular participation in tree planting with local and private resources. Activities funded under the project will be related to the Mission's concern with environmental deterioration and increased agricultural production in Senegal as stated in the FY 1987 CDSS.

The project consists of five principal components as follows:

1. Media campaign: to convey to the public tree benefit. marketing and technical information.

2. Training program: to assist GOS staff and other entities to understand the importance of agroforestry and promotion of private tree planting and maintenance.

3. Matching Grants: to support on a 50-50 basis initiatives by individuals and groups in tree planting.

4. Private Sector Promotion: to encourage planting, services and marketing by private, non-governmental organizations.

5. Policy Dialogue: to encourage the GOS to establish a policy environment which stimulates massive popular involvement in tree planting and maintenance.

The project will finance training, technical assistance, advisory services, commodities and other costs to achieve its purposes.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Commodities, Nationality of Services

Commodities financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Except for ocean shipping, the suppliers of commodities or services shall have the Cooperating Country or the United States as their place of nationality, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States

b. Conditions Precedent and Special Covenants

1. Conditions Precedent

a. Prior to the first disbursement, the GOS will provide the usual names of authorized representatives and a legal opinion.

b. Prior to the first disbursement for training other than observation tours, the GOS will submit a training plan for the life of the project.

c. Prior to the first disbursement for roadside planting, the GOS will submit a plan for contracting, supervising and paying the private contractors.

d. Prior to the first disbursement for the matching grant program, the GOS will submit the criteria for eligibility for matching grants and procedures for review and payment.

2. Covenants

In addition to the usual covenant regarding evaluation, the GOS will covenant to the following:

a. To engage in discussions and carry out studies as needed on policies which affect forestry practices, pricing of tree products, and other relevant activities to ensure that these policies will stimulate critical mass participation in tree-planting operations.

b. To encourage the sale of seedlings at their real cost to rural communities and groups which undertake reforestation activities. The GOS will also encourage, to the maximum extent possible, the sale of seedlings at their real cost to individuals who invest in reforestation activities for their own benefit.

c. To provide payment of GOS staff per diem and performance awards after year 3 of the project.

c. Waiver Approval

Based on the memorandum request as set forth in appendix K, a waiver for three motor vehicles is approved.

S.J. Littlefield
Director, USAID/Senegal

Date: AUG 0 6 1986

Clearances:
(as Shown on Action Memorandum)

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A (A = Add, C = Change, D = Delete)

Amendment Number

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: SENEGAL

3. PROJECT NUMBER: 685-0283

4. BUREAU/OFFICE: AFRICA 06

5. PROJECT TITLE (maximum 40 characters): SENEGAL REFORESTATION PROJECT

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 09 DD 30 YY 93

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

A. Initial FY 86 B. Quarter 4 C. Final FY 93

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	4250	1250	5500	6400	3600	10000
(Grant)	(4250)	(1250)	(5500)	(6400)	(3600)	(10000)
(Loan)	( )	( )	( )	( )	( )	( )
Other U.S. 1.						
Other U.S. 2.						
Host Country					2775	2775
Other Donor(s)						
TOTALS	4250	1250	5500	6400	6375	12775

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) SH	743B	160				5500		10000	
(2)									
(3)									
TOTALS						5500		10000	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 851, 067

11. SECONDARY PURPOSE CODE

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

A. Code	BR	ENV	BSW
B. Amount			

13. PROJECT PURPOSE (maximum 480 characters)

To promote large scale popular participation in tree planting with local and private resources by 1993.

14. SCHEDULED EVALUATIONS

Interim MM 07 YY 89 MM 07 YY 92 Final MM 07 YY 93

15. SOURCE/ORIGIN OF GOODS AND SERVICES

[X] 000 [ ] 941 [ ] Local [X] Other (Specify) 935

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

17. APPROVED BY

Signature

Title S.J. Littlefield Director

Date Signed MM AUG DD 01 YY 1986

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

MM DD YY

AID 1330-4 (8-79)

Clearances:
(as shown on Action Memorandum)

Senegal Reforestation Project 685-0283

Project Paper

Table of Contents

	Page
Action Memorandum	
Project Authorization	
Facesheet	
Table of Contents	
Acronyms	
I. Summary	1
II. Problem and Project Description	5
A. Problem: Environmental Deterioration	5
1. GOS recognizes the problem	5
2. Previous approaches in forestry sector insufficient	6
B. Project Description	7
1. Project approach	7
2. Goal	7
3. Purpose	7
4. Problems affecting purpose achievement	8
5. Summary of project outputs and inputs	11
6. Beneficiaries	12
7. Relationship to USAID strategy	13
8. Logical framework	13a
III. Summary of Analyses	14
A. Technical	14
1. forestry	14
2. media campaign	16
3. private sector	17
4. training	20
B. Economic	23
C. Social Soundness	26
D. Administrative	30

IV. Conditions and Covenants 34

V. Cost Estimate and Financial Plan 35

A. Cost Estimates 35
B. Financial Plan 36
C. Methods of Implementation and Financing 38
D. Budget 39

VI. Implementation Plan 41

A. Responsibilities 41
B. Major Implementing Actions 41
C. Implementation Schedule 47

VII. Monitoring Plan 50

VIII. Evaluation Plan 51

Annexes

A. PID Approval Cable
B. GOS Request For Assistance
C. Statutory Checklist
D. 121 (d) Determination
E. Project Analyses

1. Technical
   a. forestry
   b. media campaign
   c. private sector
   d. training
2. Economic
3. Social Soundness
4. Administrative

F. Financial Tables
G. Procurement Plan
H. Donor Forestry Projects
I. Environmental Determination
J. References
K. Waiver

ACRONYMS

ABS	Annual Budget Submission
ACI Inc	Africa Consultants, Inc.
ADO	Agriculture Development Office (USAID)
A & E	Architects and Engineers
AR/CER	Assistant Regional/Centre d'Expansion Rurale
A-V	Audiovisual
CAP	Centre d'Application Pratique
CARAT	Centre d'Appui pour le Recyclage des Agents Techniques
CARIT	Centre d'Appui pour le Recyclage des Ingénieurs des Travaux
CATIE	Centro Agronomico Technico de Investigacion y Ensayanza
CCCE	Caisse Centrale de Coopération Economique (French Agency)
CDSS	Country Development Strategy Statement
CEFAS	Centro di Formazione per l'Assistenza allo Sviluppo
CER	Centre d'Expansion Rurale (Rural Extension Center)
CERDI	Centre d'Edition, Reproduction et de Diffusion de Documents Pédagogiques.
CESAG	Centre Africain d'Etudes Supérieures de Gestion
CESTI	Centre d'Etudes des Sciences et Techniques de l'Information
CFA	Communauté Financière Africaine
CILSS	Comité Inter-Etats de Lutte contre la Sécheresse au Sahel (Burkina Fasso, Cape Verde, Chad, Gambia, Mali, Mauritania, Niger and Senegal).
CLUB DU SAHEL	Donor Organization, Paris (OECD)
COP	Chief of Party
CR	Conseil Rural (Rural Counsel)
CSCE	Centre Sénégalais du Commerce Extérieur (Senegal Int'l Trade Center)
DAT	Direction de l'Aménagement du Territoire
DCSR	Direction de la Conservation des Sols et de Reboisement
DEFC	Direction des Eaux et Forêts et Chasses
EATA	Ecole des Agents Techniques d'Agriculture
EATE	Ecole des Agents Techniques de l'Elevage
EATEF	Ecole des Agents Techniques des Eaux et Forêts
ENCR	Ecole Nationale des Cadres Ruraux
ENDA	Environment et Développement du Tiers Monde
ENEA	Ecole Nationale d'Economie Appliquée
FAC	Fonds d'Aide et de Coopération (French Organization)
FAO	Food Agriculture Organization
FAR	Fixed Amount Reimbursement
GES	Groupement Economique Sénégalais
GOS	Government of Senegal

HB	AID Handbook
HC	Host Country
ICRAF	International Counsel for Research in Agroforestry (Kenya)
IITA	International Institute of Tropical Agriculture (Nigeria)
ILCA	International Livestock Center for Africa (Ethiopia)
IRR	Internal Rate of Return
ISRA	Institut Sénégalais de Recherches Agricoles
INDR	Institut National de Développement Rural
IQC	Indefinite Quantity Contract
ITA	Institut de Technologie Alimentaire
LT	Long Term
MC	Ministry of Communication
MDR	Ministère du Développement Rural
MNE	Ministry of National Education
MPN	Ministry for the Protection of Nature
MURB	Ministère de l'Urbanisme et de l'Habitat
NAP	New Agricultural Policy
NGO	Non-Government Organization (PVO)
NPW	Net Present Worth
ORT	Organization for Rehabilitation Through Training
ORTS	Office de Radiodiffusion et Télévision du Sénégal
PACD	Project Activity Completion Date
PARCE	Projet d'Aménagement et de Reboisement des Forêts du Centre-Est
PC	Peace Corps
PCV	Peace Corps Volunteer
PP	Project Paper
PSA	Procurement Services Agent
PSC	Personal Services Contract
PVO	Private Voluntary Organization
RFTP	Request for Technical Proposals
SE/CER	Secrétariat Exécutif aux Actions des Centres d'Expansion Rurale
SODEVA	Société de Développement et de Vulgarisation Agricoles
SPT	Société de Publicité et de Tourisme
SSAR	State Secretariate for Animal Resources
ST	Short term
TA	Technical Assistance
TTI	Dept. of Training and Trade Information (CSCE)
UNDP	United Nations Development Program
UNESCO	United Nations Education Science and Culture Organization
UNICOM	Unité de Communication (Ministry of Plan's Communication Unit)
ZAP	Zone d'Application Pratique

$1 = 360 CFA

I. SUMMARY

Grant:	$10.0 million for seven years with $5.5 million to be obligated in FY 86 and the remainder in FY 87.
Grantee:	Government of Senegal
Implementing Agency:	Ministry of Protection of Nature, Division of Soil Conservation and Reforestation (DCSR)
Waivers:	Source and Origin waiver to buy vehicles from Code 935 countries.

1. Why?

The problem is the rapid and vast deterioration of Senegal's land and forest resources. The FY 87 CDSS (February 1985) described it: "Topsoil blowing away and dust storms of increasing severity and frequency have become the most visible sign of environmental degradation. Reduced crop yields, lowered water table, and scarcity of fuelwood are also serious related problems which are getting worse. These problems are quite well known but the right mix of human and financial resources have yet to be devoted to producing solutions. A few trees are being planted, some wells are being improved and some research is underway; but, there is a need for an action program to turn the situation around." The devastation to Senegal's land resource base has been a major factor in declining agricultural production of the past twenty-five years.

In Senegal foreign donors have invested in 23 projects in the forestry sector (value: $58 million). AID has financed four dollar and five local currency activities ($15 million) of various sizes. These projects have had little impact on the overall environment proving either too large and costly for the country to replicate and maintain or so small and localized that the impact is minor. These projects have also failed to generate the massive popular participation in tree planting needed to arrest the environmental deterioration. What, then, are the obstacles to involving more people in tree planting?

First, past anti-desertification activities have been too closely associated with the "fuelwood problem". Planting trees for fuelwood has simply not provided a strong enough incentive to the heads of families who traditionally make decisions regarding land and labor usage to motivate wide-spread tree planting.

Secondly, farmers have insufficient information and training about the variety and values of species, technical information on where to find trees, when and how to plant and maintain them and how to harvest, store, transform and commercialize forest products.

Thirdly, the GOS is committed to revising the complex of policies and codes which regulate the forestry sector. Revisions will be made which will stimulate greater interest and investment in tree planting.

Fourthly, individual farmers and communities are reluctant to risk limited funds in new activities or investments. Traditionally conservative, Senegalese subsistence farmers have tended to imitate the successful experiences of others rather than innovate.

Fifthly, the GOS is incapable of developing and maintaining adequate seedling, supply and marketing services. As participation increases more services will have to be provided by non-governmental means.

GOS planning for the forestry sector is at a crossroads. The annual planting targets established in the Economic and Social Development Plan of 1985-1989 are 14,000 hectares, rising to 42,000 hectares in 1990-1995 and 70,000 hectares in 1996-2000. The combined pressure of land clearing, fire, desertification, cutting and grazing brings about a loss of the natural forest resource estimated at about 100,000 hectares per year. It is this decrease that the project hopes to reverse. At CFA 300,000 per hectare (GOS estimates) the cost of meeting these targets represents an unsupportable cost burden for the GOS. There is now a growing consensus among senior GOS decision-makers that Senegal cannot meet these targets without massive participation of farmers and private investment.

2. What?

The purpose of the project is to mobilize large-scale popular participation in tree planting with local and private resources.

The scope of this project is nation-wide and the emphasis is on getting farmers, local communities, and businessmen to plant and care for trees. The project is designed to address each of the principal obstacles mentioned above. Farmers have shown interest in tree planting for direct economic benefit. The project will accelerate this process by emphasizing planting for economic reward and increased agricultural production rather than past fuelwood approaches. The main activities of the project include:

(a) A media campaign to convey to the public (1) the message that trees benefit the owner, his children, his community and his country; that the one who plants and cares for a tree receives its benefits; and (2) technical and marketing information.

(b) Training to assist the forest service headquarters staff, field agents and other entities of the GOS involved with forestry in understanding the importance of agroforestry and promoting private sector tree planting/maintenance. Training will be directed to changing the prevailing attitude of preservation of existing forests and trees at all costs (which has been totally unsuccessful) to one of promoting tree planting and the multi-use of trees. Training will also be directed to promoting new investments in growing, processing, and using tree products.

(c) The complex of policies and codes regulating the forestry sector will be studied. A covenant requires the GOS to work with project funded technical assistance to develop policies which will stimulate increased participation.

d) The matching grants activity to match, on a 50-50 ratio, the contributions of communities and eligible individuals for their local tree planting programs. The program will fund those individuals and groups which take the initiative in tree planting. The success of these grants will serve as an example for others to imitate. The communities will be assisted by local extension agents or other rural agents including PVOs or Peace Corps.

e) Private sector promotion: As market opportunities for seedlings, sale of forest products and provision of services such as roadside planting appear, the private sector will become involved with an expanded capacity. A covenant will require the GOS to sell seedlings, to the maximum extent possible, at a non-subsidized cost thereby reducing competition with private nurseries. Technical assistance will match market opportunities with investors, strengthen local institutions to support the private sector and arrange for required market feasibility studies.

AID funds will provide technical assistance, training, a limited amount of commodities, a matching grant fund and contracts with local private sector firms to produce media material and plant trees along roadsides. The summary budget for the project is below:

U.S. contributions	($000)
- Technical Assistance	$3,650
- Training	1,330
- Matching grants	2,000
- Roadside tree planting	600
- Studies	300
- Commodities	280
- Miscellaneous (including evaluations)	440
- Contingency @ 8%	500
- Inflation @ 4%	900
	$10,000

Estimated Senegalese contributions:	
- Salaries of personnel with project	350
- Air time for radio and TV	425
- Matching grant contributions	2,000
	$ 2,775

3. How?

The project will be implemented by the Soil Conservation and Reforestation Division (Direction de la Conservation des Sols et du Reboisement - DCSR) within the Ministry for Protection of Nature (MPN), with the assistance and involvement of several other GOS entities such as training institutes, Ministry of Communications for broadcasting special radio and TV programs; and Ministry of Interior for technical help from the extension agents located in the CERs and involvement of the rural councils (CR). Coordination of these elements will be done by MPN. The DCSR will appoint a project coordinator, full-time staff to manage the media and training programs and part-time staff in support of the matching grant and private sector activities.

