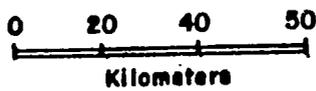


**MAP 1: GUINEA BISSAU FORESTRY PROJECT
SITUATION MAP**

- International Boundary
- - - - - Development Zone Limit
- Town
- ==== Paved Road



PREFACE

Because of special AID funding and administrative constraints and the particular evolution of foreign donor interest in this project (explained more fully in Section I.B.), the Project Paper format utilized herein, although containing documentation for all of USAID's standard requirements, has been modified somewhat. Specifically, the interested reader will find all USAID internal documentation (facesheet; action memorandum; project authorization; section on conditions, covenants, and negotiating status; PID authorization cable; statutory checklists; GOGB request for assistance; 611(a) certification) relegated to Annex G of this report. The reasoning for this is simple:

- (a) This Project Paper, at the request of the other donors, is the sole reference document to be used for project approval and implementation by SIDA, SUCO and the GOS and GOGB, as well as AID.
- (b) The AID financial contribution to the overall project is small (9%).
- (c) The Project Paper will be translated both in Portuguese and French and Annex G can therefore be simply removed prior to translation.

Also, because the fiscal years of the various donors exhibit considerable variation (U.S. fiscal year begins October 1, Swedish fiscal year begins July 1, GOGB fiscal year begins January 1) we have utilized calendar years throughout and have made special note only when one country's fiscal year required special attention.

Finally, the CDO/Bissau and his colleagues from the local offices of SIDA, SUCO and Guinea Bissau Forest Service wish to recognize the quality of effort of the PP design team: Raul Sardinha, Forester (Institute of Agronomy, Lisbon), Steven Reyna, Anthropologist (University of New Hampshire, USA), Sten Noren, Forester (University of Agricultural Sciences, Sweden), and Jim Hradsky, Design Officer (REDSO/WA, Abidjan).

LIST OF ACRONYMS AND ABBREVIATIONS

AID	United States Agency for International Development
CDO/Bissau	Country Development Officer (AID/Bissau)
FED	European Development (European Common Market)
GGOB	Government of Guinea Bissau
GOS	Government of Senegal
MDR	Ministro do Desenvolvimento Rural (Ministry of Rural Devel.)
MPL	Ministro do Plano (Ministry of Plan)
MRN	Ministro dos Recursos Naturais (Ministry of Nat. Resources)
PID	Project Identification Document
PP	Project Paper
REDSO/WA	Regional Economic Development Services Office/West Africa
SIDA	Swedish International Development Agency
SUCO	Service Universitaire Canadien d'Outre-Mer (Canadian University Service Overseas)
USG	United States Government

EXCHANGE RATES

US\$ 1.00 = 35	Guinean Pesos (PG)
US\$ 1.00 = 5.0	Swedish Crowns (SK)
US\$ 1.00 = 1.15	Canadian Dollars (CAN\$)
US\$ 1.00 = 280	CFA

V. Annexes

- A. Project Logframe
- B. Socio-economic Analysis
- C. Technical Forestry Analysis
- D. Financial Analysis
- E. Location and Design of the Forestry Development Center
- F. Mission Undertaken and Persons Contacted
- G. AID Internal Documentation (not for translation)
 - Facesheet
 - Action Memorandum
 - Project Authorization
 - Conditions, Covenant and Negotiating Status
 - PID Approval Message
 - GOGB Request for Assistance
 - 611(a) Certification
 - Statutory Checklists
 - Waiver - Host Country Participant Travel Responsibilities
 - Waiver - Transportation Source

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Signature

James O'D. Maher
Mr. James O'D. Maher
CDC/Bissau/Cape Verde

Date

July 16, 1981

Concurrence

Gordon W. Evans
Mr. Gordon W. Evans
Director, REDSO/WA

Date

July 3, 1981

II. Prior to disbursement under the grant, other than up to a maximum of \$20,000 for English language training, the Cooperating country will, except as AID may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID:

- a) Evidence of a binding agreement between the Grantee and the Swedish International Development Agency (SIDA) under which SIDA will finance approximately \$3,665,000 (in equivalent Swedish Crowns) and evidence that the conditions precedent to effectiveness (other than those related to the AID Grant) have been fulfilled.
- b) Evidence of binding agreement between the Grantee and the Canadian University Service Overseas (SUCO) under which SUCO will furnish four volunteer technical assistants to the project for four years each, and evidence that all conditions precedent to effectiveness (other than those related to the AID Grant) have been fulfilled.

III. Prior to disbursement under the grant or the issuance by AID of documentation pursuant to which disbursement will be made for procurement of the training center power plant, the Cooperating Country will, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that a site for the training center has been selected and made available to the project.
- b) Preliminary plans and specifications for the training center.
- c) An executed contract for construction of the training center.

C) Waivers

Based on the justification provided in Annex G 9 of the Project Paper, I hereby approve the request for a waiver of host country participant travel responsibilities so as to permit AID to finance all expenses relate to the university level training in the United States of two Guinean forestry candidate over four years.

PROJECT AUTHORIZATION

Name of Country	Guinea Bissau
Name of Project	Forestry Project
Number of Project	657-0005

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, I hereby authorize the Forestry Project for Guinea Bissau ("Cooperating Country") involving a planned obligation of not to exceed \$500,000 in AID grant funds in FY 82, subject to the availability of funds in accordance with the AID OYB/allotment process, to help in financing foreign exchange costs for the project.
2. The Project consists of improved forestry management in Zone I of Guinea Bissau through the construction of a small Forestry Development Center, scholarships, technical assistance, equipment and associated inputs which all will contribute to the institutionalization of the techniques and services provided to the Zone's small farmers and villagers.
3. The Project Agreement which may be negotiated and executed by the officer (s) to whom such authority delegated in accordance with AID regulations and Delegations of Authority, shall be subject to the following essential terms, covenants and major conditions, together with such other terms and conditions as AID may deem appropriate.

a) Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by AID under the project shall have their source and origin in countries included in AID Geographic Code 941, except as AID may otherwise agree in writing. A request for a flag carrier source waiver from Code 000 to Code 899 vessels has been requested of SER/COM (see ABIDJAN 7856).

b) Conditions Precedent

I. Prior to the first disbursement under the Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made, the Cooperating Country will, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Specimen Signature
- b) Evidence of the source and availability of funds for the GOGB contribution to the project (\$1,072,000 equivalent in Guinean pesos).

The project outputs anticipated are (1) the development and extension of locally acceptable forestry-related and agro-forestry packages (fruit trees, agro-silvo-pastoral schemes, village fire management, improved charcoal production, etc.) to some 150 villages in Zone I, (2) the training of Guinea Bissau forestry personnel, (3) improved forest management planning for Zone I, and (4) an improved forestry knowledge base.

The inputs through the multidonor project include the construction of a small Forestry Development Center (with activities in training, experimentation and documentation), scholarships, technical assistance, equipment and local personnel and operating costs.

The input to be financed by AID is \$500,000 for two, four-year university scholarships to train Guinean forestry personnel and the provision of a major renewable energy power plant (solar or dendro - thermic for the Forestry Development Center.

B. Financial Summary

Life of Project costs have been estimated at \$5,445,000 over five calendar years, including contingencies and inflation. The total AID contribution of \$500,000 will be made in USG FY 82. A complete list of each donor's contribution to the project is noted below by calendar year:

CALENDAR YEAR	BY CALENDAR YEAR (US \$ 000)				TOTAL
	SIDA	GOGB	AID	SUCO	
1981	64	16	-		80
1982	1424	436	500	52	2412
1983	604	181	-	52	837
1984	735	206	-	52	993
1985	838	233	-	52	1123
TOTAL	3665	1072	500	208	5445
	(67%)	(20%)	(9%)	(4%)	(100%)

C. Socio-economic, Technical and Environmental Description

This Project Paper, as designed, contains all requisite technical, financial, social, economic and administrative analysis and includes adequate implementation planning. The project design team has estimated that the project will have a positive impact on the participating farmers and village groups as well as the country of Guinea Bissau.

The project provides for construction of an autonomous Forestry Development Center. The requirements of FAA section 611 (a) for the AID - financed portion of the Center (the renewable energy unit) have been reviewed and approved by REDSO/WA engineering.

An Initial Environmental Examination was provided in the project PID and was approved by AID/W.

Source /origin for AID - financed procurement under the project will be exclusively Code 941. A waiver of host country participant travel responsibilities has been described and justified in Annex G9 of the PP. A request for a flag carrier source waiver from Code 000 to Code 899 vessel has been requested of SER/COM (see ABIDJAN 7856). Justification for the flag carrier source waiver has been placed in Annex G10 of the PP.

D. Committee Action and Congressional Apprisement

The Project Review meeting was held on July 15, 1981 in REDSO/WA and the PP was reviewed and approved. Revisions to the PP suggested at that meeting have been incorporated into the attached PP.

The project was included in the FY 1982 Congressional Presentation and no further notification is required at this time.

E. Project Officers

Responsible project officers are Glenn Slocum in AFR/DR/SFWAP (AID/W backstopping), Glenn Anders, ENG. (REDSO/WA backstopping) and James Maher CDO/Bissau (field implementation).

F. Recommendation

That you sign the attached Project Authorization, thereby authorizing the project and the requested waiver.

Clearances:

William Naylor, Project Review Chairman WN
Glenn Anders, Engineering GA
James Ito, Controller JIT
Cynthia Smith, RLA CS
Don Kennedy, PDO DK

Fran Stier, PADS FS
Clarence Kooi, Engineering CK
Tcny Bilecky, Procurement TB

ANNEX G2
ACTION MEMORANDUM

-TO: James D. O'Maher, CDO/Bissau
Gordon W. Evans, Director, REDSO/WA

FROM: James A. Hradsky, Acting Chief, PDO 

SUBJECT: Guinea Bissau Forestry Project, Project No. 657-0005

I. PROBLEM: Your approval is required to execute a grant agreement of \$500,000 from funds available under section 103 of the FAA of 1961, as amended, to the Government of Guinea Bissau (GOGB) for the subject project. It is expected that the total obligation of \$500,000 will take place in FY 82.

II. DISCUSSION

A. Project Profile

The project is a \$5,445,000 multidonor (SIDA, GOGB, AID, SUCO) effort in forestry improvement for Zone I of Guinea Bissau. The AID contribution to the project will be a \$500,000 grant. As conceived in this report will contribute to two major goals:

- to improve the well-being of rural populations in Zone I through improvements in the sustained production capability and use patterns of the forest resource base;
- to halt/reverse the current degradation of Zone I forest and environmentally linked resources.

The principal causes of the current trend of dramatic deforestation in Guinea Bissau and Zone I (slash and burn agriculture, fuelwood collection, fire for pastoral and hunting purposes) are all man's actions on his environment in his daily battle for subsistence. The operational focus of the project is, therefore, to develop village - level and family-level solutions to the problem through the national Forest Service and decentralized community activities. It appears sufficiently clear that, if such measures are not taken, the probable long-term implications will be increased laterization of soils, increased soil erosion, decreased natural water control and a trend of ever-decreasing agriculture productivity of local soils and drastic reduction in the availability of forest resources. An evaluation of the project and the Zone I Integrated Rural Development Project will be undertaken by all donors every year. If deemed desirable at the time of the 1984 evaluation, it is recommended that appropriate action be taken to finance a second, five-year Phase II immediately after completion of Phase I.

INSTRUCTIONS

The approved Project Data Sheet summarizes basic data on the project and must provide reliable data for entry into the Country Program Data Bank (CPDB). As a general rule blocks 1 thru 16 are to be completed by the originating office or bureau. It is the responsibility of the reviewing bureau to assume that whenever the original Project Data Sheet is revised, the Project Data Sheet conforms to the revision.

Block 1 - Enter the appropriate letter code in the box, if a change, indicate the Amendment Number.

Block 2 - Enter the name of the Country, Regional or other Entity.

Block 3 - Enter the Project Number assigned by the field mission or an AID/W bureau.

Block 4 - Enter the sponsoring Bureau/Office Symbol and Code. *(See Handbook 3, Appendix 5A, Table 1, Page 1 for guidance.)*

Block 5 - Enter the Project Title *(stay within brackets; limit to 40 characters)*.

Block 6 - Enter the Estimated Project Assistance Completion Date. *(See AIDTO Circular A-24 dated 1/26/78, paragraph C, Page 2)*

Block 7A. - Enter the FY for the first obligation of AID funds for the project.

Block 7B. - Enter the quarter of FY for the first AID funds obligation.

Block 7C. - Enter the FY for the last AID funds obligations.

Block 8 - Enter the amounts from the 'Summary Cost Estimates' and 'Financial Table' of the Project Data Sheet.

NOTE: The L/C column must show the estimated U.S. dollars to be used for the financing of local costs by AID on the lines corresponding to AID.

Block 9 - Enter the amounts and details from the Project Data Sheet section reflecting the estimated rate of use of AID funds.

Block 9A. - Use the Alpha Code. *(See Handbook 3, Appendix 5A, Table 2, Page 2 for guidance.)*

Blocks 9B., C1. & C2. - See Handbook 3, Appendix 5B for guidance. The total of columns 1 and 2 of F must equal the AID appropriated funds total of 8G.

Blocks 10 and 11 - See Handbook 3, Appendix 5B for guidance.

Block 12 - Enter the codes and amounts attributable to each concern for Life of Project. *(See Handbook 3, Appendix 5B, Attachment C for coding.)*

Block 13 - Enter the Project Purpose as it appears in the approved PID Facesheet, or as modified during the project development and reflected in the Project Data Sheet.

Block 14 - Enter the evaluation(s) scheduled in this section.

Block 15 - Enter the information related to the procurement taken from the appropriate section of the Project Data Sheet.

Block 16 - This block is to be used with requests for the amendment of a project.

Block 17 - This block is to be signed and dated by the Authorizing Official of the originating office. The Project Data Sheet will not be reviewed if this Data Sheet is not signed and dated. Do not initial.

Block 18 - This date is to be provided by the office or bureau responsible for the processing of the document covered by this Data Sheet.

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number _____	DOCUMENT CODE 3
--	--	------------------------	---------------------------

2. COUNTRY/ENTITY GUINEA BISSAU	3. PROJECT NUMBER <input type="checkbox"/> 657-0005
---	---

4. BUREAU/OFFICE <input type="checkbox"/> 06	5. PROJECT TITLE (maximum 40 characters) <input type="checkbox"/> GUINEA BISSAU FORESTRY PROJECT
--	--

6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 06 01 86	7. ESTIMATED DATE OF OBLIGATION (Under 'B' below, enter 1, 2, 3, or 4) A. Initial FY <input type="checkbox"/> 82 B. Quarter <input type="checkbox"/> C. Final FY <input type="checkbox"/> 82
---	--

8. COSTS (\$000 OR EQUIVALENT \$1 = 35 PG)						
A. FUNDING SOURCE	FIRST FY 82			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total						
(Grant)	(500)	(0)	(500)	(500)	(0)	(500)
(Loan)	()	()	()	()	()	()
Other U.S.						
1.						
2.						
Host Country	0	452	452	0	1072	1072
Other Donor(s)	1540	0	1540	3873	0	3873
TOTALS	2040	452	2492	4373	1072	5445

9. SCHEDULE OF AID FUNDING (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH CODE		D. OBLIGATIONS TO DATE		E. AMOUNT APPROVED THIS ACTION		F. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) FN	740	160				500		500	
(2)									
(3)									
(4)									
TOTALS						500		500	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)	11. SECONDARY PURPOSE CODE
--	-----------------------------------

12. SPECIAL CONCERNS CODES (maximum 7 codes of 3 positions each)
A. Code _____ B. Amount _____

13. PROJECT PURPOSE (maximum 480 characters) <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"> <p>To assist the GOGB, Forest Service, and the country's farmers and villagers develop a strong foundation and an integrated process for improving, managing and enhancing their natural resource base.</p> </div>

14. SCHEDULED EVALUATIONS Interim MM YY MM YY Final MM YY 1 1 8 2 1 1 8 3 1 1 8 5	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input type="checkbox"/> 941 <input type="checkbox"/> Local <input type="checkbox"/> Other (Specify) _____
--	--

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

17. APPROVED BY	Signature: <i>James O. Maher</i> Title: CDO/Bissau/Cape Verde	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION Date Signed MM DD YY 0 7 1 5 8 1
------------------------	--	---

657-0005
PD-ART-454
ISN 957

PROJECT PAPER

GUINEA BISSAU FORESTRY

PROJECT FOR ZONE I

(AID Project No. 657-0005)

SIDA	US\$	3665
GGB	US\$	1072
USAID	US\$	500
SUCO	US\$	208
	<hr/>	
	US\$	5445

(AID CONTRIBUTION OF \$500,000 AUTHORIZED
July 16, 1981)

Third, adjustments will be made, as required, and packages will be extended on a wider-scale.

The first wave of volunteers (1982-84) will be specifically required to produce, in collaboration with other project and GOGB personnel, a "Field Handbook for Forestry Extension" prior to their departure. The second wave of volunteers (1984-86), who will be much more actively involved in widespread extension and work with Forest Service agents, will be expected to revise the Handbook prior to their departure to reflect the larger data and experience base which will have been developed in years 3 and 4 of the project.

Community Foresters in the Field

A qualified body of Guinean forestry extension personnel must also be developed through the project. The Forest Service is currently seriously lacking trained personnel at all levels. The following section will describe in greater detail the project proposal to develop the capacity of Forest Service personnel, however, it should be noted that the project places greatest emphasis at the village level. Current "forest guards" (guardas florestais) and other candidates will be retrained as "community foresters" (agentes florestais) through the Forestry Development Center to be built under the project. They will be entirely relieved of all police functions to avoid potential role ambiguities in their own mind or those of the villagers and will be taught to be low-level technicians and receptive village forestry extension agents. Phase I of the project will train 35 such agents and place them in the field with a bicycle and backup support and supervision. Each agent will be responsible for five pilot villages (one visit per week per village) and twenty associate or "satellite" villages. Although initially supervised by Center or volunteer expatriate staff, the community foresters will ultimately be backstopped by Guinean forest technicians trained under the project and assigned to appropriate regional field responsibilities.

All community forestry activities, including studies, pilot work and final extension will ultimately be the responsibility of the project Community Forestry Coordinator.

Taken in perspective, it is anticipated that project community forestry field activities for Phase I will evolve in approximately the following manner.

Figure 2: Indicative Schedule of Social Anthropologist

ACTIVITY	1982		1983		1984		1985	
	D.S. ¹	R.S.	D.S.	R.S.	D.S.	R.S.	D.S.	R.S.
A. Socio-economic analysis of farm and forest utilization								
B. Formulation of initial IS's		—						
C. SOCIOL. Monitoring of pilot-village acceptance levels								
D. For Forest Extension Handbook formulate tested IS's				—				
E. Training Activity								
F. Extension Activity								
G. Monitoring of extension-agent village's								
H. Reformulation Tested IS's						—		—

1. D.S. = Dry Season
R.S. = Rainy Season

Figure 1: Indicative Schedule of Volunteer Forester Activities

Activity	1982		1983		1984		1985	
	D.S. ¹	R.S.	D.S.	R.S.	D.S.	R.S.	D.S.	R.S.
a) <u>Physical data for sub-zone and pilot zone</u>								
- Soil classification	=====							
- Inventory of Plant cover	=====							
- Meteorological data	=====							
- Water resources	=====							
- Roads and other access	=====							
b) Agricultural systems (description observation and monitoring)								
c) Description of the phenology of forest tree								
d) Maintenance and improvement of existing nurseries, or draw plans for implementation of nursery in the pilot village		=====				=====		
e) Implementation of pilot village nursery					=====			=====
f) Tentative community work					=====			
g) Preparation of preliminary Handbook						=====		
h) Extension work based on the first pilot village data, undertaken by volunteers and trained Guinean Community Foresters, under Community Forest Coordinator.								
i) Expanded extension activities led by volunteers and with 2nd wave of trained Community Foresters.								
j) Revised Community Forestry Extension Handbook.								

(2nd wave of volunteers work in the same 3 pilot villages)

1. DS = Dry Season, R.S. = Rainy Season

a technically and socially acceptable extension package, a qualified body of forestry extension personnel, and, a long-term commitment to integration of silviculture into its larger rural development framework.

Pilot Villages Inventory

The development of technically and socially acceptable forestry packages is probably the most difficult aspect of the project. Indeed, no such package currently exists in Zone I of Guinea Bissau, nor does the bio-physical and socio-economic data upon which one could be constructed.

The problem of deforestation in Zone I is closely linked to local land use practices, themselves related in the most general terms to ethnic affiliation. To generate the primary data necessary to the construction of a forestry extension package, the project will undertake, on a daily basis, studies in one pilot village for each of the three major farming systems found in Zone I: Manjak, Balanta and Mandinka. Each of the three pilot villages will be assigned a university trained professional forester volunteer (SUCO) who will be responsible for undertaking an inventory of the local physical milieu and who will necessarily work closely with the project sociologist who will be responsible for the simultaneous gathering of pertinent socio-economic data in all three pilot villages. The four volunteer professionals will be housed in small towns with reasonable access to minimal modern facilities and close to the pilot village selected. Potential small towns noted by the PP team include Cachungo (Manjak), Farim (Mandinka) and Mansoa or Nhacra (Balanta), although final selection will require greater field study by the project staff.¹ An indicative timeframe of pilot village studies is noted for reference in Figures 1 and 2, attached. It is anticipated that volunteer personnel will remain in the same pilot villages for four years (two waves, two years each) although the nature of their activities will evolve considerably over time.

In broad terms, the volunteers, in collaboration with other project staff and Forest Service field personnel, will develop locally appropriate technical packages and extension techniques in three phases. First, a careful inventory of bio-physical and socio-economic characteristics will be completed in the earliest stages of the project. Second, pilot interventions will be tested locally for appropriateness and villager acceptance.

1. Selection criteria should include representativeness (ethnic, land use pattern and ecology) and ease of access (both in the physical and social sense).

investment to create a new resource base, will lead, in a short-term, to the destruction of the forest resources. In a long-term perspective, and knowing the agrological implications of different soil uses and cover, it is anticipated that current land utilization patterns will lead, if continued at current rates, to a rapid savannization of Zone I and, eventually, to the destruction of the soil resources needed for agriculture production in the area.

The fact that the rural populations of the country are largely dependent upon farming for subsistence indicates that they will take particular interest in matters and activities which will limit their supply of food and restrict their freedom of action. It has been concluded, therefore, that adequate recognition of the needs of local communities and an integrated development policy are two essential pre-conditions for the sustained productivity of Zone I agricultural and forestry resource base. (see "Social Soundness Analysis," Annex B).

Institutionally, Guinea Bissau is not yet equipped to deal effectively with the forestry problems of Zone I or the country. A Forest Service has been created but is seriously lacking in numerous areas, notably: knowledge about existing wood availability, growth rates of principal species, floristic dynamics, inadequate staff, infrastructural facilities and equipment, inflexibility of logistics, delays in repairs and insufficient maintenance capacity. The role currently played by the Forest Service is further hampered by the absence of national forest policy, forestry legislation, and effective administrative structures.

To curb the present situation, a coordinated action in agriculture and forestry is needed in the following areas: 1) forest protection measures; 2) forest plantation schemes; 3) forest management plans.

The elements that are necessary to developing such a program in Zone I should include a strengthened Forest Service; training of forestry personnel, forestry extension and information to farmers, a comprehensive forest inventory which includes estimates of population pressures on the forest; the elaboration of a management plan for the forests, and trials and experiments.

2. Proposed Forestry Activities

Specifically, this project proposes four types of activities or outputs in order to confront the problems of deforestation and forest resource management in Zone I - a program for community forestry, the training of Guinean personnel, improved forestry management planning, and improved forestry knowledge base.

a) Community Forestry Program for Zone I

While the Project Paper team has concluded that there is currently no reasonable alternative to the community forestry approach in Zone I, it has also been admitted at the outset that successful widespread acceptance of such an approach will be neither automatic nor rapid. A successful community forestry program will require

Table 1: Land Occupation and Land Use Capability in Zone I

<u>Designation</u>	<u>Area (ha)</u>
<u>1. Current land occupation</u>	
- Paddy fields	80300
- Agricultural upland used and being prepared	76450
- Fallow area	28700
- Mixed oil palm formations	109400
- Forested area	164000
- Degraded forests	197600
- Savanna formations	189500
<u>2. Land Use Capability</u>	
- Paddy fields	125900
- Arable land	337800
- Arable land with erosion risks	174700
- Arable land with high erosion	188900
- Silvo pastoral lands	18900
- Mangrove	159400

Source: SCET, 1979

From the ecological point of view and in the long-range interests of the country, this data indicates the need for immediate action in order to maintain ecological equilibrium. The risks of forcing monocultural systems under tropical conditions, particularly in the ecological region under study, can only be done at high risks and with expensive high inputs in fertilization (see Annex C - "Impact of Deforestation on Soil and Agriculture Activities").

The agriculture-forestry production systems are interconnected and are very complex. Forest is used to satisfy numerous daily needs, including supplementary nutrition as well as a reservoir of new lands for shifting cultivation as demographic pressures grow and degraded agriculture lands develop. The increased pressure on forested land and the maintenance of the current agriculture systems, as well as forest harvesting practices in Zone I without any kind of

<u>DONOR</u>	<u>AMOUNT IN \$US</u>	<u>% OF TOTAL</u>	<u>OBSERVATIONS</u>
SIDA	3,665,000	67%	Foreign exchange cost of construction, scholarships, studies, expatriate personnel and some operating costs.
GOGB	1,072,000	20%	Local costs of land, construction, operating costs, local personnel, training.
AID	500,000	9%	Construction of solar or wood-powered energy unit for Center, scholarships.
SUCO	208,000	4%	Volunteer personnel costs.
	<hr/>	<hr/>	
	5,445,000	100%	

The GOGB local cost contribution to the project will come from a special fund financed by the sale of AID PL 480 Title II Emergency Food Receipts and will not, therefore, require a special budget allocation from the Central Treasury.

II. Project Analyses and Description

A. Technical Forestry Analysis

1. Summary Technical Forestry Analysis

Agriculture in Guinea can be characterized as subsistence-oriented and farmers activities are therefore primarily oriented towards satisfaction of daily food requirements. Superimposed on this system in Zone I is the cash crop production of groundnuts.

Analysis of available data has shown that the current relationship of cultivated upland soils to fallow is about 1:1.8 nationwide, while in Zone I it is about 1:0.4. Data on soil capability in Zone I indicates that there are 1,747,000 ha. of agricultural land susceptible to erosion risks and another 188,900 ha that could only be cultivated under high risks of erosion within the Zone.

B. History of Development of the Project

The first to publicize and begin to document the deforestation phenomenon in Guinea Bissau were a small number of professional agronomists and foresters late in the colonial era. Following independence in 1974, the Government of Guinea Bissau has progressively come to focus on the problems of deforestation in its rural areas, especially in terms of its incidence on agricultural production.

CDO/Bissau's interest in this problem dates back to 1977 and led eventually to contacts in 1979 with the then recently created Forestry Service to take some form of corrective action. In January, 1980, CDO/Bissau received a request from the Forest Service for AID to finance four separate forestry proposals in fire-fighting, forest inventory and classification, community forestry and reforestation. This began a series of field trips and long discussions with the GOGB and other donors over the ensuing year in order to define the most appropriate strategy to follow. For simplicity, the description of these numerous missions are noted below for reference, with greater detail provided in Annex F.

- AID Project appraisal mission (March 2-8, 1980)
- AID Project Identification Document - PID (June 16-28, 1981)
- AID Coordination mission (January 19-23, 1981)
- AID Coordination mission (May 3-7, 1981)
- SIDA Forestry mission (May 11-21, 1981)
- AID Coordination mission (May 12-21, 1981)
- AID/SIDA Project Paper mission (June 8 - July 3, 1981)

Initially, the project (which has remained in basically the same form throughout the period of project evaluation) was to be nation-wide in scope. Subsequent discussions (June, 1980) led to a decision to focus on Zone I and IV only and finally (January, 1981) on Zone I alone.

Due to severe AID conjunctural difficulties (especially budget constraints), the total AID contribution to the project dropped progressively from an initial \$3,100,000 to a final figure of \$500,000 by April, 1981. Fortunately for the project, SIDA interest in Zone I general rural development and the AID-initiated forestry activity developed rapidly during the same time-frame, and an eventual SIDA pledge of \$3,665,000 has made up for the AID financial shortfall.

C. Overall Multidonor Program

After going through a fairly long and complex period of gestation, therefore, financial responsibilities for the project have been drawn in the following manner:

I. Project Background and Summary

A. Project Profile

The project described herein is a \$5,445,000 multidonor (SIDA, GOGB, AID, SUCO) effort in forestry improvement for Zone I of Guinea Bissau. The AID contribution to the project will be a \$500,000 grant. As conceived in this report the project will contribute to two major goals:

- to improve the well-being of rural populations in Zone I through improvements in the sustained production capability and use patterns of the forest resource base; _ _ _
- to halt/reverse the current degradation of Zone I forest and environmentally linked resources.

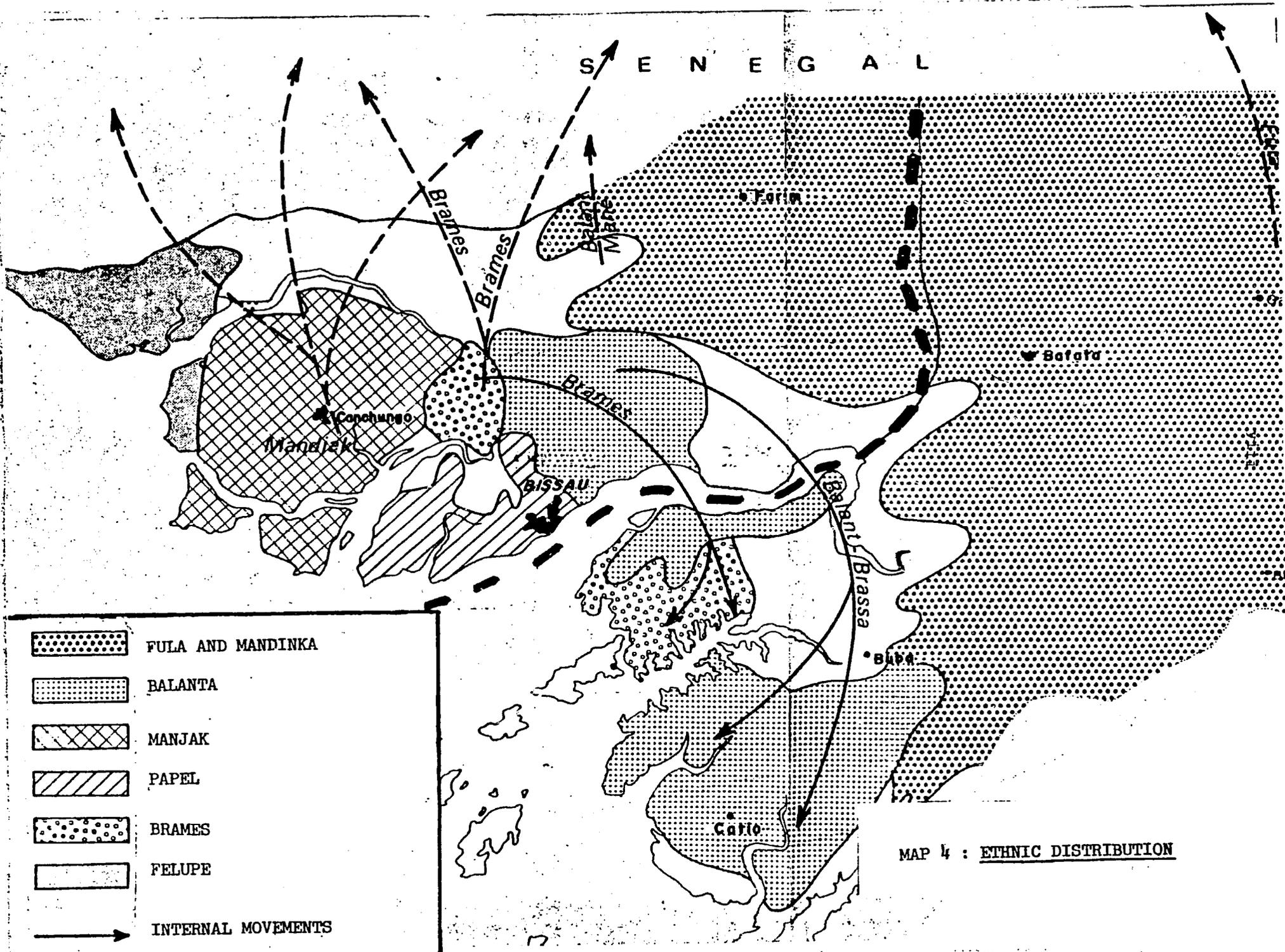
The principal causes of the current trend of dramatic deforestation in Guinea Bissau and Zone I (slash and burn agriculture, fuelwood collection, fire for pastoral and hunting purposes) are all man's actions on his environment in his daily battle for subsistence. The operational focus of the project is, therefore, to develop village - level and family-level solutions to the problem through the national Forest Service and decentralized community activities. It appears sufficiently clear that, if such measures are not taken, the probable long-term implications will be increased laterization of soils, increased soil erosion, decreased natural water control and a trend of ever-decreasing agriculture productivity of local soils and drastic reduction in the availability of forest resources. An evaluation of the project and the Zone I Integrated Rural Development Project will be undertaken by all donors every year. If deemed desirable at the time of the 1984 evaluation, it is recommended that appropriate action be taken to finance a second, five-year Phase II immediately after completion of Phase I.

The project outputs anticipated are (1) the development and extension of locally acceptable forestry-related and agro-forestry packages (fruit trees, agro-silvo-pastoral schemes, village fire management, improved charcoal production, etc.) to some 150 villages in Zone I, (2) the training of Guinea Bissau forestry personnel, (3) improved forest management planning for Zone I, and, (4) an improved forestry knowledge base.

The inputs through the multidonor project include the construction of a small Forestry Development Center (with activities in training, experimentation and documentation), scholarships, technical assistance, equipment and local personnel and operating costs.

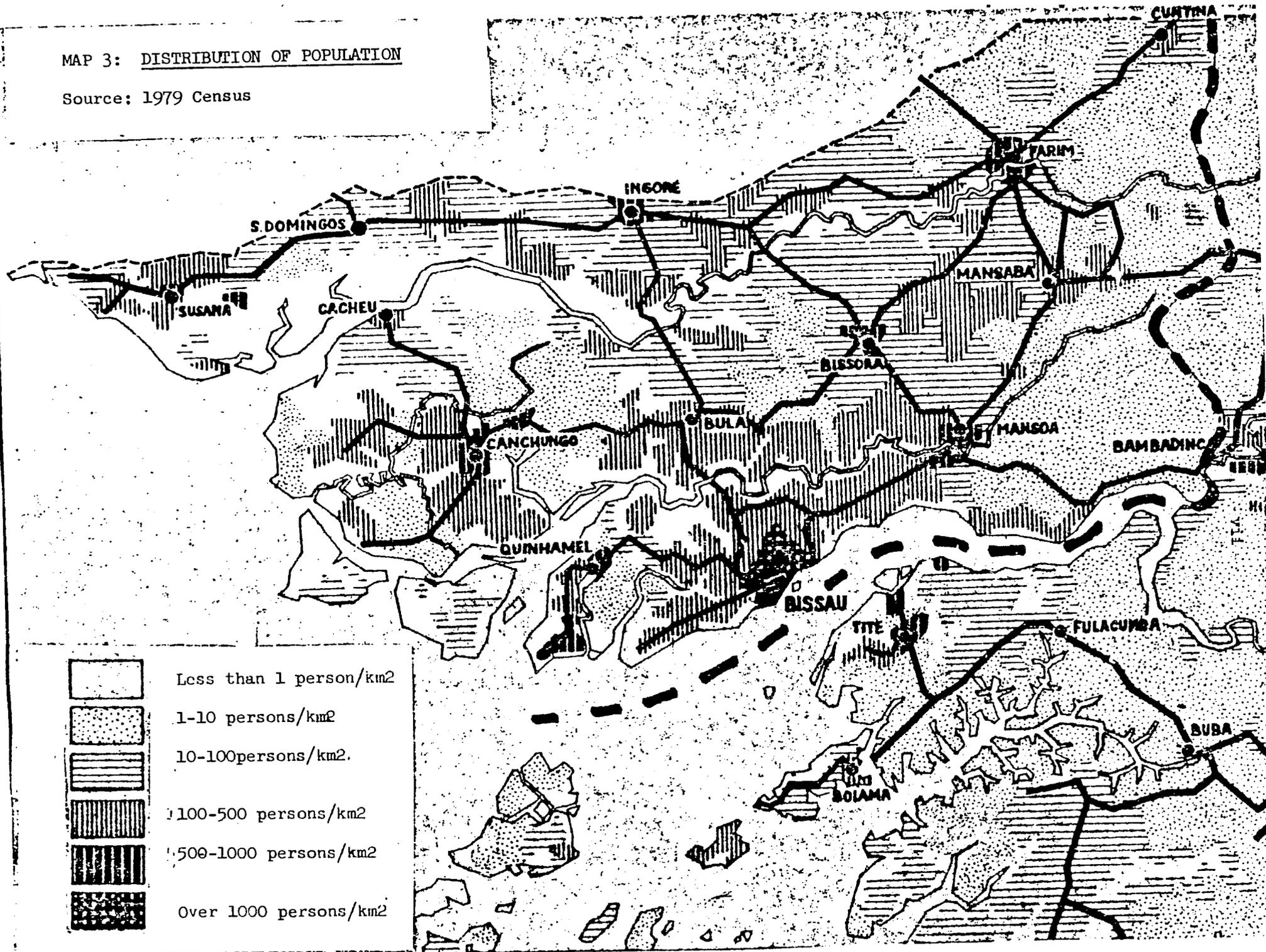
"Show me a good agricultural system and I will show you
a good syvicultural system..."

L. Huguet, Former Director
of FAO Forest Resources Division

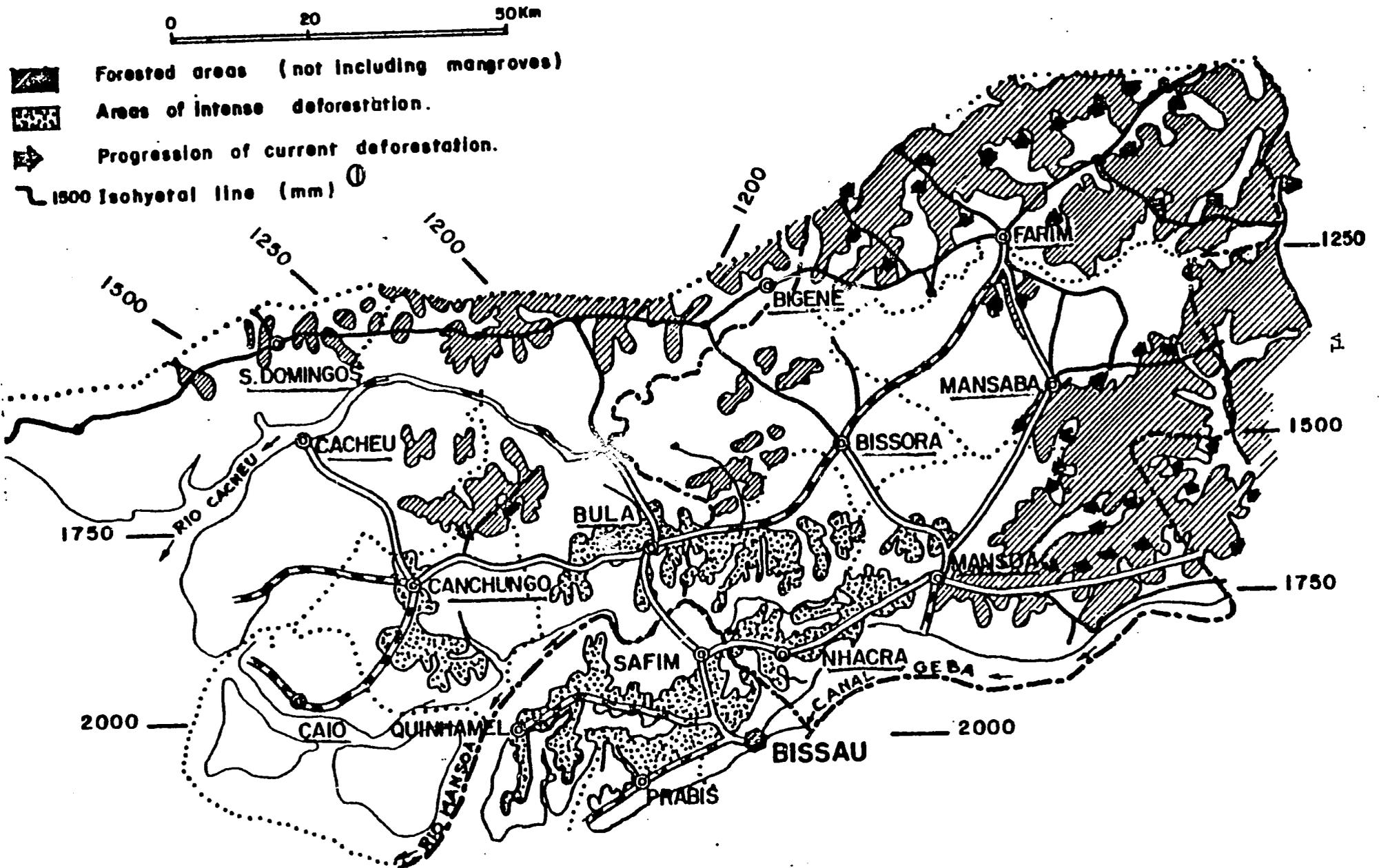


MAP 3: DISTRIBUTION OF POPULATION

Source: 1979 Census



MAP 2: ZONE I RAINFALL AND FOREST COVER



① **Source:** min. of rural development best estimates for period 1957-75

Technical and sociological monitoring will be a mechanism for developing technically feasible, socially-acceptable village, forestry interventions. The goal of monitoring will be to develop "Intervention Schemes" (IS). These are "recipes", detailing ways of introducing each innovation that are technically correct, perceived by villagers to be in their interest, "fit" culturally, are not in conflict with existing economic activities, and are managed by villagers' own institutions. Considerable discussion on this topic will be found in Annex B and in Section IV of this paper "Monitoring and Evaluation Plan."

1. Economic Value of the Project

It is exceedingly difficult to undertake a meaningful economic analysis of a project such as this one, given its longer-term environmental and resource management objectives as well as the obvious lack of basic data on local conditions. The economic worth of the project, if successful, is nevertheless uncontestable. Project Paper estimates in Annex B have estimated that perhaps as much as 2,000,000 m³ of wood are consumed through slash-and-burn farming techniques nationwide. Because of high population pressures and the tendency to move out of traditional belanhas into new uplands, it can probably safely be assumed that at least 1/3 or some 600,000 m³ are consumed annually in Zone I alone. Using the soil occupation data gathered by SCET in 1978 (see Annex C), it would appear clear that the current Zone I forest resource potential will all but disappear before the turn of the century, if current deforestation trends continue.¹

If the project succeeds in slowing, halting, or reversing this trend, the project should contribute to the following types of economic benefits:

- 1) long-term environmental enhancement - better soils, richer flora and fauna, better watershed and rainwater regulation, reduced erosion.²

-
1. Undegraded forest (164,000 ha X 20 m³/ha.), degraded forest (197,600 ha. 10 m³/ha), scrub includes fallow and oil palm classification (138,100 ha x 2 m³/ha).
 2. In Charreau and Nicou, "Bulletin Agronomique N° 23, IRAT/Senegal," measurements on experimental plots in the Casamance over the years 1954-1968 indicates the local soil erosion potential under flat conditions at 15.2 tons/ha. whereas that number drops to 0.8 tons/ha. under local forest cover. It can be estimated that one centimeter of local topsoil contains some 175 tons/ha.

B. Socio-economic Analysis

Guinea Bissau, situated on Africa's coast, between Senegal and the Republic of Guinea, occupies 36,125 km² in sudano-guinean and guinean climatic zones. The 1979 census estimates population at 777,217 people living at a relatively high population density for Africa (24 people/km²). Four ethnic groups represent 75% of Guinea Bissau's population (Balanta 31%, Manjak 13%, Fula 19%, and Mandinka 13%). These can be classified in terms of location, political centralization, and religion into two contrasting socio-economic areas. In the interior, to the east are Fula and Mandinka, stratified, formerly centralized Muslim societies, whose farming systems emphasize rainfed crops on upland soils. In the coastal areas are largely Senegambian speakers (Balanta and Manjak) egalitarian, acephalous, non-Islamic societies, whose farming systems placed greater emphasis on flood-water production in lowland soils.

The project is situated in Zone 1, which consists of two Regions--Cacheu to the west and Oio to the east. It is the most populous area in the country occupying 35% of the land and (with Bissau) including 55% of the population. Population pressures has resulted in serious deforestation.

Ethnic group distribution is fairly complex, but in general can be characterized as follows. In Oio, Mandinka, and to a lesser extent, Fula, predominate. In the south, especially along the Rio Mansoa are Balanta. In Cacheu a single ethnic group predominates, Manjak, though there are Felupes north of the Rio Cacheu, and pockets of Balanta, Papel, Brèmes, and Mancagne mostly to the south (see Map 4).

In Annex B a forest product demand model is presented, and empirically supported, in which changes, introduced during the colonial and continued in the contemporary period, increase farming-system and commercial tree-removal rates to ecologically intolerable levels. It is demonstrated that the major source of forest-product demand is from the farming-system. Villagers are farmers. It is accordingly they who must innovate sustainable forest management patterns. Participation is shown to have a catalytic effect upon innovation. It is, hence, advantageous for Guinea Bissau to emphasize a forestry strategy of high village participation.

Analysis in Annex B shows that by emphasizing participation the project can provide significant national and village-level benefits; that can be socio-culturally feasible; and that it can enjoy equitably distributed, comfortable spread effects and benefit incidence. Women can be major project beneficiaries. The primary target population of the project will be located in some 150 villages equally distributed throughout the Zone and representing some 30,000 people - mostly subsistence farmers and their families.

TABLE 4 :

EQUIPMENT PROCUREMENT

ITEM	QTY	UNIT COST	TOTAL COST	REMARKS
VEHICLES *				
PICK-UP TRUCK	5	\$13,000	65,000	Type Peugeot 404
5-TON TRUCK	1	30,000	30,000	
4-WHEEL DRIVE VEHICLE	1	15,000	15,000	Type Land Cruiser
FARM TRACTOR	1	40,000	40,000	For use at Center
TRACTOR TRAILER	1	4,000	4,000	
TANK TRAILER	1	6,000	6,000	
MOTORBIKES	4	1,500	6,000	For volunteers
BICYCLES	50	200	10,000	For Agentes Florestais
ENERGY SOURCE				
SOLAR ENERGY UNIT	1		250,000	
DIESEL GENERATOR	2	10,000	20,000	
FORESTRY EQUIPMENT (SEE SEPARATE LIST)	Unit		20,000	For teaching and trials
NURSERY EQUIPMENT	Unit		10,000	Incl. irrigation-equipment
METEOROLOGICAL STATION	Unit		2,000	
OFFICE EQUIPMENT (SEE SEPARATE LIST)	Unit		50,000	
DORMITORY, DINING HALL EQUIPT.			10,000	
HOUSING FURNITURE, ETC.	Unit		60,000	
KITCHEN EQUIPMENT (SEE SEPARATE LIST)	Unit		10,000	
FENCING	1500 mm		8,000	Around nursery and garage
WORKSHOP TOOLS **	Unit		12,000	For garage/workshop
			<u>628,000</u>	

* Should be the same models as in the Rural Development Center. With the vehicles should be ordered enough spare parts to cover expected need for initial 2 yrs. Cost for this is calculated under operating expenses .

** 200 amp. gas welder (\$4,000), Complete tool set, locking (\$3,000), bench tools - air compressor, bench grinder, benches (\$5,000).

FIGURE 3 : SITUATION SKETCH OF THE FORESTRY DEVELOPMENT CENTER

1cm.=10m.

Nursery

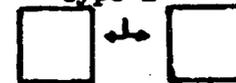
Forest Production Area

Agro-Forestry Area 20

Type 3 Housing



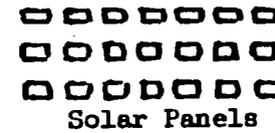
Type 1



Type 2

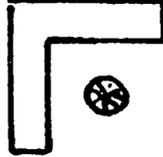


Type 1



Solar Panels

Dormitory

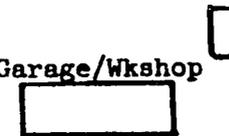


Main Building



Well, Pump and Water Tower

Garage/Wkshop



To ensure close collaboration with the Zone I Integrated Rural Development Project, the Forestry Development Center will be built in proximity to one of that Project's Centers, either near Bula (Zonal Operations Center), or Bissora (Oio Regional Center). A complete discussion of the location and design of the Forestry Development Center can be found in Annex E.

An indicative sketch of the physical plant layout of the Center is attached for reference (Figure 3) and will include 2 classrooms, 4 offices, a dormitory for 32 students, a multi-purpose dining hall, kitchen, expatriate and local staff housing, a minor garage/workshop area, a tree nursery (1 hectare) and forest production/research area (40-60 ha.). Sharing of facilities with the IRD Center (garage, classrooms, meteorological data, water or electricity) will be encouraged, to the extent deemed feasible by project personnel and the Forest Service.

b) Forestry Personnel

Already stretched to the limit by existing activities, the Guinea Bissau Forest Service is clearly unable to offer significant personnel support to the project. Three contract expatriate professional foresters (Project Manager, Forestry Training Coordinator and Community Forestry Coordinator) will, therefore, be hired to manage the project activities in Phase I. In addition, SUCO will furnish four volunteers (three professional foresters and one sociologist) who will live and work at the village level. A scope of work for each of the above professionals has been furnished in Annex C (X).

"Guineanization" of the project will be only possible in Phase II of the project, following the return of the Guinean foresters trained with project funds.

Some 30 persons will also be hired locally to conduct daily the operations of the Center and project. A complete list of that personnel may be found in Annex C (X).

c) Equipment

Equipment necessary to the functioning of the Center and project will be purchased with project funds. A list recapitulating overall equipment procurement is attached for reference (Table 4) and complete details of equipment procurement may be found in Annex D.

The project staff should also take advantage of the considerable amount of research and field data which has been generated in neighboring Senegal, particularly through the CNRF forestry research station at Djebilor. It should be noted that CNRF staff is currently working on an extensive regional proposal which, if necessary financing is obtained, would undertake major forestry research in both the Casamance and Guinea Bissau. While the project has deliberately opted to undertake forestry experimentation with a highly operational and low-cost perspective, such a major research effort, if properly designed, should be encouraged and project staff made available to cooperate with CNRF specialists to the extent they are able to accept the additional responsibility. Also, to the extent deemed feasible by project staff, institutional links with such competent tropical research institutions as the Portuguese Institute for Tropical Research (INIT) and the Swedish Agency for Research Cooperation (SAREC), should be encouraged.

Finally, in an effort to accumulate and store all information of pertinence to the development of Guinea Bissau's forestry sector, project funds have been made available to establish the country's first forestry documentation center at the Forestry Development Center.

3. Support Required to Achieve Project Objectives

The forestry analysis contained in Annex C makes quite clear the fact that the forestry sector in Guinea Bissau is sorely deficient in human, financial and material resources. The lack of such basic infrastructure has meant that the project has been obliged to finance a number of first-time expenditures, which, while substantially raising the funding required to implement the project, will represent a major contribution to the long-term institutional development of forestry management in the Zone and in the country.

a) Forestry Development Center

A multipurpose Forestry Development Center will be constructed upcountry in Zone I and will serve as the base of project operations in training*, experimentation and extension, and will contain a small documentation center.

* The Forestry Center will ultimately be responsible for the training of forestry personnel nationwide.

c) Improved Forest Management Planning in Zone I

Upon completion of Phase I and prior to the arrival of the 1985 evaluation team, the Project Manager will be expected to have completed an Indicative Forest Management Plan for Zone I. This Indicative Plan will be based on the project's cumulative knowledge of Zone I field conditions as well as a detailed Forest Inventory for the Zone.

Bids are currently being let under European Development Fund (FED) financing for a comprehensive national forest inventory which will include:

- forest area maps and classification (forest composition, production forest, protection forest, silvo-pastoral areas, etc.)
- standing and commercial volumes by species
- rate of growth and degree of regeneration
- local population tenure rights on forest land and indications of farmer pressures on the forest.

It is currently anticipated that the inventory will begin in Zone II and then move to Zone I. The FED agricultural adviser in Bissau has indicated that Zone I results should be available by late 1983.

The Forest Management Plan can only be indicative as final planning will depend, to a large extent, on the evolution of GOGB legislation and policy beyond the control of project staff. This activity is one which could provide considerable insight to GOGB decisionmakers, however, and could potentially become a major aspect of Phase II of the project once the major issues of forestry management planning, as well as overall agricultural and land use planning, are more clearly defined and measured.

d) Improved Forestry Knowledge Base

In spite of past studies undertaken in Guinea Bissau and noted in Annex C, not to mention work undertaken elsewhere in West Africa, no generally applicable, broad approach has yet emerged which could permit a sustained use of natural dry forests in Guinea Bissau. A major activity of this project will be an effort to improve, in a scientific and systematic manner, the knowledge base which will permit the derivation of forestry programs and policies of relevance to the local context. This will take place in many ways—from the villages inventories and pilot activities noted previously, to the use of short-term research and development and selected special studies. These latter two categories are explained in much greater detail in Annex B (III) and Annex C (VIII).

In-country Training

A key aspect of the project and one of the primary activities of the Forestry Development Center will be the training of community foresters. These agents must be trained, not only in technical skills and their use under local conditions, but, also, how to be a dynamic agent of change in the forestry development of local populations. The project will construct appropriate facilities for the training of 16 forest agents, per year, who, after successful completion of their eleven-month program, will be awarded a certificate (Diploma de Agente Florestal) and thereafter incorporated into Forest Service field activities. The proposed curriculum and the other details related to this aspect of forestry training may be found in Annex C. It was noted in the previous section that community foresters will not exercise the police responsibilities (issuing cutting and hunting permits, tax collection, etc.) which are the mainstay of today's forest guard. Forest guards will still be required, however, as the GOGB has no current plans to turn these responsibilities over to the police. The project will, therefore, ultimately train both types of forest agents, with a greater obvious preference and need for community foresters. This will be accommodated by running all candidates through a nine-month core training program and then splitting them onto separate career tracks during the final two-month probationary period. This would hopefully encourage all Forest Service personnel - both community foresters and forest guards - to maintain an operating style which is conducive to overall community forestry development. Of the estimated 48 forest agents to be trained under Phase I of the project an estimated 35 will be trained as community foresters (agentes florestais) and another 13 will become forest guards (guardas florestais).

Finally, some 25-80 persons with an interest in forestry will be trained through short-term (2-4 weeks) courses at the Center. These groups could include, but are not necessarily limited to, Zone I agricultural extension personnel, interested villagers, SOCOTRAM employees, and selected GOGB employees. Any short-term study will necessarily be specially adapted to address the interests of those receiving instruction. In the event that the small size or the particular interests of some groups precludes training at the Center, special funds have been made available for individual instruction (e.g. nursery training or improved charcoal production in Ziguinchor).

All training undertaken through the project will be the direct responsibility of the Forestry Training Coordinator.

b) Trained Guinean Forestry Personnel

A trained and motivated Guinean national forestry personnel is ultimately critical to the institutionalization and replication necessary to long-term success of this project. Given almost complete absence of such personnel in the country today (see Annex C), the project has taken the responsibility of training personnel of four different types: university foresters, forest technicians, community foresters and selected short-course candidates. The first two levels will be trained at appropriate schools overseas and the last two will be trained in Guinea Bissau in special facilities constructed through project funds.

Overseas Training

The project will train two qualified candidates in the United States in general forestry management (B.S. degree). It is expected that these two professional foresters will be employed under Phase II of the project and will ultimately replace the expatriate personnel with whom they will work.

At the mid-level, fifteen qualified candidates will be sent out of country for three-year training as forestry technicians. The most probable choice for such training is the Senegalese Djebilor Forestry School in Ziguinchor. The school is well located in an ecological zone (the Casamance) similar to that of Zone I, has developed a high quality program and is willing to receive 5-10 Guinean candidates per year. Candidates must have a good comprehension of French¹ and possess the equivalent of the Senegalese B.E.P.C.² Upon successful completion of his studies the candidate will receive a forestry technician diploma (Diplome d'agent technique des eaux et forets). Upon returning to Guinea Bissau, all fifteen candidates could be employed by the project as sectore community forest coordinators (eleven posts) and in various capacities at the Forest Development Center. Other potential forestry schools in West Africa include Ivory Coast, Cameroon and Morocco.

1. French is a reasonably common second language in Guinea Bissau, however, supplementary instruction may be obtained at the French Cultural Center in Bissau. Instruction in French is also taught at the Djebilor School.
2. Primary school (six years) plus four years of high school.

- a) The Forestry Development Center will be constructed in close proximity to the IRD Center in Bula or Bissora (See Annex E for details), and, to the extent feasible, will share facilities with it (garage, classrooms, etc.).
- b) Community Foresters trained at the Forestry Development Center will receive short courses in agricultural extension at the IRD Bachile Center and, in exchange, IRD extension personnel will receive short courses in forestry perspectives at the Forestry Development Center (see Section II-2).
- c) The academic level and salary structures of Community Foresters and IRD extensionistas will be similar (see Annex C).
- d) Field activities and experimentation will be coordinated to the extent deemed feasible by both parties through periodic coordination meetings (see Section III-D).

Long-Term Commitment to Forestry

As was noted in the project PID, forestry, and particularly community forestry development, is a long-term proposition. As much of the tree production, management and extension techniques will only slowly be developed during the four years of implementation which have been budgeted under this project, the PP team has incorporated a tentative Phase II (1986-1990) into its long-term financial planning (see Annex D). It has been assumed that Phase I interventions will only slowly be adopted at the village level in the initial years and will probably find greatest local acceptance with fruit trees (especially mango and cashew), agro-forestry associations (especially acacia albidia), and improved charcoal production (see Section IV). It is imperative to underscore, however, that no matter how large the incidence of village acceptance measured in Phase I, the ultimate effects of a community forestry program can only be clearly discerned in the longer-term perspective which will be provided by a five-year Phase II. Final design of a Phase II project should be part of the responsibilities of the 1984 evaluation team. It can be expected that Phase II outputs (successful adopters) will be significantly higher, and costs, significantly lower, than Phase I, given, on the one hand, the existence of tried, locally-acceptable forestry extension packages and, on the other, the elimination or reduction of numerous Phase I installation and pilot expenses (construction, well, equipment, technical assistance, etc.).

Table 3: Zone I Integrated Rural Development Project Extension Activities

<u>Area of Activity</u>	<u>Km²</u>	<u>Pop.</u>	<u>No. Villages</u>	<u>No. Families</u>	<u>Extension Teams</u>
A) Cacheu Region					
- Bigene	1047	28957	126	4630	5
- Bula	639	19456	143	2850	4
- Cacheu	901	15194	104	2469	3
- Caio	460	14239	54	1720	2
- Canchungo	603	36776	89	4387	4
- S. Domingos	974	19418	103	4239	4
Sub- Total	4624	134040	619	20295	22
B) Oio Region					
- Bissora	1096	39913	174	7070	7
- Farim	1439	26242	161	3499	5
- Mansaba	1364	26063	129	3228	4
- Mansoa	1043	26147	107	4309	4
- Nhacra	243	19230	49	3914	3
Sub-Total	5185	137595	620	22020	23

Source: Projecto de Desenvolvimento Rural: Zone I

Trees and Rural Development

The tree cannot be analytically or operationally separated from the larger rural development context in which it finds itself in Zone I. Promotion of silvicultural schemes in Zone I will require considerable understanding of local farming and herding systems, culinary patterns, and local cultural and economic realities, among others. To date, forestry activities in Guinea Bissau have been a largely sectoral concern. The project will attempt to overcome this constraint organizationally by fostering close links with other rural development specialists and activities in Zone I. Of particular current relevance is the SIDA/GOGB-financed Zone I Integrated Rural Development Project, which will be operating in the same geographic areas as the Zone I Forestry Project described herein. In their documentation of the project,¹ the Ministry of Rural Development has described its overall objective as increasing the welfare of local populations through participatory action. Project priorities will be oriented to:

- satisfaction of food and nutritional need,
- increased production of cash crops for local consumption or export markets,
- improvement of the general living conditions of local rural populations.

Total funding for the project, although subject to modification following annual evaluation, is expected to attain some \$15 million (533 million PG). Major activities undertaken to reach project objectives include 1) agricultural training at the technician and farm level, 2) credit, 3) animal traction, and 4) infrastructure development (roads, warehouses, etc.).

The project expects to place 90 extension agents (2 agents per team), equipped with bicycles, in Zone I. Extension targets have been noted in Table 3, for reference.

The Zone I Forestry Project has been designed, therefore, to coordinate its field activities with the Zone I Integrated Rural Development effort. That cooperation has been conceived in the following manner:

1. Projecto de Desenvolvimento Rural: Zone I, MEDR, Bissau, February, 1981.

Table 2: Primary Schools In Zone I

	<u>No. of Schools</u>	<u>No. of Students</u>
<u>Cacheu Region</u>	134	15170
- Cacheu	21	2425
- S. Domingos	30	2589
- Bigene	31	2774
- Bula	15	2840
- Canchungo	23	3262
- Caio	14	1280
<u>Oio Region</u>	120	11636
- Farim	26	1915
- Mansaba	23	1203
- Bissora	37	3126
- Mansoa	20	2660
- Nhacra	14	2662

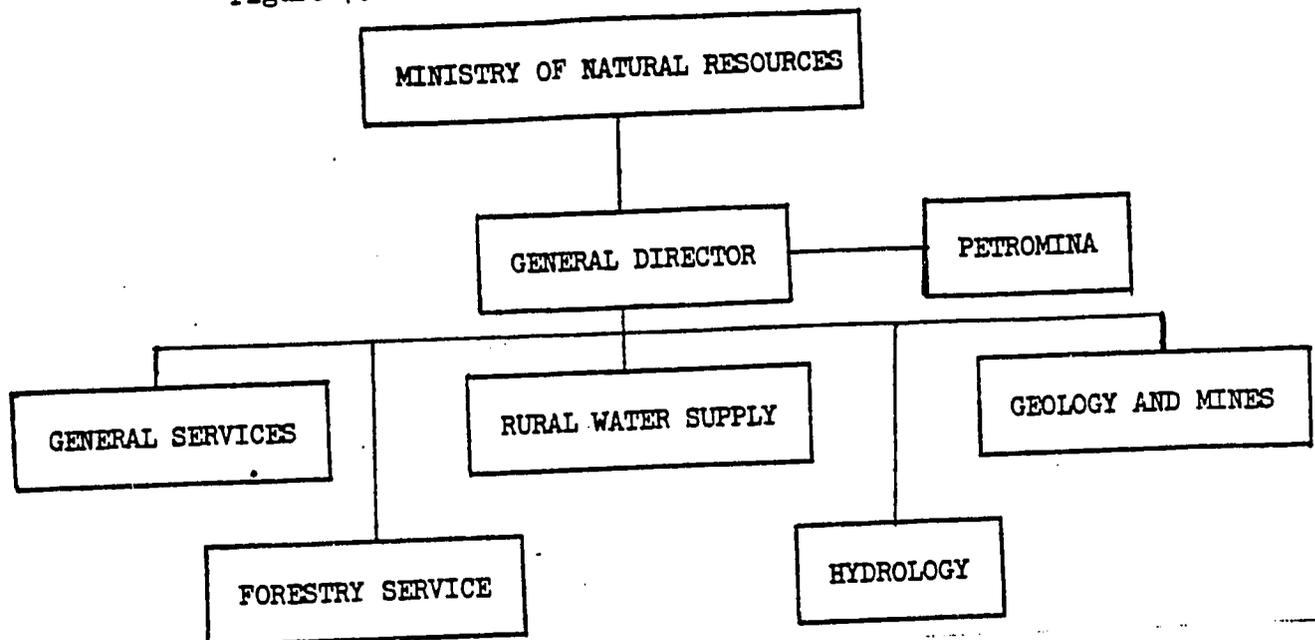
Although it is clear that Phase I of the project will attempt to work through some selected primary schools, the PP team considers that any widespread use of the school system should not become an objective until Phase II of the project. The reasoning behind this choice includes 1) the fact that use of schools will tend to orient project activities to larger villages, 2) that schools are fairly "easy" targets and could cause the project to divert critical Phase I resources from the more problematic aspects of local rural forestry, as well as, 3) the fact that a proven extension package will not be available until late in Phase I.

Year	Volunteer Foresters	Community Foresters
1982	<u>3 Pilot Villages</u> - Bio-physical inventories - Socio-economic data - Pilot trials	None available
1983	a) <u>3 Pilot Villages</u> - Expanded Pilot trials b) Extension to selected villages c) Complete Forest Extension Handbook	None available
1984	a) Continue pilot work in 3 villages b) Expand extension activities, including supervision of newly trained community foresters	15 Community Foresters in Zone I (75 pilot villages)
1985	a) Continue pilot villages b) Continue extension with Community Foresters c) Complete revised Handbook d) Replace volunteers with newly trained Forest Service Technicians	15 additional community foresters (75 additional pilot villages, or 150 total) (last 15 Community Foresters trained in field in 1986)

Utilization of Primary Schools

A longer-term operational objective of the community forestry effort will be to utilize the existing primary school system in Zone I as one means of persuading villagers of the utility of selected community forestry activities. As the local focal point for the introduction of new technologies and ideas, the primary schools could be used as a location for village nurseries, for the presentation of community forestry materials and documentation and for local trials in small agro-forestry or fruit tree plots. Some 250 primary schools and over 25,000 students could be reached in this manner. Table 2 indicates the distribution of schools in Zone I.

Figure 7: Current Structure of the Ministry of Natural Resources



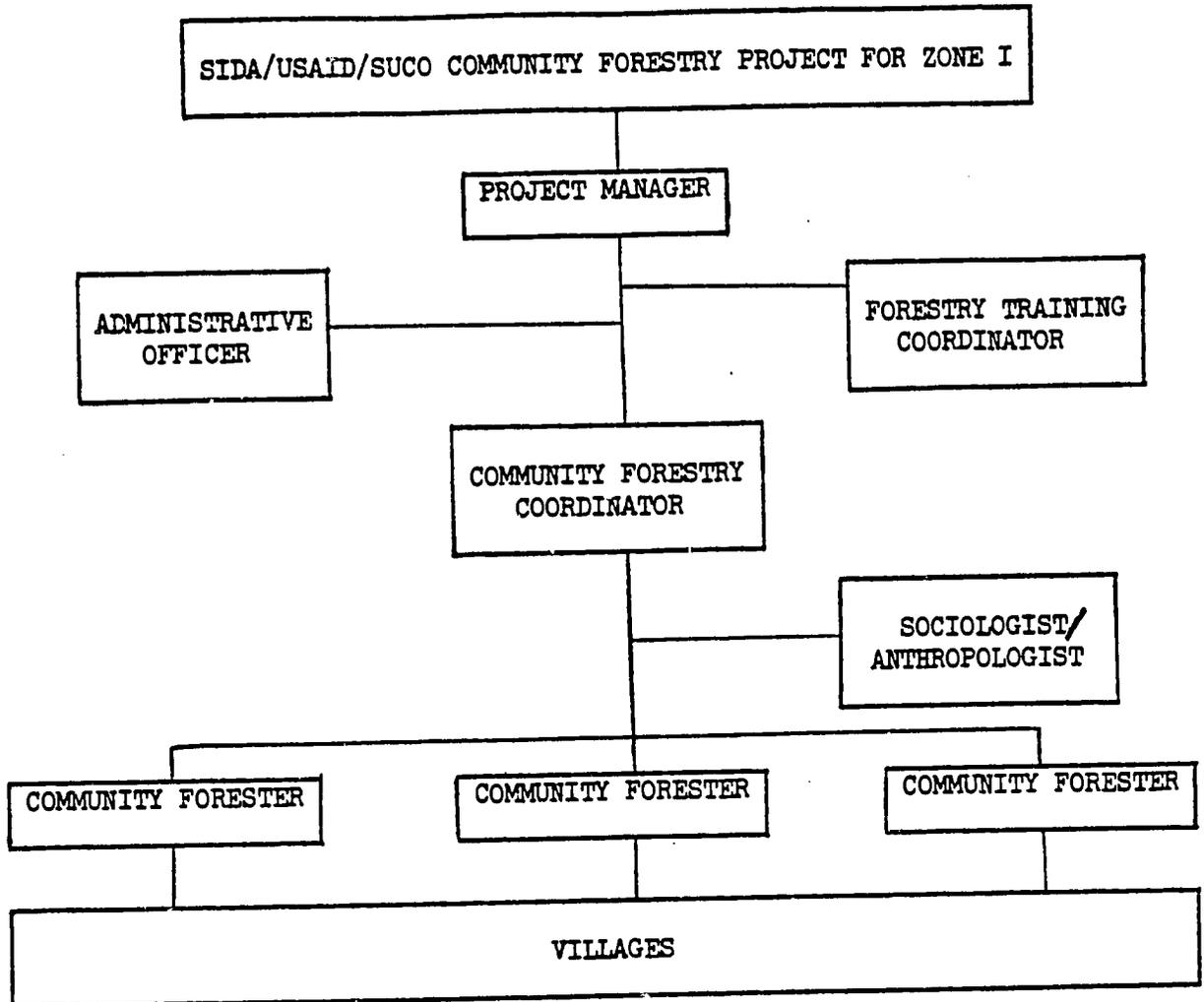
The PP team has considered that the structural framework proposed for the project will be part of the Forest Service and an instrument of its organizational capacity. The project will be placed, therefore, within its organizational structure in order to strengthen its actions and to allow, without interruption, the continuation of all activities once the project is over. It is desirable, however, for the project to retain a certain identity and flexibility in the early years of its operations. The project will maintain, therefore, only one hierarchical line of responsibility with the Forest Service under the direct supervision of the Forest Service Director.