AID-financed inputs will be provided largely through one host country contract with a U.S. firm or university let on a competitive basis. Regular evaluations and close monitoring by USAID will be critical for project success. The Chief of party, a Senior forester, will serve as the long term technical advisor to the DCSR concentrating his efforts on policy matters. A second technical assistant will support the media and training programs; and the third technical assistant will promote private sector activities. Most project resources will be provided under the contract with the U.S. contractor, who will be logistically self-sufficient, thereby reducing the administrative workload on both the DCSR and USAID. With these steps, the project should be within the capability of DCSR to manage. The USAID will monitor performance closely.

Project Design Team:

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Ernest Pfeiffer, Private Sector
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II. PROBLEM AND PROJECT DESCRIPTION

A. PROBLEM: Environmental Deterioration

The dust cloud that these days often envelopes Senegal is homemade, the product of a rapidly deteriorating land resource base. True, the rainfall pattern, poor in recent years, has contributed to the deterioration; however, equally ominous is the severe deterioration in quality of large amounts of woodland and forest cover per year due to manmade factors: fire, over grazing, land clearing for crop land and the need to satisfy a national appetite for 4 million cubic meters of firewood. At the annual growth rate of greater than three percent, Senegal's population of 6.9 million people will reach 15 million by the year 2010. The pressure to clear land, already intense, will increase--by 2010 Senegal will have to increase its cereals production by six fold.

Abandonment of fallowing, the increase of saline soils, water and wind erosion, and landscapes devoid of plant and forest cover or blackened by brush-fire bear witness that no region has escaped the growing devastation. It has been estimated that Senegal's national forest cover has been reduced by 30 percent across the country in the last 30 years. In fact, satellite remote sensing, conducted under a USAID-financed land use project, confirms that in the period 1971-1983 the quantity and quality of vegetative cover have deteriorated sharply over a zone extending 200 kilometers south of the northern border with Mauritania.

The economic consequences of the deterioration are menacing. In the period 1979-1984 Senegal's faltering domestic cereals production met less than half of demand and cereals imports accounted for 10% of the national import bill. Food production on a per capita basis has declined by 1.3% since 1968. In addition Senegal imported in 1984 $34.5 million worth of forest products, of which $8.5 million were of wood. Wood product exports on the other hand are minor and declining. For example, the only significant item (gum arabic) Senegal exported in 1983 earned only 178 million CFA ($494,000), in 1982 the volume of gum arabic exports was 30% higher.

The problem is the rapid deterioration of Senegal's land and forest resources. The potential consequences of this deterioration constitute a clear and present danger to Senegal's economic development and, ultimately, its survival.

1. GOS recognizes the problem

The GOS is vitally aware of the problem. President Abdou Diouf has said on several occasions that desertification and unchecked population growth are the most significant problems confronting his country today. Following the severe drought of 1968 to 1974, the GOS and the international donor community prepared a program of reforestation and anti-desertification efforts. Twenty-three forestry projects have been initiated and three multinational meetings have been held in Senegal on desertification and environmental

degradation. Public awareness has been sharpened as the President and his top level staff annually inaugurate the national reforestation campaign and symbolically plant trees in different localities on "National Arbor Day". The media, especially national radio and newspapers, is used at times to engage popular support and participation.

The GOS has erected a policy and strategy platform to highlight and guide environmental activities. The New Agricultural Policy (NAP), April 1984, marks a departure from past policy. The objective of the NAP is to reduce government dominance of the rural and agricultural sector in favor of increased private initiative. It declares that the production potential of Senegal "must be preserved and improved by reforestation and soil conservation".

The "fight against desertification" was also given top priority in the December 1984 GOS Medium and Long-term Adjustment Program presented to the World Bank Donor Consultative Group meeting in Paris. The inclusion of the fight against desertification in a plan which sets forth reforms designed to stabilize Senegal's precarious macro-economic position demonstrates the significance of the problem.

A strategy for forestry development in Senegal was included in the 1982 multi-volume Forestry Development Master Plan. This Master Plan constitutes the only attempt by a Sahelian country to prepare a long-term, comprehensive plan for forestry development. Annual planting rates of 25,000 hectares by the turn of the century were projected. These annual planting targets were refined in the Economic and Social Development Plan of 1985-1989 to be 14,000 hectares, rising to 42,000 hectares in 1990-1995 and 70,000 hectares in 1996-2000. At CFA 300,000 per hectare (GOS cost estimate) the cost of meeting these targets constitutes an unsupportable cost burden for the GOS.

2. Previous approaches in forestry sector insufficient

Donors to Senegal have financed 23 forestry projects at a cost of at least $58.0 million. Of those, USAID/Senegal has financed four dollar projects ($6.7 million) and, additionally, six Title III local currency sub-projects ($8.3 million). The accomplishments of these projects have been insignificant in terms of the magnitude of the problem.

Why haven't the projects achieved more? Nearly all of the donor projects take one of two approaches: (a) planting and maintenance of large plantations or forests; or (b) small village woodlots mainly for fuelwood. The shortcomings of the first approach include extremely high cost and management requirements per hectare, failure to manage the forest for multi-uses with benefits going to the people in the area, conflict between the forest agency and the local people over the use of the forests, and lack of identification of the population with the forests. The shortcomings of the second approach include limited physical impact on the country. The results are often minimal because of such factors as the poorest land being set aside for community woodlots, inadequate plans for communal marketing and distribution of benefits, and poor maintenance of the woodlots since community property is often considered as nobody's responsibility.

These approaches have proven inadequate even though farmers are already motivated in a general sense to plant trees. They are more acutely conscious than anyone of the environmental degradation going on around them. Many are aware of the long term benefit of trees in protecting people, animals, and the land from the harsh sun and winds of Senegal. They know many uses for trees and tree products. Herders likewise depend heavily on trees for forage. There is now a growing consensus among senior GOS decision-makers that Senegal cannot meet its reforestation targets without mobilizing the participation of just these farmers and herders. Four major problems which inhibit this participation, and this project's responses to them, are described in the next section.

B. PROJECT DESCRIPTION

1. Project Approach

Previous forestry projects have shown themselves incapable of stemming the rising tide of environmental deterioration. This can only be accomplished by massive mobilization of the population in large scale tree planting activities. This project's approach is to create the conditions for mobilizing the public and private sectors to manage and service forestry sector activities well beyond the seven year life of this project. To succeed, the project must motivate farmers, communities and businessmen to invest in tree planting and related activities by overcoming the following problems affecting participation: (1) uncertain policy environment, (2) farmer lack of access to information, (3) lack of infrastructure and (4) risk aversion.

This project is based on the assumption that the opportunity for economic benefits and increased food production to be derived from forestry-related efforts will motivate farmers and the private sector to participate in large numbers. This motivation is evident in visits throughout Senegal and in discussions with farmers. It is also consistent with a key lesson learned by USAID from previous experience in Forestry related projects: individuals, families and communities value trees mainly for their income generating and food production roles. Furthermore, the farm forestry approach, which is at the core of this program, is a reaffirmation of traditional farming systems eg. intercropping with acacia albida (kad) trees, gum tapping, arboreal fodder for livestock. Research has shown that integration of trees with farming as windbreaks or intercropping can substantially (up to 50%) increase cereals production.

2. Goal: The project goal is to positively impact on the environment, economy, and agricultural production of Senegal. Only by planting and protecting millions of trees throughout the country can the desertification process be halted and significant reversal of the soil degradation take place.

3. Purpose: The project purpose is to mobilize large scale popular participation in tree planting with local and private resources. At project's end the people of Senegal should be sufficiently aware of the benefits, and have sufficient technical knowledge, to carry out at an ever increasing rate of tree planting with their own resources.

4. Problems affecting purpose achievement

1. Policy environment: The legal context of tree and land tenure is an overlay of traditional customary laws and formal laws which create an imprecise environment for people contemplating investments of time, money, and labor in tree planting. The underlying philosophy of these policies is protective in nature. The most important formal laws are the forest code and land tenure. However, in spite of these formal laws, customary law largely prevails in rural areas so that project progress will not be affected by formal laws.

a. The Forest Code

The Forest Code confers management of forest lands on the Forest Service. Each village used to have a "master of the axe", who managed local woodlands and received a token tax from users, but this tradition was superseded when the Forest Service was created in 1933. Trees became Government property, although traditional rights of usage were recognized for local woods. Villagers now consider woodlands public property, and use them freely in the absence of the Forest Service. When the foresters notice abuses, they impose ex post facto fines and seize equipment and vehicles involved. This has made them feared, but has little demonstrable deterrent effect. The thinness of Forest Service presence means, in practice, that there is little effective management of woods near settlements.

One aspect of the Forest Code concerns "protected species." A list of such species is established in the Code and includes those most useful for commercial cultivation, forage, and agriculture. Any tree on that list may be cut down by an owner who planted it on his own land with a felling permit and a tax. The permit can be obtained from the Forest Service agent. A transporting permit and a "depositing" permit, valid for thirty days, are needed if one wants to take the wood or byproducts to the city to sell. Experience suggests, however, that any paperwork requirement may hamper the development of small-scale enterprise as Senegal's farmers are largely illiterate and sometimes hesitant to deal with educated officials.

According to customary law, useful trees that are deliberately planted (or saplings protected) by an individual are his property. He is entitled to the usufruct of the tree even if he has no claim to the land on which it grows. Under the Forest Code individuals retain the usufruct. Since seedlings and branches are exempt from the regulations, i.e., still available to individuals, the Code in effect protects mature trees but does not provide for their regeneration.

b. Land tenure

The 1964 Law on the National Domain established four regimes to which lands may be subject: urban zones, classified lands, traditional rural lands and pioneer zones (lands expropriated for development).

In the traditional rural lands, Rural Councils were created and given legal authority over land. Traditional family rights, which are collective and hereditary, were recognized, but only in so far as land-owning families themselves used the land. If borrowed land was farmed for two successive years by a tenant, the latter could file a claim to ownership. All sharecropping, labor obligations and tithing arrangements were declared illegal.

These provisions, which implied a profound legal revolution, have done little to change land ownership patterns and hereditary obligations thus far. They have been promulgated in phases, one region at a time, so that the Saint Louis Region only began to be affected in 1980, and the Tambacounda Region in 1982. They concern the reforestation program, however, because of the role of trees in establishing land claims.

Planting trees on land is an easy way to establish ownership. This is one of the strongest motivations that land-owning families have for planting windbreaks around their fields. On the other hand, it means that many proprietors, in order to protect their title to land that they lend out, could refuse permission for a tenant to plant trees on it.

Project Actions: The senior officials of the MPN, aware of the need to establish a more active partnership with the public, are preparing a revision to the Forest Code. The Minister has requested USAID to provide a short term advisor experienced with forestry codes and laws to asist in the process. This help will be provided outside this project with other USAID funds so as to respond promptly to this need.

A one-month observation trip to the U.S. by several senior forestry officials during the first months of the project to observe U.S. Forestry practices will provide MPN staff alternative ideas to consider as they take up revision of the Forest Code and related policies. The tour will also demonstrate the importance of agroforestry and the interrelationship of trees, livestock, and food crops. This tour will be the first of a series of observation tours for approximately 25 senior officials. The project will finance short term training in specific related subjects for an additional 20 forestry officers. Early on the project will sponsor a meeting of all donors engaged in the forestry sector in Senegal to compare experiences, coordinate future actions and avoid duplication of effort.

To complement the above efforts, the U.S. contractor's chief of party, a senior forestry advisor, will, as his principal assignment, assist the Ministry and other entities of government to study and frame policies and practices which stimulate greater participation of the population in forestry. A project covenant further requires the GOS to undertake studies and analysis of all policies bearing on the forestry sector in order to stimulate increased popular participation.

2. Lack of access to information: Farmers have insufficient information and training about the variety and values of species, technical information on when and how to plant and maintain trees and how to harvest, store, transform and commercialize forest products. Media campaigns have not

developed and coordinated motivational messages and technical and commercial information. Extension agents have not integrated farm forestry into their extension message.

Project Actions: A media campaign, combining radio, TV, and a variety of other media, will provide the public with information about tree benefits; changes in laws and procedures; planting and caring of trees; marketing of tree products; the ways trees improve community life; etc. The media campaign will be carried out by DCSR with help from existing GOS and private sector facilities.

The training program and observation tours will encourage extension agents to integrate agroforestry messages into their technical approach. Changes will be introduced into the curriculum of extension agent training institutions to provide for training in both agroforestry and communications skills to permit agents to be more effective in their contacts with farmers.

3. Lack of Infrastructure: Virtually all nurseries serving the rural sector are government owned and operated mainly to provide seedlings for government and donor forestry projects. The estimated production capacity of these nurseries is about seven million seedlings per year. When the government-owned nurseries do provide the public with seedlings, they either sell at a price far below actual costs (thereby subsidizing the public) or give the seedlings away. This GOS practice discourages private ownership of nurseries, and impedes would-be investors from entering the forestry sector except with respect to charcoal production.

Project Actions: USAID has discussed nursery pricing and sales practices with MNP officials who are sympathetic to the problem. A covenant in the project agreement will encourage the GOS to adjust its seedling price practices.

Information about need for nurseries and how to establish them will be provided through the media campaign and by extension agents. Word is already spreading about the profitability and need for nurseries. For example, numerous private nurseries are already being established in the Cap Vert region as demand increases. Demand for seedlings to be provided by the private nurseries should increase substantially due to the matching grants program, roadside tree planting, and the general media efforts. In addition, PVOs and Peace Corps Volunteers will be promoting the establishment of small, community nurseries to meet local demand. The roadside planting carried out by private contractors will encourage individual businessmen or technically knowledgeable people to set up small enterprises to plant and care for trees under contracts with the Forest Service. As the supply of tree products increases, other investors and businessmen will begin to invest in processing and marketing of tree products.

4. Risk Aversion: Subsistence farmers living on the margin are traditionally reluctant to risk their limited capital or property in new investments, especially those with long term payoff. Thus, these farmers tend to imitate the successful experiences of others rather than innovate.

Project Actions: A 50-50 matching grants program will lessen the risk for individuals and communities who take the initiative by covering half the cost.

5. Summary of Project Outputs and Inputs

a. Policy study: A series of policy studies, meetings and analyses will be undertaken in order to develop policy recommendations for senior GOS decision-makers with respect to stimulating greater participation in tree planting. The scope of these studies will be broad including, but not limited to, the Forest Code, the proper role of government in promoting private sector activity, pricing for tree products which reflects tree market value, and integration of local populations in the planning and management of natural resources.