D. Relationship with the Zone I Integrated Rural Development Project

The analytical and operational approach developed in this PP has continually emphasized the importance of integrating village forestry into its larger rural development context. One concrete way the project will transform this notion into village extension actions will be through close collaboration with the Zone I Integrated Rural Development Project described earlier in the paper. Collaboration with the project will take place at three separate levels:

1. At the regional policy level, the Interministerial Management Coordinating Committee for both Cacheu and Oio Regions will have a Forest Service representative as a permanent and active member.
2. At the project management level, technical staff from both projects will collaborate closely in areas of common interest and regular meetings will be organized for that purpose. The proximity of the two Centers will, of course, facilitate that collaboration.

Figure 6: Project Organigram



contract with a temporary project coordinator for the timeframe October, 1981 - July, 1982.

Locally qualified, short-term candidates have been located by the Project Paper team and the Director of the Forest Service. The Forest Service will negotiate a local contract with the most qualified candidate, subject to approval of the local SIDA, AID and SUCO representatives. Funding of this person, while not specified in the Financial Annex D, is included under the total expatriate funding heading. A more detailed description of the activities incumbent in this position is located in Annex C (X).

C. Relationship to the Forest Service

The current structure of the Guinea Bissau Forest Service is noted in Figure 7. The Forest Service is formally part of the Ministry of Natural Resources and has numerous informal links with the Ministry of Rural Development (particularly the Agriculture Service) and the Ministry of Industry (commercial logging activities).

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Jan

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July

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Oct

Nov

Dec

Jan

Feb

Mar

1984
Apr

May

Jun

July

Aug.

Sept.

Year 287
Evaluation

Year 287
Evaluation

Year 287
Evaluation

Year 287
Evaluation

2nd Wave
Volunteer
Language Training

Arrival
2nd Wave
Volunteers

Dep.
1st Wave
Volunteers

Possible
replacements
arrive

Forestry Extension
Handbook ready

Phase II: Pilot Implementation

Forest Agent
Class 1 Starts

Departure
5 Candidates for
Techn. Traing

Begin
Prob
Period
for For.
Ag.

Graduation
Forest Agents
Class I

Forest Agents
Class 2 starts

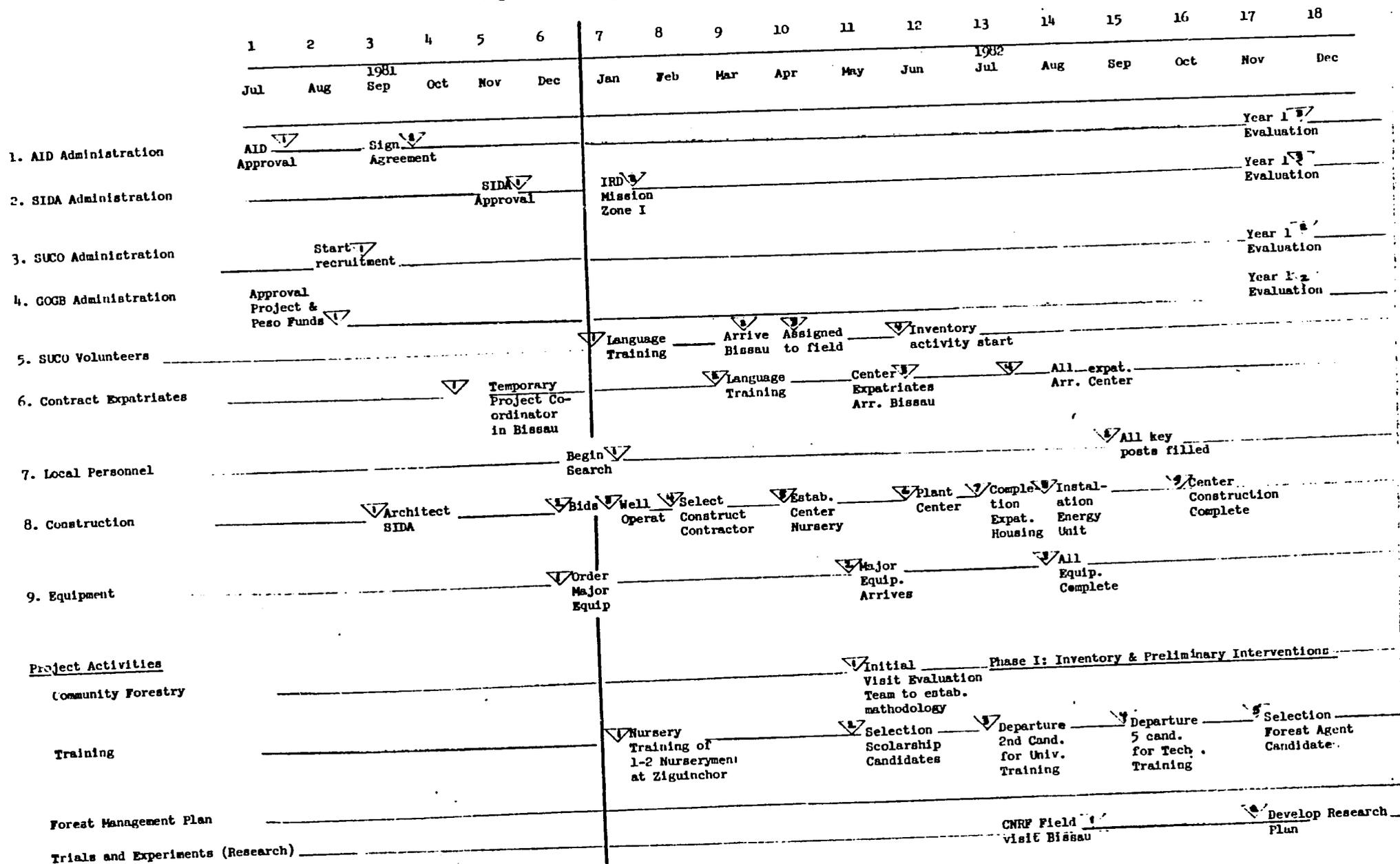
Depart 5 last
cand. for
Techn. Training

Begin
Prep.
Research

Annual
Research
Report

FED Forest
Inventory Published

Figure 5 : Project Implementation Schedule



III. IMPLEMENTATION PLAN

A. Implementation Schedule

A detailed implementation schedule is contained in Figure 5 for reference and use by the project implementation team. The following details of implementation planning have been calculated on the basis of that document. For purposes of AID administration, it should be noted that the Terminal Disbursement Date (TDD) for Phase I is July, 1986.

B. Project Organization and Staff Responsibilities

Figure 6 indicates the organization of project technical staff envisaged to implement the project. Greater information on total personnel requirements and their corresponding job descriptions may be found in Annex C (X).

Because the Forest Service and local offices of SIDA, AID and SUCO are already heavily involved with responsibilities outside of this project, final responsibility for project implementation will be contracted out. The technical assistance contracts will be financed by SIDA, who are currently considering five options:

- contracting through FAO
- contracting through a non-profit managerial firm
such as ORT/Geneva
- contracting through a specialized institute such as INIT/Lisbon
- contracting through a private consulting firm
- direct contracting

Taking all facets of project development into consideration, the PP team favored one of the first three options, although the final decision will remain with SIDA/Stockholm.

Generally speaking, the implementation team's Project Manager will be responsible for all administrative and managerial decisions related to the project. Working under his supervision are two senior contract foresters (Forestry Training Coordinator and Community Forestry Coordinator) basically in charge of project training and project community forestry activities, respectively.

The bulk of everyday field operations (village-level) will be the responsibility of four SUCO volunteers who, unlike their contract staff colleagues, will be housed near the villages where they work, rather than at the Forestry Center.

Current planning (see Figure 5) calls for volunteer staff to arrive in Bissau in March, 1982 and contract staff in June, 1982. Because a number of important project activities (selection of housing for volunteers, coordination with all donors and Zone I Integrated Rural Development Project, Center construction, ordering of appropriate equipment, personnel search and location of training candidates) will either begin or require professional attention prior to the arrival of regular project staff, it is proposed to

D. Summary Environmental Analysis

An Initial Environmental Examination (IEE) was prepared by the REDSO/WA Regional Environmental Advisor on July 8, 1980. A copy of the IEE may be found in Annex D of the PID document. AID/W concurred in a negative determination for the IEE except to note (see State 63755) that a risk-benefit analysis of pesticides should be undertaken at the time of project design. This project, as it will attempt to develop low-cost, village-level forestry packages, does not envisage the use of any pesticide during project implementation. Nevertheless, the REDSO/WA Environmental Advisor will be involved in annual project evaluations and will therefore be able to monitor forestry extension proposals as developed to ensure their environmental soundness. Clearly, the very objective of the project is to reverse the current dramatic trend of environmental degradation in Zone I.

Every effort has been made in the course of project design to reduce the recurrent cost burden of the project to a minimum, as the GOGB and the Forest Service already have considerable difficulty in meeting their existing recurrent cost responsibilities - a situation which will conceivably remain into the near future. Center construction will be studied to reduce maintenance and foreign exchange costs, and operating costs will be reduced by utilization of local renewable energy sources and labor-intensive strategies wherever deemed feasible. Total additional recurrent costs generated by the project and which will eventually be covered by the Forest Service (mainly salaries and operating costs for vehicles) are estimated at perhaps \$150,000 at 1981 prices. As the Center staff and students will also be actively involved in developing viable forestry and agro-forestry production systems (wood, charcoal, fruit and vegetables), it is estimated that the Center could be organized so as to cover all its recurrent costs through the sale of surplus production prior to completion of Phase II.

TABLE 61 : PROJECT FINANCIAL PLAN: PHASE I. (1981 - 1985)

(US\$ 000, 1981 prices)

(Calendar year only)

	1981		1982		1983		1984		1985		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
A. CONSTRUCTION COSTS	-	-	523	224	-	-	-	-	-	-	523	224
B. WELL, PUMP AND TOWER	64	16	-	-	-	-	-	-	-	-	64	16
C. EQUIPMENT PROCUREMENT	-	-	628	-	-	-	-	-	-	-	628	-
D. OPERATING EXPENSES	-	-	21	21	21	21	21	21	21	21	84	84
E. TRAINING COSTS	-	-	86	4	114	6	143	7	143	7	486	24
F. EXPATRIATE PERSONNEL	-	-	232	39	232	39	232	39	232	39	928	156
G. LOCAL PERSONNEL	-	-	-	63	-	63	-	63	-	63	-	252
H. RESEARCH AND STUDY	-	-	100	-	100	-	100	-	100	-	400	-
SUB-TOTAL	64	16	1590	351	467	129	496	130	496	130	3113	756
+ PHYSICAL CONTINGENCIES (10%)	-	-										
+ INFLATION (13%/YR.)												
TOTAL	64	16	1976	436	656	181	787	206	890	233	4373	1072

5445

C. Summary Financial Analysis

The details of the project financial analysis may be found in Annex D. A Project Financial Plan (Table 6) has been attached for reference, and indicates a total length of project cost of \$5,445,000, composed of approximately 80% foreign exchange costs and 20% local costs. A large portion of these costs (approximately 75%) are first-time costs, including construction, training, expatriates and research, required because of the extremely underdeveloped state of the Forest Service at the Zone I and national levels. Many of these investments in basic infrastructure and start-up activities will not be required in the subsequent development of Zone I activities and are reflected in the Phase II Financial Plan (see Table D-2 in Annex D).

The anticipated projection of expenditures by donor and by calendar year is noted below. (Table 7) Calendar years have been utilized instead of fiscal years to avoid confusion among the various donors. AID funding of the project (\$500,000) will all take place in U.S. fiscal year 1982.

Table 7 : PROJECTION OF EXPENDITURES BY DONOR AND
BY CALENDAR YEAR
(US \$ 000)

CALENDAR YEAR	SIDA	G0GB	AID	SUCO	TOTAL
1981	64	16	-		80
1982	1424	436	500	52	2412
1983	604	181	-	52	837
1984	735	206	-	52	993
1985	<u>838</u>	<u>233</u>	<u>-</u>	<u>52</u>	<u>1123</u>
TOTAL	3665	1072	500	208	5445
	(67%)	(20%)	(9%)	(4%)	(100%)

- The plantation of "bissilao" (African mahogany) and other commercializable hardwoods will probably not be an appropriate village-level activity.
- Fruit trees, such as mango and cashew are financially interesting for farmers at current prices and probably will be an initial priority activity of the project.
- Except in areas of active market potential (severely deforested areas, particularly near Bissau) a fuelwood project except, perhaps improved charcoal production, will probably not be viewed as an interesting, local commercial activity.

In conclusion, it needs to be strongly emphasized, however, that even if villagers do not have the possibility of entering into commercial forest activities due to marketing or price deficiencies, the development of local forestry activities will be probably perceived beneficial for their own personal long-term (improved agriculture or herding) and short-term (nutrition, fuelwood, medicinal, construction) gain.

Table 5: Financial Rate of Return of Selected Forest Products¹

<u>Product</u>	<u>Rate of Return</u>
a) Mango	98%
b) Cashew	48%
c) Firewood (eucalyptus)	4%
d) Charcoal (eucalyptus , traditional conversion)	5%
e) Charcoal (eucalyptus, improved conversion)	4%
f) Bissalao (<u>Khaya Senegalensis</u>)	5.9%

1. Assumptions

- a) Mango: Plantation costs for equivalent 5 hrs. paid labor at 20 PG/hr. in year 1; 1 hr. labor for yrs. 2-3. Market price 20 PG/mango, farmgate prices 5 PG/mango. Production 20 mangoes/tree years 3-4; 120 mango/tree years 5-25.
- b) Cashew: Plantation costs for 5 hrs. paid labor; 1 hr. in year 2. Market price 10 PG/liter of juice, farmgate 3 PG/liter; market price 10 PG/kg. for unbroken nuts, farmgate 3 PG/kg. Production 3 kg. nuts and 15 liters juice (yr. 3-6); 10 kg. nuts and 50 liters juice (yrs 7-20).
- c) Firewood: Plantation 5 hrs paid labor; 1 hr. for year 2. Market price 5 PG for 7 kg. of encalyptus; farmgate price 3 PG. Harvest after 8 yrs. with production 15 m³/ha./yr. (130 kg/tree); coppices 3 times.
- d) Charcoal-traditional: Conversion 15% efficient, 19.5 kg./tree yield from encalyptus plantation. Market price 4 PG/kg., farmgate price 2 PG/Kg.
- e) Charcoal-improved: Conversion 30% efficient, all assumptions same as in case "d".
- f) Bissalao: Plantation 5 hrs. paid; 1 hr. for year 2. Market price for trunk 10500 PG/m³, farmgate price 3500 PG/m³. Production 1 m³/tree after 60 yrs.

FIGURE 4 : NUTRITIONAL CONTENT OF ZONE I TREE PRODUCTS (per 100 grams)
Source: FAO/ORSTOM

PRODUCT	Calorie	Protein (g.)	Lipids (g.)	Glucide (g.)	Calcium (mg)	Iron (mg)	Vit. A (U)	Vit. B ₁ (mg)	Vit. B ₂ (mg)	Vit. PP (mg)	Vit. C (mg)	Water (%)	Waste (%)
-Tropical Fruits (avg.)	41	0.3	0.1	8.0									
-Orange	32	0.6	0.1	7.0	14	0.3	400	0.03	0.03	0.3	36	83	
-Papaya	26	0.4	0.1	5.7	24	0.3	120	0.06	0.02	0.1	42	87	
-Mango	40	0.4	0.1	9.0	12	0.2	60	0.05	0.02	0.1	30	86	
-Guava	54	0.8	0.1	12.0	7	0.7	1180	0.03	0.04	0.4	125	82	
-Baobab Leaves	70	3.3	0.17	14.0	390	2.3					42	85	10
²⁵ Baobab Flour	266	1.1	0.1	70	340							23	
-Baobab Seeds	507	31.0	41.0	13.0	370							8	
-Palm oil Nuts*	202	1.0	20.0	3.8	20	0.1	2700					30	64
-Palm oil*	808	99	99		7	7	13600					0	0
-Shea Nuts	180		20										
-Coconut*	161	1.9	15.6		4.0	0.8		0.3	0.01	0.3	1.0	48	54
-Avocado	110	1.2	10	3	9	0.5	140	0.05	0.16	1.0	8	79	30
-Plantain Banana*	75	0.8	0.3	17	5	0.5	220	0.04	0.03	0.4	11	68	34
-Sweet Banana*	67	0.9	0.3	15	6	0.04	140	0.03	0.04	0.5	8	73	29

* Not botanically a tree species.

2) enhanced resource productivity for local population - better soil conditions (increased plant nutrients, improved tilth, increased soil moisture content) will assist long-term agricultural productivity, local game will be more available, and a number of basic human needs normally drawn from the forest will be enhanced (pharmaceuticals, fuelwood, building materials, fruits, etc.).

3) improved availability of commercially valuable wood species - large numbers of currently valuable species are destroyed or cut without replanting and fire reduces natural regeneration possibilities.

2) Value of the Project at the Village Level

Because project objectives will only be achieved if local villages and farmers find the project in their own long-term and short-term interest, it is useful to examine project value from the village perspective as well. From a long-term perspective, local farmers are generally aware of the beneficial effect of forest cover. A commonly held local perception is that tree cover "draws" the rains and the question of poor rainfall was clearly measured as being foremost on local minds. Villagers are all aware of the numerous forest products they utilize on an everyday basis and do often attempt to protect those species which have the most immediate value (e.g. acacia albida, fruit trees, selected medicinal trees, sacred forests). As a source of nutrition, forest products ranging from fruit trees to baobab seeds are a common occurrence in Zone I. Their utility as a supplementary food source is particularly evident during the "hungry season" just prior and during the planting season. Often neglected by officials and foreign specialists, an indication of the richness of local representative tree crops is noted in Figure 4.

The PP team has attempted, for purposes of comparison, a discounted farm budget analysis for a number of the tree interventions suggested for the area. The results of that analysis are noted below, for reference, but should be taken only as an attempt to establish the relative monetary interest of each intervention rather than attributing to it any absolute value. Furthermore, it should be noted that the market value of these products is only valid in those areas where a marketing system is possible, a state of affairs which all parties admit has been particularly lacking throughout the country to date.

Taken only in its relative context, this analysis reveals a number of potentially interesting observations concerning the selection of activities as a function of farmer acceptance (See Table 5).

Guinea-Bissau, situated on Africa's coast, between Senegal and the Republic of Guinea, occupies 36,125 km² in sudano-guinean and guinean climatic zones. A striking physical feature of the country is its tidal river network. No major population center is more than 20 kilometers from a waterway. These divide the country into two contrasting land-use zones--one on the heavier soils of lowland areas adjacent to, and the other on higher soils of upland areas away from rivers and streams. Approximately 90% of the population survives operating farming systems in these contrasting ecozones.

Forests ranging from fairly dense sub-humid areas in the south to sparsely wooded savannah in the north occupy approximately 2,240,000 hectares (70% of Guinea-Bissau. Studies, however, reveal that these are disappearing at an alarming rate, threatening desertification. The Guinea-Bissau Forestry Project (#527-0002) for Zone I proposes to combat this condition through a strategy permitting villagers to manage their own forest resources. The present analysis addresses three issues: (1) the strategy required to effectively control deforestation; (2) the social soundness of the proposed project; and (3) appropriate factors for successful implementation of project strategy.

A central contention of this analysis is that successful forest management in Guinea-Bissau, and in countries with similar socio-economic conditions, depends upon a strategy of providing local communities resources to manage forests. The paper's first section supports this contention with analysis justifying a forest-product demand model in which changes, introduced during the colonial and continued in the present period, increase farming-system and commercial timbering tree-removal rates to intolerable levels. Village control of certain aspects of forest management is argued to be essential for relaxing environmental stress generated basically by farming systems. The second section analyzes how the project could be socially mutually feasible while enjoying considerable spread-effects and benefit incidence among rural poor if it successfully utilizes the participation tactics described in the final section. This last section offers ways of enhancing village participation in forest management.

J. C. J. A. Pereira and F. B. Pereira Nunes: Contribucao para o estudo do problema ambiental da Guine Portuguesa. Ministerio do Ultramar. Junta de Investigacao do Ultramar. Lisboa. 1976. p. 128.

Guinea-Bissau: Republica da Guine-Bissau: Potencialidades agricolas. SGT reports that (Vol. I.) FAC. Paris 1978. SGT reports that 1.2 million hectares of forest (or 24%) are degraded.

continued

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B. Evaluation

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Appendix 1 Aspects of Balanta and Mandinka Farming Systems.

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ANNEX B

STRATEGY AND TACTICS FOR A SOCIALLY SOUND
GUINEA BISSAU ZONE 1 FORESTRY PROJECT.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 82 to FY 86
Total U.S. Funding \$500,000
Date Prepared: June 28, 1981

Project Title & Number: GUINEA BISSAU FORESTRY PROJECT FOR ZONE 1 (657-0005)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p><u>Inputs:</u> AID (\$500,000)</p> <ul style="list-style-type: none"> - Solar or wood-burning energy unit - Scholarships <p>SIDA (\$3,665,000)</p> <ul style="list-style-type: none"> - Scholarships - Construction - Studies and research - Contribution to operating costs - Expatriate personnel <p>SUCO (\$208,000)</p> <ul style="list-style-type: none"> - Volunteer personnel <p>GGOB (\$1,072,000 in local costs)</p> <ul style="list-style-type: none"> - Land - Local personnel - Contribution to SUCO volunteer costs - Construction - Training 	<p><u>Implementation Target (Type and Quantity)</u> <u>Expatriate Personnel</u></p> <ul style="list-style-type: none"> 1 Project Manager 1 Training Center Coordinator 1 Community Forestry Coordinator 3 Volunteer Community Foresters (SUCO) 1 Volunteer Sociologist/Anthropologist (SUCO) <p>20 Man-months of consultancies</p> <p><u>Scholarships</u></p> <ul style="list-style-type: none"> 2 University-level 15 Technicians - level <p><u>Construction</u></p> <ul style="list-style-type: none"> 1 Forestry Development Center (see PP for floor plan) 1 Solar energy or dendro-thermic electric generation system 1 Tubular well, pump and water tower 1 Nursery (one hectare) <p>40 - 60 ha. of land</p> <p><u>Equipment</u> (See PP for detailed equipment list)</p> <p>Operating Costs (see PP for detail)</p>	<ul style="list-style-type: none"> - Records of purchase and payment - Project Agreements and contracts - Inventory lists - Employment and salary lists - Building inspections - Project accountant books 	<p><u>Assumptions for providing inputs:</u></p> <ul style="list-style-type: none"> - Supplies available - Appropriate personnel available - Scholarships available at appropriate training schools. - Money allocated from U.S., GGOB, Sweden and Canada.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project: _____
From FY 82 to FY 86
Total U.S. Funding: \$500,000
Date Prepared: June 28, 1981

Project Title & Number: GUINEA-BISSAU FORESTRY PROJECT FOR ZONE I (655-0005)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Outputs: Community Forestry Program for Zone I (woodlots, agro-silvo-pastoral schemes, fruit trees, fire control, improved charcoal production, etc.)</p> <ul style="list-style-type: none"> - Trained Guinean forestry personnel - Improved forest management planning in Zone I - Improved forestry knowledge base 	<p>Magnitude of Outputs: (See Evaluation Section for Details)</p> <ul style="list-style-type: none"> - Project will contact and work with 150 villages of an average population of 215 inhabitants. - % measures of anticipated success will resemble those presented in Project Paper Evaluation Plan - A Community Forestry Extension Handbook will be produced and distributed to key personnel. - 2 University-trained professional foresters - 15 forestry technicians. - 35 Community forester (<u>Agentes Florestais</u>) - 13 Forest Guards (<u>Guardas Florestais</u>) - 25-80 persons with short-term training or retraining (ag. extension agents, village heads, etc.) - 1 indicative Forest Management Plan for Zone I. - A plan of number and type of research activities to be carried out during the project. - 10-15 trials and experiments started, of which 5-10 preliminarily evaluated. - 20 man-months of consultancy studies carried out. 	<ul style="list-style-type: none"> - On site inspection - Records of all project activities volunteers and Community Forestry Coordinator to give quarterly reports to Project Manager, Project Manager to give yearly report to annual evaluation team. - Degrees and diplomas from training certificates from the Forestry Center. - The Forest Management Plan for Zone I with maps, tables, etc. - Records from trials, reports from experiments, consultancy studies and reports. 	<p>Assumptions for achieving outputs:</p> <ul style="list-style-type: none"> - Sufficient numbers of qualified candidates available for forestry training. - Staff and transport facilities available. - Forestry Center functioning well. - FED national forest inventory is complete for Zone I by end of 1983. - Support from competent forest research organizations, availability of qualified consultants.

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

AID 1023-28 (7-73)
SUPPLEMENT 1

Life of Project: _____
From FY 82 to FY 86
Total U.S. Funding \$500,000
Date Prepared: June 28, 1981

Project Title & Number: _____

PAGE 2

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose:</p> <ul style="list-style-type: none"> - To assist the GOGB, Services Forestais and the country's farmers and villagers develop a strong foundation and an integrated process for improving, managing and enhancing their resource base through the project activities noted in the output section. 	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ul style="list-style-type: none"> - A forestry sector with a strong infrastructure and capability to be responsive to local, regional and national needs. - A forest management plan has started to be implemented by the Forest Service and other parties. - Ongoing community forestry program. - Ongoing training. - Ongoing applied research and data being utilized. - Ongoing in-country training. - Production and distribution of planting materials from established nurseries. - Recognition of Forestry Center as important national entity. - Complementary practices between SOCOTRAM and other forest users, if SOCOTRAM still active in Zone I. 	<ul style="list-style-type: none"> - Yearly evaluation of GOGB Forestry Sector and project activities. - Project annual reports. - Estimations of burning activities in the forests. 	<p>Assumptions for achieving purpose:</p> <ul style="list-style-type: none"> - GOGB committed to save, develop and utilize its forest resources through village-level participation.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

(INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED AS AN AID TO ORGANIZING DATA FOR THE PAR REPORT. IT NEED NOT BE RETAINED OR SUBMITTED.)

Life of Project: From FY 82 to FY 86
Total U.S. Funding \$500,000
Date Prepared: June 28, 1981

Project Title & Number: GUINEA-BISSAU FORESTRY PROJECT (657-0005)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <ul style="list-style-type: none"> - To improve the well-being of major portions of Guinea-Bissau's population in Zone I through improving the sustained production capability and use patterns of the forest resource base. - To halt and prevent the degradation of forests and environmentally linked resources. 	<p>Measures of Goal Achievement:</p> <ul style="list-style-type: none"> - Improved and sustained provisions of forest products and services, i.e. fuel, food, construction and craft materials, forage, recharged groundwater, erosion control - Increased sustained multiple use of the forest resource base - Decreased degradation of forests and ecologically linked resources. 	<ul style="list-style-type: none"> - Evaluation comparing baseline data with project results - Project and ministerial figures - Site inspection 	<p>Assumptions for achieving goal targets:</p> <ul style="list-style-type: none"> - The carrying capacity of Guinea Bissau's forest resource base will not be over-extended with the improved rational management and use to be instituted. -- Related sectors will cooperate

V: ANNEXES

Two types of research tactics will be desirable. In the pilot-villages, participant observation can be useful because the intense scrutiny of a few cases resulting from such an approach speeds investigators' identification of the factors effecting and consequent upon varying acceptance levels. Quantitative multivariate data-analysis should be employed in a sample of extension agent villages. This will permit investigators to establish the representativeness of participant-observations, and differential impacts of a number of variables operating at the same time on acceptance levels.

initiation percentages will indicate acceptance, low initiation percentages the reverse. Inquiry should focus upon the relationship of two categories of variables to innovation. First, it is important to identify what variables influence, and by how much, acceptance levels. Examples of this category of variable might be access to markets or percentage of agricultural product sold. Second, it is important to know what target population variables are influenced, and by how much, by different acceptance levels. For example, does high acceptance of fruit-trees translate into better target population nutrition? A programmatic value of the former information is that it tells managers what must be programed for high acceptance-levels to obtain, and whether the impacts of different acceptance-levels are significant in terms of target population welfare.

Members of the Project Paper team believed that the project should be judged highly successful if it attains, with the length of project, the following acceptance-levels:

Innovation	Unit of Analysis	Acceptance Levels	
		% initiating Innovation	% Spontaneously Continuing Innovation
1. Fruit trees	household		
a. with good market access		75%	50%
b. with poor market access		50%	25%
2. Improved charcoal prod.	village		
a. with good market access		75%	50%
b. with poor market access		0%	0%
3. Agro-Forestry	village		
a. <u>Acacia albida</u> , in high pop. density and upland soils		30%	1%
b. <u>Acacia albida</u> , other		.5%	.5%
c. Other		.5%	.5%
4. Village FuelWood plantations	village		
a. Forested area		15%	.5%
b. Deforested area		30%	1%
5. Fire Control	village	30%	1%
6. Village Nurseries	village	30%	1%

Phase 3: Replication

Goal: Creation of a forestry service capacity to replicate implementation of tested IS's in two years.

Personnel: Same as in the two previous phases, with the addition of forest extension agents.

Monitoring Activities: Training of extension agents should occur at the project training center. The Forest Extension Field Handbook would be a significant component of this training. Extension agents, then, implement tested IS's. These are further tested, and revised where necessary, through continued forester and social anthropologist monitoring of forest extension agent activities.

The foresters and the social anthropologist will each have responsibilities for research design issues--including data collection and analysis techniques--in their respective areas of expertise. However, these designs will require coordination from the Community Forest Coordinator. Data will be recorded and analyzed, as much as possible from the perspective of the target population in order to generate culturally acceptable IS's.

B. Evaluation

Evaluation will occur once per year, simultaneously with the annual SIDA evaluation of the Zone I Integrated Rural Development Project. The team evaluating the Forestry Project should be composed of at least two contract professionals including a forest management specialist and a social anthropologist.

Both should have considerable West African experience, and should evaluate the project throughout its entire implementation. Evaluation should address three issues: First, are project inputs being managed to attain projected goals, purposes, and outputs? If not, why not? Second, how is the project impacting upon different components of the target-population? Thirdly, how are the IS's functioning? Evaluation results should guide project finance and programing so that the project has the flexibility to exploit unexpected opportunities.

C. Coordination of Evaluation and Monitoring

The evaluation team should be constituted during the first year of project implementation (in April - May, 1982). It should develop procedures (with the project staff and the Forest Service) to collect and analyze information concerning the preceding three questions. At this time questions of sampling, data-collection techniques, and relevant variables should be settled. As much as feasible, evaluation data requirements should be satisfied by information collected in the course of monitoring.

Monitoring and evaluation must be designed to record activities in the three pilot-villages, plus a total of 150 villages (each with a mean of 215 inhabitants) worked in by the forest extension agents. Innovation should be treated as the central concept when examining village impacts. It might be operationalized as the proportion of the total population which initiates, and/or continues to initiate different innovations. High

IV. MONITORING AND EVALUATION

Technical and socio-economic monitoring will be employed to develop technically feasible, socially acceptable forestry interventions.

A. Monitoring

The goal of monitoring is to establish forestry interventions through creation of "intervention schemes" (IS) which, themselves, are incorporated into the training of forest extension agents. IS's describe ways to introduce interventions. These descriptions must tell change agents how to introduce interventions which are: technically correct, perceived by the target population to be in their own interest, culturally "fit", are not in conflict with existing economic activities, and are managed by villagers' own institutions.

During the three phases of village intervention, monitoring of community forestry activities will proceed as follows:

Phase 1: Pilot-Village Inventory and Preliminary Intervention

Goal: Development of initial IS's within one year.

Personnel: 3 community foresters, 1 social anthropologist

Monitoring Activities: Selection of three pilot villages which are representative of different farming-systems. Foresters examine village micro-habitats to identify technically feasible interventions. Social anthropologist analyses, economic, social, and cultural factors influencing farm and forest utilization in villages. Initial IS's are formulated using this data.

Phase 2: Pilot Implementation

Goal: Development of tested IS and Forest Extension Field Handbook in one year.

Personnel: Same as in the preceding phase.

Monitoring Activities: Community foresters implement initial IS's. Social anthropologist, using participant observation, observes interventions identifying innovation rejection and acceptance processes. Foresters observe conditions that hinder or facilitate technically correct implementation of interventions. For each innovation, tested IS's are developed which identify how to stimulate conditions leading to acceptance and avoid those associated with rejection. Each tested IS is then included in a "Forest Extension Field Handbook".

3. At the field level, community forest agents will maintain their sectoral autonomy, but will carefully coordinate their field activities with those of local extensionistas in order to avoid overlapping functions or eventual conflicts which may confuse the farmers or detract from the credibility of the rural development agents.

E. Procurement

Most procurement (construction, equipment, services) will be jointly funded by the GOGB and SIDA. The sole exception to this rule will be the AID procurement of the electrical generating plant for the Center (solar or dendro-thermic generation). Procurement of this item will be through normal AID competitive procedures and will be undertaken by CDO/Bissau, with assistance from REDSO/WA for the GOGB. For greater precision in implementation it would appear useful to include greater detail on the procurement of this energy system. It is anticipated that a REDSO/WA energy specialist and engineer will travel to Bissau in September, 1981 to coordinate their assessment of the energy package for the Center with the SIDA architect, due in Bissau at that time. Their visit will permit AID to develop preliminary specifications and TOR for the bid documents. This information will be forwarded to NASA/Lewis, who will be the procurement agent and in charge of installation of the energy unit in the field. It is suggested that following the September site visit that the SIDA architect travel to the USA to confer with NASA/Lewis on the most appropriate design for the energy system. NASA/Lewis will request bids of qualified U.S. suppliers and by April, 1982 will have selected the supplier, commenced shipping of the equipment to Bissau and will effectuate a site visit. Given shipping delays, actual installation of the solar unit will probably not begin until October 1982 and will not be operational until end-1982. Electrical generation in the interim period between the arrival of staff at the Center and the completion of the solar unit will be assured by the diesel generators supplied under the project.

A complete list of equipment, construction and other items to be procured under the project is presented in Annex D, for reference.

The major source of forest product demand is the farming system. A forestry strategy should therefore intervene at this level.

It is farmers resident in villages who operate these farms, and who must accept innovations if Guinea Bissau's forests are to be managed. Sociological, social psychological, anthropological, and economic studies conclude that high participation has a catalytic effect upon innovation.¹ It is advantageous for nations such as Guinea Bissau to pursue strategies involving high village participation.

¹ Summary of these studies is available in S. Vago: Social Change. Rentice Hall. Englewood Cliffs, NJ. 1979. Chapt. 6-7

"The danger is stressed of large regions...., lying over laterite, becoming desertic as a result of normal and accelerated erosion. Indeed, one fifth of the territory is already affected by the "bowl-lisation" process."²

Present forest-product demand structure will, eventually, result in "desertification" For the farmers of Guinea Bissau this demand structure creates a cruel contradiction: to survive to day they must drive their farming systems to "eat" ever-increasing amounts of forest, thereby negating the possibility of those same farming systems contributing to their future survival.

A forest-policy strategy emerges as corollary of the proceeding analysis. In existing farming systems, fields and forest are part of the same land utilization system. In most contemporary European agriculture, farming activities do not destroy forest cover. Guinea Bissau's upland agriculture begins with operations slashing and burning forest. Very rough estimates of the amounts of wood cleared under present farming systems are presented in Table B-6, and suggest that perhaps 2,000,000m³ wood are consumed annually by farmers.

Table B-6: Estimated National Annual Farming System Derived Forest-Consumption

Forest type	Amount of wood consumed/.5ha. cleared	% of total population using forest types	# of individs. clearing	Amount consumed (m ³)
undegraded forest	10m ³	8%	62,176	621,770
degraded forest	.5m ³	33%	25,6479	1,282,395
scrub	1m ³	33%	25,6479	256,479
bolanha	0	25%	19,4303	0
Total				2,160,644

Explanation

Table B-6 is based on the assumption that .5 hectares/year/capita are put into agricultural production. This figure is provided by SCET: op.cit. The amounts of wood consumed per .5 hectares in each type of forest were provided by Dr. Sardinha (personnel communication).

²

A.J. da Silva Teixeira: Os Solos da Guile Portuguesa. Junta de Investigacaos do Ultramar. Lisboa. 1962. pp. 272 and 273

C. The State and Commercial Logging

Guinea Bissau has experienced financial difficulties since independence, especially those derived from a poor balance of payments. Exports earned \$15 million in 1979, while exports cost \$60 million. The government budget was projected during this year at approximately \$100 million annually, with revenues of \$20 million, and foreign assistance between \$50 and 60 million, thus creating an annual shortfall of \$20 to \$30 millions.¹ Guinea Bissau has very few resources, with which to confront these financial exigencies. One resource, however, is commercial timbering which in 1979 was one of the country's four major exports.² There is, thus, a strong interest in commercial timbering.

Independent Guinea Bissau formed a parastatal company, SOCOTRAM, which was given a near monopoly of forest resource exploitation. SOCOTRAM is presently removing tropical species at or above the highest levels attained at the end of the colonial period: 15,000m³ of roundwood was cut in 1979/1980; 9000m³ were projected for 1980/1981. Added to these quantities should be an unknown amount taken by private firms. There is presently no replanting. Under these conditions, it is estimated that commercially exploitable species will be exhausted between 30 and 50 years.³ There is thus fifth source of demand for forest products. Additional proposed commercial ventures suggest this source of demand could increase.

3. Consequences of the Present Forest Product Demand Situation

Analysis has documented five sources of high and or increasing demand for forest products. Such demand implies increasing tree-removal rates. Consequences of elevated tree-removal rates have been documented in Guinea Bissau for approximately 20 years. A high tree-removal rate is expressed, at the level of farming systems, as increased girdling of trees, bush firing, and reduction of fallows. These result in increased upland soil erosion, initiating a regressive soil evolution process termed "bowallisation" which produces lithosoils and litholic soils over laterite. Such soils are not suitable for farming. This process was advanced twenty years ago. In 1962 the soil scientist A.J. da Silva Teixeira reported:

"...population pressure and the need for cash crops are rapidly increasing the erosion problem...", and he warned:

¹ Duncan. et. al. op. cit. pp. 37-38

² Techno-Foret: Definition d'une strategie pour la mise en place du service forestier. Mende. France. 1980. p.13.

³ Personal communication with Dr. Sardinha.

Increased money demand influences farming systems in two ways. Decreasing terms-of-trade mean that increased quantities of cash crops must be produced. Table B-5 shows that in 1974, 45 kilograms of peanuts had to be grown to purchase 100 kilograms of millet. By 1980 the amount of peanuts which had to be grown had doubled to 93 kilograms. If more cash-crops must be cultivated, in the absence of any technical innovation which has characterized the farming sector, then greater land surfaces must be put into production. Data contained in Table B-3 concerning peanut productivity and in Table B-5 concerning terms of trade between sale of peanuts and purchase of millet indicates that the amount of peanut land required to purchase 100 kilograms of millet would have to be approximately doubled between 1974 and 1980.

If additional land must be put into production, in the absence of labor-saving innovations, greater amounts of labor must be invested in farming. For example, it probably takes about 1200 hours to put one hectare through its complete production cycle,¹; meaning, under the yield conditions reported in Table B-3, that one hour's work produced about 1.1 kgs. of peanuts. Hence, in 1974 it took about 41 hours work to grow enough peanuts to buy 100 kilograms of millet, while in 1980 it took about 85 hours. To maintain old levels of consumption, Guinea Bissau's farmers must work harder to put more land into production.

Wage labor, it should be recalled, is not common in Guinea Bissau. Rather workers are most easily acquired by having the appropriate kin categories in households. Increased labor demand, under such conditions, makes high rates of reproduction a major way of responding to this demand which further strengthens pro-natalist attitudes making unlikely any decrease in the 1.4% rate of natural population increase.

Evidence has been presented which sustains the hypothesized changes in forest-product demand (presented in diagram B-1) as follows:

1. that partial incorporation into market relations during the colonial period created a demand among farmers for cash-crops;
2. that recent decreasing terms of trade for farmers leads to increasing demand for cash crops;
3. that increasing cash crop demands result in greater surfaces of land being placed under cultivation
4. that increased areas farmed, under present conditions, raise labor demands which contributes to increased population growth;
5. that a growing population means larger areas which must be cultivated to feed this population, while at the same time raising demand for firewood and wooden building materials;
6. that thus, deriving from the farming system are four sources of increasing forest-product demand-- need for cash-crops, food-crops, firewood, and building materials.

¹. Labor input data derived from Gambia in C. Clark and E. Haswell: Economics of Subsistence Agriculture. Oxford University Press. London. 1959.

Table B-4: Annual Expenditures in Two Oio Villages

Household #	Household size	Annual expenditure (in pesos)	% on cloth	Expenditure per person
1	7	15,790	22%	2,225
2	14	24,408	43%	1,743
3	7	8,760	42%	1,252
4	4	10,342	26%	2,586
5	4	17,790	32%	2,965
6	6	5,070	78%	1,268
7	4	9,122	44%	3,040
8	3	12,585	48%	1,798
9	7	8,760	47%	1,095
10	8	12,020	25%	3,005
11	4	11,180	34%	1,597
12	7	4,663	43%	1,558
13	3	3,337	80%	835
14	4	8,810	58%	1,100
15	8	8,280	40%	690
16	12	5,840	72%	835
17	7	12,946	62%	1,177
18	11	7,340	55%	918
19	8	13,672	44%	1,147
20	12	14,643	50%	1,627
21	9	9,484	77%	1,054
22	9	16,614	50%	1,510
23	11	13,348	45%	1,112
	23			

SourceA.M. Hochet: Region de l'Oio. op.cit.Table B-5: Terms of Trade for Oio Farmers

	1974	1980	increase
Farmgate peanut price	2.2 pesos/ kg	7.5 peso/ kg	3.4 times
Consumer price palm oil	10 pesos/ lit.	50 pesos/ lit.	5 times
Palmoil-peanut terms of trade	4.5 kg peanuts/ litre oil	6.6 kg/ litre	
Consumer price millet	100 peso/100kg	700 peso/ 100 kg	7 times
Millet-peanut terms of trade	35 kg peanuts/ 100 kg millet	93 kg peanuts/ 100 kg. millet	

Source

Data collected by author in Oio June 1981 north of Farim.

by migration out of lowland into upland rice production. Appetite for the forest has quickened. A.-M. Hochet reports that . . . in Oio: "Conscious of soil exhaustion by upland rice, farmers wish above all the restoration of their lowland fields" (emphasis added)¹

C. The Vicissitudes: Some consequences of increased monetarization pressures.

Hochet, speaking of peoples in Cacheu, observes: In former times, the economy of these villages was based on barter, and there are still many signs of this. But present... (conditions) in the whole area have created a large need for cash (emphasis and insert added)²

Table 4 presents data on annual household expense in two Oio villages. These average above 2000 pesos per person with a high percentage (44%) being spent on such necessities as clothing.

There are indications of need for increased amounts of money. Guinea-Bissau's marketing and transportation systems function imperfectly. Cash crops are either not purchased or only very irregularly purchased. These are sold to one of two parastatal enterprises sensitive to the policy of using agricultural production to generate government revenue. Pricing policies of these parastatals has resembled that of other parastatals with the same functions in West Africa. Consumer goods, including food, are in extreme short supply. As a result of this situation one study concludes: "...the commercialisation and transportation of agricultural products is actually a bottleneck to agricultural development"³. Such conditions mean for farmers stagnating farmgate inflating consumer prices. The terms-of trade can be expected weighed against them.

Evidence collected in Oio villages in June 1981 for peanut farmgate price and palm oil and millet consumer price suggests this to be true. Table B-5 shows that between 1974 and 1980 the farmgate peanut price rose 3.4 times while over the same period it cost a farmer 5 times as much to buy palm oil and 7 times as such to purchase millet. This evidence is clear. Farmers need more money in 1981 to buy the same amounts of goods that they purchased in 1974.

¹ A.-M. Hochet: Region de l'Oio. op. cit.

² A.-M. Hochet: Preliminary Socio-economic study for the small-scale fisheries project in the region of Cacheu. Economic and Planning Commissariat. Bissau. Dec 1979. p.59

³ SCET o.p Cit. p.48

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Balanta farming is based on construction of complex systems of dikes and canals to capture and regulate rainfall and riverwater flow to rice planted in bolanha. The labor involved in the construction and maintenance of such a hydrological infrasture, built entirely by hand, is considerable. Greater preparation of soils, use of organic fertilizer, transplantation, planting in rows, and more meticulous weeding further raise labor inputs. The payoff for this additional work is extra productivity. Yield figures for lowland rice are among the highest reported for a "traditional" African system. (See Table B-3). Mandinka

Table B-3: Guine-Bissau Crop Yields

lowland rice	1751 kg/ha	a
upland rice	1185 "	
millet	600 "	
peanut	1374 "	
palm oil	1100 "	b

Source

a
Prospectiva do Desenvolvimento Da Guine. Junta de Investigacao do Ultramar. Lisboa. 1973.

b
 SCET. op. cit.

farming emphasizes upland crops. Bush is cleared through slash and burn, no--or far less--fertilizers are applied, seed is broadcast, soil receives rather little preparation, weeding is more casual. Women tend to monopolize upland and lowland rice production.

A striking difference between the two systems is that it is the Mandinka system which "eats" the forest. Examination of Table B-2 shows that at any one time Balanta are using approximately three times less land than Mandinka. But the difference does not end here. Approximately one half of all Balanta fields are in permanent use. On these fields trees are not cut each year. Mandinka rotations, however, involve relatively short periods of cultivation and long fallows. Upland rice and peanuts appear to be especially demanding, and fields must be completely cleared because the crops do not tolerate shade. Under conditions there is a tendency to clear some new lands of trees each year. It is thus upland slash and burn which "eats" the forest.

Manjak farming, represents an interesting compromise between the preceding systems. Resident in the same coastal areas as the Balanta, Manjak choose to concentrate on a foraging activity, specializing in the products of palms-- wine and oil. Because of the effort spent in foraging, less time is available for work in bolanhas than is the case with Balanta but still more than is that with Mandinka.

The three farmings systems just described are not the only ones in Region I. They are however in terms of number of people working them and area cultivated the most significant variants of the DMP in Guinea-Bissau. Conjunction of destruction and abandonment of Bolanhas during the war, combined with insufficient rainfall since the war to prevent salt intrusion has had a devastating impact on lowland rice production. Lowland fields are going out of production. Agriculturally this conjuncture has been dealt with

under 10 hectares), absence of capital inputs except for hand-held tools, provision and organization of production factors on the basis of kinship (usually domestic or lineage), and distribution of product on the basis of kinship. In the DMP, if you want land you cannot buy it; but, rather, acquire it by virtue of being somebody's kin. If you want labor you cannot purchase it; you acquire it by having certain relatives who customarily are obliged to work for you. As sons and daughters are the most important category of kin who are obliged to work for you, you normally do not buy labor you make it. The DMP, as described earlier, was subjected to pressures during colonial times when individuals were obliged to sell a portion of their product thus diverting it away from customary kin, and is properly termed as experiencing transition to a yet unclear production mode.

There are two contrasting tendencies in Zone I DMP. These tend to be exhibited by Balanta and Mandinka. The former emphasizes a form of permanent, and the latter one of slash and burn agriculture. Details of the two systems including production structures, agricultural cycle, rotations, and division of labor by age and sex are presented in Appendix I. Balanta farming is characterized by lesser amounts of land farmed, greater labor intensities, and concentration of production in lowland (bolanha) areas. Mandinka farming exhibits the reverse tendencies.

Table B-2: Distinguishing Attributes of Balanta and Mandinka Farming Systems

<u>Area of concentration of farming activities</u>	<u>Balanta lowland hydromorphic soils</u>	<u>Mandinka upland ferralitic soils</u>
% of area cultivated in bolanha	47%	11%
basil millet	10%	27%
peanuts	10%	26%
mean farm size	2.3 ha.	6.6 ha
labor intensity	much greater/ha	much less/ha
Forest- product demand	lesser	greater

Source

a. Prospectiva do Desapvolvimento da Guine. Junta de Investigacao do Ultramar. Lisboa. 1973.
While there have been excellent studies of Guinea-Bissau's agriculture, these are now old, nevertheless they permit us to grasp broad outliness of Balanta and Mandinka farming systems.¹

¹ For a useful overview see Raul M. de Albuquerque Sardinha and C. A. Picado Horta: "Perspectivas da agricultura, silvicultura e precuariz na Guine." Boletim Cultural de Guine Portuguesa. XXI, 81. Jan. 1966.

Cacheu may be generally considered as coastal and Oio an interior zone. Heavy halo-hydromorphic soils, mangroves, and palms are common in the former. Ferralitic soils and dry forest predominate in the latter region. Population pressure has resulted in serious deforestation. According to one study, in Cacheu the area south of the Rio Cacheu is in the process of nearly complete deforestation, with the exception of a forested spot which remains northwest of Pelunde;" and in Oio the areas west of the Farim-Mansoa Rd. are "... very exploited, and being cleared at accelerated rates."¹

Ethnic group distribution is complicated but in general can be characterized as follows. In Oio, Mandinka and to a lesser extent Fula predominate. In the south, especially along the Rio Mansoa are Balanta. In Cacheu a single ethnic group predominates, Manjak, though there are Felupes north of the Rio Cacheu, and pockets of Balanta, Papel, Brames, and Mancagne mostly to the south. Basically three ethnicities predominate-- Balanta, Manjak, and Mandinka-- whose farming systems will be explored below.

A brief digression is in order to establish two points concerning these groups' social organization. First, while there is some useful older ethnographic literature, generally the social structures of Guinean populations remain to be described.¹ It is important to accept that little is known about the target populations, which implies acceptance of a corollary: sociological investigations are desirable.² Second, two structures effect villagers' actions. On the one hand, indigenous social organizations organize activities on the basis of differing kinship, age & gender principles. On the other, there is the GOGB, operating in villages through village committees, organizing activities on the basis of its policies. Both structures exist. Actions from both will be necessary for project success.

A. Farming Systems

Balanta, Manjak, and Mandinka farming systems are variants of a common mode of production that has been variously termed the domestic, communal, or lineage mode of production. (In the interests of brevity we shall refer to these as the DMP--domestic mode of production). This productive mode is characterized by: relatively small production units (generally

¹ There is useful information on non-Guinea-Bissau Mandinka in N.S. Hopkins; "Mandinka Social Organization" and P.H. Weil "Political Structure and Process among the Gambia Mandinka: the village parapolitical system", both in Papers on the Manding. University of Indiana Press. Bloomington. Indiana. 1971. A bibliography of existing Guinea-Bissau ethnography may be found in Lobban: op.cit. pp. 144-152.

² There is a tendency in some literature to employ imprecise terms, such as tabanca and moranca to describe social organization. There is very considerable difference, for example between a Mandinka korda and a Balanta pam. Both have been referred to as moranca. To label them by a common term tends to classify them as a common type of group which obscures their differences. Further, tabanca and moranca are creole terms which roughly correspond to Portuguese social groups. Tabanca, for example, means village. Guinea-Bissau social organization is not Portuguese. For example, villages simply do not exist among Balanta. Rather, groups of people living close together are doing so because they are co-members of common kin groups.

There has been a tendency in some literature to view villagers as "...oriented towards self-subsistence",¹ and thus escaping from money unscathed hoes, fire strongly could pay ethnic groups during the cloth. Operation into systems and forest utilization are described in the succeeding section.

2. Zone 1 Farming Systems and their Vicissitudes

Zone 1, consists of two Regions--Cacheu to the west and Oio to the east. It is the most populous area in the country occupying 35% of the land with 55% of the population. (See Table B-1 for basic demographic data.)

Table B-1: Zone 1 Population Characteristics

<u>Region of Oio</u> <u>Sector</u>	<u>density</u>	<u>mean</u> <u>village size</u>	<u>mean</u> <u>family size</u>
Bissora	36.4 km ²	229	5.6
Farim	18.2 "	163	7.5
Mansaba	18.9 "	202	8.0
Mansoa	25.1	244	6.1
Nhacra	79.3	392	4.9
<u>Region of Cacheu</u>			
Bigene	27.7	225	6.3
Bula	30.2	137	6.9
Cacheu	16.7	146	6.2
Caio	31.0	263	8.3
Canchungo	61.0	412	8.4
S. Domingo	19.9	188	4.6

Source

Resultados Provisorios: Recenseamento Geral da Populacao 16 de Abril 1979. Departamento Central de Recenseamento. Bissau. 1979.

¹ S. Bergholtz et al.: Investigacao socio-economica das tres tabancas da Guine-Bissau, Setembro. 1980. SIDA. p.77

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The 19th century saw the end of slaving and its replacement by legitimate trade along the West African coast.¹ Profits for the colonial power were now to be made by purchase of primary commodities required by industrializing economies; and sale of consumer goods to the colonized. Guinea-Bissau entered the era of legitimate trade in a more desultory fashion than her neighbors, but by the first quarter of the century was producing peanuts, palm oil, and some rubber for export. Overthrow of the Portuguese monarchy in 1910 and the establishment of dictatorial rule by 1926 heightened colonial pressures. Taxes were imposed on everything from festivities to funerals. Forced labor was increased. Indigenous manufactures were discouraged to prevent competition from European imports. By the end of the colonial era a Portuguese multinational firm, Companhia uniao fabril, dominated exports and imports. One affiliate, Casa Gouveia, controlled palm oil and peanuts; another, Antonia Silva, dominated sales of consumer goods. By the 1960's villagers were moving into a world economy in which they were buying from a monopoly and selling to a monopsony. When other African nations received their independence in the early 1960's and Guinea Bissau did not this situation became intolerable. There followed 11 years of struggle.

Activities in the forestry sector paralleled those in other sectors of the colonial economy. Commercial timbering removed, and did not replant, valuable tropical species. By the end of colonial era exploitation was at the annual rate of 10,000 m³ of roundwood, which was enough to raise alarms concerning the disappearance of certain of these species.² A forest service was organized whose efforts strengthened forest exports. Research on the main commercial species, bissilon (African mahogany) began as early as the 1920's. Nurseries were introduced at the Circonscription level to diffuse fruit-trees, especially cashews, which had an export potential. During the 1960's work began on promotion of more productive oil palm species.

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1. Imposition of legitimate trade is described in J. Cunningham: "The colonial period in Guinea" Tarikh. 6.4. 1980. pp. 31-47.
 2. Carvalho and Pereira Nunes: op. cit..

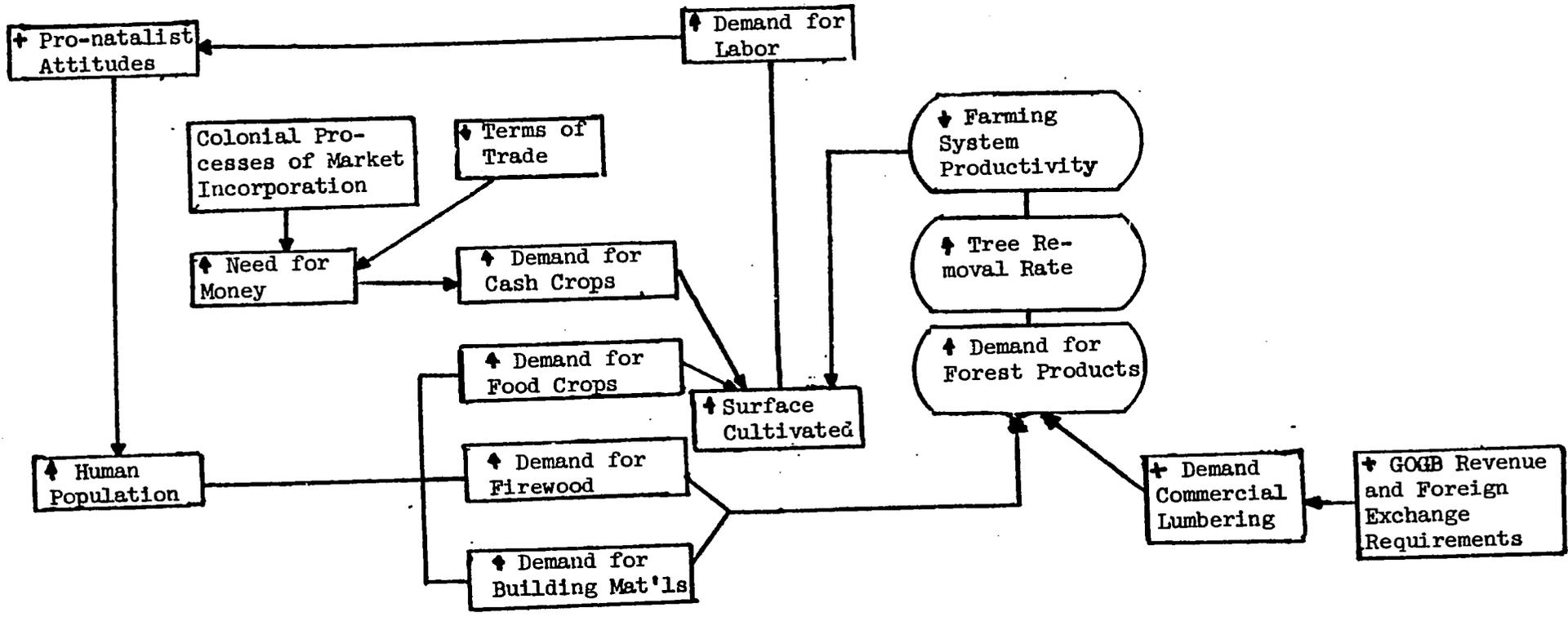
areas of Guinea Bissau are precisely those in which the project proposes to operate (Zone I). One study implies that in one of the higher density areas (61 people/km²) that existing farming system capacity may be hard pressed to satisfy subsistence requirements.¹

Four ethnic groups represent 75% of Guinea Bissau's population (Balanta 31%, Manjak 13%, Fula 19%, and Mandinka 13%). These can be classified in terms of location, farming system, political centralization, and religion into two groups. In the interior, to the east are Fula and Mandinka whose farming systems emphasize rainfed crops on upland soils. Fula place considerable emphasis on cattle-breeding; Mandinka on peanut production. Fula and Mandinka have been stratified, centralized, and Muslim societies. In more coastal areas are largely Senegambian speakers (Mandjak, Balanta, Felupes, Brames, Papels, etc.) who have been egalitarian, uncentralized, non-Islamic societies. Their farming systems have placed greater emphasis on flood-water production in lowland soils.

B. Incorporation into a world market

Guinea-Bissau's history is marked by "cinq siecles de colonization et onze annees de lutttes."² The colonial period may be divided into two periods--that of slaving and that of the legitimate trade.³ In the 1300th century the Mandinka state of Gabu was formed as a secondary semi-autonomous offshoot of the Mali empire in what today is eastern Guinea-Bissau, and began pushing Senegambian speakers towards the sea thus creating the contemporary interior/coastal ethnic distribution. By the 15th century the Portuguese were exploring the West African coast, and had begun slaving. Slaving greatly intensified in the 16th through 18th centuries. Portuguese control during this time was restricted to the coast where it was "precarious" and highly dependent on the goodwill of Gabu.⁴

1. A.M. Hochet: "L'emigration manjaque et ses incidences sociales et economique." Centro de documentacao Amilcar Cabral. Bissau. 1980.
2. SCET. op. cit. p. 3.
3. This classification is that of A. Hopkin in An Economic History of West Africa. Columbia University Press. NY. 1974.
4. R. Lobban: Historical Dictionary of the Republics of Guinea-Bissau and Cape Verde. Scarecrow Press. London. 1979. p. 7.



FARMING SYSTEM INFLUENCES

STATE INFLUENCES

A MODEL OF GUINEA BISSAU FOREST PRODUCT DEMAND

- | | |
|--|---|
| <p>□ Variable influencing forest product demand</p> <p>○ Variable indicating consequences of variables influencing forest product demand</p> | <p>↑ Increasing</p> <p>↓ Decreasing</p> <p>+ Continued high</p> <p>→ Direction of influence</p> |
|--|---|

I. We Have Eaten The Forest: Changes In The Demand For Forest Products¹

This section's argument concerns alterations and their consequences in the demand for forest-products. Demand is analyzed at two levels--that of the farming system and the state. (see Diagram 1 which visually presents relationships between forest-product demand, tree-removal rate, and agricultural productivity.) Emphasis is upon farming systems. Argument develops in the following manner. The first section provides a general overview showing how Guinea-Bissau was incorporated into a world market economy. The second narrows analysis to Zone I, where the project is to be implemented analyzing representative farming systems. It shows how continuing incorporation into market relations intensifies farming-system forest product demand while at the same time maintaining high demand for commercial timbering. The third presents evidence bearing upon impact of deforestation upon agricultural productivity, and argues that an implication of this analysis is that a community forestry strategy is a sine qua non for forest management.

1. Background

A. Population and ethnicity

"Une grande incertitude" dominates Guinea-Bissau's demography.² The 1979 census estimates the population at 777,217 distributed in 124,354 families. Projected crude birth rate was 25.1 which has been suggested to be underestimated.³ Infant mortality is high--250/1000; and one source suggests that perhaps a half of all children born die before the age of five.⁴ Mortality appears unusually elevated due to especially high incidence of major disease including malaria, respiratory infection, gastro-enteritis, and parasitic infection. Nutrition also poses problems. A Swedish financed nutritional study estimated that 40 to 50% of the children in the Farim area are 80% or less of standard weights.⁵ Combination of lowish birth and high death rates contribute to a projected 1.4% rate of natural increase.

Population density (mean 24 people/km²) is already high for a West African nation. The most densely populated regions are those north of Bissau. Sixty percent of the population resides in coastal areas, three fourths of the coastal peoples live north of the Rio Geba (see Project Paper density map). This means that the most densely populated

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1. One villager, when referring to his slash and burn activities, was translated to have said "we eat the forest." His way of expressing slash and burn agriculture's demand for trees seems an appropriate title for this section. Other swidden farmers have conceived of slash and burn in the same way (see G. Condominas: Nous avons mange la foret. Plon. Paris. 1962).
 2. SCET. op.cit. p. 16
 3. R. Faulkingam. West African Fertility. REDSO/WA. Abidjan. 1980.
 4. A.S. Waldsein: "Guinea Bissau at some cross-roads." Unpublished manuscript. Durham, NH. 1980. p. 19.
 5. A.S. Waldstein. Ibid.

problems. The only way the project can achieve comfortable benefit incidences is through completion of the three phase methodology just described.

B. Familial versus Village Interventions

Interviewing made clear that villagers preferred certain interventions at the family and others at the village level. There is at present a distinction between family and communal activities. In general food-production activities are controlled by the family; but there are some in which familial labor is insufficient and in which communal labor parties intervene. Villagers hoped that interventions involving food ~~be introduced at the level of families.~~ This includes all fruit trees. ~~They preferred interventions such as woodlots and firebreaks, to be controlled at the communal level by existing communal labor parties such as age-groups.~~

It is further strongly recommended that initial interventions be of family fruit trees. Guinea Bissau is currently undergoing a food-production crisis. Foremost on everyone's mind is the search to secure enough food. Fruit trees can address this need, and in so doing facilitate project success.

The fact that families are the major units of food-production has implications for agro-forestry interventions. Any association of food-crops and trees which requires more labor than the family can provide will be difficult to implement due to labor constraints. The project in such cases must look for ways of integrating family and communal age-group labor in novel ways.

C. Organization of Participation

The key to organizing participation is paradoxically not to organize it. As noted earlier there are two sets of institutions within local communities which make decisions--those of the state and of resident ethnic groups. These institutions function with legitimacy. The quickest way to destroy participation is to impose new institutions with dubious legitimacy.

An effective tactic for inducing participation is to vest local community decision-making institutions with authority concerning decisions about village forestry interventions. Such tactics are easy to describe in words, but in implementation require patience, negotiating skill, and, above all, knowledge of indigenous decision-making institutions.

IS's are powerful project implementation tools because they oblige projects to consider social acceptability before, not after, costly blunders. A formal IS should guide the introduction of each new innovation. The social anthropologist would formulate IS's only after formal coordination with relevant project staff.

The first phase's goal is identification of possible forestry interventions. Some especially promising interventions could be tried but the focus of activity would be upon identifying technically feasible interventions and developing IS's for them. Approximate time required is one year.

Ineffective performance of Phase I will result in the familiar "putting-the-cart-before-the-horse" syndrome, where attempts to impose innovations of unknown technical & social attractiveness lead to their rejection.

Phase II: Pilot Implementation

During this phase innovations developed in the former phase are implemented by community foresters. The social anthropologist --employing participant observation and intensive interview-- meticulously observes processes associated with acceptance and rejection.

The goal of the second phase is to "try out" IS's under normal conditions. By observing those which succeed and those which experience difficulties, the project will possess detailed information concerning the innovation process. It will then reformulate its tested IS's so that they explicitly describe processes that lead to acceptance and how to achieve them, as well as detailing those which threaten rejection and how to avoid them.

A "Forest Extension Handbook" will be developed during this phase. This document would be organized in terms of different innovations. Each innovation would be discussed in two ways. A first section would describe all technical conditions which must be satisfied for it to be feasible. The second would present the IS known to enhance its social acceptability.

Phase III: Replication

During this phase forest extension agents, trained at the project training center in the Handbook's techniques, begin implementation of the "packages" developed in the two previous phases. They do so in villages assigned to them according to criteria developed in other sections of the project paper.

A goal of the third phase is to develop village forestry interventions which can be regularly implemented by forest service personnel. Key to successful implementation in the third phase is successful completion of the first two phases. Should all three phases be successfully completed Guinea Bissau will have developed a capacity to utilize village forestry as a strategy for confronting its forest management

III. ENCOURAGING VILLAGE PARTICIPATION

Tactics for implementing a village forestry strategy are presented below. These consist in guidelines concerning techniques for intervening at the village and forest service levels. Ways of employing monitoring and evaluation to replicate socially acceptable and technically feasible innovations are equally discussed.

1. How to Intervene in Villages

Villagers accept innovation if these are in their interest. The following sections describe how project activities can generate such interests.

A. Village Forestry

Village forestry is a new specialty about which there is little experience. Lacking are intervention "packages"--types of innovation--which are technically feasible and socially acceptable. A first order of business, then, is a methodology for developing these interventions.

The following constitutes such a methodology. It is recommended that village forestry activities occur in three phases:

Phase I: Inventory and Preliminary Interventions

Community foresters, during this phase, in concert with the social anthropologist, select three pilot villages. These should be in high density areas of representative farming systems (e.g. of Balanta, Manjak, and Mandinka). Community foresters would analyze the village micro-habitats to identify, given varying natural resource bases, what forestry interventions are technically attractive.

What is technically possible is not necessarily socially acceptable. Research shows that the overwhelming cause of project failure is not their technical feasibility but their social acceptability. ^{1/} It is for this reason that the professional skills of a social anthropologist are needed. He/she would identify economic, social, and cultural factors affecting farm and forest utilization. This information would serve as a basis for formulating an initial "intervention scheme"(IS) for each technically feasible innovation. These would consist of plans detailing how to introduce the innovation so:

- 1.. it is perceived by villagers to be in their interest;
2. it "fits" with other aspects of their culture;
3. it does not conflict with existing economic activities;
4. it is managed by villagers' own social institutions.

^{1/} cf. C.M. Arensberg & A. Nelhoff: Introducing Social Change. Aldine. Chicago. 1975.

6. Equity

There has been substantial criticism of some agricultural innovations (e.g. the Green Revolution) as intensifying intra-societal inequities. This is an unlikely consequence of the proposed project. Key casual factors associated with the Green Revolution inequities are costs and credit to meet those costs. Green Revolution agricultural inputs are expensive. Usually only more comfortable farmers have been able to afford these inputs, and frequently it has been believed that only they make decent credit risks. Under such conditions the comfortable become more so, while the poor become at least relatively poorer.

Such inequities will not be associated with the project, if proposed innovations are available inexpensively or at no cost. There will be no targeting of advantaged population segments. Rather, the selection of pilot-villages with average welfare-levels in typical farming systems, should help the project target representative households of average conditions, which are by any standards are those of poor rural peoples.

7. Distribution of Benefits to Women

Women could be major project beneficiaries given existing divisions-of-labor. It is women, with children, who presently do much of the work associated with fruit-trees. It is women who collect firewood. Many women make and sell charcoal. Women use wood to boil salt-water to make salt. However, a problem with many projects has been that benefits have been distributed to males. The final section suggests ways of avoiding such a distribution.

8. Rosegardens and Reality

Experienced development managers complain that project design documents occasionally are pervaded by a sense of unreality promising easily implemented, mega-benefits to all --male and female, living and dead, etc. and etc.-- when it is clear that such rosegardens are illusory. Guinea Bissau's Zone 1 Forestry Project can be socially sound. Implementation will be difficult requiring adaptable and patient project staff. There are no indications that the project will be any more difficult than funded projects in similar environments. There are no real alternatives to this project in Guinea Bissau. Its absence means quickened progress to an environmental debacle. I believe that the project can be socially sounder than many existing projects, which attempt to achieve social soundness by pulling it like a rabbit from a magician's hat. The following section outlines implementation guidelines which if achieved raise to above average the chances for a socially sound project.

5. Spread Effects & Benefit Incidence

Innovation diffusion rates are a function of many factors, important among which are (1) satisfaction of perceived need, (2) social and cultural 'fit', and (3) availability.

Fruit trees are already a perceived need among Guineans. They already 'fit' with existing agricultural cycles. However, diffusion is constrained by availability, which depends upon the target population's ability to acquire the innovation at a cost within their means. It is precisely this constraint which the project will relax.

The situation is more problematic for forestry interventions which do not directly generate food or income. Consider, for example, the case of firewood lots. Male villagers when questioned about the desirability of growing firewood regarded this as yet another ignorant question. The attitude seemed to be :we grow things to eat, not to burn. Women, who have to gather firewood, were more sensitive to it becoming scarce, but responses were far less emphatic than those received in more arid zones. Firewood is not in very short-supply, there is no urgent sense that people should devote labor to growing what is naturally abundant.