Inputs: The contractor chief of party will work with his GOS counterparts on this task. The training and observation tours will reinforce this activity.

b. Media Campaign: The media campaign involves technical, commercial, educational and motivational activities designed to encourage and convince many different groups of people to participate in tree planting. The basis of the campaign will be special programs for radio and TV, articles for the newspapers audio-visual kits of materials for use by extension agents in the regions, etc. The messages will be designed to integrate the tree into basic elements of Senegalese society: religion, the family, the strong reverence for children, etc. Figure 1 outlines the media campaign.

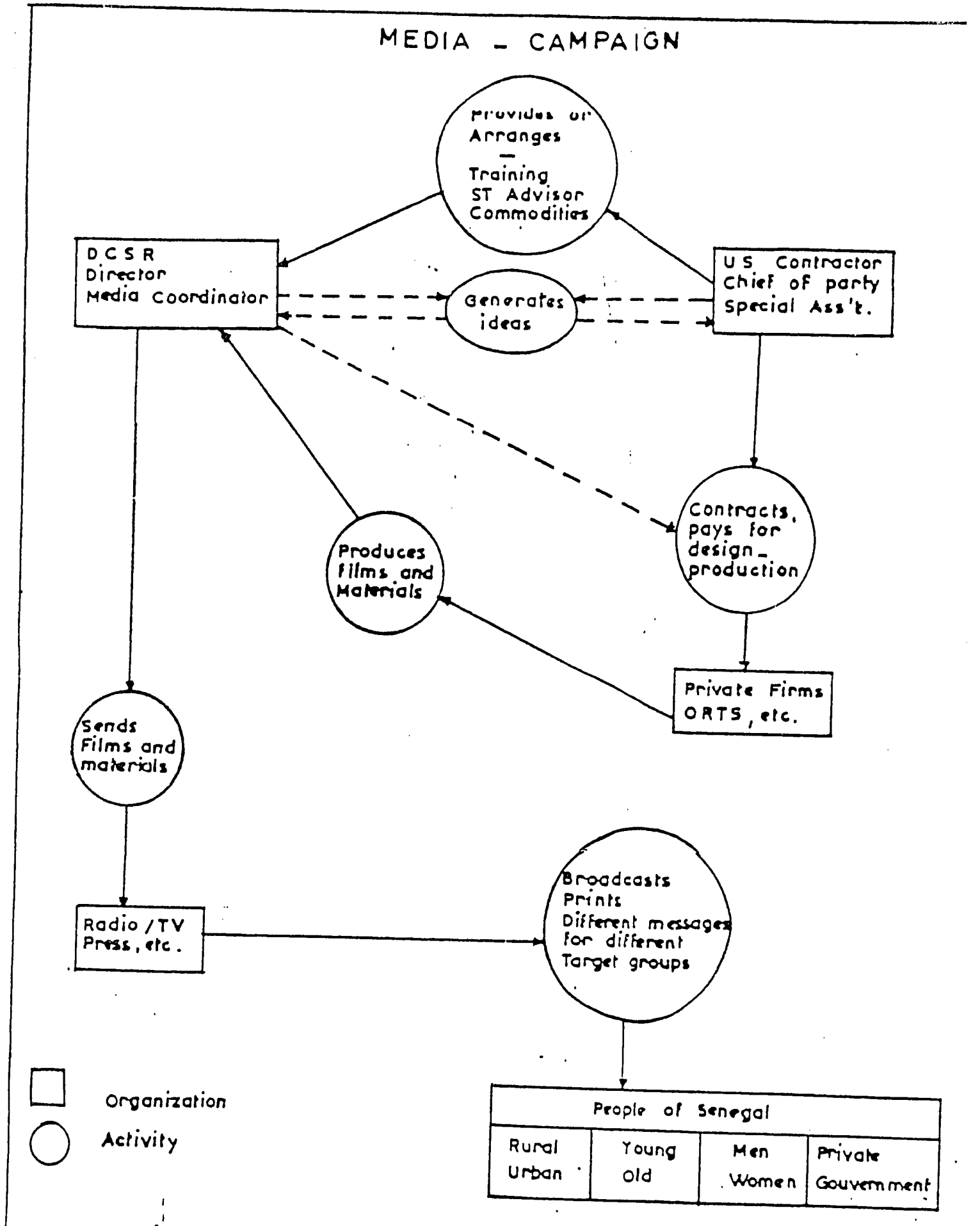
Inputs: short term media advisors (20 months), media design and promotion activities, media advertising, short term training of two months each for six people, observation tours of one month each for four people, and a limited amount of commodities. The GOS will provide a full-time coordinator.

c. Training program: Training will play a major role in overcoming the problems described in this section. It consists of 20 short term courses and 5 long term advanced degrees; 200 observation tour participants; and 740 in-country participants. Different aspects will be coordinated by either the DCSR project management staff or by the U.S. contractor. An assessment of DCSR's manpower needs will be made early in implementation to pinpoint more precisely specific training needs.

Inputs: 1/3 of the time of the Jr. Forestry Advisor. The GOS will provide a full-time coordinator.

d. Private Sector Promotion: The very nature of this project is oriented to the private sector. In addition to tree planting by individuals there are three other major activities involving the private sector: (1) establishment of nurseries, for which the media campaign and assistance of extension agents are to be the major change agents; (2) roadside tree planting/maintenance to be carried out by private contractors through contracts with the DCSR; and (3) investments in processing of tree products (fruits, nuts, gum, bark, etc.) and marketing of tree products for domestic and export markets. The private sector is at present narrowly involved in the forestry sector primarily associated with charcoal production. A 1980 World Bank Report cites 25 forestry cooperatives, 12 forestry companies and 640

Figure 1



NOTE: This does not cover all the activities that might be sponsored by the project. Other activities might be directed to and involve the schools and school children; extension agents etc...

individuals holding licenses for forestry exploitation. This project will aggressively promote expansion and development of private interests beyond the traditional charcoal market. The DCSR will involve private sector organizations such as the Chamber of Commerce and GES as well as GOS organizations such as the CSCE in the implementation of this activity.

Inputs: A contract team advisor for three years, a "survey of tree products potential", four feasibility/marketing studies, 10 months of short term advisors, short term training in the U.S. of two months each for two people, and one month observation tours for three people. The DCSR will provide a part-time coordinator.

e. Matching Grants: To encourage local communities such as the rural and municipal councils to begin or enlarge their tree planting programs, the project will provide cash matching grants, equal to about 50% of the economic cost of tree planting to eligible applicants. The FAR system, whereby payment will be based on a fixed rate for trees actually planted, will place emphasis on tree planting rather than money spent. Figure 2 outlines the Matching Grant program.

Inputs: $2.0 million has been budgeted for this component plus 1/3 of the time of the contract Jr. Forestry Advisor. The GOS will provide a full-time coordinator.

f. Roadside Planting: The MPN has carried out roadside tree planting with its own equipment and personnel on a limited basis. The project will provide the wherewithal to employ the private sector to undertake the planting activities now being done by MPN by financing roadside tree planting/maintenance contracts between the private sector and DCSR. This effort should strengthen the private sector's capability. It will also contribute toward demand for private nurseries.

Inputs: The fund of $600,000 to be used for contracts. In addition, the U.S. contractor may have to provide some short term technical assistance with the contracting process. The GOS will provide a part-time coordinator.

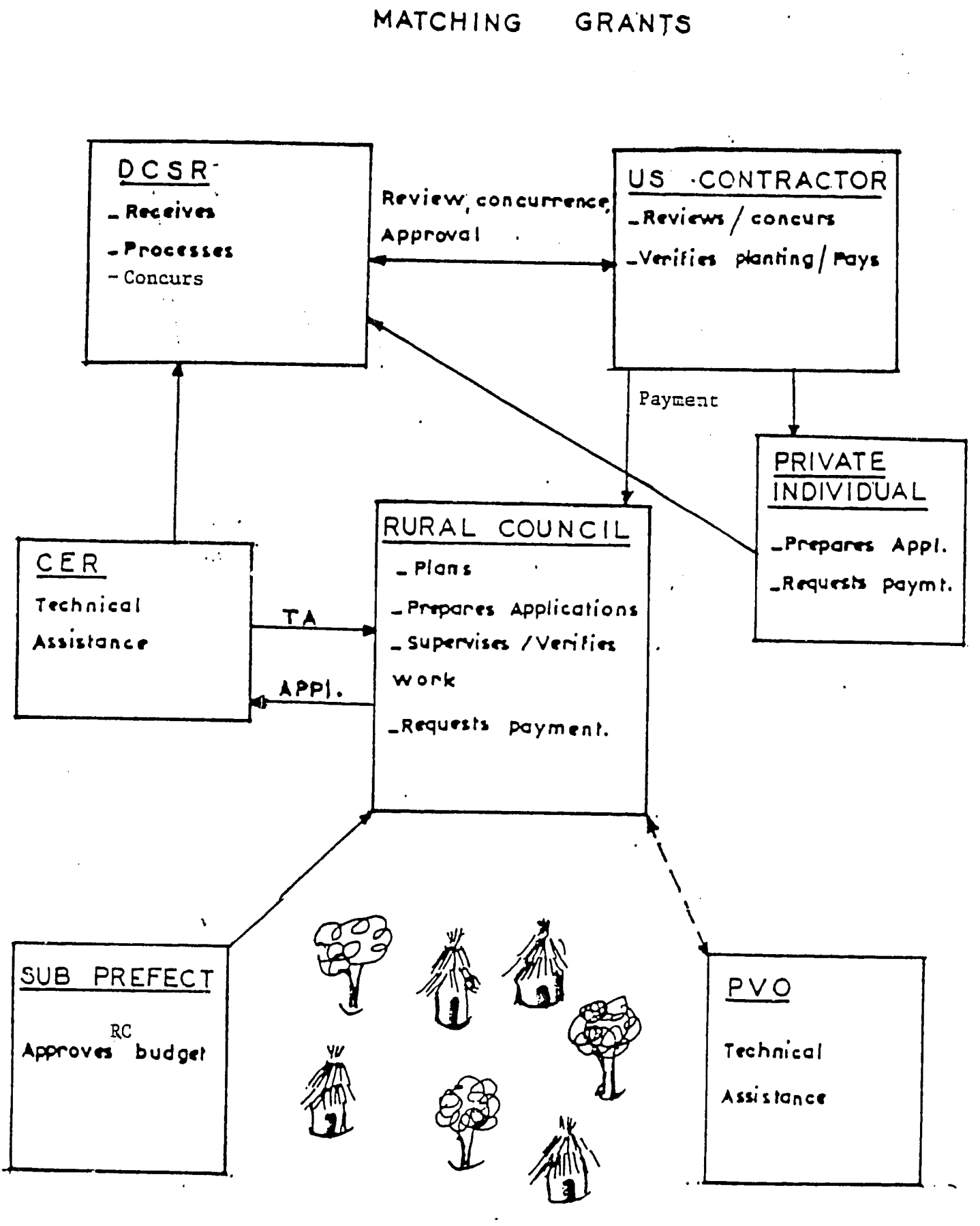
6. Beneficiaries

This project will be the first nationwide forestry program in Senegal promoting tree planting initiatives by individuals, the private sector and local institutions. It will be a test of a new mode of eliciting popular participation in development and as such the numbers and types of beneficiaries cannot now be precisely calculated.

Businessmen and women marketing forest products, large farmers, and peri-urban orchard planters are likely to derive cash income benefits. Rural and urban youth will benefit from the employment opportunities. Farm families who plant trees will benefit from tree crops, increased cereal yields, animal fodder, diversified human diet and improved farm economy.

Men are likely to participate in the planting more fully than women, because they dominate in land ownership, local government and access to the media. Project managers and the media messages will encourage women's

Figure 2


MATCHING GRANTS
DCSR
- Receives
- Processes
- Concurs
Review, concurrence, Approval
US CONTRACTOR
- Reviews / concurs
- Verifies planting / Pays
Payment
PRIVATE INDIVIDUAL
- Prepares Appl.
- Requests paymt.
RURAL COUNCIL
- Plans
- Prepares Applications
- Supervises / Verifies work
- Requests payment.
CER
Technical Assistance
TA
APPl.
SUB PREFECT
Approves RC budget
PVO
Technical Assistance

participation. Even though they may not own the land, experience shows that women have increased their incomes by combining the production of seedlings and fruit trees with their vegetable gardening. The project will instruct women how to cultivate mango, banana, cashew and other tree species and to improve marketing through the media campaign.

The poorest of the poor, in this case land-poor, rainfed farming families and farm workers will also benefit by (1) access to fruit and shade seedlings for their compounds; (2) increased rainfed crop and forage production, on which they are totally dependent; and (3) shared amenity, fuelwood and forage benefits on common lands; and (4) increased employment from nurseries and marketing.

The national economy will benefit from increased production, employment and income. The nation as a whole also benefits indirectly, as incremental improvements in tree cover in one area clean the air, slow the winds, and hold moisture and topsoil, making it easier to extend environmental restoration to neighboring areas.

7. Relationship to USAID Strategy: USAID in its FY 87 CDSS, (February, 1985) recognized the need for a new approach. "What is needed is a national campaign to promote tree planting and agroforestry. Consciousness of the importance of tree planting can be raised by a variety of techniques, but particularly in the initial stages, by concentrating on income generating tree varieties which farmers will maintain and protect. This CDSS is written at a time when a GOS policy framework is evolving which USAID supports. The new factor in this present situation is a strong consensus among the donors about the problems and the courses of action and a willingness at the Presidential level to make the necessary difficult decisions...The Government appears committed to making the necessary policy changes, and as of this writing, major steps have been taken".

One of the four elements of the CDSS strategy is creating income-generating activities which contribute both to environmental protection and increased production. The CDSS proposed a $10 million new effort in forestry to begin in FY 86. The FY 87 ABS, prepared in July, 1985, included this project for initial obligation in FY 86.

SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTION
GOAL: To have positive impact on environment, economy and agricultural production of Senegal.	Measurement of Goal Achievement 1. Decrease in rate of topsoil erosion. 2. Farmers getting increased crop yields. 3. Estimated 100,000 hectare annual loss of natural forest resources and vegetative cover reversed.	GOS agricultural statistics Environmental surveys	People continue to plant trees.
PURPOSE: To mobilize large scale popular participation in tree planting with local and private resources by 1993.	1. More farmers/city dwellers planting and using trees at increasing rates. 2. Farmers obtain increased crop yields by 1993. 3. Private nurseries provide 75% of seedlings used nationwide by 1993. 4. Rural councils, municipalities and others increase tree planting programs by 5% yr. 5. Private sector continues to make investments in tree products. 6. Forest Service oriented toward farm/urban forestry. 7. Extension agents focus on farm/urban forestry.	1. Surveys as part of evaluations 2. Project records	1. Farmers believe crops will benefit sufficiently to plant trees. 2. Private nurseries are profitable. 3. Rural councils and others believe benefits from trees are worth the cost. 4. Sufficient tree planting & survival to increase supply of tree products; 5. Investment, trade obstacles are overcome. 6. Training has impact on attitudes.
OUTPUT 1. Policies Reviewed 2. Media Campaign Implemented 3. Training Program for GOS and other Agents 4. Private Sector Promotion 5. Matching Grants Disbursed 6. Roadside Tree Planting Completed	OUTPUT INDICATORS 1. Major policy contraints identified and brought to the attention of senior GOS staff. 2. 5 TV films, radio programs and 10 other media activities developed and used. 3. 5 MSC degrees, 20 ST, 740 incountry; 200 people depart observation tours. 4. 7 studies completed, 75 private nurseries, better GOS promotional ability. 5. 1,000 to entities meeting eligibility criteria. 6. 200 kms of trees planted by private entities.	1. Project records 2. Contractor's progress reports	1. Media will cooperate. 2. Private sector willing to invest. 3. Communities interested in trees sufficiently to use own funds. 4. Private contractors can do work. 5. Language will not be problem. 6. USAID and others cooperate. 7. Observation travel & TA influence senior GOS officials
INPUTS 1. Central management and advisory services 2. Media campaign 3. Training 4. Private Sector Promotion 5. Matching grants 6. Roadside planting 7. Evaluations 8. Contingency 9. Inflation	Budget/Schedule AID: $2.680 million; .758; 1.426; 866; 2.170; .600; .100; .500; .900; 10.000 Senegal: in-kind and cash contributions equalling approximately $2.775 million	1. Project records	Additional funds available for obligation.