That interventions do not conform to the preceding three conditions does not invariably doom them to rejection. Potatoes --a glory of English cuisine-- were believed poisonous when first discovered. They were rapidly accepted, however, once they were discovered to satisfy perceived nutritional needs more cheaply than many existing crops, and not to kill off consumers. For innovations in which there is no 'fit' & perceived need, the key implementation task is to create these conditions. The ability to do so depends upon knowledge of the target population culture and society. For example, the argument can be made among Mande and Fula populations that it is appropriate for men to cultivate woodlots on upland soils, because it 'fits' with their existing division of labor which has men working upland and women lowland soils. Many projects lack the technical expertise to formulate interventions creating perceived need and 'fit'. The present project with its community foresters and social anthropologist has the professional capacity to be culturally sensitive.

Benefit incidence is usefully conceived as the number of beneficiaries per unit of money expended to achieve those benefits. Benefit incidence importantly depends upon innovation diffusion rate. What distinguishes the present project from others is that it institutionalizes the conditions for its own replication. For this and other reasons indicated in the preceding paragraphs, optimism is possible concerning spread effects.

single young man, which handled GOGB affairs within the village. This simple tabanca thus consisted of 25 patrilineages, each with its own interests and factional alignments, about 75 households, each with their interests and factional proclivities, and at least two authority structures.

Evidence from other development projects shows that to be ignorant of such social organizational complexities raises implementation barriers. For example, perhaps lineages 1 through 4 are in alliance with 19 and 20 against the others, possibly over a dispute originating long in the past. Should this be the case, a project that concentrates attention in lineages 1&4 may win acceptance among lineages 19 and 20, but in so doing generate factional dispute and rejection among the remaining lineages. What is being illustrated is that different groups in a "village", like the one described above, have different interests. Project implementation can be held hostage to these interests. It should be a responsibility or the sociologist to understand existing social organizational interests so that they may be used to stimulate rather than retard intervention acceptance.

4. Participation

Those projects lacking in participation face grave implementation difficulties. Available evidence suggests this to be even more significant for forestry projects because the intervention is flammable and fires are common. Forest projects low in participation seem to experience more difficulties with uncontrolled burning.

A positive sign for the present project is that at least some members of Guinea Bissau's forest service are sensitive to the need for participation. One middle-level official reported that during last year certain plantings had been burnt because there was no village participation and concluded by stressing its need. Such middle-level officials may be sensitive to these issues because GOGB encourages participation, for as then Planning Minister, Vasco Cabral, stated: "participation of the rural population is sought at various levels." ^{1/}

The proposed project has the means to stimulate participation. A key is to allow existing legitimate local community organizations make decisions concerning interventions. Tactics suggesting how to activate such institutions are included in the final section.

^{1/} This quotation is from Dennis Goulet: "Looking at Guinea Bissau: A new nation's development strategy." ODC: Washington. 1980. p.20.

B. Hierarchy of Perceived Needs, Labor Conflicts & Marketing

Part of the interviewing focused upon villagers' perceived needs by asking them to construct a hierarchy of what they most wanted assistance--with--respondents choosing from either farming, fruit trees, or woodlots. Results were similar to those obtained during interviewing for social analysis of the Gambia Reforestation Project. Everywhere farmers wanted first assistance with farming. With the perceived need for fruit trees a distant second, and the desirability of woodlots not clearly seen. The interviews in which the need for woodlots was ranked higher than that for fruit trees were exceptions which proved the rule. Interviewees wanted woodlots to reconstitute forest cover which was believed associated with more abundant rainfall, and inadequate rainfall has plagued the last few agricultural seasons. Thus, woodlots were desirable only in so far as they were a form of "irrigation". What such results imply is that any intervention threatening farming runs a high rejection probability.

Examination of the agricultural calendars included in Appendix 1 and their comparison with the representative forestry work schedules suggested in Annex C indicate that there are likely to be labor conflicts between farming and project interventions as most clearing will occur during the dry season when much available labor has seasonally migrated to Senegal, and most planting must occur during the height of farming activities during the rainy season. Ways of mitigating these conflicts are suggested in the third section.

The project faces implementation barriers from the transportation and marketing sectors. Guinea Bissau's performance in these areas has recently lagged behind other W. African nations which could threaten procurement of project inputs and their distribution to the target population.

Should Guinea Bissau be able to improve performance in these sectors they can act as stimulants to intervention acceptance. With transportation constraints relaxed the market for forest products (fruits, charcoal, etc.) is greater so that target population income opportunities are enhanced. These opportunities could operate as additional incentives to innovation acceptance.

C. Social Organization

There is a tendency to over-simplify the complexity of Guinea Bissau's social organization. The countryside is seen as divided into villages (tabanca) which tend to be viewed as internally undifferentiated, which is simply not the case for most ethnic groups. Rather, the village is an administrative unit limited to state activities in most societies. Consider the case of one tabanca studied. The group resident in the tabanca was a patrilineal composed of approximately 25 minor patrilineages. Each patrilineage was segmented into a number of extended or nuclear family households. Each patrilineage possessed an elder who regulated, largely through consensus, many of its affairs. As a group the elders further managed many of the decisions of the patrilineage. Superimposed on this decision-making structure was a comite de base, reported to consist of a

3. Socio-Cultural Feasibility

Cultural, economic, and social factors relevant to the feasibility of the proposed project are discussed below.

A. Cultural

By "cultural" is meant a population's values and beliefs --its ideology in the broadest sense. Concerning one project in Guinea Bissau it is reported: "The project has moved slowly in part due to the variety of cultural factors" 1/ Cultural factors in any project are ignored at the risk of project success.

Not infrequently African societies make a distinction between "village" and "bush" The former is a place of social intercourse, and it is good to be there. The latter is a place of malevolent forces, and it is dangerous to be there. In discussion with villagers I found no such forest ideology that is likely to effect project feasibility. Views seemed to be that the forest is a place to be used to satisfy human needs; that it may be feared, especially at night when dangerous forces are about. But there was among none of the interviewees any indication of a powerful ideology tabooing forest use.

A cultural issue of greater potential significance deals with the existence of a subsistence ethic. Forest products are necessary items in farming, fishing, collecting, domestic, construction esthetic, magical, ritual, and medicinal activities. Zone I villagers' subsistence levels are a function of forest access. Recent studies suggest that peasant societies possess certain commonalities with regard to resource access. 2/ Peasant ideology may accept as legitimate some restrictive resource access so long as subsistence is not threatened. Antagonistic responses are associated with threats to subsistence, because these are perceived to violate the "subsistence ethic" and are hence immoral and illegitimate. Research among Zone I's peoples was far too cursory to confirm the existence of such an ethic. There were, however, indications of its presence. The project may participate in decisions vis-a-vis forest access. Preceding comments should make clear that such decisions have feasibility implications.

A final observation, cultural belief systems, if they are understood, can facilitate the acceptance of innovation. For example, one difficulty in controlling burning is discovering who is setting fires. Among Fula populations there is a ritual, involving colanuts and swearing on the koran, which motivates individuals submitting to it to tell the truth for fear of supernatural retribution. Such a ritual could have utility in helping to control Fula burning.

1/ Duncan et. al. op.cit. p.41

2/ A.N. Scott: The Moral Economy of the Peasant (Yale University Press, New Haven, 1976) brilliantly synthesizes these findings.

TABLE B-9: Cost/Benefit Ratios of Transplanted Rice and Mangos

Crop	(A) Unit Price	(B) Mean Yield	(C) Amount Produced	(D) Gross Value D=ABC	(E) Input Costs	(F) Net Value	(G) Undiscounted Benefit Ratio G=E/E
Transp. Rice	18 pesos/ Kg.	1000 kg/ ha.	1 ha.	18000 pesos	5000 pesos	13000 pesos	2.6
Mangos	20 pesos/ Kg.	50 mango / trees	55 trees	15000 pesos	1000 pesos	14000 pesos	14

- Sources:
- Rice yield and input costs are derived from those reported for the Casamance, Senegal.
 - Mango yield and input costs were those of the PP team's experts.

TABLE B-8: Guinea Bissau's Food Self-Sufficiency (1977) If Destroyed Productive Capacity were in Production

	(1) Potential Production (tons)	(2) Disposable Production (tons)	(3) Kg/capita/ Year	(4) %Minimal Nutritional need exceeded	(5) Amount Imported	(6) Additional Production
Rice	102000	87720	112.9		13082 T	17000T
Cereals	74000	63984	82.3		6505	12000
Total			195.2	8.5%		

Sources: Disposable production is production --seeds and storage losses. The coefficient of loss is from SCET op.cit. p.38

The minimal annual per capita nutritional requirement estimate is that of FAO and is 180 kg.

2. Benefits to Villagers

Four types of intervention can directly benefit villagers:

1. Woodlots could provide fuel and building materials more productively at lower labor costs because introduced species would mature more quickly at closer distances to villages so that a given area would produce more that could be harvested with less effort;
2. Agro-forestry schemes, perhaps the most interesting of the different types of interventions could lead to more varied, and more nutritious production under conditions of higher productivity. Acacia albida/crop associations, already practiced around Bula, return nitrogen to the soil preventing declining yields. Pineapple/palm tree associations, possible in Cacheu, would permit the same land surface, presently yielding only palm products, to produce an additional cash-crop -- thus at the same time raising productivity and adding a novel income opportunity;
3. Fire-control schemes through preservation of forest cover and watersheds might potentially provide more protein through increased hunting off-takes because of an enhanced forest habitat;
4. Small-scale forest industries, such as charcoal & furniture making cash increase income-generating opportunities.

The interventions in agro-forestry may possibly generate more attractive cost/benefit ratios than those resulting from investments in staples. Innovations in rice and upland cereals in similar habitats to those in Zone I have proven costly to farmers. Inputs such as fertilizer, improved seed, pesticides, herbicides, and animal traction equipment are expensive. ^{1/} With marketing conditions similar to those prevailing in Guinea Bissau, it is quite possible that production levels could be compromised by inadequately supplied inputs. Production could be further reduced by skimping on the application of expensive inputs. Fruit-trees, on the other hand require fewer agricultural inputs and so have lower production costs. Yet per unit value of fruit is high. A single large mango sold for 20 pesos while a kilo of rice sold for 18 pesos in June 1981. Table B-9 compares representative undiscounted cost and benefit ratios for one hectare of Casamance lowland rice and fifteen mango trees under conditions where rice production is unaffected by rainfall or marketing constraints. Under such conditions, it shows that for one peso invested the returns are 2.6 pesos of net value for rice as against 14 pesos for mangos.

^{1/} For example, farmers in the Department of Sedhiou 30 kilometers north of Farim have been underutilizing inputs because of their costs which have led a number to fall into debt. SOMIVAC: Rapport au Niveau du du Projet Rural et du Department de Sedhiou. MDR. Senegal. 1980.

**TABLE B-7: Productive Capacity Losses: Guinea Bissau's Actual
And Lost Crop Production (1977)**

Crop	<u>Actually Produced</u>		<u>Could Have Been Produced</u>	
	(1) amount (in tons)	(2) value (millions of pesos)	(1) amount	(2) value
Rice	85000	425	102000	510
Cereals	62000	217	74400	260
Peanuts	41000	205	49200	246
Tubers	30000	45	36000	54
Palm oils	150000	198	180000	238
Other	---	60	---	72
Total	291500	1150	441600	1380

SOURCE: Columns 1 & 2: Duncan et. al. Op.cit. p.35
Columns 3 & 4: Multiply the values found in columns 1 & 2 by .2.

This appears conservative because:

1. Twenty years ago, 20% of Guinea Bissau's land was declared deeply affected by soil deterioration;

2. Forest experts familiar with Guinea Bissau's ecosystems declare that most erosion provoking this deterioration results from farming practices;

3. The preceding section suggested that farming system demand on forest products should have intensified over the last 20 years.

Table B-7 indicates lost productive capacity. Columns 1 & 2 describe the amount and value of actual production. Columns 3 & 4 report what could have been produced and had bowallized land been arable and in production. The lost productive capacity is striking. Table B-8 examines the implications of the amounts of lost productive capacity for food self-sufficiency. Column 1 shows what potential price & cereal production might have been in 1977 by summing actual production and the amount of production lost to bowallization. Columns 3 & 4 examine the implications for individual consumption levels. Per capita potential disposable product would have been in 1977 8.5% above FAO minimum annual nutritional requirements. In 1977 Guinea Bissau imported foodstuffs. The amounts of foodstuff that could have been produced had bowallization not occurred comfortably exceeded the quantities imported (see columns 5 & 6).

Lost productive capacity due to forest-product demand probably exceeds amounts required for food self-sufficiency. Guinea Bissau's forestry project, thus, has direct production implications. It is a strategy for maintaining productive capacity of the country's major industry. With implementation of such a strategy Guinea Bissau may achieve its agricultural goals, without it development becomes somewhat chimerical.

II. SOCIAL SOUNDNESS

The project consists of eight components: establishment of village forestry interventions, creation of a national training center, training of forest agents, reforestation, development of nurseries, forest management planning, legislation, and research. The project strategy is to have the activities of the last seven components complement and strengthen those of the first component. Project social soundness is evaluated in terms of whether it can deliver economic benefits on the national and village levels; whether it is socio-culturally feasible; will be high in participation and spread effects; and be equitable, especially with regard to the distribution of benefits to women.

1. National Level Project Benefits

There is a tendency to rigidly sectoralize donor activities. A forestry project is in the environmental and a food-production project in the agricultural sector and never the twain shall meet. There is further proclivity to emphasize as food-production interventions only those which add new productive capacity and to ignore those which maintain existing capacities.

GOGB's development strategy as formulated in the IIIrd PAIGC Congress emphasizes agriculture:

"The first goal of economic development is to get the peasants of Guinea Bissau to produce enough rice to feed themselves and the urban population of the country;" and then as production increases, it is anticipated that:

"The initial surplus needed to finance the national development and industrialization of Guinea Bissau will thus have to come from the work of the peasants." 1/

It is a central observation of this analysis that agriculture and forestry are elements of a common land-utilization system, and that therefore success in one is a condition for success in the other. The previous section documented negative agricultural consequences of farming system forest-product demand, presenting evidence that these consequences have been extensive.

Economic effect can be estimated by calculating the amount and value of productive capacity lost to over-utilization of forests, and considering the significance of these losses in terms of the GOGB's agricultural goals. Tables B-7 and B-8 report results of such analyses. Table B-7 compares what was actually produced in 1977 with what could have been produced had soil deterioration not occurred. The coefficient of lost agricultural value and quantity is set at .2.

1/LRudebeck: "Development and class struggle," Monthly Review 30.8. 1979. p.22

D. Incentives

Two different--familial and communal--incentive situations should be distinguished. For communal woodlots or firebreaks, etc., incentives will be required. Because seasonal migration is high during the dry season, those interventions which operate during this time should expect a rate of remuneration which at least equals the opportunity cost of not migrating. Prevailing daily wage rates in Zone I are approximately 50 pesos plus food for a full day's work. Respondents, perhaps because it is presently a time of scarcity, eagerly welcomed payment in foodstuffs, saying that this is the manner in which non-familial, traditional labor is remunerated.

For trees owned within families there is less need for incentives. Fruit trees especially should require no incentives. Villagers perceptively observed that they would have great difficulty keeping any trees alive unless they could water them. They therefore requested wells. Tree-planting campaigns might be coordinated with well construction programs. The ability to more easily acquire drinking water would be an incentive to compensate for the labor involved in maintaining trees.

E. Timing of Village Forestry Interventions

Ways of mitigating labor conflicts between agricultural and project activities are threefold:

1. Clearing and planting should be scheduled for slack periods in the agricultural cycle. These cannot be known simply by looking them up in some convenient reference. Labor requirements vary with the micro-habitat of the village and unpredictable events like rainfall and pest infestations. Generally, there are two slack periods during which to try and schedule activities. One following harvesting and before clearing of the next year's fields. The other is much more restricted in time and occurs between planting and before weeding.

2. Incentives must be provided for communal interventions. The agricultural season makes intense nutritional demands on villagers at times when last year's harvest may well be consumed. Under such conditions individuals simply cannot work for nothing.

3. Appropriate work groups must be organized. Forestry interventions can take considerable labor. Age-groups are the most likely institution available to perform large amounts of labor within narrow time frames.

2. Concerning the Forestry Service

Recommendations proposed below will allow the Forestry Service to implement a village forestry strategy.

A. Training and Specialization

Two considerations are important for the project training component. The first pertains to role-conflict. Consider the case of a forest guard who one evening stops a village's hunt, and who has to the following morning conduct a demonstration of grafting. Forest guards expressed concern that in this and in similar situations their houses

would be burnt. They requested guns to protect themselves against hunters' revenge. The situation just described is one of role conflict--the forest guard is both cop and companion. Such conflict contrains successful role performance.

To avoid role-conflict it is recommended that police and extension functions be differentiated. It is suggested that two training curricula be developed--one appropriate to forest guards and the other to extension activities. Every cohort of students would follow a common curriculum for the majority of the training, but would be divided in the final two months into two streams concentrating on the two specialities.

It is further recommended that forest agents work either as forest guards or extension agents, but that they are never required to perform both functions at the same time.

A second consideration concerns what skills the agents are to acquire. Instruction and curriculum developed at the training center should seek to provide technical expertise and skills in being change agents. The technical training component should strike a balance between providing professional expertise and practicality. Perhaps the most productive training which can occur is that the skills students acquire are ones which permit them to develop other skills on their own.

The sociological training component should teach students to be effective change agents. Students should be taught to be ombudspersons articulating between villagers and technical services. They should learn to:

1. assist villagers to make decisions about their forestry needs using their own decision making institutions;
2. seek from technical services technical solutions to villagers' forestry problems;
3. assist villagers to implement these solutions.

A properly trained extension agent is a catalyst using villagers' initiative to help improve their welfare.

B. Forest management planning, legislation, and research

A contention of this paper has been that forestry and agriculture are part of the same land-utilization system that provides for Guineans most elemental needs. From a policy perspective this means that forest management and planning can effect farming and the satisfaction of basic human needs. Such planning and legislation requires very considerable investigation into contemporary land-utilization modes because of the paucity of available data.

Of central importance is forest tenure. Information concerning forest tenure comes from two sources--members of the forest service and villagers.¹ As far as the Forest Service is concerned the situation is clear: forests are the patrimony of the state. Villagers may use some of their products so long as they do not sell them, but properly their value belongs to the state. This conception contrasts with villagers' views who perceive forest as part and parcel of land tenure. They believe different, often patrilineally based, groups corporately exercise ownership rights in territories that were appropriated when the group's ancestors first occupied them. That ownership is corporate, in no way diminishes the fact of ownership. Natural forests are owned in so far as they are part of some owning group's territory. There may be some land that is unoccupied, but this is likely to be rather little in a country as densely populated as Guinea Bissau.² When forest products are abundant and possess little market value there is a tendency to treat them as if they were free goods. However, when scarcity and/or market value increase ownership claims are remembered.

Two forest systems, thus, in this interpretation, co-exist, each claiming forest rights. What the state perceives as unoccupied and underutilized forest, and is tempted to utilize to help relax financial constraints is to villagers either future fields, fallow fields, or a natural resource contributing to literally hundreds of products used in everyday life.

In a country as densely populated as Guinea Bissau, if large tracts of land are set aside for non-village forest utilization, then this subtracts from the amount of land presently (barely) meeting villagers subsistence requirements. It is strongly recommended that applied policy research be conducted to devise forest legislation which aids villagers' manage forest resources. Such a policy will contribute to stable development.

3. Project Replication

There is a tendency to view monitoring and evaluations systems as project "report cards". This is unfortunate because professional evaluation and monitoring systems are one of the most powerful implementation tools at the manager's disposal. Justification of monitoring and evaluation systems is simply--you cannot replicate what you have done if you don't know what you did.

¹ Published literature concerning Guinea Bissau's land and forest tenure systems is scarce and scanty. Information can be found in: A.A.P. Carreira: "Alguns aspectos do regime juridico da propriedade imobiliaria des Manjocos". Buletin Cultural da Guine Portuguesa. I,4: 1946. A.A. da Silva: "Usos e costumes juridicos dos Mandingas". Buletin Cultural da Guine Portuguesa. XXII:90-91.1968 and XXIV,93. 1969. ----- Usos e Costumes juridicos dos Fulas da Guine-Bissau. D.E.D.I.L.D. Bissau. 3rd edition. 1980.

² Tenure differs for planted trees. These normally belong to the planter.

A. Sociological Monitoring

The following guidelines should be respected for the sociological monitoring conducted while creating and evaluating IS's.

1. monitoring should be considered a normal part of the social anthropologist's function;
2. the project should be treated as a quasi-experiment whose dependent variables are innovation acceptance and rejection;
3. the exact nature of the sociological research design should be left to the project anthropologist, but the design must seek to identify those processes resulting in innovation rejection and acceptance;
4. intensive interview and participant observation data collection techniques should be employed as extensively as possible to observe innovation processes;
5. the research design devised by the anthropologist must meet with the acceptance of a senior social anthropologist with development anthropology experience in West Africa prior to its utilization;
6. results of the data analysis performed by the anthropologist should be in a simple step-by-step form explaining IS's associated with innovation acceptance, and how to avoid IS's known to cause rejection.

B. Evaluation

Standard evaluation procedures should be implemented once per year by non-project professionals. It is desirable that the evaluation team include a senior management specialist and a social anthropologist with extensive West African experience because both managerial and monitoring functions are especially vital to project success. It might be useful to combine evaluation the present project with USAID's Gambia Reforestation Project. Both projects will be implemented under roughly similar ecological conditions, but with different implementation styles which could add comparative insights into the strengths and weaknesses of more and less participation oriented approaches. Evaluation results should guide project activities and financing so that "rolling design" occurs allowing the project flexibility to pursue unexpected opportunities.

4. Measures to Equitably Distribute Benefits to Women

Three procedures should be used to increase the likelihood that women equitably benefit from the project. First, at least some of the forest extension agents should be women. Second, the "forest extension handbook" and training school curriculum should develop ways of including women both as participants in and beneficiaries of forestry interventions. Finally, a percentage of benefits should be directly distributed to women. This is especially true of fruit-trees. Existing divisions-of labor allocate considerable labor involving forest-products to women. Thus, women are presently informed about forest-product production and are interested in its improvement. By actively encouraging womens' participation, the project is insuring that persons who are more likely to be motivated to change are given the chance to change persons are targets of innovation

Appendix 1: Aspects of Balanta and Mandinka Farming-Systems¹

Balanta

(Data is derived from studies in the village of Tchangué Bedeta.)

A) Agricultural Products

Bolanha rice, millet, sorghum, bacil maize, "fundo", ground-nuts, cashew, sweet potatoes, yams, beans, manfafe, mandioca, tifa.

Animals

Cattle, goats, pigs, sheep, poultry.

Fishing

Men set nets from canoes. Women use smaller roundnets. They make their own nets from materials they buy.

Handicrafts

The men cut bolanha straw and make mats from it that are used for roofing etc. They also do some basketry. The women make pottery.

1

Information in this section is taken directly from the English-translation of S. Bergholtz zt.al. op.cit. 1980

B. The Agricultural Cycle

TCHANQUE BEDETA

Chart showing the basic division of labour between men and women within the agricultural and horticultural crops and related enterprises, and the months when the main activities take place.

Crops	Other	Soil	Sowing/	Sowing in	Trans-	Weeding	Harvest	Tools Used	
Local Name	English Name	Enterprises	Planting	Nursery	planting				
<u>Women</u>									
Fajiao	Beans	-	Beginning of rains	Beginning of June	-	-	Middle June	During December	Hand hoe. (Arado oumprido)
Manfefe		-	"	"	-	-	-	December	"
Tifa		-	"	Beginning of July	-	-	"	"	"
Inhase		-	"	"	-	-	"	"	"
Tomate	Tomato	-	"	Rain period	-	-	-	Variable	"
Piri-piri		-	"	"	-	-	"	"	"
Qabaca		-	"	"	-	-	-	January/ February	"
<u>Men</u>									
Milho cavalo	Sorghum	-	Beginning of rains	Beginning of June	-	-	Middle June	September- mid-October	Hand hoe. (Arado oumprido)
Milho preto	Millet	-	"	"	-	-	"	"	"
Milho bacil	Maise	-	"	15th June, beginning of July	-	-	-	August/ September	"
Fundo		-	"	Beginning of June	-	-	Middle July	End of August	"
Mandioka, tipo one	Cassava, type 1	-	"	"	-	-	-	December- January - February	"
Mandioka, tipo two	Cassava, type 2	-	"	Beginning of July	-	-	-	December	"

Crops	Other	Soil	Sowing/	Sowing in	Trans-	Weeding	Harvest	Tools Used	
Local Name	English Name	Enterprises	Preparation	Planting	Nursery	planting			
Mandioka, tipo three	Cassava, type 3	-	Beginning of rains	October	-	-	-	August/ September of following year	Hand hoe. (Arado cumprido)
Mancarra	Ground-nuts	-	"	Middle of July	-	-	Middle of August	Middle of December	
Arroz Bolanha	Rice, paddy	-	Nursery - 15 of July Bolanha - August	-	Middle of July	15th August	Middle of September	20 December	Small sickle
Batata doce	Sweet potato	-	Beginning of rains	September	-	-	-	Middle-end of December	Hand hoe
Horticultural crops		-	"	Rain period	-	-	-	Variable	"
Arvores frutiferas	Fruit trees	-	-	"	-	-	-	"	-
-	-	Caju	-	-	-	-	-	Variable Dry period	-

C. Fields of Mixed Crops

- a) Inhame is grown with cassava, type 1 and 2, together with tifa and manfafa in the same field. This is also planted with cassava, type 3, at the time of harvesting the inhame.
- b) Fundo may be mixed with beans. The fundo being in much quantity than the beans.
- c) Millet may also be sown in the same field as sorghum.

Rotations

Rotation A 1st year; Fundo with beans
 2nd year Millet with, or without, sorghum
 3rd year: Fundo with beans

No fallow. This rotation usually follows a pattern of alternation using two fields, vis:

	<u>Field 1</u>	<u>Field 2</u>
	1st year: Millet/sorghum	Fundo/beans
	2nd year: Fundo/beans	Millet/sorghum
Rotation B	Rotation within fields every year	

	<u>Field 1</u>	<u>Field 2</u>
	1st year: Ground-nuts	Fallow
	2nd year: Fallow	Ground-Nuts
Rotation C	Sweet potatoes grown in the same field as maize.	

Rotation D Inhame, tifa and manfafa grown in a new area every year.

	<u>Field 1</u>	<u>Field 2</u>
	1st year: Inhame/tifa Manfafa	Maize
	2nd year: Maize	Inhame/tifa/manfafa

D. Division of Labour According to Sex

Generally the responsibility for different crops is divided between men and women, although the actual work may cross these boundaries to some extent.

The women are responsible for growing yams, manfafa, tifa, beans.

The other crops are grown by men. The women are solely responsible for the work on their own crops, and in addition have the following tasks in the mens crops: transplantation of rice from nursery to bolanha. Helping with weeding in the bolanha and transporting the crop home after harvest. They clean and shell all crops.

The women are responsible for horticulture: tomatoes, piri piri, calabass. Women milk the cows and tend goats, sheep, pigs and chicken. Women make wine from cashew and also roast cashew-nuts. They also extract salt from bolanha soil and collect various wild fruits and plants.

The men cultivate and prepare all the fields, including those planted by the women. They cultivate their own crops with some help from the women (see above). The men are responsible for the fruit-growing: Cashew, lemon, banana and mango.

The men tend the cattle (see age-group system). In addition they tend the goats, sheep, pigs and chickens. The cows are the only animals regularly put to pasture.

In addition to the above, the age-group system is the basic method for division of work and recruitment of labour.

Mandinka

(Data is derived from studies in the village of Bricama.)

A. Agricultural Products

Bolanha, lala and pam pam rice, millet, sorghum, maize, ground nuts, beans, mandioca, "fundo", sweet potatoes, jacalo, tifa, yams, manfafe, jagatu, tomatoes, piri piri, cabasse, onions, papaya, cashew, mangoes and oranges.

Animal products

Cattle, goat, sheep and chicken.

Other economic activities

Gathering of wild yams and palm fruit. Extraction of palm oil for consumption and sale, coconuts and hunting gazelles, wild goats, deer etc. The hides are treated for sale, and the meat eaten. They fish and catch crabs for consumption and sale. They extract salt. The men make reed mats, tool-handles. The women make pottery.

The village also has 12 professional craftsmen:

4 tailors, 2 shoemakers and 6 blacksmiths.

5 B. The Agricultural Cycle

BRICAMA

Chart showing the basic division of labour between men and women within the agricultural and horticultural crops and related enterprises, and the months when the main activities take place.

Crops	Other	Soil	Sowing/	Sowing in	Trans-	Weeding	Harvest	Tools Used
Local Name	English Name	Enterprises	Preparation	Planting	Nursery	planting		
<u>Women</u>								
Arroz, Paa-Paa	Rice, Inland	-	May/June	Beginning of rain - mid June	-	-	August	August/September Hand hoe (euzada cumprida)
Arroz, Lala	Rice, River paddy	-	"	"	-	-	"	September Sickle. Hand hoe
Arroz, Bolanha	Rice, Salt paddy	-	June	-	Beginning of July	Beginning of August	-	December "
Cebola	Onion	-	"	September	-	-	-	November/December "
<u>Men</u>								
Milho preto	Millet	-	"	Beginning of rains - mid June	-	-	10 days after sowing	September/October Hand hoe (arada curto)
Milho bacil (2 tipos)	Maize (2 types)	-	"	"	-	-	"	August/September (binderão)
Milho bacil (1 tipo)	Maize (1 type)	-	"	"	-	-	"	September "
Milho cavalo	Sorghum	-	"	"	-	-	"	September/October "
Mancarra	Ground-nuts	-	"	"	-	-	Varies	November/December "
Mandioka (3 tipos)	Cassava (3 types)	-	"	"	-	-	20 days after sowing	Mid January "
Fundo 1st tipo		-	"	"	-	-	July/August	End of August/September "

Crops	Other	Soil	Sowing/	Sowing in	Trans-	Weeding	Harvest	Tools Used	
Local Name	English Name	Enterprises	Preparation	Planting	Nursery	planting			
Fundo 2nd tipo		-	June	Beginning of rains - mid June	-	-	July/August	Mid-September	(Binderão)
Jaçalô		-	"	"	-	-	10 days after sowing	November/December	"
Tifa/Inhame		-	"	"	-	-		Mid January	"
Manfate		-	"	"	-	-	30 days after sowing	"	"
Piri-piri		-	"	"	-	2nd month of rains	10 days after transplanting	"	"
Caudja, 1st tipo		-	"	"	-	-	10 days after sowing	Mid August	"
Caudja, 2nd tipo		-	"	"	-	-	"	Mid September	"
Obaca		-	"	"	-	-		Mid January	Hand hoe
Jagatú		-	"	Middle of July/August	-	20 days after sowing		September/October	"
Batata doce	Sweet potato	-	"	Middle of August/September	-	-		November/December	"
Feijão, 3 tipos	Beans, 3 types	-	"	3rd month of rains	-	-	1 week after sowing	3-4 months after sowing	"
Tomate	Tomato	-	"	2nd month of rains	-	3rd month of rains	10 days after transplanting	1-2 months after transplanting	"
-	-	Ohabéu	-	-	-	-	-	Dry period	-
Arvores frutíferas	Fruit trees	-	-	Rain period	-	-	-	Varies	-

C. Fields of Mixed Crops

The following crops are grown together, in the same field:

Beans with jagalo
 Beans with millet
 Beans with ground-nuts
 Beans with cassava

Ground-nuts with sorghum
 Ground-nuts with candja
 Ground-nuts with cassava
 Ground-nuts with jagatu
 Ground-nuts with millet - in separate rows
 Ground-nuts with cabasse

Maize with cassava
 Maize with millet

Agricultural and horticultural crops are grown in two relatively distinct areas - those nearby the houses, and those grown further away (in the "Mato"). Near the house are cotton, jagatu, candja, inhamé and cassava.

Further away are ground-nuts, millet, cabasse (gourds) beans, maize sorghum, fundo and jagalo.

Candja and jagatu are grown separately in a field, while candja is found alongside baga-baga.

Rotations

Paddy rice is cultivated every year in the same fields (bolanhas) except where salt water from the river Farim has now made rice growing impossible. Inland paddy-rice (lala) is grown every year in the same paddy fields.

Rotation A (nearby the house)

1st year: Beans + millet. (This combination is NOT repeat
 2nd year: Ground-nuts + millet
 3rd year: Millet + maize
 4th year: Ground-nuts + millet
 5th year: Ground-nuts + sorghum or jagalo
 6th year: Fundo
 7th year: Beans + jagalo

NB. There may be a variation of the crops sown in the 4th/5th years:

4th year: Ground-nuts + millet
 5th year: Millet + maize.

The 4th year may also be utilized for ground-nuts with candja, jagatu.

After seven years the land is not considered good enough to sow and is left. If there is plenty of land available and suitable, this seven year rotation will be interspersed with a year of fallow after the first year.

Rotation B

- 1st year: Maize + cassava. After the maize has been harvested the same land is used for candja, jagatu and tomatoes.
- 2nd year: The same crops as in the 1st year, including those planted after the maize harvest. NB. No fallow is incorporated since manure from the cattle is used regularly.

Rotation C

- 1st year: Beans + ground-nuts
- 2nd year: Beans or fundo
- 3rd year: Beans + ground-nuts
- etc.

This rotation is used for 7 consecutive years, and then the land is left for 10 years fallow.

Rotation D

- 1st year: Beans + ground-nuts
- 2nd year: The same crops as in 1st year.

The land is not left for a period of fallow because cattle manure is collected from areas nearby the house and spread over the fields concerned. (Manure is principally obtained from sweeping the houses clean, and from the area where the cows are tied outside the living quarters). Waste chaff after threshing maize, millet and sorghum is also used.

In the paddy fields, the straw is burnt to provide extra nutrients, while in the inland rice fields (pam-pam) ash is collected from cooking etc, and spread.

Rotation in the fields further from the houses

<u>Field 1</u>	<u>Field 2</u>	<u>Field 3</u>
1st year: Ground-nuts + millet	Millet + maize	Sorghum + jagalo
2nd year: Millet + maize	Sorghum + jagalo	Ground-nuts + millet
3rd year: Sorgh + jagalo	G-nuts + millet	Millet + maize etc etc.

D. Division of Labour According to Sex

Farming

The crops are again divided between the men and the women. Rice and onions grown by the women while all the other crops are the men's responsibility and there is very little interchange of work. The women use the same kind of hoe that the Balanta Mane women use. The men use a short hand-held plough. The cattle are the responsibility of the men and this includes the milking.

Attempts are made to train oxen as draft animals. Goats and sheep are tended by both young girls and boys. Chickens are tended by the women. Besides this division of work, young men form themselves into work groups who offer their services for cash. They also work for their own families in a rotational system for food.

The women of each household work together in the pam-pam fields. When they start work on the bolanhas the women of several households work together in a group, rotating between their respective fields. For this they receive food.

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XI. Indicative Time Frames and Community Forestry Activities

I. BACKGROUND INFORMATION1. Physical Information

All general background information about physical data , climatic data , population, economic and social structure, are readily available elsewhere (see footnotes) and will not be repeated here. This paper will only retain those points which are pertinent to the purposes of the project.