III. SUMMARY OF ANALYSIS

A. Technical

1. Forestry

Background

Senegal, with an area of 197,000 sq. km. and a population of approximately 6.9 million is located in the Sahelian region of West Africa. This region of West Africa, a zone of marginal agricultural productivity, was recently battered by a persistent drought resulting in dramatic changes in social and economic structures. The Senegalese must now cope with a dry, marginally-productive ecosystem that has been put under greater stress by increasing human and animal populations, expanding agriculture, and periodic drought. The region has yet to recover from the severe drought of 1968-73, and the low rainfall conditions that have remained through 1984. Rainfall in 1985 increased by 60% compared with the 1984 yearly total, but was still below the average yearly rainfall for the pre-drought period (prior to 1968).

In Senegal the harsh and unpredictable climate in the Northern and Central Regions is a great stress on all agricultural production systems. The rains are expected during the months of July to October, however, they are characteristically uncertain in nature with respect to amounts (varying between 500 mm in the north, to over 1500 mm in the south) and distribution (highly localized and erratic). Winds appear to be incessant. Yearly average temperatures range between 26-28°C. These high temperatures coupled with hot, dry winds are extremely stressful on all vegetation found in Senegal. With the exception of the soils found in river valleys and estuaries which receive annual deposits of alluvium, the soils of Senegal are yet another productivity-limiting factor.

Current Forestry Situation

Senegal's forest resources are not completely inventoried, thus there are no definitive sources on area or volume of this resource. The best estimates are that about 11.2 million hectares, or about 57% of the total land mass of Senegal, are lands which are described as forested, that is lands which have a contiguous cover of trees. The actual forest cover varies between less than 5% to 100%, with the vast majority of lands averaging less than 20% coverage. Of the forested area, about 345,000 ha. (about 3%) are identified as "closed" or protected forests. The balance of the area is considered open woodland. In addition to these lands an additional estimated 3.1 million ha. of bushland and intermittently forested fallow presently exist.

Senegal has about 150 native tree species of common occurence. Among these species are many legumes which fix nitrogen in the soil thus making them particularly valuable to farmlands. These trees are well adapted to the long dry seasons and the combined stress of fire and loss of foliage by browsing animals.

It is estimated that Senegal requires about 4 million cubic meters of wood per annum, over 90% of which is needed to meet the domestic fuel requirement. Construction poles and building materials constitute an important but indeterminate amount, possibly as much as 700,000 cubic meters per annum.

The combined pressures of land-clearing, fire, cutting and grazing bring about a loss of forest lands each year. This trend is countered, to some extent, by the spontaneous re-growth of trees as fallow land and in the forested areas. The overriding trend, unfortunately, has been a rather constant decrease in the natural forest resource over the past 15 years, estimated at about 100,000 ha. per year. This trend is accompanied by another unfortunate situation; the more valuable tree species become less numerous, resulting in a loss of volume and quality of the forest resource.

Present Technology to Address the Problems

The techniques available for reforestation and natural forest management are well enough known to justify the activities which the project proposes to carry out. The trees to be used for farm planting will build on the widespread knowledge already existing among Senegal's rural population. The most outstanding example is that of the "kad" tree, *Acacia albida*. The re-introduction of "kad" trees is an important factor, particularly on the depleted soils of the peanut basin.

The project proposes also to make use of the technical knowledge developed by previous reforestation programs and to keep abreast and apply the results of current research pertinent to its aims. While much research is going on and many opportunities are appearing, enough is known to offer sound advice in improving land management with trees. Examples of trees species of interest to agroforestry in Senegal are as follows: *Acacia nilotica*, *A. Senegal*, *Bauhinia rufuscens*, *cordylla pinnata*, *Prosopis tamarugo*, *Pterocarpus ernaceus*, *P. lucens*, and *Zizyphus Mauritania*

Probably the single most important barrier to increased food production in Senegal is the decreasing fertility of the traditional farm lands. Thus the strongest case for using trees in farming systems to increase yields rests upon the ability of trees to increase water retention capacity, to fix atmospheric nitrogen and to improve the supply of phosphorus and trace elements.

For example in studies conducted in the 1960's and reported by Felker in 1978 (Grant No. AID/Afr-C-1361) millet and sorghum yields increased, under *Acacia albida* crowns at 10 meter spacing, by 152 per cent and 104 per cent for the two crops. The increases were equivalent to 1028 kilos per hectare and 477 kilos per hectare respectively. Another study from Burkina Faso reported an increase of 50 per cent, equivalent to an extra 430 kilos of millet per hectare.

Another method to increase the organic content of soils is by the use of tree mulch. Leaves and severed branches are scattered on the soil surface and allowed to decompose into humus.

Besides their effects upon agricultural and livestock yields, trees have other uses that contribute directly to the farm enterprise. Among them are firewood, wood for tools and building, shade, amenity, food (fruits, nuts, leaves, honey), medicine, and the social and religious values associated with trees. A further use of trees and shrubs on farm lands is as live fences to control the movements of livestock and to mark the boundaries of fields.

2. Media Campaign

The media campaign, or "communication support" involves information, motivation, education and advertising activities designed to help achieve project objectives. Its purpose is to encourage and convince many different groups of people to participate in planting trees. It relies on the full range of communication methods in an appropriate mix of communication support.

The project requires the participation of all Senegalese. The media campaign is to bring the reforestation message to a nationwide audience:

- for Senegal, the nationwide audience, there is one message: "Plant Trees!"

- for diverse groups, the message will appeal to that which Senegalese hold in common: homes and families, children, feeding the family, religion, increasing wealth. Thus the message is "plant trees for your home, your health, your children, your wealth, your country."

- for individuals, since the single strongest motivation often proves to be children, the message becomes: "For each child - trees."

In addition to "the messages", the media campaign will provide technical information, e.g. how to plant trees, markets for tree products, location of nurseries, how to use living hedges, etc. Thus, the campaign will be a teaching tool at the same time as being motivational. A special effort, for example, will be made to motivate teachers to work with their students to plant school nurseries and orchards while giving them the necessary technical information.

The media campaign will also prepare materials for others who wish to participate in the motivation campaign. For example, as discussed in the social soundness annex E3, religious leaders have agreed to discuss the importance of trees in their sermons. High government officials will also be provided materials which they can use while travelling through the country and speaking to rural communities.

Capacity, as discussed below, does exist to produce the necessary materials both within the public and private sectors. Within the Ministry for the Protection of Nature (MPN) is a press office which is oriented to mass media and requires assistance to overcome professional and institutional weaknesses in communication support. In 1985, MPN signed a formal cooperation agreement with the Ministry of Communication, whereby support is to be given to MPN by the Office de Radiodiffusion et de Television du Senegal (ORTS).

This includes technicians, use of equipment, production for regular radio and TV. ORTS's workload, however, prevents it from giving MPN the support it needs. The national radio station has set aside 30 minutes of air time every Friday evening, but MPN has never used it. The TV station has shown two forestry films and is willing to show others, but several other films available in country have never been given to the TV station.

In addition to ORTS, within the Ministry of Plan is the Unite de Communication (UNICOM), a multisectoral communication support unit which serves all national population projects. It was set up in 1983 by UNESCO's Fund for Population Activities. UNICOM's work is recent, relatively unknown and needs evaluating. Although designed to support population projects, its range of activities is wide and could be widened. Although UNESCO's initial funding was only for three years (1983-86), UNICOM expects to continue operations after existing UNESCO funding terminates. There may be other government media production or communications facilities and staff available which MPN could also use.

There are also private, Senegalese firms with substantial capability in development communications and training who might be able to produce films, programs, and other media material on a contract basis. This will be explored during the early months of the contractor's work.

DCSR will add to its staff a media coordinator with media training to bring to DCSR a fresh approach to communication support. That person would be assisted by short term consulting assistance from U.S. media experts.

In addition to the technical assistance, the project would provide the following to support this activity: (a) contracts for baseline data surveys, small media design, pre-testing and monitoring services and media evaluation; (b) short term training in educational radio/tv, communications skills, and social marketing for seven people, and observation travel for five persons; (c) advertising campaign; (d) media design/production/distribution done by local contractors; and (e) communications support equipment.

The objective initially is to produce: (a) one 30 minute program weekly for radio in the several basic languages; (b) five TV programs which would be shown at least once a month on national TV; and (c) pamphlets, brochures, etc. to be distributed through the schools and churches, extension agents, etc.

3. Private Sector

The analysis indicates that Senegal has considerable potential for development of tree products including (a) nurseries, (b) product transformation and development, and (c) wood harvesting.

a. Nurseries: there is significant private sector potential in the nursery production of seedlings for sale for various uses. Private ornamental and commercial nurseries have been successful for a variety of reasons including an active and lucrative urban and export market, limited amounts of space and capital needed, and the relatively short turn around time between investment and pay-off.

The production of seedlings for the rural sector is dominated at present by the GOS which reportedly has the capacity to produce some 7 million seedlings/year, insufficient for reforestation needs. Thus a market openning exists.

The technical requirements for nurseries are well known, as confirmed by the large number of informal sector ornamental and commercial nurseries. The conditions required to start a nursery can be brought together on as little as 1/4 ha or less. Much of this production can be done by the private sector under certain conditions.

b. Product transformation: one of the biggest targets of opportunity for private sector activity is the transformation and marketing of tree products. Much production remains untreated and thus access to markets is limited or the benefits of transformation accrue to third parties -- often foreign. Thus production increases for export would allow the development of transformation industries, thus increasing the valued added and stimulating employment.

The Institute for Food Technology (ITA), has made some interesting progress in tree product transformation. On an experimental scale, they have developed a line of products which include juices, jellies, dried fruits and nuts, oils and butters and various other consumables. Private sector interest can be developed in the marketing or further development of these transformed products. In addition, local domestic market development can be encouraged.

c. Wood harvesting: the harvesting of small diameter wood for fuel and charcoal is a very active industry. The wise harvesting of trees from certain controlled areas is a long standing and technically well known forest management technique. Opportunities for the Forest Service to divest itself of a harvesting role present an occasion for private sector involvement. The Forest Service could mark trees on its land to be auctioned on the stump to the highest private sector bidder for controlled harvesting and withdrawal. If done correctly this would not only provide economic return for both buyer and seller but would improve the forest stands.

Constraints to Private Sector Involvement

Constraints to private sector forestry activities include: (a) policy, (b) information and training, and (c) integration of forestry.

a. Policy constraints: private sector seedling production on a more massive scale will be stimulated as the government policy of subsidizing seedlings from its own nurseries is phased out. Another policy area is the price of forest products. Most notable in this area is the policy of fixing charcoal and fuelwood prices at artificially low levels.

b. Information and training: in the area of product transformation and development opportunities are not being followed up simply due to "missed connections". The information about forest products is not being matched with potential business people and market opportunities. There is also a lack of data on which to base policy decisions.

Related to the lack of information is the lack of training in certain domains crucial to private sector development such as marketing, business administration and product development.

c. Integration of forestry: a lack of integration among agriculture, horticulture, the Ministries of Interior and Communication, and with the business community means that the grouping of all the diverse resources needed for forestry development is difficult. Much of the private sector potential is dependent on links to these economically more important sectors.

The Project Approach and Inputs

To unleash private sector forestry potential the project proposes a package of technical assistance, training and observational travel and studies and surveys.

a. Technical Assistance: a long term expatriate technical advisor in private sector promotion and marketing is needed and will be provided for a period of three years. The major task of this advisor, working closely with the media campaign, is to forge the connections between the economic potential of forestry, mainly in nurseries and product transformation, and the private sector actors capable of developing this potential. As a secondary task the advisor will work closely with the senior forestry advisor on the issues of policy reform since many needed reforms are private sector related. The advisor will assist in the analysis of issues such as land and tree tenure, pricing policies, supply quotas, etc. He will advise the Forest Service on the various relationships between the Forest Service and the private sector that have evolved in such places as the U.S.

Ten months of short-term technical assistance is also programmed. This assistance will also help overcome constraints related to the lack of links between business and producers. However since some products such as cashews or gum arabic require specialized knowledge or specific marketing or business development needs may arise, the short-term technical assistance will help the long term advisor meet these punctual needs.

b. Training and Observational Travel: a very limited amount of short-term training and observational travel is planned under this project component. Short-term training will be in the areas of business administration, marketing and product development. Observation travel will allow selected key actors to see first-hand successful on-going forestry related businesses.

c. Surveys and Studies: the tree product potential of Senegal is substantial. As part of the background study for this analysis the economic potential of cashew, gums and lumber and machined wood products were explored. The three products mentioned are only the tip of the iceberg. Therefore, early in project implementation it is necessary to contract for a tree products survey which will gather data on forest products from secondary sources and quickly survey the diversity and importance both for export and domestic use of this sector. In addition, the long-term advisor will be responsible for commissionning approximately four additional studies of the feasibility and marketing of selected high potential products.

d. Media Campaign: the media campaign will assist the private sector effort by providing information on commercial opportunities, markets and prices.

4. Training Component Technical Analysis:

The training program is to introduce and promote the practice of agroforestry by providing training in (a) techniques, management and policy making in forestry and agroforestry; and (b) communication skills to convey information and motivate farmers, community leaders and private sector people in general to plant trees on a large scale and maintain them. It will include short and long term classroom training.

The main target group is the extension agents in the Centres d'Expansion Rurales (CER) because: (a) they are responsible for the planning, implementation and coordination of development activities in rural areas; (b) they will be called on to play a more important role as the rural development agencies phase down; and (c) they will be the leading group in the promotion of agroforestry in rural areas through training of the local people. This target group will mainly receive short term local training and some out-of-country observation tours. Other actors in the rural areas (PVOs, volunteers, etc.) will also be eligible for this training.

Professional, mid-professional and senior officials in the MPN will be the next target group. Training will consist of long and short term training in the U.S. and other countries, and some observation tours.

Although communities, village youth groups, cooperatives, farmers and other private individuals are the planned beneficiaries, they will be trained in directly by this project through the media campaign and the extension agents who will provide local training as appropriate in such subjects as nursery operations, windbreak planting, etc. Some outstanding leaders might participate in the observation tours to other African countries.

Local training resources include six vocational schools and seven training institutions. (See Annex E.1 d for detailed discussion of these schools.)

Specific training activities include:

a. In-country training: (1) a 2-week seminar mainly for extension agents in agroforestry and communication skills will be given to about 500 (about 1/3 of the estimated 1500 agents in the field) extension agents (estimated 25 seminars with about 20 participants at each); and (2) a follow-up one week seminar at least six months later to offer more advanced agroforestry and communication skills material, plus re-inforcement of the material presented in the first seminar, for about one half of the people who took the 2-week seminar (estimated about 12 seminars with about 20 participants each). Special one and two day worshops and seminars may be organized for other appropriate target groups.

The project anticipates that the in-country training can be provided by one or more of the existing training institutions through subcontracts with the U.S. contractor. Since other donor assistance programs provide technical assistance and training to these institutions, it should not be necessary for the project to provide any TA or training to the institutions in preparation for conducting the in-country training. If other donor programs are not able to provide the needed TA or training, the project could finance any needed TA and short term training of trainers upon request. The technical advisors to these institutions have expressed interest in providing these seminars as well as including agroforestry in the curriculum of the long term training programs. Rural sociology and communication skills should receive more attention if and when the regular curriculum is revised.

b. Short-term out-of country training: about 25 people will attend two month classroom type training courses in such subjects as agroforestry, forest management, management, commercial product promotion and marketing, educational radio/TV, etc. Although most of these participants will come from the MPN, some might come from other organizations directly involved with the media campaign and private sector promotion.

c. Observation tours: about 175 people will be sent on a series of one week observation tours of Kenya or other African countries with successful agroforestry activities. About five to ten people would be in each tour group. If language problems arise, an escort officer will be arranged. Participants would include outstanding extension agents, outstanding CR and other community leaders, and a limited number of people from GOS entities directly involved with this project. About 25 senior GOS officials might be sent on longer observation tours of about one month each to the U.S. and elsewhere for more extensive exposure to agroforestry practices forest management and policy formulation in other countries. Some of the longer observation tours might be suitable also for people involved with the media campaign and the private sector promotion component.

d. Long term training: The project plans to finance five participants from the MPN for advanced degree training in U.S. universities in forestry subjects such as agroforestry, forest management, policy and price formulation, forestry economics, etc. In addition a manpower study will be accomplished to ascertain the Forest Service's future staffing needs. If there should be a major shortfall in numbers of people needed with advanced degrees, USAID will finance up to 10 additional degrees from its Sahel Human Resources Development Project III.

English language capability could be a limiting factor in the short and long term training. For the long term training, the project might follow the usual USAID practice of financing up to six months of language training in the U.S. prior to commencement of academic studies. This, however, is not financially practicable for the short term training. Therefore, some non-English speaking participants might have to be sent to third countries for training. An alternative might be the possibility of sending sufficient numbers of participants at one time to a course to justify the course being presented in French. A third alternative might be to have a team of instructors present the course in Senegal in French. Flexibility must be practiced if the training objectives are to be achieved.

To assist the extension agents in the field to present local training sessions, the project will provide a kit of simple training aids (slide projector, slides, screen, tape recorder, movie projector, etc.) to each region to be used by the several extension agents in that region.

B. Economic Analysis

The purpose of this project is to mobilize large scale popular participation in tree planting. The project is based on the assumption that farmers and others will be motivated to plant trees by the promise of tangible economic gain and increased agricultural production.

Although the project has considerable economic benefits, both measurable and unmeasurable, the nature of the project as an activity based on private sector initiative makes it impractical to calculate an overall economic internal rate of return. However, an IRR can be calculated for several economic activities that will be promoted by the project and these are discussed below. Table references are found in Annex E 2.

The project stresses reliance upon private initiative and private investment because the government and the donors, in more than 20 forestry projects, have not altered the rate of environmental decline or produced significant amounts of wood products. The approach employed in those projects fuelwood production or environmental protection carried out in high-cost, management intensive and restricted geographic efforts — has failed to elicit widespread popular participation. Yet Senegal has some 750,000 farm families which possess large amounts of land and available labor at little or no opportunity cost. The work of re-planting Senegal with trees properly belongs to them and with the proper approach and motivation they will undertake it.

Many farmers have a strong tradition of using trees in their farming systems, a tradition which this project will promote through the work of the extension agents and the mass media campaign. Since farmers are first and foremost anxious to increase the productivity of their crops and livestock, a ready and widespread response with trees will be for that purpose. They can raise crop yields by planting trees on agricultural soils, planting windbreaks to lessen the force of winds, and planting trees on grazing lands for animal fodder and shade. Studies have shown that cattle gain more weight and give more milk if protected from the stress of insolation. Rural households also have an interest in trees for edible products such as fruits and nuts, either for home consumption or for sale. They can plant trees for wood products such as poles and, finally, for firewood.

Since local communities, farmers, and other individuals and organizations will be planting trees because they receive the benefits from them, the quantities of different species that will be planted, their survival rate, etc. cannot now be precisely estimated. However, economic benefits can be estimated for three types of tree planting activities for which sufficient data is available for IRR calculations:

1. Soil Enrichment: If a farmer plants 50 kad trees (Table 1) throughout one hectare of land used for growing millet, he can expect a gradual increase in crop yield due to enriched soil resulting from the influence of the trees. This increase might be on the order of 12% per year increase in the 6-10th years after planting the trees; 24% per year increase in yield in years 11-20; and 56% per year in years 21-40 (Table 2). The IRR (Table 3) for a 10 year period exceeds 6%, rising to 20-22% for years twenty to forty.

The payoff for the farmer enriching his soil through tree planting rather than annual application of fertilizer is slow in coming but after the first two years he has no recurring costs. This approach also requires no foreign exchange outlays for the country. During the first 10 years, the farmer's increased yield from kad trees as compared to fertilizer is not great. Thereafter the increased yield with kad trees is almost the same as with fertilizer, but with no annual recurring costs. The net incremental gains over a 40 year period for the kad tree approach is CFA 572,390 (Table 4) as compared to CFA 157,160 for the fertilizer approach, assuming that the fertilizer subsidy is removed in three years as planned. If the subsidy continues, the net incremental gains from use of fertilizer increases to CFA 382,000 (Table 5), or only 50% as much as the net gain from planting kad trees.

A large scale kad tree planting program, accompanied by continued use of fertilizer during the first years until the kad trees begin to have a substantial influence on the soil, would maximize the long term economic benefits to the farmer and to the country. For example, if 100,000 farmers planted kad trees on 1 hectare each, during years 6-10 the country would increase millet production by 7,800 tons, during years 11-20 additional production would amount to 15,600 tons per year and years 21-40 to 32,500 tons. As a substitute for rice, the increase would save Senegal approximately $2.7 million per year at year 11 and $5.8 million at year 21 at today's rice import prices (Table 6).

While this soil enrichment example refers to Kad trees planted around fields another project supported approach will be windbreaks. Windbreaks, which stabilize microclimates, improve plant growth and raise production, have been employed with positive results in many developing countries. In China, for example, windbreak effects have achieved increases of cereals yields by as much as 30-50%.

2. Eucalyptus Poles: If a farmer plants one hectare of eucalyptus seedlings, his total costs (excluding the value of land) would be CFA 95,250 (Table 7). His gross return at the end of six years when the trees are cut for poles would be CFA 175,000. This gives him a net profit of CFA 79,750 and an IRR of 17% (Table 8). In fact, farmers will perceive a greater return on their investment since in-kind outlays such as labor are not really calculated by the farmer as a "monetized" cost. There is an active demand for eucalyptus poles for construction purposes.

3. Fruit and Nut Trees:

It is estimated that fruit and nut trees will account for approximately 10% of trees planted during the life of project. They will be grown in small numbers around homes or in larger numbers for commercial purposes. If a farmer plants one hectare of cashew seedlings his total costs throughout the life of the trees (excluding the value of the land) would be CFA 34,800 (Table 9). His annual return in years 5-12 would be CFA 20,000, in the peak producing years 13-20 CFA 80,000 and years 21-40 CFA 60,000 (Table 10). The planter will earn CFA 2,000,000 throughout the life of the trees. This is equal to an IRR of 24% (Table 11).

Tree planting also provides fodder for livestock. It is estimated that a one hectare field planted with 50 Kad trees will produce approximately 33,000 kg of fodder for livestock over 40 years. The value of this fodder is calculated at CFA 1,320,000 (Table 12).

The least cost approach to block tree planting indicates that planting by individuals is much more cost effective than planting by the GOS. In the eucalyptus example above, the cost for planting and caring for one hectare of trees by the farmer is about CFA 95,250. In USAID/Senegal's Fuelwood Production Project, the direct GOS costs for planting and maintaining a hectare of fuelwood trees was about CFA 291,000 (Table 13), substantially higher than the cost of a farmer's efforts.

The GOS' annual planting targets as established in the Economic and Social Development Plan of 1985-1989 are 14,000 hectares, rising to 42,000 hectares in 1990-1995 and 70,000 hectares in 1996-2000. At CFA 291,000 per hectare the cost of meeting these targets represents an unsupportable cost burden for the GOS. Each hectare of private planting stimulated by this project will, therefore, contribute to a major reduction in GOS costs while achieving the same purpose.

Furthermore, as discussed in the Private Sector Analysis (annex E.1.c.) the potential for increased involvement of individuals and the private sector in nurseries, product transformation, wood harvesting and planting is considerable. The expansion of theses activities will undoubtedly lead to increased employment opportunities for various elements of the population though it is not now possible to quantify the number of jobs that will be created. These elements are described in more detail in the Social Soundness analysis (annex E.3.) under the section on project beneficiaries.

Finally, there are also immeasurable benefits to be obtained such as shade, improvement of the air around the trees, reduction in the force of wind, and increased moisture in the area. These immeasurable benefits are important to people everywhere, but especially important in a country such as Senegal which is facing a serious desertification process. Trees modify the micro-climate by intercepting the sun's rays, by intercepting winds, by holding the soil and by transpiring moisture into the air and thereby influencing the relative humidity. Since Senegal has a long, dry season of strong insolation, shade is important for human comfort.

C. Social Soundness Analysis

1. Introduction: This project seeks to accelerate some deeply rooted changes that are already occuring in the role of trees in Senegalese customs, law, administration and the modes of production. Senegal's ecosystem is in transformation. The key elements forcing changes in the way people use land are rapid population growth combined with urbanization, settling of the nomads, rapid depletion of tree resources, and exhaustion of the best lands.

Farmers and extension agents are generally aware that old ways of using resources are exhausting them, but that does not automatically lead to a better approach. Land, pasture, water and tree resources were, until quite recently, regarded as inexhaustible public goods. People accordingly became accustomed to using public resources wastefully, managing carefully only what was regarded as private or family property.

The public management principles, law and administrative structure that exist today were mainly introduced during the colonial period. The colonial forest service's task was to protect government resources from the people. It is only in the last 15 years that the situation has become acute and attitudes have begun to change. Former common lands and forests are passing quickly into private hands. People are fencing their fields to keep them from being used as a public resource. Herding, which most depended on common lands, is adapting to a new mix of semi-sedentary modes.

2. Socio-cultural Feasibility: This project relies primarily on individual families planting and/or protecting trees on their own and village lands. The land tenure systems and the relationship between land and tree tenure form the crucial legal context. The feasibility of matching grants also hinges on the ability of rural councils to set up the committees necessary to administer the program and to budget money for tree planting. There is a growing interest already evident among rural communities. In 1985 161 rural councils (50%) budgeted from CFA 7,000 to more than CFA 1,000,000 for tree planting activities. The total budgeted equals CFA 36,960,423.

The 1964 law on the national domain established four regimes: (a) urban zones, where private property is titled; (b) classified lands reserves; (c) traditional rural lands; and (d) pioneer zone (land expropriated for development). In the tradional rural lands, rural councils were created and given legal authority over land. Traditional family rights, which are collective and hereditary, were recognized, but only in so far as land-owning families themselves used the land. These provisions, however, have done little to change land ownership patterns and hereditary obligations thus far. Since planting trees on land is an easy way to establish ownership, this is one of the strongest motivations that land-owning families have for planting windbreaks around their fields.

3. Modes of production and land holdings: Farming is the principal occupation of about 73% of employed males and 15% of employed females. Some 46% of the male farmers and 19% of the female farmers are farming for themselves while the rest are agricultural workers. The predominant mode of

agricultural production on rainfed lands is small family farms of 2 - 5 ha.

Land and tree tenure within the village is regulated by complex rules. The authority of the village chief is above that of family heads. The chief decides the management of common lands. At the next higher level, the law gave authority over farm lands to the elected rural councils.

Several specialized modes of production also need to be considered, especially pastoralism and urban. Herders are very aware of the forage value of certain tree species. During the late dry season, they get more forage for their animals from trees than from the land. Forest resources on pasture lands are nevertheless degrading rapidly, due to a combination of drought and poor management. Brush fires, which are set to burn off weeds and insects, also destroy all but the hardiest varieties of trees. Pasture lands, since they have been declared government property, are subject to little direct management authority. The people who use the lands and trees no longer have the authority to manage them, and the government representatives who do have the authority have little direct interest in or knowledge of successful resource management. Many herding lands are in farming villages' pastoral zones rather than government reserves. There, herders and livestock are the main destroyers of reforestation efforts, and the pastoral code forbids farmers from chasing livestock out of fields once the crops are in.

The urban population is well equipped to respond to the AID approach, despite the shortage of land. It is most readily reached by the media campaign and is already accustomed to planting trees for their amenity value and fruit. It currently has better access to water, to seedlings, to transportation and cash to buy plants. Small urban centers are also concerned about growing unemployment among youth. They see tree planting as a means to provide employment and revenue while keeping them from migrating to large urban areas (Dakar).

The scale of planting will be small for most people, as space is scarce and valuable. The impact will not be negligible overall, however.

4. Socio-Political Structures: In the rural areas, informal authorities, who are not legally recognized, are at least as important as official structures. The project should encourage participation of the village chiefs and the marabouts (religious leaders). The leading marabouts, in discussing environmental issues with USAID consultants, have indicated a desire to encourage environmentally sound farming, both on their own estates and among their disciples. In addition to their personal contacts, they offer to participate in radio interviews, to include exhortations to plant trees in their sermons, and to create model planting on communal fields.

The formal structures of local government will also be involved in this project. In rural areas, the basic unit is the rural council and in the urban areas the municipality or urban commune. These elected bodies have limited influence as they correspond to no traditional political structure.

Those rural councils that have already allocated money for tree planting will be asked to initiate the AID matching grant program by forming matching grant committees. Over one half of the CRs in some regions have already budgeted from $200 to over $1,000 for reforestation.

Each arrondissement headquarters has a center for rural extension (CER) housing the field extension personnel of the various ministries, including the forestry agent. These will be the main source of technical advice to local tree planting activities.