-
- J. Siva Teixeira (1962) Os solos da Guine. J.I.U. S. Estudos, Ensaios e Documentos. Lisboa.
 - J. A. Martins Santareno, (1956). Subsidio para o Conhecimentos da Composicao das Manchas Florestais da Circunscricao de Farim. Bol. Cultural da Guine X 1 (42):25 -81
 - Carvalho, J. T. e F. J. S. F. Pereira Nunes, (1956) - Contribucao para o Estudo do Problema Florestal da Guine Portuguesa. J.I.U. S. Estudos Ensaios e Documentos Vol XXX. 194 p.
 - (Anonymous) Potentialites Agricolas, Forestiers et Pastorales (1978) Fonds d'Aide et de Cooperation de le Republique Francaise and the Ministry of Rural Development.
 - Definicion d'une strategie pour la mise en place du Service Forestier (1980) - Fonds d'Aide et de Cooperation de la Republic Francaise, and Ministry of Natural Resources.

Table C-1: STATISTICAL INFORMATION ON ZONE I (CACHEU-OIO)

SECTORES	AREA km ²	POPULATION	NO. OF "TABAMCAS"	NO. OF FAMILIES
----- CACHEU -----				
Bigene	1046.9	28957	126	4630
Bula	639.4	19456	143 (138)	2850
Cacheu	901.2	15194	104 (106)	2469
Caio	460.0	14239	54	1720
Canchuugo	602.5	36776	89	4397
S. Domingos	974.4	19418	103 (96)	4239
Sub-Total	4624.4	134040	619	20295
----- OIO -----				
Bissora	1096.2	39913	174 (175)	7070
Fairui	1438.5	26242	161	3499
Mansaba	1363.7	26063	129	3228
Mansoa	1042.5	26147	107 (108)	4309
Nbacra	242.5	19230	49	3914
Sub-Total	5183.4	137595	620	22020
Total	9807.8	271635	1239	42315

Source: Projecto de Desenvolvimento Rural, Zone I, Bissau 1981

TABLE C-2 - AVERAGE CLIMATIC CHARACTERISTICS OF ZONE I (NEAR STATION, BISSAU)

Rainfall (1948-77)	-----	1877 mm
Duration of Rain	-----	112 days
Rainy Season	-----	June - October
Temperature		
Average	-----	26.5° C
Average of Maximum	-----	33.3° C (March)
Average of Minimum	-----	18.5° C (January)
Average Relative Humidity	-----	70%
Average Evapotranspiration	-----	1837 mm
Annual Solar Radiation	-----	2638 hours

2. LAND UTILIZATION DATA

For Guinea-Bissau as a whole we retain the following land capability data referred to by the study "Potentialites Agricoles, Forestieres et Pastorales"

TABLE C-3 - LAND USE CAPABILITY

		<u>Area</u>
- Oil Palm and Orchards	-----	173765 ha
- Annual and Semi-Perennial Crops under Palm Trees	-----	87489 ha
- Annual and Semi-Perennial Crops	-----	341795 ha
- Fallow Associated to Agricultural Crops	-----	622105 ha
- Paddy Fields	-----	281285 ha
- Productive Forests and Forest Plantations	-----	466110 ha
- Natural Degraded Forest For Extensive Pasture	-----	1378750 ha

TABLE C-4 - CURRENT SOIL USE AND LAND USE CAPABILITY IN ZONE I

Designation	Area (ha)
<u>A. Current Use</u>	
Paddy Fields	80300
Agriculture Up-land used and Being Prepared	76450
Fallow Area	28700
Mixed Oil Palm Formations	109400
Forested Area	164000
Degraded Forests	197600
Savanna	85700
Mangrove Formations	189500
<u>B. Land Use Capability</u>	
Paddy Fields	125900
Agricultural Land	337800
Agricultural Land with Erosion Risks	174700
Agricultural Land with High Erosion Risks	188900
Sylvo-pastoral Lands	18900
Mangrove	159400

The data estimated in the work referred to above for Zone I has been set forth in Table C-4. The low arable land to fallow relationship (approx. 1:04) noted above, and land use capability described, would appear to indicate that the farming system currently utilized in Zone I is ready for a rapid modification and suggests that land pressure is so intense that it can only be relieved through major destruction of the already degraded forest resources in the Zone.

From the ecological point of view and in the long range interests of the country, the actions implicit in the above data must be carefully looked at and questioned to avoid long-range laterization and increased savannization when the forest is cut and the fields left to monocultural systems (see section on the impact of deforestation on soil). Guinea Bissau has already numerous examples of this process in Gabu and Boe areas where monocultural systems of groundnuts were first implemented in the territory. The misuse of soils through clear cutting is estimated to have already depleted 1/5 of arable land by transforming it into a hard lateritic surface layer (Teixeira, 1962).

From the point of view of forestry within Zone I, the COBA report (1980) indicates that:

- a) In the Cacheu River region the entire left bank of the river is, except for a small area in N.W. Pelundo, almost completely deforested.
- b) Oil palm formations are still abundant in semi-hydromorphic soils to the left of the line Cachungo - S. Domingos.
- c) In the Cachungo and Bula areas, deforestation is now almost complete.
- d) In the Western part of the Oio Region, (limited by Mansoa-Farim road) the forest is very much degraded due apparently to high land pressure and demographic density.
- e) The Eastern part of the Oio region is still covered by dense dry forest formations and thick formations in narrow valleys.

3. FOREST INDUSTRIES

The industrial development of the forest in Guinea Bissau is carried out by the parastatal company SOCOTRAM, which runs 6 stationary and two mobile saw mills. They also operate a joinery factory and a parquette factory.

SOCOTRAM currently extracts some 10000 m³ (r) of tropical hardwoods annually (mostly "bissilao" and "pau sangue") from Zone I. Also one private company is currently harvesting some 500 m³ (r) in the Zone, North of Farim.

The Forest Service does not interfere with SOCOTRAM except to give an annual permit to cut, and to control the volume transported over roads. Thus Forest Service has minimal control over the volume actually cut, the volume of waste left in the forest, the degree of utilization of forest products, price policy, and so forth.

4. Description of the GOGB Forest Service

Although Guinea has no formally declared forest policy, the primary responsibility of the GOGB Forest Service (Servicos Florestais) is to ensure balanced use of all forest resources. This should mean, in particular, the development of the forest production potential on all land classified as part of the permanent forest of the country (not yet mapped out with clear boundaries, however). This responsibility includes a broad range of specific duties although once again the functional activities are not yet detailed.

Contrary to many countries, the Guinea-Bissau Forest Service does not carry out the functions related to the exploitation or processing of timber.

In summary, the main theoretical responsibilities of the Service are:

- a. Productive forestry management, including, where necessary, new plantations or replacement of the original tree cover with superior substitutes;
- b. Encouragement of, and participation in, methods of full and efficient forest utilization;
- c. The enforcement of all laws and regulations relating to forest resources, wild life and inland fisheries;
- d. The conduct of forestry research;
- e. The provision of training and technical assistance to all parties concerned with forestry.

4.1 Organization of the Forest Service

Because of the wide variety of national forest laws, forest policies and forest service functions throughout Africa, forest service structures may differ considerably. The differences lay mainly in the ministerial organization and in the internal structure of the administration itself. Experience in Africa has shown that in many cases forestry and veterinary services, for example, may come under the Ministry of Agriculture and Natural Resources, natural resources meaning that the Ministry is also responsible for the development of forestry, livestock and fisheries. In some cases, however, mainly when forestry services were not properly staffed and backed-up, agriculture extension service expenses increased to the detriment of other ministerial activities. Forestry tends to be looked at essentially as contributing to food production or foreign currency reserves. This means that throughout Africa, there is, therefore, no longer any uniformity about the ministerial position of forestry.

Insofar as Guinea Bissau is concerned, and because of the close links between agricultural and forestry sectors, and the ecological sensitivity of the country which demands an integrated operating style we feel that the Forest Service and its operations would better come under the same hierarchical responsibility. The growing awareness of the potentialities of the forest and its close links with long-term soil and ecological conservation problems seem to call for some modification in the organizational placement of Forest Service.

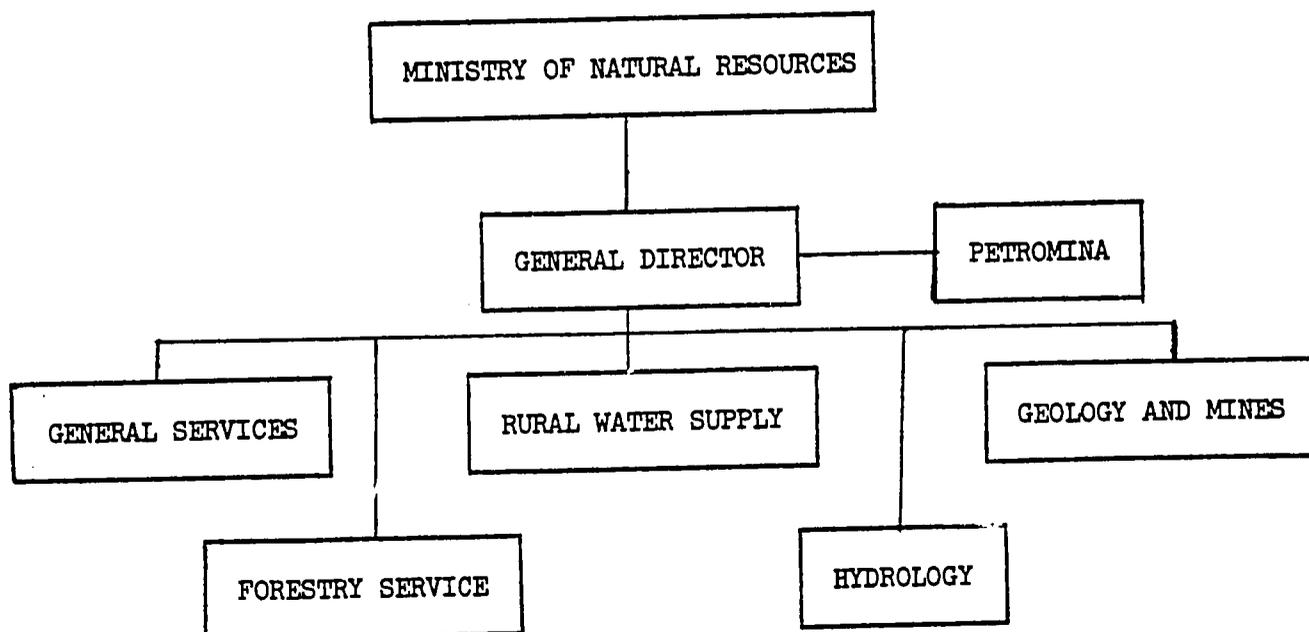


Fig. C-1 Current structure of the Ministry of Natural Resources.

The actual departmental structure of the Forest Service does not reflect the responsibilities that it has been allocated. (See Figure C-2). The factors governing its structure were mainly: unavailability of professional staff; unavailability of foreign professional or assistance; necessity to concentrate short-term policing responsibilities. However, the more dynamic socio-economic circumstances of the post-independence period require a more appropriate structure to permit the Forest Service a more dynamic operating style. Other critical tasks beyond tax collection will require greater attention, since they are essential to the promotion or even maintenance of the forestry potential in a competitive economic climate. They include extension and in-service training, resource surveys, development of plantation techniques, forestry planning, forestry economics and timber marketing and trials and experiments.

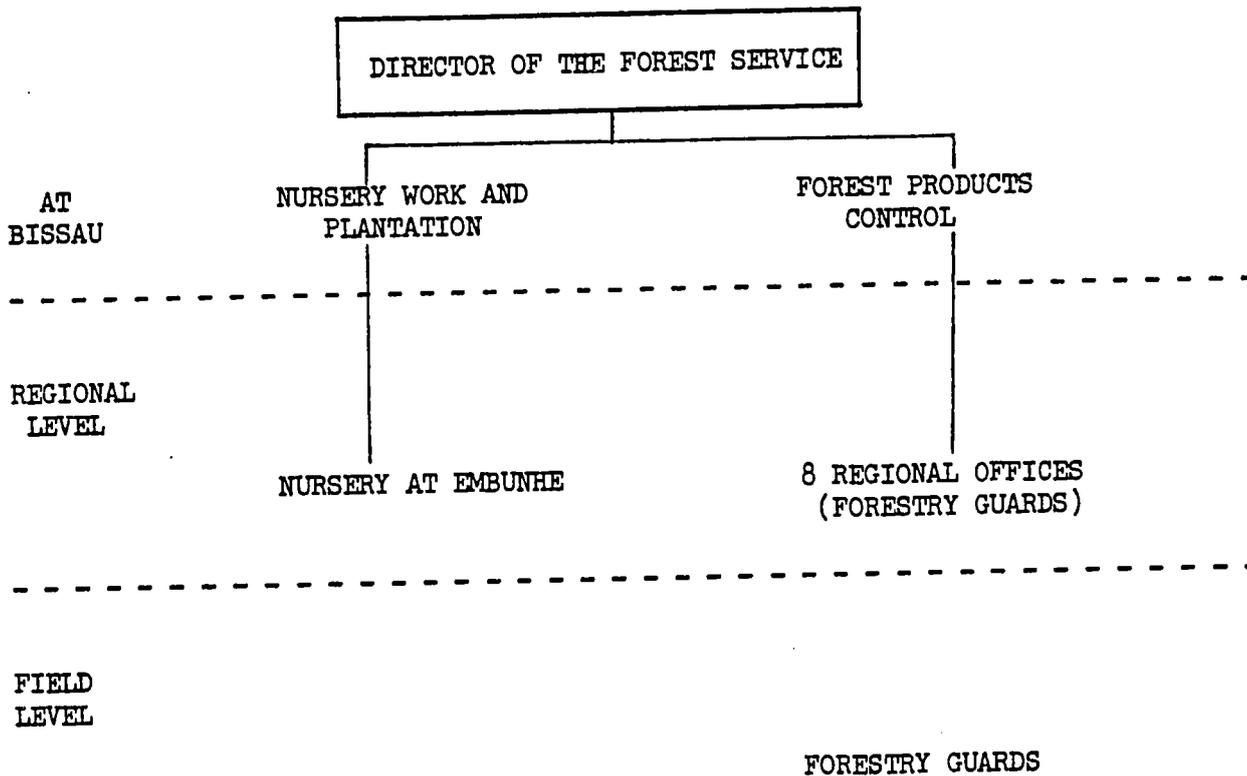


Fig. C-2 Current structure of the Forest Service.

4.2 FORESTRY PERSONNEL

There are three categories of Forest Service personnel, comprising: 1 forest officer with university training in the directorship; 1 forest technician with training in a forestry technical school; 88 forest guards, many of which have only a very summary training (programme of about three weeks). The aggregate strength and qualitative base of the Forest Service is a critical limiting factor which cannot be ignored if any forestry development program is to be established in Guinea-Bissau.

4.3 OFFICE FACILITIES

All current Forest Service office space consists of only one small room and an entrance hall without direct telephone facilities.

At regional and field levels there are no normal office facilities.

EQUIPMENT

Vehicles

- 1 Renault
- 2 Peugeot 404 (pick up)
- 1 Citroen (Nhaye)
- 2 Jeep (Gaz)
- 1 Truck (6-Ton)
- 1 Unimog
- 6 Motorcycles (Mobylette)
- 70 Bicycles

4.4 OTHER TECHNICAL MATERIAL

There is virtually no mensuration equipment available such as calipers, hypsometers, length chains, photo interpretation equipment or other significant material for training purposes such as hand saws, power saws, borers for planting purposes, shovels, etc., etc

4.5 BUDGET

During the course of this mission it was not possible to ascertain the exact size of the operating and investment budgets of the Forest Service. Forest taxes collected over the last few years are placed into a special account (Fundo de Fomento Florestal) under the Ministry of Finance. This amount currently is purported to contain 2,300,000 PG, which are intended for forest development actions. This amount could clearly not support any significant development project.

5. PRESENT FORESTRY LEGISLATION

The nature and role of the Forest Service is mainly influenced by three important factors: 1) legislation; 2) general administrative patterns; 3) national forest policy.

As far as we could see - beyond a declaration of intent for forestry development and a clear indication for community forestry actions - there is no official written policy statement of objectives nor legislation other than that published in 1963.* (see footnote next page)

The main features of the 1963 legislation are:

- Classification of forest offences and procedures against the offenders;
- Issuance and control of timber licences;
- Issuance of special licences for local forest product use;
- Rules governing the payment of fees and taxes for forest product harvest;
- Prescription of circumstances in which certain forest operators harvest in specific forest areas.

We can find in the old colonial legislation, however, an important provision for forest reserve declaration in order to safeguard forest resources. The procedures for such reserves(**) would have been cumbersome, however, and there was not a sufficient knowledge base to guarantee continuous and sustained yield. Complicating this situation, there was an imperfect knowledge of traditional land tenure and, furthermore, competing pressures for land were already strong in many parts of the country and rural populations would have been extremely reluctant to permit large areas of local land to be set aside for forest reserves without their sharing directly in some form of gain. There was a growing awareness that in spite of provisions made in the law to reserve five times the area currently used for current population, mere reservation might not be compatible with optimum land-use objectives. These constraints or tendencies are not necessarily irreversible, however, since ecological and soil conservation factors may well call for creation of national forest areas or reserved areas of either production or conservation forests once the overall land use requirements are more systematically assessed in the national context, and in particular within Zone I.

* Regulamento Florestal. Governo da Guine. 1963

** These procedures include the necessity for such information as: Topographic map; all elements for the characterization of the area (botanical data, volume of trees, its economic exploitability, pressures of the population on the land, and their dependence from the forest); detailed plan of management in a sustained yield basis; detailed information on land tenure rights in the area (reserves could not include agriculture land owned by local populations); demarcation of the reserves on the ground; establishment of convenient means of fire protection control.

The overall operational focus of past and present forest legislation (to a large extent regulatory in nature) was the logical result of a legal framework lacking an orientation toward a balanced socio-economic development of local populations. Nevertheless it offers, with an appropriately financed Fundo de Fomento Florestal, a first step in the planned control of sustained forests. A more elaborate institutional basis for the activity of national forestry requires, however, an updated national forestry inventory which must include the knowledge of local land ownership rights as well as a thorough forest resource inventory.

6. INFORMATION AVAILABLE FOR NATURAL FOREST MANAGEMENT

Our review of all studies undertaken on the forest formations of Guinea-Bissau shows that we still lack sufficient basic knowledge to support proposals for any given technical package. There is considerable data about floristic composition in the works of Gomes e Sousa, Ester de Sousa, Espirito Santo, Orey, Tavares de Carvalho and Pereira Nunes. (op. cit.) However, and except the works of Carvalho & Pereira Nunes and Santareno, upon which is based the current cutting regulations for girth diameters, our knowledge of silvics and silviculture of dry tropical trees and quantitative ecological relationships is clearly lacking. This means that the maintenance of the sustained yield of Guinean forest will require careful study and well formulated intervention strategies.

Tentative plantations in pure stands of non-gregarious forest tree species have not been successful in many parts of the tropical world. A small trial done with Khaya Senegalensis (bissilao) in a pure stand in Bor (1947) and in Sansanto (1947) near Mansoa showed that bissilao yield was very low and the trees developed crooked boles. In spite of their bad trunk form, trees planted on the edge of roads generally show better overall shape. The results could have been anticipated, as bissilao is light-exigent and non-gregarious species generally found only in mixed stands.

These general conditions are probably also valid for other commercially interesting trees such as: Azalia africana (pau conta), Pterocarpus erina ceus (pan sangue), Albizzia gommifera (farroba-de-lala), Erytrophloeum guineensis (mancone) and Chlorophora excelsa (pau-bicho).

Adding to this it may be noted that they are slow-growth species which make artificial regeneration doubtful from the ecological and economic point of view.

Considering the high degree of commercial cutting in the area, it is felt that the current industrial forestry activities North of Farim should come under severe cutting control measures.

In 1956, in 46 plots of 1/4 ha each in the Farim (Oio) area, the following densities (in parenthesis) and associations were measured:

- 1 - Association bissilao (16.8) and pau-sangue (7.2)
- 2 - Association pau-de-conta (26.6), bissilao (18.6), pau-sangue (5.4) and mancone (1.0)
- 3 - Association bissilao (72.0), pau-de-conta (12.0), pau-sangue (5.2), pau-bicho (3.2) and mancone (1.2)
- 4 - Association pau-sangue (24.4), bissilao (4.0) and pau-conta (1.2)

Considering diameter distribution and the fact that it is considered necessary to leave 1/3 of the trees on the stand to guarantee natural regeneration, the authors (Tavares de Carvalho and Pereira Nunes) concluded that, in Oio region, the theoretical harvesting possibility was 5 bissilao, 2 pau-conta and 1 pau-sangue per hectare.

If we consider the long time lag necessary to complete the growth cycle for the hardwoods of Zone I forests and the fact that loggers are already returning to exploit previously logged concessions, it would seem imperative that we begin to foreclose the possibility of high ecological damage through an improved forest legislation.

II. IMPACT OF DEFORESTATION ON SOIL AND AGRICULTURE ACTIVITY

There are considerable differences between temperate and tropical zones insofar as bio-geochemical cycles are concerned. In temperate zones a considerable amount of organic materials and nutrients are kept in the soil, while in the tropics they are retained in the biomass and recycled into the system in an organic form. This means that few mineral elements are found free in tropical ferralitic soils. Humus is therefore indispensable to maintain soil structure, the hydric cycle and agricultural production. Furthermore, humus is rapidly mineralized and lost once exposed to intensive solar radiation as happens when forest cover is clear cut or degraded, which also means that the soil has lost its capacity to maintain mineral elements that are crucial for agriculture. It also must be taken into consideration that direct or intense radiation on ferralitic soils and increased dissection causes an upward movement of water through the soil layer. Dewatered soil products, such as silicic acids, sesquioxides of aluminum and iron, and aluminosilicates in solution, will travel to the surface. After oxidation the sesqui-oxide salts will become insoluble and the other soluble minerals will be leached away by rain. The accumulation of salts at the surface forms a very hard lateritic layer which makes impossible any economically viable agriculture. (See Fig. C-3)

So, forest vegetation or tree vegetation which help to keep the bio-chemical cycle functioning, bringing nutrients from the soil and releasing them in an organic form to an agriculture crop under its canopy, or for its own use, is a key to appropriate land management in ecological and economic terms.

The most common ferralitic soils present in Zone I manifest the following main features:

- 1 - very poor bio-genic capacity;
- 2 - very low holding capacity for nutrient elements when vegetation equilibrium is disrupted;
- 3 - very low organic content, generally only in the upper horizon layers, and maintained only when the organic cycle is kept intact;
- 4 - easily subject to erosion;
- 5 - very low content in N, P and K elements.

From an agronomic point of view, the conclusions to be retained for Zone I are:

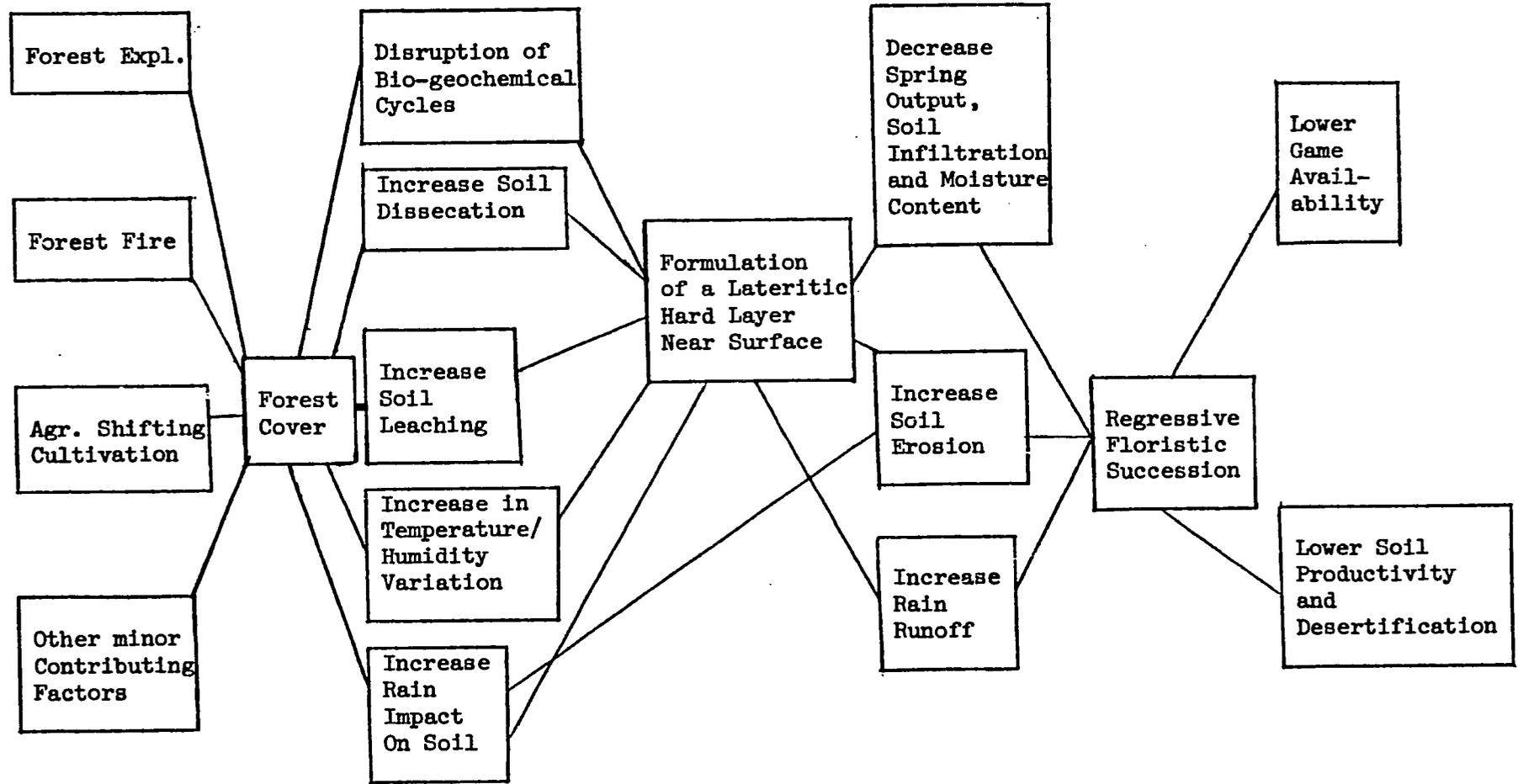


Figure C-3 - Environment Impacts Associated with Deforestation

- 1 - Tree vegetation, thanks to its root system habits, longer permanence at the site, and its protective capability, are much more able to maintain such an unstable ecological system.
- 2 - Increased agricultural productivity in a widely-practiced and exclusive agro-system is only possible with increased energy inputs, which seem unrealistic at the present time, and with severe risks of ecological degradation and desertification (see Figure C-4).
- 3 - The current intensification of agriculture and reduction of fallow periods in the Zone are clear evidence of the necessity to develop viable agro-forestry systems as a way of maintaining the eco-systems and reducing costly chemical fertilizer energy inputs to a minimum.

The agriculture forestry production systems are interconnected and are very complex. Forest is used to supplement some food and mainly as a reservation of new land for shifting cultivation as a consequence of demographic pressure and degraded agriculture land.

Neither knowledge nor the means - personnel or funds - are available for rapid transformation of the current cultivation system towards a stable and sustained renewable resource system. However, this system, together with the forest harvesting in Zone I, without any kind of investment to create a new resource lease will lead, in a short time, to the destruction of Guinea Bissau's forest resources. This is the most severe forestry problem in the country and has to be carefully looked at from economic as well as ecological points of view, especially in a region as susceptible to sahelization as in Zone I.

The close links between agriculture systems and forestry indicate that forest problems in Guinea Bissau cannot be solved on a sectorial basis but only with a comprehensive approach with agriculture and forestry together.

III. INTERVENTION STRATEGIES

Three strategies could be individually or simultaneously chosen to curb present natural resource degradation (see Fig. C-4), each one having different advantages and disadvantages, as summarized below:

COMPARISON OF FOREST STRATEGIES

Item	Man-made plantations	Natural forest re-enrichment	Agro-forest systems or Communal Woodlots
- Beneficiaries	State or private companies; villagers or communal earners	State or private	Target populations
- Benefit incidence	Seasonal employment	Seasonal employment	Distribution of labor
- Ecological risks	High for large plantations	Low	Very low
- Phyto-sanitary risks	High	Low	Very low
- Fire risks	High	High	Low
- Social risks	High if continuous land pressure	High if continuous land pressure	None
- Maintenance of the resource base	Maintains forest resource on a sustained basis if legislation is established to consider private or state demarcated forest land tenure	Unknown due to lack of knowledge of forest succession and dynamics	Maintains and improves
- Resource access under current agro-system	Reduces access	Maintains	Maintains. Imposes legislation considering communal land tenure
- Population participation	Low	Low	Stimulate increased participation

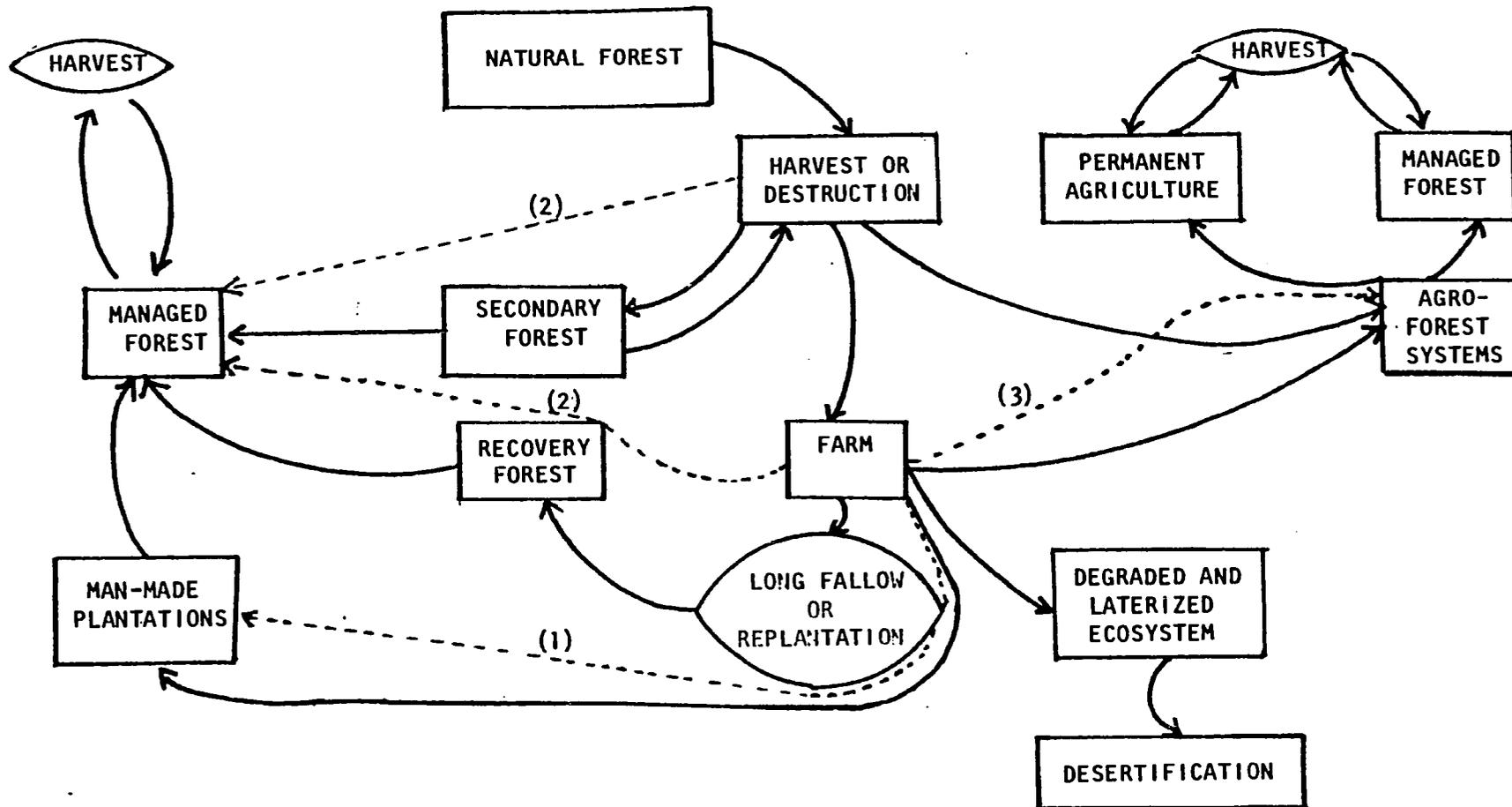


Fig. C-4: FORESTRY DEVELOPMENT MODELS IN FOREST UTILIZATION

————— PROBABLE SEQUENCE OF EVENTS

----- INTERVENTION STRATEGIES

Item	None-made plantations	Natural forest re-enrichment	Agro-forest systems or Communal Woodlots
Economic consequences	Possibility of good returns and high multiplier effects if integrated with industry	Unknown due to lack of quantitative data	Possibility of villagers to increase their monetary gains
Capacity to increase management skills	High capacity to diffuse managerial skills	Low capacity to diffuse managerial skills at present state of the art. Possibly higher capacity in future	High capacity to diffuse managerial skills
Degree of replicability	High	Low	Highly dependent on local conditions
Investment level	Very high to high	High	Low
Estimated overall risk level for Zone	High to medium	High	Low

1. GENERAL GUIDELINES

Considering the current situation in Guinea Bissau and the impact of each strategy,* general guidelines are presented below on strengthening popular participation in forestry development and to contribute to the establishment of a sustainable resource base:

- a. Initially emphasize family fruit tree plantations and agro-forestry systems;
- b. Emphasize community plantations of appropriate rapid-growth trees for fuelwood or local construction;
- c. Emphasize small forest activities in schools.

* The third strategies, which is more or less synonymous with community forestry, has several advantages over the others and a good chance of success in the long run, albeit cumbersome and time-consuming to introduce.

- d. Create an appropriate trial and experimentation program and strengthen the Forest Service.

The key to successful implementation of the points referenced to above will include:

- Creation and extension of training services;
- Provision of some sort of credit or incentive actions*;
- Provision for immediate staff strengthening;
- Provision for an appropriate technical package for forestry management in the near future.

Consequently the project proposal in Zone I includes the following main activities:

1. Community Forestry activities;
2. Training and scholarships;
3. Forest Management planning;
4. Trials and experiments.

Because the state of knowledge of management or enrichment techniques for the implementation of stable agro-forestry systems under dry tropical forest conditions is still incipient, some indicative species have been listed in Chapter VII in order to avoid high technical risks in the early stages of the project.

2. PRIORITY AREAS FOR IMPLEMENTATION OF FOREST ACTIVITIES. (Numbers represent orders of priority)

A - Community agro-forestry systems

1. Cachungo and Bula
2. Oio

* Preliminary discussions were undertaken with USAID and WFP to provide supplementary food supplies to villagers in return for those community forestry actions which may require significant labor inputs or in those cases where introduction of pilot activities which are long-term return or which do not immediately attract his interest. Although not included in the project budget, it may be anticipated that some food assistance may be utilized in this fashion every planting year.