Prime tree planting time is at the onset of the rains, which is already a busy planting season for farmers. This is not the peak labor period, however, and the labor involved in family tree projects should be possible to integrate with the work in the fields.

Successful implementation of this project requires careful attention to policy impacts and education in the planting and care of appropriate species. Many past failures have resulted from imposing global project packages on socio-cultural situations that are not uniform. This program will bring detailed knowledge of arboriculture to individuals and use extension services to help them adapt it to their circumstances.

5. Spread Effects and Benefit Incidence: The media campaign will reach the entire population. The campaign will be educational, not just hortatory, and its programming can be designed to be useful to even the poorest of the rural and urban poor. Another element of project design intended to promote spread effects is private establishment of nurseries throughout the country. At present, seedlings are available only from the Forest Service, SODEVA, or commercially in Dakar and a few regional markets. The private establishment of nurseries should provide a cheaper and more locally available source of seedlings.

Businessmen and women who market tree products, large farmers and orchard planters are likely to receive cash benefits. Rural and urban youth will benefit from the employment opportunities. Farm families who plant trees will benefit from tree crops, increased crop yields, animal fodder, diversified human diet and improved farm ecology.

The project relies on individual private and local community initiatives, stimulated by the nationwide media campaign and local technical help by extension agents. Thus the project will not directly provide instruction or assistance to the people who will be actually planting and caring for the trees, but will be providing guidance directed at the local level through the media campaign and extension services. Since much of the planting and caring of trees will be done by women, the educational materials of the media campaign should be directed to and take into account the role of women in the local community and tree planting in general. To the extent that some women are on the Rural Councils or serve as extension agents, they will be given special consideration for inclusion in the several training programs.

The Peace Corps is planning a project to begin in July, 1987 involving about 40 volunteers working in over 60 villages to form local women's profit-making groups. They will encourage establishing local nurseries for own use and sales to others; planting of trees for eventual profit; and setting out vegetable gardens for commercial vegetable production for immediate profit and cash flow. The Project designers are planning to have the PCVs work with their villages to apply for matching grants through their local Rural Councils.

Men are likely to participate in the planting more fully than women because they dominate in land ownership, local government and access to the media. Media messages will encourage women's participation. Even though they may not own the land, women have increased their incomes by combining the production of seedlings and fruit trees with their vegetable gardening. The project, through the media campaign, will instruct women on how to cultivate mango, banana, cashew and other tree species and to improve marketing.

Since this project depends on local initiative, it will not intervene directly in local equity questions. Larger, more dynamic communities and families, and those with ample land, labor and water are better equipped to undertake large-scale planting programs. The poorest of the poor, in this case land-poor, rainfed farming families and farm workers will also benefit by:

- Having access to fruit and shade seedling for their compounds;
- Increased rainfed crop and forage, on which they are totally dependent; and
- Sharing the amenity, fuelwood and forage benefits on common lands.
- Increased employment opportunities.

The national economy will benefit from increased production, employment and income. The nation as a whole also benefits indirectly, as incremental improvements in tree cover in one area clean the air, slow the winds, and hold moisture and topsoil, making it easier to extend environmental restoration to neighboring areas.

D. Administrative Analysis

1. Introduction

Lines of authority and channels of communication within the project and in the Ministry are discussed in annex E.4. It is important that these lines be clear and direct in the project headquarters and the Ministry. Since this program relies on the initiatives of private individuals, local government structures, and existing extension personnel for tree planting, it does not have implementation personnel and lines of authority reaching to the local level. Instead the community planting effort is designed to work through rural and municipal councils. Where the capacity to organize activities shows the greatest potential weakness, in the links to local communities and village extension agents, a unique system of outreach is proposed. The national educational media campaign is expected to communicate technical, marketing, and practical program information weekly, directly to the population; and the trained extension agents will be integrating farm forestry into their extension messages. If this approach proves to provide local communities and private entrepreneurs with adequate motivation, information, and logistic support, it will be an important innovation in management efficiency.

The three main institutions involved are USAID, the Ministry for the Protection of Nature (MPN), and a U.S. contractor (consulting firm and/or university). For administrative efficiency, some central project administrative functions are assigned to the contractor. These include procurement, financial management, and subcontracting.

2. The Ministry for the Protection of Nature (MPN)

The mandate of the Ministry for the Protection of Nature charges it with:

--the protection of natural forests, classified forests, and most species of trees wherever they grow (including government, private, and farm lands),
--regulation of the production, transport, and commerce of all tree products,
--reforestation,
--environmental protection and pollution control,
--regulation and policing of hunting and inland fishing,
--management of national parks,
--policy analysis and planning for the forestry sector.

Staffing and recruitment are only partially in the control of the functional ministries. The MPN recruits most often from within the existing civil service, as the general budget crisis since 1977 has limited new openings. Promotions and raises are primarily determined by education and seniority, but recently merit and performance have more weight. Professional development comes through training opportunities usually funded by projects.

The core of the Ministry is the Department of Water and Forests (DEFC) which, since its creation in 1933, has played an enforcement role for woods, fishing and hunting. The issuance of permits and enforcement of violations

through fining are its main local level functions. Its agents have the right of search and seizure when violations of protective, charcoal and firewood production, commercial or fire regulations are suspected. They are entitled to keep up to 10% of the proceeds of fines and sales of equipment or vehicles of violators, which can be an important supplement to their meager salaries (field agents average $50 to $100 per month take-home pay). The rest goes into the Forestry Fund, 75% of which is returned to the Ministry to supplement the funding provided by the general government budget.

Under the leadership of a dynamic Minister the Ministry has, in the last few years, decided to convert from an enforcement approach to a role of facilitator of local forest management and reforestation and thus created the Department of Soil Conservation and Reforestation.

Reforestation is primarily carried out by autonomous projects. The Ministry's regular duties are concentrated on routine administration and policing the firewood and charcoal industries, hunting and fishing, and trade in fruit and other tree products. The Ministry's usual role vis-a-vis projects is one of coordination and oversight. Actual implementation is assigned to donor financed personnel, or by Ministry personnel lent to the project with donor financed allowances and logistic support.

In 1982, the year covered by the most recent Annual Report, approximately $1.7 million (in 1986 US$) was provided from the general budget for salaries, and $158,000 for equipment and supplies. Forest Fund receipts of $1.086 million were reported. The Forest Service's 75% share of receipts appears to be combined with its general budget allocation.

Receipts to the Forest Fund offer another perspective on performance. In 1982 they amounted to FCFA 30.1 million (US $90,000) for sales of carving wood, CFA 11.1 million ($30,000) for construction materials, CFA 10.1 million ($30,000) for fuelwood, CFA 122.6 million ($320,000) for charcoal and CFA 87.6 ($270,000) for gathering and ornamental plants. An additional CFA 118.3 million ($360,000) (31 percent of total receipts) came from seizures and sales related to violations.

The current Four Year Plan (1985-1989) sets an objective of 14,000 ha. per year of reforestation, accelerating to 70,000 ha. per year by 1999. Given its very limited means, the Ministry has been content to note an average of 3,008 ha. per year in 1977-1982, an improvement on the 1,700 ha. per year averaged in the preceding period.

3. Department of Soil Conservation and Reforestation (DCSR):

The lead for this project within the MPN has been assigned to the Department of Soil Conservation and Reforestation, which is administratively parallel to the traditional core of the Ministry, DEFC. DCSR was created as a Department in 1985. It was formerly a part of DEFC. The territorial hierarchy and extension agents of the MPN are under the line authority of the Director of DEFC, though their mandate includes implementing programs of reforestation and soil conservation as in the past.

The Director of DCSR is a Senior Forester (Ingenieur des Eaux et Forets), with a Masters degree in Forestry and two years of graduate administrative training in addition to his bachelors' level forestry degree. He reports directly to the Minister.

The DSCR commitment of staff includes the Director himself, two of his three existing division chiefs, and four additional senior foresters. This is a substantial commitment, as AID requested. This should assure the program the necessary authority and connections within the Ministry to solve quickly any problems that arise. It also provides the working framework for a policy dialogue, as the American senior forester (contractor Chief of Party) and private sector specialist are in daily contact with senior Ministry personnel.

It is essential that project headquarters be adjacent to the DCRS, as planned. DCSR's offices are located in the national Park at Hann, twenty-five minutes from downtown Dakar, and telephone connections are not reliable. It would not be feasible to locate project offices elsewhere.

The newness of the DSCR is an advantage in that it is expected to adopt new approaches. It has some potential weaknesses from a management perspective, in that personnel are limited in numbers and working together as a unit for the first time. GOS procedures will not be fully familiar to all personnel. However, DCSR has taken over management of eleven on-going projects, and is currently co-designing three new ones, of which this is the largest. The DCSR has a full-time contracts administrator and the MPN has a legal department attached to the Minister's cabinet which is experienced at negotiating and managing agreements with foreign donor agencies. Contract management is not expected to pose a major problem.

Civil servants are ranked in five hierarchies. The top (Hierarchy A), heads of Departments and counselors to the Minister, with graduate professional training, take home FCFA 80,000 to 200,000 ($220 to $556) per month. The bottom (Hierarchies D and E), village extension workers with a junior high or technical high school education, take home $50 to $100 per month.

The DEFC and the DCSR have a total staff of 704 persons. Of these about two thirds are in the field. There are 24 senior foresters in the MPN (Hierarchy A), of which 13 are assigned to the DCSR (3 in Dakar headquarters and 10 project managers in the field). Another 8 are in DEFC, with which DCSR continues to cooperate closely. The rest are in Ministry central offices.

The DCSR is rapidly recruiting staff, but is still a small unit. It could run into obstacles, and become overextended with the demands of new projects. Its three functioning divisions each have one senior forester (Hier. A) and one forester (Hier. B) assisting him. A total staff of ten is in headquarters, and another 11 in the field. An additional twenty are expected to be added to headquarters by the end of the year, recruited from elsewhere in MPN and other Ministries.

4. Interministerial Commission:

A permanent Interministerial Commission on Conservation of Resources exists, and may be called upon to facilitate cooperation with other ministries as necessary. The broad principles of cooperation should be agreed upon in a special session of the Interministerial Commission in its earliest phases. The Commission should be presented with the longer term problem of reconciling sometimes contradictory bodies of law that make it difficult to manage natural resources rationally. The Code Pastoral, the Code Forestier, and the National Land Law all contain disincentives and even legal obstacles to good land management by farmers, herders, and other government services. Problems of interministerial cooperation are not likely to hamper the project significantly.

5. Other Action Agents:

The territorial administration and staff of other forestry projects will be asked to provide technical and organizational extension advice. About half of the "extension" agents on whom this project relies to develop matching grant proposals with communities and help them work, will be forest rangers. The other half are those assigned to existing projects. The DCSR expects to use its project supervision function to encourage existing projects to take a lead in developing matching grant proposals with additional villages around their area of activity. Some have already expressed an interest in doing so.

The rangers in the CERs who might work on the matching grant program will be spending part of their time enforcing forest and wildlife protection regulations. The DEFC states that they have few brushfire fighting, hunting, and charcoal/firewood related duties during the rainy season, and are expected to focus on reforestation then.

IV. CONDITIONS AND COVENANTS

A. Conditions Precedent

1. Prior to the first disbursement, the GOS will provide the usual names of authorized representatives and a legal opinion.

2. Prior to the first disbursement for the matching grant program, the GOS will submit the criteria for eligibility for matching grants and procedures for review and payment. The criteria will include but not be limited to minimum size, availability of water and adequate soil, types of organizations and individuals who are eligible, and recommended fixed amount reimbursement rate per tree.

3. Prior to the first disbursement for training other than observation tours, the GOS will submit a training plan for the life of the project.

4. Prior to the first disbursement for roadside planting, the GOS will submit a plan for contracting, supervising and paying the private contractors.

B. Covenants

In addition to the usual covenant regarding evaluation, the GOS will covenant to the following:

1. To engage in discussions and carry out studies as needed on policies which affect forestry practices, pricing of tree products, and other revelant activities to ensure that these policies will stimulate critical mass participation in tree-planting operations.

2. To encourage the sale of seedlings at their real cost to rural communities and groups which undertake reforestation activities. The GOS will also encourage, to the maximum extent possible, the sale of seedlings at their real cost to individuals who invest in reforestation activities for their own benefit.

3. To provide payment of GOS staff per diem and performance awards after year 3 of the project.

V. COST ESTIMATE AND FINANCIAL PLAN

A. Cost Estimates

1. Technical Assistance: A factor of $15,000/month for short term advisors and $170,000/year for long term advisors was used. This includes salary, overhead, fringe benefits, allowances, furniture etc. The project includes the following expatriate advisors: (a) long term advisors: senior forestry advisor and chief of party for six years; junior forestry advisor for three years; and private sector promotion (marketing and product processing) advisor for three years. (b) short term advisors: An estimated 20 months for the media campaign; 10 months for various technical and marketing experts for the private sector promotion activity; and 20 months unallocated for possible needs in such areas as agro-economics, forestry management, curriculum preparation, etc.

2. Contractor local support staff: (a) special assistant to COP for six years at $1,500/month; (b) office manager for six years at $1,500/month; (c) accountant for six years at $1,000/month; (d) assistant accountant for four years at $10,000/year; (e) two bilingual secretaries for six years at $800/month; and (f) two drivers for six years at $150/month. Operating expenses are estimated at $390,000 (see Annex F for details).

3. Training: (a) long term academic training is based on 24 months at a U.S. university. This is based on ST/ IT's recommended amount of $1,800/month plus six months English language training in U.S. ($1,100 per month), plus air fare for 5 participants ($51,000 per participant).

(b) short term specialized training in U.S. for 20 participants for an estimated two months each at $3,500/month plus air fare. Training would be in such subjects as agroforestry, various media subjects, marketing, management, promotion of tree products, forestry law and policy, etc.

(c) observation travel would be mainly to African countries. This would be an estimated 175 people at an average cost of $2,500 per one week trip per person. An additional 25 would be sent on longer trips of about one month each to the U.S. and/or other suitable places for policy management level officials for a more extensive exposure to modern, progressive farm/urban forestry practices and policies, media campaigns and market promotion at an estimated cost of $5,000 per participant.

(d) in-country training is based on an estimated cost (including course preparation and presentation, room and board for participants, classroom space, etc,) of $5,000/session for 240 participants in the 12 one-week courses and $9,000/session for 25 two-week sessions to train about 500 field extension agents and others in introduction to agroforestry and advanced agroforestry. This also includes an allowance of $65,000 for misc. special seminars, workshops, and very brief training courses.

4. Studies: (a) the survey of tree products potential, should require an estimated four months of expatriate assistance at $15,000/month plus $15,000 for local consulting assistance; (b) about four feasibility and/or marketing studies that might result from the survey of tree products potential, at an estimated cost of $25,000 for each; (c) the DCSR manpower needs assessment should require one month of expatriate help (ST TA) at $15,000 plus some local consulting assistance; and (d) the baseline data survey is estimated at $100,000.

5. Commodities: (a) $100,000 of equipment for the media campaign; (b) two vehicles and spare parts for DCSR initially and two replacement vehicles in fourth year for $60,000 total; and (c) contractor's equipment (3 vehicles plus 2 replacements, 4 personal computers and printers, 2 typewriters and misc. office equipment), estimated at $120,000. Contractor housing furniture costs are included in Technical Assistance line item.

6. Matching Grants: this is a fund to finance this activity of supporting tree planting over the life of the project. This will be implemented using the FAR system.

7. Roadside Planting: this is a lump sum to support this activity over the life of the project.

8. Miscellaneous: (a) media advertising efforts - $40,000; (b) media design/production to be contracted out if possible - $150,000; and (c) small office building, probably pre-fab type, to be placed next to the Forestry Service building for use by the project staff, an estimated 4,000 square feet for $150,000;

9. Evaluations: Each evaluation will require about three months of expatriate advisors at $15,000/month plus $5,000 for miscellaneous costs.

10. Contingency at about 8% of all costs except matching grants and roadside planting since these are lump sum amounts rather than reimbursable costs which are affected by inflation.

11. Inflation allowance based on 4% per year.

B. Financial Plan: All inputs, other than those to be provided prior to the contractor's beginning work and evaluations, will be included in one host country contract with U.S. firm or university following AID's competitive contracting rules. Since the contractor will handle all project funds, and the matching grants will be based on work already done and thus, in effect, is a reimbursement operation, a 121 (d) negative determination was requested and received from AID/W. (see Annex D).

Since all inputs will be provided by one U.S. contractor, his monthly invoices would provide, in one document, a continuing and effective system of monitoring expenditures for the project. The quarterly progress reports should include detailed information about all aspects of the project, including progress against budgets and work plans. The contractor's chief of

party, his office manager, and accountant should meet with the USAID controller during the first weeks of work to ensure that their records, reports and financial control systems are complete and satisfactory. Since the project includes some unspecified months of TA, the contractor can bring out specialized help, if needed, to set up the financial management system.

The RFTP and contract should call for periodic management and financial review by an independent public accounting firm.

The U.S. contractor would be reimbursed monthly from AID by submission of form 1034 vouchers with supporting documents to USAID/Senegal.

C. Methods of Implementation and Financing

Method of Implementation	Method of Financing	Approximate Amount US$ 000
Host Country Contract with U.S. private firm or university to provide: Technical assistance Training Commodities Studies Media campaign Matching Grants Sub-contracts for Roadside tree planting	Direct L/Comm	$9.275
USAID IQC or PSC for 2 evaluations	Direct L/Comm	100
Training (before HC contractor is in place)	Direct payment	75
Office building by purchase order or local direct contract.	Direct payment	150
Survey of tree products potential by IQC	Direct L/Comm	75
Baseline data survey	Direct L/Comm	100
Commodity purchases	Direct payment	225
		Total 10.000

D. BUDGET

Technical Assistance

Sr. Forestry Advisor/Chief of Party	6 yr. x 170,000	=	1,020,000	
Jr. Forestry Advisor	3 yr. x 170,000	=	510,000	
Private Sector Promotion	3 yr. x 170,000	=	510,000	
Misc. Short Term Advisors (20 pm media; 10 private sector; 20 misc.)	50 pm x 15,000	=	750,000	
	Sub-total		2,790,000	

Support Staff

Special Ass't to COP	6 yr. x 18,000	=	108,000	
Office Manager	6 yr. x 18,000	=	108,000	
Accountant	6 yr. x 12,000	=	70,000	
Assistant accountant	4 yr. x 10,000	=	40,000	
Bilingual secretaries (2)	2 x 6 yr. x 10,000	=	120,000	
Drivers (2)	2 x 6 yr. x 2,000	=	24,000	
	Sub-total		470,000	
Operating Expenses			390,000	
	Total TA & staff			3,650,000

Training

Long term academic, M. Sc.	5 x 51,000	=	255,000	
Short term, ave. 2 months, U.S.	20 x 8,000	=	160,000	
Observation:				
One month, U.S., elsewhere	25 x 5,000	=	125,000	
One week, Africa	175 x 2,500	=	440,000*	
In-country, 1 & 2 weeks plus special seminars, etc.	740 plus	=	350,000	
	Total Training			1,330,000

* Numbers rounded off.

Studies			
Survey of tree products potential		75,000	
Feasibility/marketing studies	4 x 25,000	100,000	
DCSR manpower needs assessment		25,000	
Base line data survey		100,000	
		Total Studies	300,000
Commodities			
Media support equipment		100,000	
Vehicles for DCSR (4)		60,000	
Contractor's office equipment & vehicles		120,000	
		Total Commodities	280,000
Matching Grants			
Lump sum estimate for rural councils, municipalities, etc.			2,000,000
Roadside Planting			
Lump sum estimate for DCSR to contract out to private sector.			600,000
Miscellaneous			
Pre-fab office building for contractor and repair	4,000 ft2	150,000	
Media design/production		150,000	
Media advertising		40,000	
		Total Misc.	340,000
Evaluations			
Formal	2 x 50,000 each		100,000
		Sub-total	8,600,000
Contingency at 8%			500,000
Inflation at 4%			900,000
		AID Grant Total	$ 10,000,000
Estimated GOS Contributions:			
Salaries of personnel with project			350,000
Air time for radio and TV programs			425,000
Matching grant contributions			2,000,000
		Total GOS contributions	2,775,000

VI. IMPLEMENTATION PLAN

A. Responsibilities:

1. USAID: will designate a senior agricultural officer in the Agriculture Development Office to be the AID Project Officer. He will be assisted by an assistant Project Officer. These managers are already on staff and will be responsible for AID approvals, monitoring, etc. of the contractor as provided in the contract and needed for implementation. ADO managers will also be supported by the Mission Project Committee which may be convened at anytime to examine specific problems. The Project Officer will arrange for initial commodity procurement and studies as listed in section III C. above.

2. GOS: (a) will appoint an interministerial coordinating committee composed of representatives from the several concerned ministries and organizations such as Interior, Commerce, Information and Rural Development with the committee being chaired by a senior officer in the Ministry for the Protection of Nature; and (b) will designate one or more people in the DCSR as authorized representatives. The Chief of DCSR would be the authorized representative with overall responsibility for implementation of the project. He, in turn, will designate a senior officer from DCSR to be the full-time, day-by-day project coordinator. Both DCSR staff will serve as counterparts to the contractor's chief of party (COP) for administrative and substantive matters. Counterparts will be named for all long and short term advisors provided by the contractor before their arrival. Figure 3 contains project personnel information and figure 4 a breakdown of implementation tasks. The GOS should organize a conference of all donors currently working in the forestry sector to share experience, avoid duplication of effort and inform participants of this project and its objectives.

3. U.S. Contractor: will provide the necessary inputs and actions required for implementation as described in his contract. Since he will be under a host country contract, he will receive day-by-day guidance from, and work in close coordination with the GOS designated project coordinator. The contractor will provide all long and short term technical assistance; arrange all out-of-country training; arrange for procurement of all project commodities except for a few items to be procured prior to contractor's arrival. These items are cited in the procurement plan found in annex G.; provide a reviewing function and make payments for the matching grants component, the roadside planting program, DCSR per diem and performance payments made from USAID funds; provide advice and guidance on forestry policy; and contract for or provide staff to carry out several studies.

The contractor is to be logistically self-sufficient through such actions as hiring its own office staff; buying, operating and maintaining vehicles used by the contractor; etc. The contractor may also choose to engage the Contractor Support Services (CSS) office established by USAID to provide support services of a personnel nature. The contractor will be located in the building of the DCSR or in a prefab building to be provided by project funds next to the forestry building by the project.

B. Major Implementation Actions:

1. Contracting: The various project inputs will be largely provided through one host country contract between DCSR and a U.S. firm or university

selected on a competitive basis. The USAID project officer will assist DCSR to prepare a request for technical proposals (RFTP). He will then prepare a cable notice to the Commerce Business Daily. The one-step approach should be used whereby interested U.S. firms and universities submit their proposals in French and English directly to DCSR with info copy to USAID. The DCSR's Technical Evaluation Committee evaluates the proposals and submits its findings to USAID for concurrence before beginning negotiations with the top rated firm. The project officer will monitor the evaluation and negotiating process closely to be sure that AID concerns and rules of Handbook 11 are fully considered.

USAID and DCSR should include a "pre-proposal conference" in Dakar approximately three weeks after advertising. All interested firms would send representatives (at their expense) to the two day conference where appropriate representatives from GOS and USAID would be present to answer all questions. Attendance would not be mandatory, but USAID and GOS should not meet with representatives of interested firms outside the conference so as to reduce intrusions into their regular work and to ensure fairness to all.

2. Media Campaign: Within the DCSR a full-time media coordinator will be responsible for preparing or arranging to have prepared the materials for a country wide continuing campaign to promote public awareness of the use and benefits of trees. The national radio and TV networks have regular time set aside for programs about reforestation and energy conservation. The Communications Unit of the Ministry of Plan has a complete set of equipment donated by UNESCO for preparing audio-visual and audio programs. Also, there are private firms in Dakar capable of preparing programs for DCSR. DCSR should rely on them for most media productions. The role of the media coordinator would be one of promoting, coordinating and script writing rather than being a production unit.

3. Matching Grants: This activity will be administered by DCSR in close collaboration with the U.S. contractor. For technical reasons, however, the contractor will serve as the paying agent on behalf of the USAID. The DCSR, with assistance of the contractor, will prepare the criteria (eligibility, minimum size, purpose, etc.) and plans for using the matching grants in collaboration with USAID (a condition precedent). The Fixed Amount Reimbursement (FAR) system will be used whereby DCSR, the contractor and USAID will agree upon an amount that represents, on average, about 50% of the cost of planting a tree including materials and labor. Payment for the matching grant would be calculated by multiplying the number of trees planted by this rate. Since the matching grant program will initially be tested in one or two selected regions, the rate should be based on costs in those regions. Thereafter, DCSR, the contractor and USAID can decide whether the same rate should be used nationwide or separate rates be established for each region. The FAR calculation may include an amount to be paid by the CR to the local extension agent, if any, who assisted the CR with grant preparation and planting. If the CR does not think the services of the extension agent merit recognition, payment to the agent would not be made. By using the FAR system, emphasis is placed on trees planted rather than on money actually spent.

The main source of applications probably will be the rural (CR) and municipal councils and individuals. However other local entities should also be considered as receipients of matching grants. The local matching grants

committee in the CR (see Administrative Analysis) will work with interested villages within its area of influence to combine their interests and contributions with the CR's budget contributions into one matching grant application. A Peace Corps Volunteer or PVO representative might help the CR or municipal council prepare its application, but with the exception of the situation described below, it is not anticipated that a PCV or PVO will directly apply for a matching grant as the purpose is to supplement and encourage the continuing contributions of local communities in their tree planting and maintenance programs.

The Peace Corps is designing a pilot project for promoting tree planting and related activities through local women's groups formed for profit-making activities related to trees. The Peace Corps expects to assign about 20 volunteers with some forestry background or training to one region beginning in the summer of 1987. Each volunteer may work with two villages. Three cycles of two years each of volunteers per village or location are planned, or six years PCV effort per location. The PC plans to have a monitor or manager to coordinate this field effort. If satisfactory procedures can be worked out, the PC manager could pool the requests from all interested villages served by the PCVs into one application for a matching grant on behalf of the villages. The funds would go from the contractor to the PC field manager for distribution to the volunteers and their villages. This would greatly simplify the paperwork in the area served by the PCVs while enabling the PCVs to use AID funds to get more trees planted -- a mutual objective. Such applications, of course, would still require the matching contributions of the villages. However, matching grants should not be provided to villages or groups receiving food for work or other "salaries" in return for their own participation.

The application for a matching grant would be sent by the CR through local extension agents to DCSR. DCSR reviews it for completeness and eligibility before passing it to the contractor for concurrence. After the contractor concurs with DCSR's recommendation, DCSR advises the CR. After the trees have been planted, the CR completes a simple request for payment form and gets the local extension agent to certify the planting. The payment request (no partial payment should be processed) is sent to DCSR for review and forwarding to the contractor for verification and payment. Initially, the contractor should have someone on his staff physically verify that the planting has taken place for about the first ten payments. In some cases, verification statements from a PCV or PVO representative may substitute for personal verification by the contractor's staff. After the contractor verifies that the tree planting has taken place, he issues a check for the agreed upon amount (number of trees times the agreed rate) and sends it to the CR. The contractor would be reimbursed by AID through its monthly request for reimbursement voucher. The contractor, DCSR, and USAID will evaluate the experience of the first 10 payments to see if the system requires modification.

4. Roadside Planting: Roadside planting of trees has traditionally been done by the Forestry Service with its own personnel and equipment (force account). The project will finance some roadside planting to be carried out through small contracts between private contractors and DCSR with the U.S. contractor serving as paying agent on behalf of DCSR. A private sector

professional association has expressed strong interest in this possibility. Previous experience of DCSR with contracting for tree planting has been limited and not very successful. Normal safeguards built into the AID contracting procedures (HB 11) should reduce or eliminate the difficulties previously encountered by DCSR. Since the private sector has not really been active in this area, its capabilities are uncertain and the DCSR contracting capability remains to be established. The U.S. contractor may need to bring in a bidding/contracting specialist to assist in setting up rules and procedures. The initial contracts should be very small (few kilometers each) to test both the procedures and the private sector's capabilities and performance. The good performers should be rewarded with additional business with DCSR. If the GOS contracting rules become so complicated and slow as to hinder the success of this component, the process might have to be carried out by sub-contracts with the U.S. contractor. Since it is desirable to build up a contracting capability within DCSR and to direct DCSR's interest and practice into contracting more with the private sector, the sub-contracting route should be a last resort only after all efforts to simplify the GOS procedures fail.

5. Training Out of Country: A limited amount of short term classroom training in subjects relating to achieving the purposes of the project in the United States, and perhaps other countries, is planned for DCSR personnel and appropriate officials in other ministries directly involved in the project. Up to five participants may be sent to U.S. for graduate level training in forestry. The U.S. contractor will make all arrangements for such training, including admission to the course, paying of educational, travel and per diem costs, etc. using the guidelines of AID HB 10. The Director, DCSR, will approve each program of training and each candidate. Some training might start before the contractor is on board using USAID's Training Officer. The contractor is to carry out a manpower needs assessment of both DCSR and DEFC during the first months to determine graduate level training needs.

6. Observation Travel: A substantial number of individuals (about 175) will be sent on short term (generally one week) observational trips to the ICRAF in Kenya and other suitable places, to observe how agroforestry is carried out and the benefits are obtained. The participants might include decision-makers in Dakar, leading extension agents, the most progressive and promising community leaders, and a few people from the government entities involved in the project and whose influence might be increased as a result of such travel. Once on board, the contractor will make all arrangements, pay all costs, etc. Prior to contractor arrival the USAID will handle all payments. If someone in each group is not sufficiently proficient in English to serve as group translator, then an English speaking escort officer will accompany the group. In addition, up to 25 senior policy making and management officials may be sent to the U.S. and elsewhere for up to one month to observe policy and procedure making, and operating practices of the private sector and government in forestry matters. The director, DCSR, will approve each trip and the participants.