- B - Community plantations (fuelwood, fodder, etc.)
 - 1. Cachungo and Bula*
 - 2. Oio
- C - Natural forest interventions (enrichment techniques, etc.)
 - 1. Oio
 - 2. N.W. Pelundo (Cachungo Region)
- D - Protection measures (strongly controlled cutting operations until published results of forest inventory)
 - 1. E. part of Oio
- E. - Community actions towards improved and less damaging utilization of fire in farm operations.
 - 1. E. part of Oio
 - 2. Cachungo and Bula
- F - Community actions with school children (all Zone I)

* Priority in this area is given because forest as such practically does not exist and fuelwood shortages are foreseen in the near future.

IV. MAJOR CONSTRAINTS FOR DEVELOPMENT OF FORESTRY

1. Introduction

Forestry management problems in tropical areas are almost as old as the forestry profession and forestry enterprise, and their complexity is invariably a measure of the state of knowledge. The three aspects of tropical forestry which attracted a great deal of scientific attention during the Portuguese colonial era were taxonomy, wood properties qualification, and to a minor degree, species introduction. Forest researchers worked to establish the qualitative and quantitative bases of forest vegetation so that proposals could be made for its management. In spite of the numerous botanical, soil and other forestry research efforts undertaken, the time commitment was not long enough and no generally applicable, broad concept has yet emerged which could allow a sustained use of natural dry forest in Guinea-Bissau.

This situation is similar throughout tropical forest regions in Africa, even in those areas with a long-term commitment in money and manpower already underway.

The fact that every forest is a living individuality implies that there are bound to be inherent and unique problems which make it difficult to find the right answers and easy solutions of general applicability.

Development constraints in forestry are partly institutional and partly due to the nature of the resources concerned. On the whole, the institutional problems in Guinea-Bissau appear as serious as those inherent to the resources. However, there may also be greater opportunities to solve some of the institutional problems more rapidly, because institutions are man-made and therefore changeable. They can be manipulated and modified through decisions on manpower supplies or financial resources, insertion or exclusion of functions and promoting new technologies.

The following section discusses some major aspects and problems which affect the Forest Administration at present, and which consequently may act as important constraints to forestry development.

2. Headquarters and Field Activities

The headquarters is not properly staffed to handle the conceptual framework that the difficult ecological conditions in Guinea-Bissau requires. Nor is it staffed to handle the rapidly increasing volume of work.

At the field level, there is an almost total lack of operational staff beyond control and tax collection actions. Moreover, the administrative linkages between the center and the field are usually not solid enough to permit a smooth transition between the planning stage and operational activities.

Some of the most critical factors currently affecting the Forest Service pertain to communication facilities, the relationship of the staff to forest area and the intensity of supervision of timber and product operations, the quality of technical staff, and the infrastructural facilities within his districts. Under these difficult working conditions field supervision through regular visits is discouraged and meetings seldom held. Another important aspect is that some officers never have the opportunity to acquire sufficient field experience because they happened to belong to the first generation of Guinean forest officers. This situation, added to the workload and lack of an information structure of any sort increases the risk of a widening gap between headquarters and field problems (beyond control operations).

On the whole, it demands a high degree of ability and efficiency to pilot such matters, which are very critical to the growth of the sector, successfully through inter and intra-ministerial committees. The growth of the sector under the present circumstances is only possible through a strong action in personnel training, provision of infrastructural support, and creating the basis of knowledge acquisition and diffusion.

3. Staff Development

Staff development in the forestry sector in Guinea-Bissau tends to be hampered by several general factors: 1) the fact that forestry as a discipline or profession is not well known to the common public nor to those who are selected for scholarships; 2) the tendency of high school graduates to prefer some selected professions which enjoy high esteem locally; 3) the fact that forestry implies, to a large extent, field activities and the possibility that the future professional may have to live - at least part of his career - away from the capital. Consequently, forestry has, until now, been of marginal interest to students.

The shortage of forestry staff is also due to the lack of appropriate educational institutions for professional personnel at the technician level, forest protection staff, and forest workers.

To the best of our knowledge, aside from Guinea and potentially Liberia, most countries in Africa have a forestry school, although there are problems related to the availability and quality of teaching staff, inadequate equipment, and poor facilities.

A sine qua non for forestry development strategies at any level is the strength of its staff with a minimum but sufficient preparation level and the creation of infrastructure and equipment to make possible any on-the-job training preparation.

4. Other Problems

In addition to the major problems that have been reviewed there are others which may appear secondary at first glance, but which nevertheless represent important constraints to the effectiveness of the Forest Service. They are, in many cases, problems which affect all public services to varying degrees, although not so badly as in the Forest Service. Problems of this nature include:

- Lack of facilities
- Obsolete or inadequate equipment, inadequate tools, etc.
- Inflexibility of logistics
- Delays in the repair and insufficient maintenance capacity

V. PROJECT ORGANIZATION

1. Indicative Organigram

The implementation of the project will call for the following structure described in Figure C-6, below:

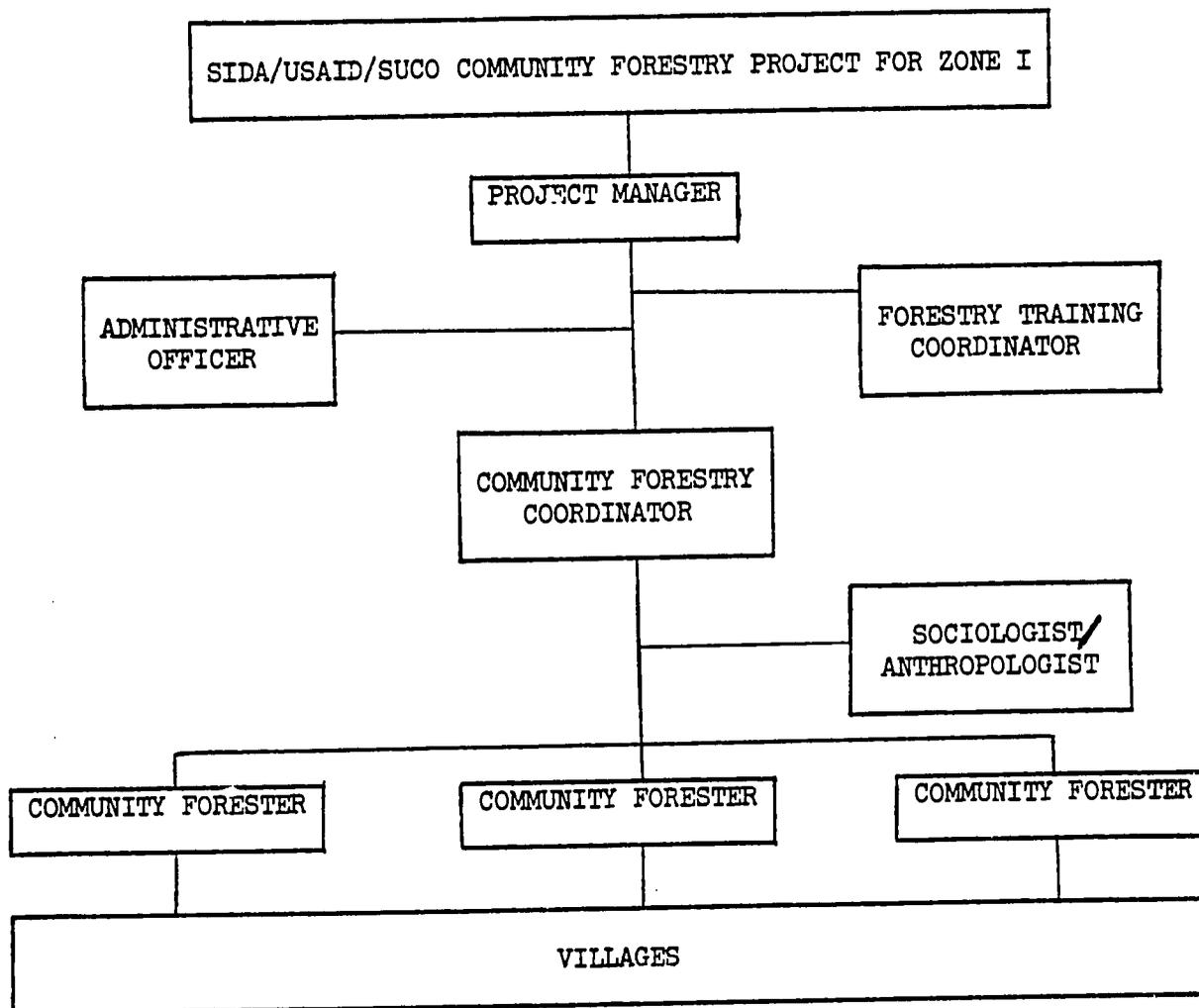


Figure C-6: Indicative Project Organigram

At the Project Manager level will be responsible for all administrative and management responsibilities, as well as the supervision of all project activities and administrative back-up. At a lower level

(technical level coordination) is placed the Community Forestry Coordinator, who is responsible for coordination of all community forestry field activities. The community forestry operations will be backed up from the administrative point of view by the Forestry Center.

Directly under the supervision of the Community Forestry Coordinator are placed the field operations, located at three carefully selected pilot villages. These three pilot villages will generate much of the data necessary for the development of extension activities.

The Community Forestry Coordinator will be located at the Center, which is conveniently located in the center of the project's community forestry activities.

At the grass roots level (Community Forestry) the Community Forester will contact daily one village - called a pilot village (Tabanca-piloto). However, if desired, villagers from surrounding villages may assist and participate in the pilot village activities.

This strategy implies that pilot village selection must be very carefully undertaken and based on sound physical, economic and social micro-environmental knowledge.

2. Links with Forest Service

The structural framework, proposed for project functioning must be part of the Guinean Forest Service and an instrument of its organization strength. It should be placed, therefore, within its envisaged organizational structures in order to strengthen its forest development activities and to allow, without interruption, a continuing action of those activities when the project is over. However, the project must keep a certain identity and flexibility in order to facilitate its eventual integration into general Forest Service structures. Therefore, it is advisable to have this project as an organization under the direction supervision of the Director of Forest Service with only one hierarchical line of responsibility.

3. Linkage with the Zone I Integrated Rural Development Project

Problems of coordination with the Zone I Rural Development Project may arise for such reasons as: (a) the existence of different administrative functions and the need to harmonize them; (b) the existence of closely related resource development functions within two ministries; (c) the different management approaches to what is the forest ecosystem.

In order to guarantee the project attains its goals, it is critical to have separate autonomous lines of responsibility between the Integrated Rural Development Project for Zone I and the Forest Project for Zone I at all levels.

At the policy level, in the Management Committee established for Zone I with coordinating functions, it seems fundamental to have the Forest Service representative as a permanent and active member.

At the middle level (project manager level) the forest project should be sufficiently autonomous to avoid being subsumed by the agriculture sector and failing, therefore, in its objective of strengthening the Forestry Service institutions.

At the field level, community forestry activities will maintain their sectoral autonomy but will nevertheless be carefully coordinated with the activities of the extensionistas in order to avoid overlapping functions or conflicts which may confuse the farmers and may not enhance the credibility of rural development agents. This coordination is very important in implementation of certain types of agro-forestry systems (integrated individual farm systems) where the sensitivity of the farmer to forest problems must start with fruit or fodder trees or even with oil palm.

At this level of action it is fundamental to have clearly defined responsibilities, and we feel that the Forest Service should be given the responsibility for all actions where trees are involved - it does not exclude back-up support from fruit tree specialists from the Agriculture Service - whatever it produces, and because it will permit the farmer to better understand relationships between the tree and a wide variety of production possibilities (fuelwood, fruit, construction, etc.).

VI. SOME NOTES ON AGRO-FORESTRY

International experience seems to show that there are limits to the extension of mechanized agriculture in the tropics because of social, economic and ecological constraints. The production of food staples can be increased through heavy fertilizer inputs but, again, at the expenses of heavy energy inputs and heavy financial cost. This means that temperate agriculture techniques cannot be simply transferred to the tropics to satisfy food demands; it is necessary in fact to develop new conceptions based on our knowledge of how the ecosystem works as well as the habits and economic constraints of local populations. This is only possible with a deep knowledge of local realities.

When we study the ecological and human constraints in Guinea-Bissau it is critical to ask if there is any reasonable or rational means of curbing the current trend to forest degradation and destruction and the pressure on the land through shifting cultivation techniques. Is there any possibility that in appropriate places one might raise simultaneously multiple high yield crops all year around and with high intensity of labor?

Agro-forestry

Local populations in tropical regions have designed a number of stable agro-forestry systems, mixing annual food crops with shrubs, trees and pastoralism. These systems sometimes lack a natural forest, however, they maintain their productive capacity over the whole year and they are extremely immune to diseases and pests. Their internal micro-climate is modified by the tree canopy and mineral elements are recycled by natural processes without the disruption of bio-geochemical cycles. The products obtained are varied and nutritious. They include grains, flowers, fruits, beans, leaves, resins, fodder, charcoal, wood and meat. One can list at least 7 agro-forestry systems:

- 1 - Shifting cultivation (the system is efficient only when population is scarce and diffused).
- 2 - Cultivation with a long fallow

The typical system is a 17-year rotation in which is included 2 successive seasonal crops, 1 annual crop, 1 semi-permanent agricultural crop followed by a 12-year fallow period.

- 3 - Taungya system

It is generally applied in reserved lands open to farmers. In this system the trees must be fast growing, light-tolerant, with deep root systems, and be able to occasionally face

competition. On the other side, crops selected have to be shade tolerant and with short vegetative cycles. King (1968) lists about 80 tree species and 40 compatible agriculture crops. In Costa Rica, for instance, it had been observed (Aguirre, 1979)* that the association of Eucalyptus deglupta and maize was not only more economical but also more disease resistant than the reference situation.

4 - Mixed tree cultures

It is a well known practice to combine nitrogen-fixing species with cocoa plantations or tree species like Inga sps, Erythrina, Dalbergia, Glinicidia reprium e Pithecellobium saman with coffee in association with leguminosae and root cultures. In Costa Rica associations of Hevea Brasiliensis with cocoa plantation are known and with much better results than with monocultural plantation of Hevea.

5 - Natural succesion simulation

A first trial made by Holdridge in 1959 introduced a system of successive cultures at the rate of 0.1 ha/year, over a period of 30 years. Hart (1975) introduced the following cultural combinations through natural simulation: (a) plants producing leaves, stems or useful roots; (b) bananas or other type of plantation; (c) palm trees; (d) production forest.

6 - Individual integrated farm systems

Several of these units have been developed in Africa, and the Far East with animals, small family orchards, fish ponds and multi-culture fields. This type of system is only possible where private land tenure prevails. Their biological cycles and its equilibrium have been studied by Mollison and Holmgren (1970)**.

7 - Dispersed or aligned trees

This is a simple system utilizing tree alignments as wind breaks or dispersed trees in pasture areas to shelter

* Aguirre, C.P. (1977) - Comportamiento inicial de Eucalyptus deglupta B. asociando con maiz (sistema taungya) en dos espaciamentos con y sin fertilizacion (These), Turrialba. 130 p.

** Holdridge, L.R. (1959) - Ecological indications of the need for a new approach to tropical land use. *Econ. Bot.*, 13:271-280

Hart, R.D. (1975) - A bean, corn and manioc polyculture cropping system. II. A comparison between the yield and economic return from monoculture and polyculture cropping systems. *Turrialba*. 25: 377-384.

Mollison, B.C. & Holmgren, P. 1978 - *Permaculture I. A perenial agriculture system for human settlement*. Melbourne Transworld Publishers. 128 p.

and/or provide aerial fodder for cattle. There is considerable, well-known documentation on the benefits of these associations.

The implementation of an agro-forestry system

In a general sense a stable agro/forestry system must contain the following characteristics:

- a) protect the soil against erosion;
- b) use techniques that allow the year-round production of food and timber;
- c) use alternance of cultures in order to avoid pests and disease;
- d) are composed of species having low requirements for soil nutrients;
- e) produce animal proteins from crop wastes;
- f) produce agriculture goods for market.

The sine quanon to establishing an agro-forestry system on individual farms, tabancas, or in any given region, is the deep knowledge of local socio-economic and physical conditions. Indeed, any one given small territorial unit may require several agro-forestry systems.

The formulation of any project in agro-forestry must consider the following points:

Priorities:

One must choose, whenever possible, well defined watersheds as a function of their productive potential, of the populations they are directed to, and in accordance with the national development policy. In each micro-region a pilot farm or a pilot village must be chosen.

Each defined area must be sub-divided into several zones according to their potential capability. So, most severely degraded areas will be assigned to forest associations with pasture land, preferably perennial plants; the slightly better zones must be designed for tree/fruit tree combinations, including traditional forest fruit species with a wide space between them to accommodate agricultural crops (peanuts, manioc, beans, etc.); semi-hydromorphic zones should be designated for palm oil trees with leguminous pasture cover and perennial shrub beans (Cajanus cajanus, for instance).

Planification

Management plans based on detailed land capability maps must be made for large-scale farm operations. However, perfect knowledge of the physical and socio-economic micro-environment is also vital for the success of actions undertaken at the village level.

Techniques

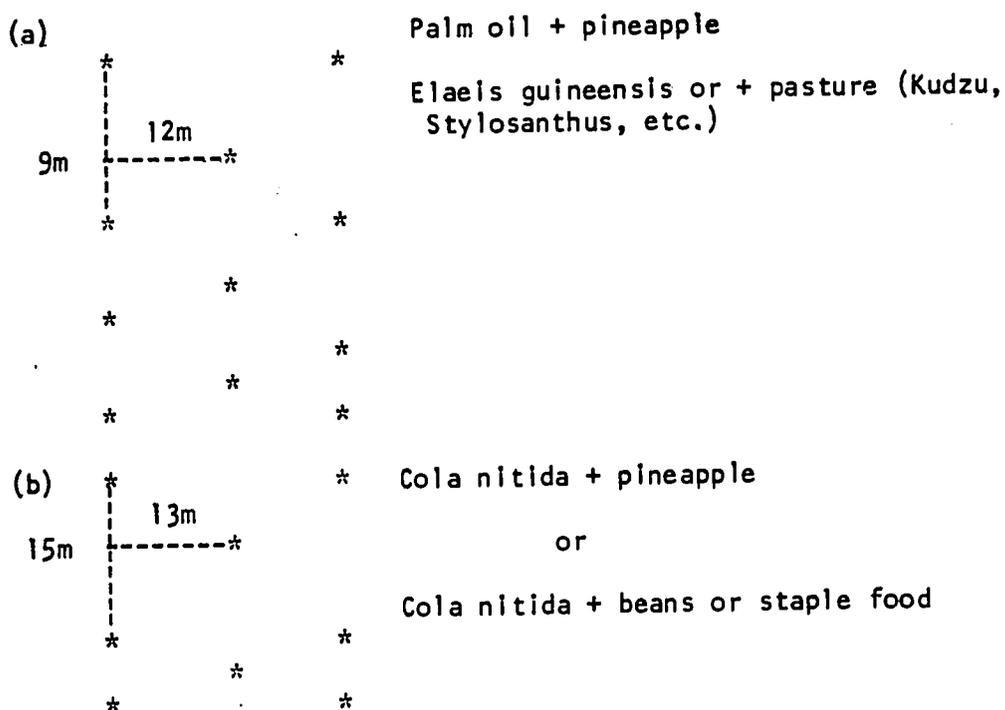
Since the target of all agro-forestry schemes is the combined production of food and wood it is important to consider these two components at the same level of importance. The important points to be considered are:

- Combination of several high value food crop species with those of a traditional nature in the poor soils.
- Determination of the carrying capacity of pasture land for those areas designated for that purpose.
- Intensive hydraulic management to maximize the productivity of the site.
- Recycling of soil nutrients by avoiding fire and using nitrogen-fixing plants adapted to tropical conditions, as well as deep-rooted trees.
- Improving simple techniques of food conservation, production of non-perishable crops and raising of small animals for family consumption.
- Systematic use of the three for fruit production, fodder, fuel and construction in all tabancas.

Socio-economic considerations

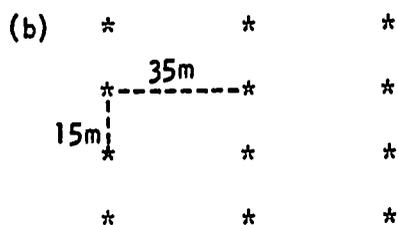
To introduce successfully agro-forestry systems, it is vital to have trained extension people, as well as access to a viable credit system, cooperative education among villagers, and the creation of local nurseries.

INDICATIVE EXAMPLES OF VIABLE ASSOCIATIONS IN POSSIBLE AGRO-FORESTRY SCHEMES FOR ZONE I ASSOCIATIONS SUITABLE FOR SEMI-HYDROMORPHIC SOILS



Associations suitable for red, red-orange upland soils

- (a) 1.5m --- 30m --- 1.5m
- (a) Anacardium occidentale + rotation of the following cultures within rows:
- | | |
|--|---|
| 1 ^o year | groundnuts |
| 2 ^o year | groundnuts or maize |
| 3 ^o year | maize or seeded pasture (Stylosanthus sp., Kudzu, "Feijao Congo" or Curcubita foetissima) |
| 4 ^o , 5 ^o & 6 ^o | pasture land |
| 7 ^o year | start rotation with groundnut |
- (b) Anacardium occidentale + rotation of the following cultures within rows:
- | | |
|-------------------------------------|--|
| 1 ^o year | groundnuts |
| 2 ^o year | groundnuts |
| 3 ^o year | maize or millets + beans |
| 4-5 ^o years - 10 years - | sowed pasture Stylozantus sp. or Kudzu |
| 11 ^o year | start rotation with groundnuts |



Acacia albida + rotation of the following cultures within rows:

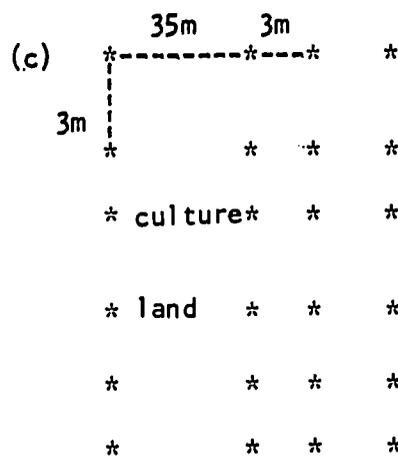
1^o year - dry field rice (if in rich soil)

2^o year - maize or sorghum

3^o year - groundnuts

4^o, 5 and 6^o year - seeded pasture of Kudzu, Stylozantus sp. or "fejiaocongo"

7^o year - start rotation



Melaleuca + rotation of the following cultures within rows:

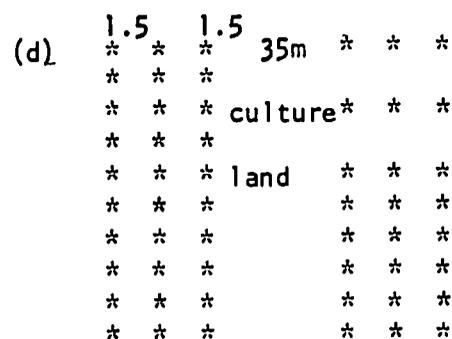
1^o year - dry field rice (if in rich soil)

2^o year - maize or sorghum

3^o year - groundnuts

4^o, 5^o, 6^o - pasture land sowed with Stylozantus sp, Kudzu or "fejiao congo" or buffalo gourd)

7^o year - start rotation



* * * Eucalyptus camuldulensis or Zizyphus abyssinica or, Tamarundus, or Leucaena, + rotation of the following cultures with rows:

1^o year dry field rice (if in rich soil) +

2^o year maize or shorgum

3^o year groundnuts

4^o year groundnuts

5^o, 6^o pasture land sowed with Stylozantus sp. Kudzu or feijao congo

7^o year tree cutting and pasture

8^o Year return to first year. Trees will sprout

VII Tree Species useful in Guinea Bissau

1. SPECIES NATIVE TO GUINEA-BISSAU

a. Utility as Fodder

Faidherbia albida - is known in Guinea as "borassam" or "borassam - o" (mandinka), "butchampele" (manjak). This is a medium height tree that can reach 20m. It appears in the dry forest association with Parkia biglobosa but its characteristic habitat is in the savanna. It yields about one ton of pods in adult tree and they are readily accepted by cattle. It's nutritive value in percent by weight, is: Protein 10.5%; digestible protein: 9.8%; phosphorus 0.23%; calcium 0.65%. The tree is very sensitive to winds. It is therefore advisable to protect it with Casuarina equisetifolia or Parinararia macrophylla.

Parkia biglobosa - is known as "farroba" or "ulele" (manjak) and "gante" (balanta). This is a medium height tree very common in the open forest and tree savanna, where it occurs in association with Faidherbia albida. It is a tree which colonizes degraded lands after groundnut cultivation. This seems to indicate it is a very satisfactory tree for degraded woodlot plantations, not only by its gregarious habits, which allow pure stands, but also because its pods have appreciable nutritious value for cattle as well as people. The following percentage composition was found in its pods (I.N.I.T.): ashes 2.87%; fats 4.71%; proteins 10.37%. Its seeds revealed the following composition: ashes 3.73%; fats 15.13%; proteins 29.19%.

As a potentially useful fodder plant, it is worth considering the value of numerous forestry shrubs found in the Oio Region, mainly, Combretum cuspidatum, C. dalzielli, C. grandiflorum, C. lecardii, C. micranthum, C. mucronatum, C. cf. nigricans, C. racemosa, C. tomentosum, and C. verticillatum. There is existing available information on the utilization of Combretum sp. as a valuable aerial fodder.

Within Combretum species it may be particularly useful to examine those shrub species able to grow in thick density and with high forest and fodder potential such as C. cf. dalzielli, C. micranthum, C. mucronatum, C. tomentosum, and C. verticillatum.

The leaves of Grevia flora and G. occidentalis are considered a good fodder. Its percentage composition

is as follows: total protein, 12.6%; total fiber, 30.8%; phosphorous, 0.13% and calcium 1.72%; (Bonsma, 1942).*

The Acacia albida, although not a fast growing tree, produces an excellent fuelwood. It is a source of fodder as well as edible seeds. It is highly suitable for agro-forestry systems and is already grown in combination with millet, forage grasses, peanuts and other crops. It is already widely utilized and protected by local populations in Zone I.

It is worth examining the fodder potential and biomass production of a small Guinean shrub Grewia cf. Kertongii which may be useful to use in fallows, decreasing its cycle.

The pods of Dichrostachys glomerata, abundant in Guinea, and commonly called "sante" or "bula-bete", contain with high nutritious value: protein 11.4%; total fiber 25.6%; phosphorous 0.23%; and calcium 0.65% (Russel, 1957).*

b. Utility as Fruit Trees

There are many tree species represented in the flora of Guinea able to be used in some type of agro-forestry system for fruit production, fuelwood, and eventually, construction wood for local uses. Its use for small communal plantations around fields or in lines in crop fields would provide nutritious food and fodder, as well.

The program of mango and cashew tree plantations in some villages should be increased and this can mean a better and easier way to make the farmer aware of the value of the trees. Cashew plantations that are easily accepted could lead in the short-term to diversification of the natural resource base and a new focal point for local economic development due to the numerous products cashew can provide. Cashew is particularly useful around farm lands and in the recuperation of degraded farm lands or on road edges.

The Anisophyllea laurina is the well known "pau miseria", "catingui", "mafele" (balanta). The origin of the common name came mainly because it is a most important

* Bonsma, J. C. 1942. Useful brusveld trees and shrubs. "Fong". (S.Africa).

* Russel, F.C. 1957 - the chemical composition and digestibility of fodder shrubs and trees. The use and misuse of shrubs and trees as fodder. Imp. Agr. Bur. Joint Publ. 10:185.

fruit during the hungry season. This tree, along with Strombosia sp., particularly dominates the dry forest in the Cantanhes area. It is a very low growth tree and its use for community forestry is doubtful, however, the floristic association dominated by A. laurina and Strombosia sp. seems to correspond to a second phase of the restoration of the dry forest that in its primary composition was formed by Parinari excelsa and Dialium guineensis as well as with Erythrophloeum guineense, E. africanum, and Pentaclethra macrophylla. The precursor character of pau miseria seems to indicate that it may be easily cultivated in the climatic conditions of the littoral zones of Zone I in abandoned land.

The Blighia sapida is known in Guinea as "peso" (fula). It is a small forest tree producing edible fruits and that can also be cultivated and disseminated.

Another very useful tree that must be considered, mainly in humid spots, is the Cola nitida. The cultivation of this plant, however, needs great care and because of the high improductivity of the seeds, grafting techniques and vegetative propagation is advisable. It also gives a good quality general-purpose wood.

Detarium senegalense "mambone" or "bobode" (biafada) is a very useful tree not only because of its fruit, but also, because of the potential of its flowers for beekeeping activities.

The Lannea acida "bembo" (mandinka), is a viable fruit tree producer.

The Parinari excelsa is another well-known forest fruit tree. Guineans use its fruit for eating or to prepare sweet syrups.

The Sclorocarya birrhea is another tree which produces large fruit used for jams and juices.

The Spondias monbin, known as "tchale" (Fula) "nincom-o" (mandinka) or "sane" (balanta), is a tall fast growing tree introduced from India and very well adapted to Guinea. It produces an agreeable fruit and the wood may be used for matches or cheap interior woodworking.

Tamarindus indica is a known species in Zone I of Guinea-Bissau. It is very well adapted to dry conditions. Recent studies have shown that the jelly from

the seeds is a potential substitute for fruit pectine in the jelly industry. It was also found that tamarind kernel powder is useful in the textile industry. Soft drinks can be made from it.

Terminalia catappa is another tree well adapted to soil dryness. The quality of the fruit indicates that this tree may be very useful for community plantations. It grows fast and produces good quality construction wood.

The Zizyphus abyssinica (= Z. jujuba) "djabi" in Fula. This small tree is very well adapted to dry areas and degraded soils. It produces a large amount of cherry like edible fruits. When the fruit is dry and grounded it may be used to bake a kind of bread. It is also a valuable fodder tree.

c. Utility as Oil Producers

Within this group and beyond oil palms, whose importance cannot be forgotten in any community forest programe, it is worth listing the following:

Butryospermum parkii commonly called the shea nut, "bamba-tulo-iro" of the mandinkas or "carei" of the Fulas. The shea nut tree produces an edible fruit the kernel of which contains between 40 to 50% of oil that is used in the local human diet and for soap production.

The shea nut is a tree of dispersed habitat that lives well in degraded and dry soils and is considered fire resistant thanks to its thick bark. In normal conditions an average tree yields 10kg. of dry kernels after 10 years of age. The shea nut tree is probably one important Guinean tree to be encouraged in community forestry actions.

The Moringa pterygosperma is the so called "lebidaio" of the Fulas. It produces oleaginous seeds from which "ben oil" is made. This oil is still important in watch maintenance and in the cosmetic and perfume industries. Its flowers and leaves are edible as salads.

Pentadesma butyracea is the "lami" or "boncom-hadje" of the Fulas. It is a big tree which produces fruit with an edible oil.

d. Pharmaceuticals

Within the natural forest of Guinea, trees of medical interest worth mentioning include Rauvolfia Vomitoria, the Strophantus hispidus and the S. sarmentosus.

Rauvolfia is a small tree of the secondary forest. Its roots are very rich in total alkaloids and reserpine which may be considered for the pharmaceutical industry. This species may be the african competitor in the reserpine market which is currently dependent upon Asia and Latin America (R. canescens.)

The knowledge currently available does not permit us to advise pure stands of this species. However, the success of its cultivation in India would seem to encourage local study of its feasibility in Guinea-Bissau.

e. Utility as Gums and Resin Producers

In this group we find one species worthy of mention: Copaifera copallifera.

The Copaifera is a gregarious species known as "po de ferro" or "melamberi" and is the producer of gum-copa, which has a wide use in the pharmaceutical industry and in the resin industry. Beyond this use the tree produces suitable wood for boat construction. Its interest for community forestry is doubtful due to its low growth rate.

2. EXOTIC SPECIES

For small woodlots for timber production we may consider the following rapid growth species which are already known as adapted or suitable in pure stands:

Tectona grandis. It is a gregarious species, although has proved suitable in mixed stands, with known resistance to long periods of dryness. It has been studied in Senegal, Ivory Coast, Benin, Cameroon, Congo, Zaire, Liberia, Nigeria, etc.

Melaleuca leucadendron. It has proved its ability in two small plantations in Zone I (Varela) and in Zone 0 (Pessube). Its bark and leaves are the source of cajeput-oil, used in the pharmaceutical industry. The reported production is 150 - 200l of oil/hectore. Although the wood has a very high volumetric shrinkage,

it is a useful rural construction material due to its durability.

Leucaena leucocephala (= glauca). It is one of the most promising fast growth leguminous species. It has a varied field of utilizations from fodder to firewood, timber and rich organic fertilizer. It is reported to yield between 30 - 40 M3/ha/year, depending on local conditions and to incorporate in the soil the equivalent to 500 KG of nitrogen/year.

Casuarina equisetifolia. It is a well adapted species in Guinea-Bissau. It can be used for good charcoal or fuelwood. The rotation is about 10 years.

Finally there are several eucalipt species that are worth considering such as E. camalduleusis for its resistance to 7 months without rain and to termites. In descending order of interest we may mention the E. propinqua, E. punctata, E. citriodora, E. eugenoides and E. sieberiana. However the two last species should not be used without introduction trials. For the other eucalipt species colaboration should be established with CNRF of Senegal in order to obtain the indication of best proved provenances.

VIII. LIST OF MAIN TOPICS FOR RESEARCH AND DEVELOPMENT

1. Long Term

Because of the past heavy cutting in Guinea (mainly in Zone 1) research on local degraded woodlands is crucial for their long-time maintenance. Research is mainly needed for study of practical methods of re-enriching such stands with the species originally found in the forest association. In this vein, we would suggest the following main topics of research:

1. Study of local wood species, considering:
 - seedling and growth habits
 - rate of growth
2. Study of artificial forest re-enrichment, considering:
 - plantation in layers
 - plantation in forest patches (Method Anderson)
 - application and viability of shelterwood systems
3. Study of introduction trials in small areas of degraded forest.
4. Study of economic, social and technical impacts of potential agro-forestry systems.

Topics No. 2 and 3 can hardly be implemented as a long-term commitment without defined and protected forest reserves, including clearly defined land tenure rights.

The current project should provide consultancies in order to design an efficient fieldwork strategy, modeled to incorporate all available information from areas with similar ecological problems.

The knowledge generated in developing topics 2 and 3 is considered critical for the sustained productivity, within reasonable levels of investment, of the still existing natural forest cover.

The long-term commitment represented by these actions (10 - 15 years) is outside the timeframe of the current project. Proper implementation of this will require an institutional commitment on the part of the GOGB, therefore.

2. Short Term R & D

1. Study plant behavior and production in project nurseries in order to develop technically sound, simple and inexpensive proposals considering:
 - pot dimensions
 - treatments and soil composition
 - seedling handling
2. Plantation techniques
3. Very simple introduction trials (method FAO) of rapid growth species.
4. Introduction of fire resistant species for live fire breaks.
5. Introduction of proven and more efficient charcoal technologies (Casamance system, for instance).