7. In-Country Training: In-country special training of one to two weeks will be provided to about one-third of the extension agents (forestry, livestock and agriculture) by either the Centre d'Appui pour le Recyclage des Agents Techniques (CARAT) or its equivalent for mid-level extension staff (CARIT). CARAT and CARIT organize and manage special training, but use the staffs and facilities of the vocational and other schools. The schools may have to hire additional staff and train them so as to increase their capability for presenting a number of special courses per year. Therefore, the contractor should enter into a long term contract with CARAT and/or CARIT sufficiently far enough in advance of the first training course so the school can prepare for the course presentation. A fee for each session should be negotiated so that the contractor, in effect, is subcontracting for these services.

In addition, funds have been allocated for special 1-2 day seminars, workshops and conferences in Senegal that might advance the purposes of the project.

8. Studies: (a) Before the contract is negotiated, a "survey of tree products potential" should be made under an IQC work order. The survey will provide information to be used during contract negotiations regarding future studies, LT and ST advisors, training needs, etc. Some studies may be needed over the first few years of the project as opportunities for investment are identified. In some cases a complete, although not overly large or complicated, feasibility study might be needed; in other cases only a marketing study. After approval by DCSR, the U.S. contractor would provide all the needed expertise and produce the desired study. All such studies would become public property, available for use by all interested parties. The relevant findings could be reported in the media campaign. Generally, such studies should be made only after a private sector investor has expressed strong interest in an investment opportunity, but in some cases suitable subjects for study might be identified without potential investors being known. The contractor will also conduct regular surveys of domestic markets in tree products and planting inputs. This information could be distributed through the media campaign and other ways of reaching the private sector; (b) DCSR manpower needs assessment is described in paragraph 5 above; (c) a base line data survey should be carried out in the first year of the project to provide the information by which progress of the project can be measured.

9. Promotion of Private Sector Investments: The Forest Service has little or no experience or expertise in this area. Some other entity in the GOS or the private sector will have to be the focal point for this promotion. The Centre Senegalais du Commerce Exterieure (CSCE) for export markets and Groupement Economique Senegalais (GES) for domestic markets are two potential candidates for involvement in this activity. Once such focal point is identified, the U.S. contractor, with the concurrence of the Director, DCSR, will provide long and short term technical assistance and training as needed to enhance and expand the local capability in identification and promotion of investment opportunities in tree products.

10. Commodity Procurement: Prior to the U.S. contractor's arrival, USAID, possibly using a PSA, will buy the initial commodities needed for the contractor's office building and housing. USAID will also order three vehicles so they will be in country by the arrival of the chief of party and two for the use of the DCSR. Thereafter, the contractor will order all remaining project commodities, following the usual AID regulations in HB 11. All commodities with useful life after the contract expires will be turned over to DCSR. A source/origin waiver is included in this PP for the vehicles (Annex K). A determination will be made concerning source/origin of computers pending additional study by project personnel.

11. Contractor's Office Building: Since the Forestry Service building does not have sufficient space for the U.S. contractor's personnel and the DCSR assigned counterparts, the project will finance an office building of about 4,000 square feet to be located on vacant land beside the Forestry Service building. This land is owned by the Forestry Service. The easiest method would be to use pre-fabricated modules from a U.S. pre-fab manufacturer. The USAID should contract with a local A&E firm (preferably American familiar with U.S. office standards, requirements and pre-fab industry) to do a layout of space needs. The layouts would be available for bidding by U.S. suppliers. The bid should include sending someone to Senegal to supervise erection. The winning bidder might also sub-contract on a cost-reimburseable basis with a local firm for pouring the building's concrete slab, suppling labor for erection, and utilities hookup. This approach would involve the minimum number of AID contracts, competitive procurement processes, decision points, etc. and be the fastest with least staff work. Repainting of the current DCSR office building should also be included.

12. Performance Awards and DCSR Per Diem: The contractor's chief of party and the Director for DCSR will evaluate the performance of DCSR staff assigned to the project at the end of each of the first three years to identify those DCSR staff members who had performed in an outstanding manner above and beyond what should routinely be expected of them. Outstanding performance would be rewarded by cash awards to such individuals in accordance with the USAID Indemnity Policy. The criteria for this performance awards program would be approved by USAID prior to the end of the first year of the project. Any disagreement by the COP and Director/DCSR would be resolved by the USAID project officer. This award system would be approved by the USAID project officer. This award system would be operational with AID project funds only for the first three years of the project. Thereafter any performance award program would have to be financed by the GOS.

The project would pay with AID project funds the per diem for DCSR headquarters staff who travel in Senegal on project business in accordance with the USAID Indemnity Policy during the first three years of the project. Thereafter any per diems will be financed by the GOS.

13. Evaluations: Two formal, outside evaluations are scheduled during the life of project: one at the end of the third year and one in the middle of the sixth year. Each should require about three independent experts in fields such as forestry, economics and media. The experts could be obtained either through the PSC route or IQC contract with the Mission. These individuals would not be provided by the U.S. contractor since they would be evaluating the contractor's performance, among other tasks.

C. IMPLEMENTATION SCHEDULE

Major Actions

July, 1986	Initial obligation of funds
September	Prepare RFTP for U.S. contractor
October	Initial conditions precedent met
October	Chief, DCSR and others go on observation trip to U.S.
October	Local contract for office building layout
October	PIO/T for IQC contract for Survey of Tree Products Potential
November	RFTP released. Notice in Commerce Business Daily
November	Advertising in U.S. for bids for pre-fab office building
December	Pre-proposal conference for TA contract
January, 1987	TA Proposals received
January	Contract awarded for pre-fab office building
January	Survey for Tree Products Potential completed
February	Selection of U.S. TA contractor made and approved by USAID
March	Contractor's vehicles initial office and housing furniture ordered
April	Pre-fab modules arrive. Building is erected.
April	Contract negotiated and approved
May	Chief of Party arrives; hires local staff. Vehicles. office and housing furniture arrive.
June	ST TA media expert, Jr. Forester and Private Sector Promotion advisors arrive
June	Conditions precedent for matching grants component met
June	Conditions precedent for roadside planting component met
July	First matching grant applications processed

August	First roadside planting sites identified, bidding action begins
September	COP submits work plan
September	Initial baseline data surveys begin
July, 1989	First evaluation
July, 1992	Second evaluation

Figure 3

PROJECT PERSONNEL

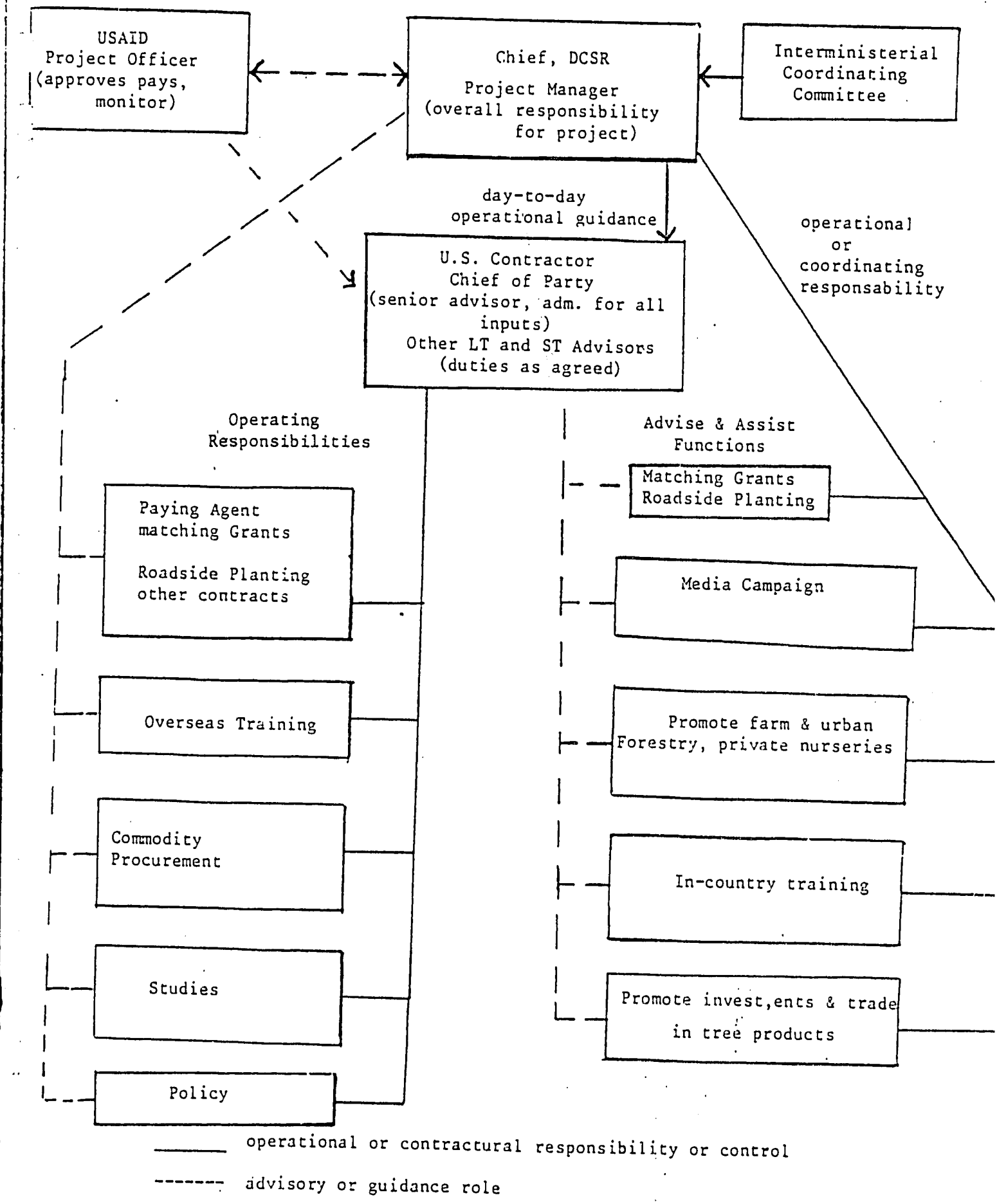
Activities	DCSR	U.S. Contractor
General Management and Policy Dialogue	M. Niang, Project Manager (part time) Coordinator (full time)	Sr. Forester Advisor/ Chief of Party (U.S.) Jr. Forester Advisor (U.S.)* Spec. Ass't to COP (Seng. ** Office Manager (Seng.) Accountant (Seng.) Bookkeeper (Seng.) 2 Secretaries (Seng.) 2 Drivers (Seng.)
Matching Grants	Coordinator (full time)	Jr. Forester Advisor*
Training	Coordinator (full time)	Jr. Forester Advisor* ST TA as needed
Media Campaign	Coordinator (full time)	Spec. Ass't** ST TA as needed
Private Sector Promotion	Coordinator (part time)	Private Sector Advisor ST TA as needed
Roadside Tree Planting	Coordinator (part time)	Spec. Ass't** ST TA as needed to set up contracting procedures

* Same person working in several activities

** Same person working in several activities

Figure 4

U.S. CONTRACTOR
Implementation Relationships



VII. MONITORING PLAN

The assigned USAID project officer will have primary responsibility for monitoring the progress of this project on behalf of AID. The monitoring will include the following actions by the project officer:

1. Meeting regularly with the DCSR and U.S. contractor.

2. Making periodic field trips, in line with Mission Policy, including writing trip reports.

3. Analyzing and approving the various actions of the contractor and the project which require prior AID approval.

4. Reviewing the documents submitted by GOS to meet the conditions precedent.

5. Reviewing the several studies to be made under the project.

6. Reviewing the monthly vouchers from the contractor.

7. Reviewing the quarterly progress reports from the contractor.

8. Requesting periodic audits of the financial aspects of the project to be made by a local public accounting firm.

9. Reviewing and approving the annual work plans of the contractor.

10. Participating in design and review of the two formal evaluations.

11. Convening periodic meetings of the USAID project committee.

12. Arranging and participating in the annual joint review and other internal Mission Review. Preparation of AID/W six-month implementation report. The internal reviews should consider the project's basic assumptions to insure that they remain valid.

All of the above documents, with the possible exception of the trip reports, would be available to DCSR also. The DCSR counterpart staff assigned to the project will be in the same building as the U.S. contractor's staff so there will be close, daily contacts between the DCSR personnel and the U.S. contractor. Since most inputs are being provided through one contract, such close contacts provide the GOS with an informal monitoring process also.

VIII. EVALUATION PLAN

Two evaluations are planned during the seven-year life of this project. The first should be made about three years after the initial obligation of funds and the second during the sixth year. A final evaluation should be conducted following the PACD.

The U.S. contractor, during the first months of work, should contract with a Senegalese firm or individuals to make a series of base line surveys. Should the contractor need expatriate advisory assistance to design the surveys, this could be arranged through an IQC, purchase order or addition to the prime contract.

1) a survey of wood and tree products in local weekly and urban markets, including prices, quantities traded and an analysis of supply and consumption patterns;

2) a survey of public knowledge, opinions and attitudes concerning different tree species, their care and usage, and the reasons for and against village reforestation efforts;

3) a survey of the nurseries in Senegal including ownership, land space, volume of business, types of species grown, profitability, etc.;

4) a survey of the rural councils and municipal councils about their tree planting activities (both planned and actual) including trends (prior years activities) of budget, rates of survival, range of species used, cost of seedlings of different sizes and species, etc.;

5) a survey of public opinion about the Forest Service and the Forestry Code;

These surveys should be done quickly, in no more than three months each, and should focus on collecting quantified information rather than extensive analysis. In addition to the information gathered in these surveys, important information for evaluation purposes will be provided also by the DCSR Manpower Needs Assessment, the Survey of Tree Products Potential, and the feasibility/marketing studies that will be carried out by the project.

Both evaluations should be conducted by three-person teams (senior forester, economist, and extension expert) working with a local consulting firm to gather basic field data prior to the evaluation. The evaluations will be under the general direction of the USAID evaluation officer in collaboration with DCSR.

The first evaluation should examine whether (a) key project assumptions were and are still valid; (b) the purpose is still attainable; and (c) modifications, if any, should be made in the project. The second evaluation should (a) examine whether the project purpose is being attained within the project period and with the level and types of project inputs; (b) investigate whether unanticipated benefits are being obtained; and (c) make

recommendations for actions after the project's PACD. Each evaluation would also include an analysis of trends in such matters as:

- number of rural councils with tree planting programs, amounts budgetted for such programs, and change in tree survival rates;

- increase in numbers of privately owned nurseries, their sizes and profitability, seedling survival rates, and volume of business;

- addition of agroforestry and urban forestry in vocational school's curriculum;

- increase in attention being given to forestry in the schools;

- changes in the budget and staffing of the forest service;

- rate of investments in processing and trading of tree products on a commercial scale;

- change in attitude of the general public toward the forestry service and the Forestry Code;

- annual change in numbers of farmers who plant trees for windbreaks, soil enrichment, etc.;

- amount of attention being given to forestry in the mass media (radio, TV, newspapers);

- time being spent by extension agents with the local communities on forestry activities.