3. Special Programs

Mangrove Ecosystem

This is a very fragile ecosystem that is facing very strong pressure due to bolanha expansion. Its complex links with shrimp and fish ecosystem and its importance as a reservoir of food for local populations will require a special consultancy to design the work and circumscribe the data collection that must be undertaken.

Special Wood Technology Studies

In cases where secondary tree species of interest to the project require further laboratory analysis to fully understand their wood properties, it is suggested that such research be undertaken with a competent foreign forest research body (such as the National Institute for Tropical Research in Lisbon).

Other

Also of potential interest could be the creation of ^{fast-growing} energy plantations in deforested areas (Biombo or Cacheu) for the production of Charcoal, firewood or construction wood for Bissau, or, eventually, shipment to Cape Verde or Dakar.

4. Long Term Institutional Linkages

It would seem highly desirable for the Forest Service and the project to foster long-term institutional linkages with competent foreign forestry research organizations. If feasible, it is recommended that project management staff attempt to establish working relationships with at least three such organizations of pertinence to their activities, i.e., the Senegalese Center for National Forest Research (CNRF), the Portuguese Institute for Tropical Research (INIT), and the Swedish parent body for global research, Swedish Agency for Research Cooperation with Developing Countries (SAREC).

IX - TRAINING PROGRAM

1. FOREST AGENT PROFILE

The community foresters (Agentes Florestais) must be trained, not only in technical skills, but also how to use them, and how to be a dynamic agent of change in the socio-economic development of local populations. He must therefore be taught how to become a positive agent in the transformation of local attitudes and not attempt to impose a preconceived solution. He should persuade local populations to accept, understand and adopt more technically acceptable solutions which are judged to be most appropriate to their own specific social and physical environment. Knowing, however, the needs of GUGB for forest guards and extension agents in community forests, it must be clear that those employed as an extension agent should not, simultaneously be charged with police activities. We feel that an ambiguous role should be definitely ruled out.

Technical skills that all forest agents should be able to perform:

- Species identification.
- Tree measurement (diameter, height, volume of bucked trees).
- Read a map, be able to note information on it and use a compass.
- Be able to choose small afforestation areas.
- Be able to identify game animals.

He must also be capable of:

- Collecting seeds by choosing the most appropriate trees.
- Directing some small forest works, namely:
 - a) soil preparation
 - b) mark tree distances
 - c) nursery development
 - d) plantation techniques
 - e) plantation maintenance
- Marking inventory plots in the field
- Know how to control fire and be able to demonstrate methods for proper fire control.

As an agent of socio-economic development, he must also be capable of:

- Learning to be receptive to local populations.
- Learning to identify their problems and needs.
- Able to perform normal extension activities in a manner compatible with local traditions and social behavior.

In the area of forest administration actions, he must be able to:

- Apply forest legislation
- Observe cutting works and see if they comply with the law and the contract
- Collect forest taxes

2. PROPOSED CURRICULUM

The curriculum proposed was designed to satisfy the technical and human requirements agreed upon with the GOGB for Forest Agents (Agentes Florestais) and also designed to give agents the capability to intervene in forest systems found throughout Guinea-Bissau, rather than just those of Zone I alone.

The course is designed to cover a nine month (15-day holidays for both Easter and the period just before probationary work period), to be followed by a two-month probationary work period in the field. Prior to departure for probation work the students will have decided, in collaboration with the Center, personnel, which of the two potential carrier tracks they wish to choose--that of a community forester (agente florestal) or that of a forest guard (guarda florestal).

Community forest agents will be assigned to forest community work in the fields in Zone I and a small number of forest guards will function in a police and control role on behalf of the Forest Service. We currently estimate that the project will train approximately 80% of its students as community foresters and 20% as forest guards. It's deemed necessary to avoid only role ambiguity either from the point of view of the forest agent or from the point of view of the villager himself (see economic analysis).

Those who succeed in the full eleven month course will be awarded a certificate (Diploma de Agente Florestal), recognizing their aptitude to perform the forest agent activities expected of them by the GOGB Forest Service.

The minimum in recruitment requirement for students should be an equivalent 7 years of schooling and a minimum age of 17 years to make them compatible with their agriculture extension counterparts (extensionistas).

The proposed curriculum for training is set forth in Table C-5 attached. In the curriculum the subjects are only listed by a single heading since it will be necessary for the final content be worked out with the direct participation of the Forest Training Coordinator.

3. INDICATIVE SCHOOL TERMS

The school calendar was established in order for students to work in all prevailing climatic conditions, i.e., dry and rainy seasons. The suggested timeframe, by category, is set forth below.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
School and Field Work	-----			-----								
Probationary Work* or Special Training for forest guards										-----	-----	
Specialized Retraining										-----	-----	

* Training work in community forestry or industrial forestry activities with SOCOTRAM

4. SHORT TERM TRAINING

In addition, it should be noted that varying numbers of participants, in short-term training will receive instruction at the Center (extensionistas, SOCOTRAM employees, selected Forest Agents, selected village leaders, etc.). The precise nature of the curriculum content for these short courses will be determined by the Forest Training Coordinator, as appropriate.

Table C-5

PROPOSED CURRICULUM FOR COMMUNITY FOREST TRAINING

Subjects	Class Room Work (hours)	Field Work (hours)
ELEMENTARY PORTUGUESE	90	
ELEMENTARY MATHEMATICS	90	
FOREST MENSURATION	32	60
TREE BOTANY AND FOREST ECOLOGY	60	64
NURSERY WORK	24	96
PLANTATION TECHNIQUES	24	96
AGRO-FORESTRY		30
FOREST LAW AND ADMINISTRATION	24	
AGRICULTURAL CROPS		
AGRICULTURAL EXTENSION	24	30
PRINCIPLES OF VILLAGE EXTENSION		
FAUNA AND WILDLIFE MANAGEMENT		30
FOREST MANAGEMENT AND INDUSTRIAL FORESTRY FORESTRY		60
FOREST PROTECTION (FIRE CONTROL)		30
SPORTS		64
TOTAL	368	560

} AT BACHILLER

X. PERSONNEL AND JOB DESCRIPTIONS

The personnel considered necessary to carry out the project is as follows:

Table C-6: Expatriate Personnel Requirements

Title	Number	Duty Station	Duration of Assignment (Years)
Project Manager	1	Forestry Center	2 - 4
Forest Training Coordinator	1	Forestry Center	2 - 4
Community Forestry Coordinator	1	Forestry Center	2 - 4
Project Anthropologist/ Sociologist *	1	Forestry Center or Small Towns	2 - 4
Regional Community Forester *	3	Small Towns	2 - 4

* SUCO Volunteers

TABLE C-7: LOCAL PERSONNEL

Category	Number	Duty Station	Duration of Assignment (years)
Office Secretaries *	2	Center	4
Accountant *	1	Center	4
Administrative Assistant *	1	Bissau/ Center	1 - 3
Mechanic and Assistant **	2	Center	4
Drivers	3	Center	3
Chief Nurseryman and Assistants **	3	Center	4
Kitchen Staff **	3	Center	4
Unskilled Workers	24	Center	4

* To be housed at the Center

** Only the category head to be housed in the workers compound

TITLE: PROJECT MANAGER

STATION: Forestry Center

DURATION OF CONTRACT: 2 or 4 years from January, 1982

DUTIES: Project Manager of Forestry Project for Zone I

1. Responsible for overall supervision of all project activities.
2. Responsible for funds and personnel management.
3. Responsible for development of an Indicative Forest Management Plan for Zone I.
4. Coordinate all research activities.
5. Ensure clear project coordination.
6. Assist the Forest Service in the development of forestry administration and forestry legislation matters, as required.

QUALIFICATIONS: University forestry education

At least 10 years working experience including experience in forest management and administration.

Experience in tropical forestry or in developing countries.

Fluency in Portuguese, some French and English desirable.

PERSONALITY: Very apt to cooperate with other nationalities; spirit of initiative, adaptable.

TITLE: FORESTRY TRAINING COORDINATOR

STATION: FORESTRY CENTER

DURATION OF CONTRACT: 2 or 4 years from January, 1982

DUTIES: To be the Principal of the Forestry Training Center.

1. To plan and implement the training program together with the Community Forestry Coordinator and other staff, as required.
2. To be responsible for the classroom and field training of agents florestais at the Center as well as actually teaching selected technical subjects.
3. To supervise other teaching personnel at the Center.
4. To cooperate with the Bachile Training Center for rural development.
5. To assist in planning and implementing the short-term training for extensionistas, SOCOTROM employees and other selected candidates, as appropriate.

QUALIFICATIONS: University or Technical Forestry Education.

At least 5 years working experience and preferably in teaching forest subjects.

Experience in tropical countries.

Good grasp of integral rural development context.

Fluent in Portuguese.

PERSONALITY: Adaptable, very good contact with young people, able to work with different nationalities, capacity to simplify complex concepts or ideas.

TITLE: COMMUNITY FORESTRY COORDINATOR

STATION: Forestry Center

DURATION OF CONTRACT: Negotiable, preferably 2-4 years from January 1982

DUTIES: The main duty is to choose and follow-up all community forestry activities within Zone I.

1. To coordinate and supervise all work done by the project in the tabancas
2. Supervise local nurseries developed by Servicos Florestais.
3. To choose, initiate and follow-up with Regional Community Foresters and Anthropologist/Sociologist, all pilot village activities and extension undertaken under the project.
4. Responsible for coordinating the development of the Forestry Extension Agent Handbook.
5. Collaborate and assist in training activities at the Center, as required.
6. Assist in orienting all project research activities in a manner concomitant with the objectives of the project.

QUALIFICATIONS: University Forestry Education or Technical Forestry Education

At least 5 years working experience in tropical countries.

Experience in extension work/or training.

Personal commitment to community - based forestry.

Working knowledge of Portuguese. French, English and Creole desirable.

PERSONALITY: Very good ability to cooperate with the direct staff; spirit of initiative.

TITLE: PROJECT ANTHROPOLOGIST SOCIOLOGIST *

STATION: Forestry Center or centrally located small town

DURATION OF STAY: 2 - 4 years

DUTIES:

1. Responsible for analysis of pilot village farm and forest land utilization systems, to select socially and economically feasible interventions.
2. Operation of project monitoring system, to identify social, cultural, and economic processes resulting in intervention acceptance.
3. Development of forestry extension agent handbook containing information concerning how to successfully implement forestry interventions.

QUALIFICATIONS:

Minimal M.S. in Sociology/Anthropology.

Experience in West African social systems. Economic anthropology/development specialization.

Portuguese and Creole or local languages.

French and/or English desirable.

PERSONALITY: Adaptable, Diplomatic, motivated

* SUCO Volunteer.

TITLE: REGIONAL COMMUNITY FORESTER (THREE PERSONS) *

STATION: Small town in representative area of Zone I

DURATION OF STAY: 2 - 4 years from January 1982

DUTIES: The main duty is to initiate and follow-up all community forestry activities within their respective project sub-zones.

1. Undertake the study of the micro-environment of a pilot village.
2. Responsible for all community forestry work in the pilot and associated villages.
3. Initiate and supervise all nursery work within his zone of action.
4. Collaborate and assist in training activities at the Forestry Center and other forest research activities, as required.
5. Contribute to development of a Forest Extension Handbook for Zone I.

QUALIFICATIONS: University or Technical Forestry Education.

Experience from extension work and/or training.

Ability to live and work under difficult conditions.

Personal commitment to the concept of community-based forestry.

Working knowledge of Portuguese, Creole and, potentially local languages.

French and English desirable.

PERSONALITY: Very good ability to cooperate; spirit of initiative, capacity to empathize with foreign national groups.

* SUCO Volunteers

TITLE: TEMPORARY PROJECT COORDINATOR

STATION: Bissau and upcountry Zone I, as required

DURATION OF STAY: Estimate October, 1981 - July, 1982

DUTIES: Coordination of all activities per Project implementation schedule (see Project Paper, Section III - A) prior to arrival of Project Manager. Specific duties should include:

1. Coordination with SIDA architect and other parties to ensure that Forestry Development Center is properly designed and located to provide maximum support for project objectives.
2. Coordination with SUCO and the Forest Service to ensure proper selection, orientation and field placement in representative areas of SUCO volunteers to be utilized under the project.
3. Coordination of initial evaluation team field mission in April - May, 1982 (see Project Paper, section IV-C) to develop procedures necessary to collect and analyze pilot village information for the community forestry extension effort.
4. Initiation of equipment procurement, well development and bidding procedures necessary for appropriate construction of the Forestry Center.
5. Initiation of personnel selection locally.
6. Coordination of project activities on behalf of the local offices of SIDA, AID, SUCO as well as the Forest Service, as required.

QUALIFICATIONS: University Forestry Education.

Experience in West African forestry.

Working knowledge of Portuguese, French and English desirable.

XI. INDICATIVE TIMEFRAMES AND MANPOWER NEEDS FOR COMMUNITY FORESTRY ACTIVITIES

The following provides some indicative manpower utilization estimates and compatible agro-forestry associations for the Zone I project.

It should be emphasized, however, that these are not simple recipes for success, but, rather, indications of preliminary trials that project personnel may wish to undertake in the earliest stages of implementation.

INDICATIVE TIME FRAME FOR COMMUNITY FORESTRY ACTIVITIES (***)

TABLE C-8

DESIGNATION OF OPERATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Area demarcated by the population	—————											
Land clearing and burning debris		-----										
Land clearing on open savanna type vegetation and controlled burning	—————											
Alignment of plantation				—————								
Digging holes for plantation					—————							
Plantation operations						----- (*)						
1st tending							----- (**)					
2nd tending											-----	
AGRICULTURAL ACTIVITIES						-----						

(*) Exact timing has to be adjusted to rainfall patterns

(**) To be adjusted according to practice and in coordination with field activities

(***) It is crucial to avoid concentration of more intensive operations such as those of land clearing with current agricultural operations

TABLE - C-9 INDICATIVE DATA OF MAN-POWER UTILIZATION (TO PLANT 1000 TREES)

A - At community level operations (village labor)

Land clearing (very few trees with shrubs)	-	94	M/Day
Land clearing (savanna type vegetation)	-	17	
Land clearing (shrub type vegetation)	-	37	
Marking tree spacing	-	3	
Digging holes	-	16	
Plant distribution	-	11	
Planting	-	13	
Replanting (20% failure)	-	2	"
Tending (2 first years)	-	6	

B - NURSERY WORK

Preparing soil composition and filling pl.

bags (seasonal workers)		4	
Weeding and shodding (*)		0.05	"
Irrigation (*)		0.15	"
Other work in nursery (germination beds, transplanting, etc.) *		0.3	"

(*) Calculated on the base of 2 permanent workers at each small (5000 - plant) nursery.

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TABLE C-10 INDICATIVE WORKLOAD FOR VILLAGES UNDERTAKING COMMUNITY FOREST OPERATIONS (MAN-DAYS PER 1000 PLANTS)

DESIGNATION OF OPERATIONS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Land clearing and burning (very few trees with shrubs)	← 94 →		→									
Land clearing on open savanna type vegetation and control burning	←	17	→									
Land clearing on shrub type vegetation	←	37	→									
Marking tree spacing				← 3 →	→							
Digging holes				←	16	→						
Plantation operations							← 26 →					
Tending 1st							← 1.5 →					
Tending 2nd											← 1.5 →	

ANNEX D: FINANCIAL ANALYSIS

This section is devoted to provision of a detailed budget description for the project, as well as a review of recurrent costs obligations that it will generate. These two aspects of the project are presented hereafter under separate headings.

1. FINANCIAL TABLES AND PLAN

In accordance with standard AID procedures, a complete financial plan of expenditures has been recapitulated in Table D-1 for Phase I of the project and only indicatively for Phase II in Table D-2. Final accounting includes a generalized 10% allowance for physical contingencies as well as a 13% per year rate for inflation, compounded annually over the life of the project. All costs are in current U.S. dollars, at an exchange rate of US\$1 = 35 PG.

A detailed description of the individual financial plan entries (Phase I only) is noted hereafter.

Item (A): Construction Costs

Finalized construction costs will only be possible following the drawing up of construction plans later in 1981 by the SIDA architect. It is estimated that unit costs of construction noted herein are close to the current reality in Guinea-Bissau's Zone I and include basic electricity and plumbing. These costs are based on comparison with actual costs of current construction as well as estimates undertaken by the Zone I Rural Development Project.

TABLE D-1 : PROJECT FINANCIAL PLAN: PHASE I (1981 - 1985)

(US\$ 000, 1981 prices)

(Calendar year only)

	1981		1982		1983		1984		1985		TOTAL	
	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC	FX	LC
A. CONSTRUCTION COSTS	-	-	523	224	-	-	-	-	-	-	523	224
B. WELL, PUMP AND TOWER	64	16	-	-	-	-	-	-	-	-	64	16
C. EQUIPMENT PROCUREMENT	-	-	628	-	-	-	-	-	-	-	628	-
D. OPERATING EXPENSES	-	-	21	21	21	21	21	21	21	21	84	84
E. TRAINING COSTS	-	-	86	4	114	6	143	7	143	7	486	24
F. EXPATRIATE PERSONNEL	-	-	232	39	232	39	232	39	232	39	928	156
G. LOCAL PERSONNEL	-	-	-	63	-	63	-	63	-	63	-	252
H. RESEARCH AND STUDY	-	-	100	-	100	-	100	-	100	-	400	-
SUB-TOTAL	64	16	1590	351	467	129	496	130	496	130	3113	756
+ PHYSICAL CONTINGENCIES (10%)	-	-										
+ INFLATION (13%/YR.)												
TOTAL	64	16	1976	436	656	181	787	206	890	233	4373	1072

5445

TABLE D-2: PROJECT FINANCIAL PLAN: PHASE II (1986 - 1990)

(US\$ 000, 1981 prices)

- Calendar year only -

ITEM	1986		1987		1988		1989		1990		TOTAL	
	FX	LC	FX	LC								
A. EQUIPMENT PROCUREMENT (1)	196	-	-	-	-	-	-	-	-	-	196	-
B. OPERATING EXPENSES (2)	19	19	19	19	19	19	19	19	19	19	95	95
C. TRAINING COSTS (3)	86	4	86	4	86	4	57	3	19	1	334	16
D. EXPATRIATE PERSONNEL (4)	120	20	120	20	60	10	60	10	-	-	360	60
E. LOCAL PERSONNEL (5)	-	74	-	74	-	74	-	74	-	74	-	370
F. RESEARCH AND STUDY (6)	100	-	100	-	100	-	100	-	100	-	500	-
SUB-TOTAL	521	117	325	117	265	107	236	106	138	94	1485	541
+ Contingency (10%) (7)												
+ Inflation (10%/Yr.) (7)												
TOTAL	1028	231	705	254	632	255	620	278	398	271	3383	1289

4672

(1) Assumes Renewal of vehicles and some material (no farm tractor)

(2) Same as Phase I vehicle purchase minus farm tractor

(3) 2 professional foresters, 5 technicians, special training

(4) 1 person for two years, 1 person for four years

(5) Same as Phase I, plus two Guinean foresters to replace expatriates.

(6) \$100,000/yr.

(7) Base year 1981. Inflation of 13% through 1985 and 10% from 1986 through 1990.

	<u>LC</u>	+	<u>FX</u>	=	<u>TOTAL</u>
1. Training Center/Office Area (350)m ² x \$500/m ²)	52500		122500		175000
2. Dormitory Area (200m ² x \$400/m ²)	24000		56000		80000
3. Garage/Workshop Area (160m ² x \$300/m ²)	14400		33600		48000
4. Housing (Type 1) (3 X 100m ² X \$600/M ²)	54000		126000		180000
5. Housing (Type 2 - "Duplex") (1 X 120m ² X \$600/m ²)	21600		50400		72000
6. Housing (Type 3) (8 X 60m ² X \$400/m ²)	57600		134400		192000
CONSTRUCTION SUB-TOTAL	224100		522900		747000

ITEM (B): Well, Pump and Tower

With the closing out of the United Nations and Russian well drilling programs it is currently unclear whether the Center's deep well will be drilled through GOGB program or by a private contractual source. Estimate for 4-inch tubular well, 60 meters deep, with electric pump and central water tower. Local costs will account for 20% of total costs.

ITEM (C): Equipment Procurement

This will include all items noted on the attached Equipment Procurement list, Table D-3. All procurement has been assumed as 100% foreign exchange costs.

TABLE D-3:

EQUIPMENT PROCUREMENT

ITEM	QTY	UNIT COST	TOTAL COST	REMARKS
VEHICLES *				
PICK-UP TRUCK	5	\$13,000	65,000	Type Peugeot 404
5-TON TRUCK	1	30,000	30,000	
4-WHEEL DRIVE VEHICLE	1	15,000	15,000	Type Land Cruiser
FARM TRACTOR	1	40,000	40,000	For use at Center
TRACTOR TRAILER	1	4,000	4,000	
TANK TRAILER	1	6,000	6,000	
MOTORBIKES :	4	1,500	6,000	For volunteers
BICYCLES	50	200	10,000	For Agentes Florestais
ENERGY SOURCE				
SOLAR ENERGY UNIT	1		250,000	
DIESEL GENERATOR	2	10,000	20,000	
FORESTRY EQUIPMENT (SEE SEPARATE LIST)	Unit		20,000	For teaching and trials
NURSERY EQUIPMENT	Unit		10,000	Incl. irrigation-equipment
METEOROLOGICAL STATION	Unit		2,000	
OFFICE EQUIPMENT (SEE SEPARATE LIST)	Unit		50,000	
DORMITORY, DINING HALL EQUIPT.			10,000	
HOUSING FURNITURE, ETC.	Unit		60,000	
KITCHEN EQUIPMENT (SEE SEPARATE LIST)	Unit		10,000	
FENCING	1500 mm		8,000	Around nursery and garage
WORKSHOP TOOLS **	Unit		12,000	For garage/workshop
			<u>628,000</u>	

* Should be the same models as in the Rural Development Center. With the vehicles should be ordered enough spare parts to cover expected need for initial 2 yrs. Cost for this is calculated under operating expenses .

** 200 amp. gas welder (\$4000), Complete tool set, locking (\$3,000), bench tools - air compressor, bench grinder, benches (\$5,000).

FORESTRY EQUIPMENT SUB-LIST	NR. OF	
DESIGNATION	UNITS	
LONG HANDLE PLANTING SHOVEL	25	
TREE PLANTING SPADE	25	
TREE PLANTING HOES	25	
TREE PLANTING BARS (OST-BAR TYPE)	10	
FIRE RAKE	25	
FAST CUTTER - TWO-MEN CROSS CUT SAW	20	
GRAFTING KNIFE	20	
BUDDING KNIFE	3	
SINGLE BITE AXE	20	
ALUMINUM GRADUATE CALIPER (CHUMAL)	2	
ALUMINUM GRADUATE CALIPER (DEVINAL (1 - 102 cm)	15	
HAGA ALTIMETER	5	
SILVA RANGER COMPASS	75	
SURVEYING FORESTRY, COMPASS	2	
METAL TAPER METER (15M LONG)	20	
CHICAGO POLY CLADE ROPE CHAIN (50m LAX)	10	
CHICAGO BABBITE TAPES (50m LONG)	2	
HEAVY DUTY POCKET STEREOSCOPE (X4)	2	
SHEAR TYPE PUMKS	15	
POWER CHAIN SAWS	2	
ONE MAN CROSS-CUT SAW	20	
ONE MAN BOW SAW	20	
MACHETES	25	
HELMETS	2	
1 PLUG HEAVY DUTY 5 WEIGHTING SCALE (50 UG)	1	
BOLE HOOKS	10	
CRUZ - ALL	4	
SOIL TESTING KIT	4	
REFILS FOR TEST SOLUTIONS	4	
BOOTS FOR STUDENTS	75	
LUMP SUM TOTAL		\$20,000

OFFICE EQUIPMENT SUB-LIST

<u>DESIGNATION</u>	<u>NUMBER</u>	
Typewriters	2	
Adding machines	1	
Calculating machine (Type HP41)	1	
Ditto machine	1	
Stencil machine	1	
Slide projector	2	
Office desks	10	} locally-made (SOCOTRAM)
Office chairs	10	
Classroom desks	40	
Misc. supplies		
Office Equipment Lump Sum		\$50,000

Dormitory and Dining Hall Sub-List

Bunk beds w/mattress	16	
Upright closets	32	} locally-made (SOCOTRAM)
Tables (4-seat)	4	
Tables (6-seat)	8	
Benches (5-meter)	2	
Chairs	112	
Misc. (10%)		
Dorm and Dining Lump Sum		\$10,000

Kitchen Equipment for Center

Wood-burning stove	1	
Refrigerator	1	
Freezer	1	
Misc. utensils and . Servingware for 50 people		
		\$10,000

ITEM (D): ANNUAL OPERATING EXPENSES

Calculations of all operating expenses (excluding salaries) are noted below first in Guinean Pesos and then converted to US dollars. Foreign exchange costs are considered to be 50% of total costs.

(1) <u>Equipment operation</u> (all costs, excludes depreciation)	
- Farm tractors (1000 hrs X 1 X 150 PG/hr.)	150,000
- 5-ton truck (10000 km X 1 X 12 PG/hr)	120,000
- Pick-up trucks (15000 km X 5 X 7 PG/hr.)	525,000
- Four-wheel Drive Vehicle, (10000 km X 1 X 8 PG/km)	80,000
- Motorcycles (5000 km X 4 X 2 PG/km)	40,000
- Bicycles (50 bicycles)	60,000
- Power chain saws (2 power saws)	12,000
	<hr/>
Equipment S-Total	987,000
(2) Overhead costs (electricity generation, building repair and maintenance, pump maintenance, communications, misc.)	500,000
	<hr/>
	1487,000 PG
TOTAL COSTS	
OR, \$US	42,486

ITEM (E): TRAINING COSTS

Two qualified Guineans will be sent to the United States for university-level (B.S.) training in forestry at \$20,000/year per student for four years (includes special language training). Fifteen Guineans will be sent to the Djebilor Forestry School in Senegal, or its equivalent, at an estimated cost of \$6,000/year per student for three years. Selected short training in speciality areas (charcoal production, nursery development, special language or technical skills) in-country, or in Senegal particularly, has been budgeted at \$20,000/year. Foreign exchange costs will make up 95% of total costs of training.

ITEM (F): ANNUAL EXPATRIATE PERSONNEL COSTS

Attainment of project objectives will require three expatriate contract personnel and four expatriate volunteer (SUCO) personnel for at least the earliest stages of the project. This item has been fully budgeted over four years although total expatriate personnel requirements could be reduced somewhat by the annual evaluation team. All staff will receive a local per diem in PG.

	<u>FX</u>	+ <u>LC</u>	= TOTAL
1 - Project Manager	60000	10000	70000
1 - Training Coordinator	60000	10000	70000
1 - Community Forestry Coordinator	60000	10000	70000
3 - Community Foresters (SUCO)	39100	6600	45700
1 - Sociologist (SUCO)	<u>13000</u>	<u>2200</u>	<u>15200</u>
	232100	38800	270900

ITEM (G): ANNUAL LOCAL PERSONNEL COSTS

This list will be somewhat modified over time as qualified Guinean personnel are located to replace or to assist expatriate project personnel. Furthermore, the administrative assistant position may not be required beyond the first 2 - 3 years of project implementation. Salary calculations are based on normal monthly salaries currently paid in Guinea Bissau times twelve. Indemnities are calculated at 100 PG/day for drivers and 120 PG for the administrative assistant over 100 days. Calculations utilize 100 PG/day for the chief nurseryman and assistant nurseryman and 80 PG/day for unskilled laborers over 50 days. All costs are local costs and are first calculated in PG, then converted to dollars.

<u>NO.</u>	<u>DESIGNATION</u>	<u>UNIT SALARY</u>	<u>UNIT INDEMNITY</u>	<u>OVERALL TOTAL</u>
2	Secretaries	51600	-	103200
1	Accountant	120000	-	120000
1	Administrative Assistant	120000	12000	132000
1	Mechanic	96000	-	96000
1	Ass't Mechanic	66000	-	66000
2	Drivers (Automobile)	51600	10000	123200
1	Driver (Farm Tractor)	70800	10000	80800
1	Kitchen Head	44400	-	44400
2	Kitchen Assistants	28800	-	57600
1	Chief Nurseryman	79200	5000	84200
2	Assistant Nurserymen	57600	5000	125200
4	Unskilled Laborers	44400	4000	1161600
			TOTAL	2194200 PG
			, OR, \$US	62,691

1 (H): RESEARCH AND STUDY COSTS

Clearly, numerous minor research attempts, special studies, consultancies and study travel will be required as the project progressively enters the complexities of implementation and field development. An estimated \$100,000 per year (FX costs only) has been budgeted for these activities, based on the following breakdown.

Annual evaluation costs	\$20,000
Consultancies	\$50,000
Minor special research, trials, and study trips	\$30,000
TOTAL	\$100,000

2. DONOR EXPENDITURES

Using the assumed allocation of financing responsibilities outlined in Section I of the Project Paper and referring to the project cost calculations noted in Table D-4, we have derived the following estimate of donor expenditures by calendar year.

TABLE D-4:
PROJECTION OF EXPENDITURES BY DONOR AND
BY CALENDAR YEAR
(US \$ 000)

CALENDAR YEAR	SIDA	GOGB ⁽¹⁾	AID ⁽²⁾	SUCO	TOTAL
1981	64	16	-		80
1982	1424	436	500	52	2412
1983	604	181	-	52	837
1984	735	206	-	52	993
1985	<u>838</u>	<u>233</u>	<u>-</u>	<u>52</u>	<u>1123</u>
TOTAL	3665	1072	500	208	5445
	(67%)	(20%)	(9%)	(4%)	(100%)

(1) Composed of PL480 Title I cereal grain receipts.

(2) For funding of the AID portion, all \$500,000 are programmed in U.S. Fiscal Year 1982.

3. RECURRENT COSTS

The GOGB and the Forest Service have been, and still are, under severe constraints to keep recurrent costs low. Government revenues are chronically insufficient to cover recurrent expenses and capital investments must be largely underwritten by external sources. Confusion over statistics and poor accounting systems leave any recurrent cost analysis

open to some question, however. National revenues in 1977 were almost \$16 million and expenditures about \$36 million, leaving a deficit of some \$20 million in that year. These trends appear to continue and, in fact, may have worsened somewhat with poorer than usual crop production figures of last year. The country also suffers from a lack of foreign exchange due to a chronic balance of payment deficit and an overvalued local currency. The balance of payment deficit in 1978 was some \$14 million, despite grants, loans, international assistance and national treasury manipulations (including reduction of reserves to very low levels). Finally, the terms of trade are continuing to work against the country, with the possible exception of tropical hardwoods.

The project has, therefore, been designed so as to keep the recurrent costs of the project to a tolerable minimum, both during Phases I and II, as well as after the completion of all foreign financial assistance. Examples of the concrete ways in which the project has been cost-effectively designed, include

- provision of renewable, low-cost, low-maintenance energy for electrical generation (solar energy photo-voltaic or wood-fueled generation) and for cooking (wood stove cooker) at the Center,
- Center construction in "passive solar" architectural design to reduce overall energy costs,
- Center construction in durable, local materials to reduce maintenance costs and foreign exchange expenditures to a minimum.

Current or past operating and investment budgets for the forest Service are unknown as an accounting system for the Service was not developed until this year. The major source of revenue for the Service outside of yearly budget affectations is the cutting fees received from commercial logging operations (already described elsewhere). Only 50% of these revenues find its way back into the Forestry Service (Forest Development Fund), however, and there only for reforestation purposes. The Fund is currently estimated to contain some 2,300,000 PG (\$66,000). At current rates of cutting and current fee schedules, new concessions should lead to an additional \$15 - 20,000 per year for the Fund.

Knowing the current personnel, and operating cost needs of the Forestry Service, we would estimate its annual recurrent costs for illustrative purposes at approximately 6 - 7 million PG (\$170 - 200,000).

Based on the budget estimates found in Table D-I, we estimate that normal recurrent costs required by the addition of project activities will be somewhat under \$150,000/year, not including depreciation and in 1981 prices. These are basically salary costs and costs of fuel and spare parts for vehicles. By the end of Phases I and II, we would anticipate that the Center would not only be self-sufficient in food and fuelwood production, but could cover all operating costs (with the exception of major construction or equipment renewal) through the sale of surplus agriculture and forestry production from the Center (wood, charcoal, fruit and vegetables).

Students will, of course, be expected to work directly, in collaboration with Center laborers and potentially with local villagers and Zone I Rural Development Project personnel, on forestry and agro-forestry activities around the Center.

ANNEX E: LOCATION AND DESIGN OF THE FORESTRY DEVELOPMENT CENTER

Location

For the location of the Forestry Center, the following factors need to be considered:

- The Center should be fairly centrally situated in Zone I and with good connections to Bissau. Connections to other parts of the country should also be considered as it will eventually develop to a national forestry center.
- The Center should have access to an area not only for the buildings (2-3 ha) and a nursery (1 ha) but also space for a production area. This area which might be open or partly forested land should be used for practicing plantation and tending of trees by the students, for production of some food (crops, vegetables) partly by students for production of fuelwood for the kitchen and possibly also for a fuelwood for an electric generator and for minor trials and experiments in forestry. The desirable size of this production area is 40 - 60 ha. The Center should also be a reasonable distance from natural forests.
- In order to assure close cooperation with the Integrated Rural Development Project of Zone I, the Center should be in proximity to one of its centers. Ideally, the Forestry and IRD Centers could be placed at a certain distance (100-500 m) with a common field between them used for practice of agro-forestry. In addition, each Center should have its own production area, -the Rural Development Center mainly for agriculture crops and vegetables, but also some for fuelwood, and the Forestry Center mainly for forestry, but also for foodcrops (see Figure E-1).

The Rural Development Project is now planning to have an administration and training center near Bula with subcenters at Bachile and Bissora. Bula is a heavily populated area where practically all land is already under cultivation. There are few remaining natural forests. There might be a problem in obtaining sufficient land for centers in this area. Bachile is too far from the rest of the country and from forests to be considered for a Forestry Center. Bissora is, from a forestry point of view the best situated of the three sites, with good communication to other parts of the country and to forested areas. At this stage it is not possible to give firm recommendations on the exact location of the Forestry Center. It can be recommended however, that the Forestry Center should be in close proximity to a Rural Development Center, but autonomous under Forest Service jurisdiction. It will be up to the Ministry of Rural Development and the Ministry of Natural Resources to jointly decide upon the final site for the two centers. This decision should be taken before the arrival of the SIDA architect who will be responsible for Center design with the assistance of USAID Energy and Engineering Advisor. His arrival is presently scheduled for September, 1981.

Design

The Forestry Center will consist primarily of the following buildings (see Figures E-2 through E-5):

Main Building with 2 classrooms, 4 offices, 1 documentation center/visitor area, dining hall/assembly hall and washrooms with toilets. Attached to the building is also the kitchen with a stove run by fuelwood. The total floor space will be approximately 300 m².

Dormitory with 32 beds (bunkbeds) divided into two parts: 16 beds for the Forest agent candidates and 16 beds for short course candidates. The building will also contain washrooms, toilets and showers and a study room. The total floor area will be approximately 200 m². Outside the dormitory is a locally constructed, roof covered gathering place.

Garage/workshop covering an area of approximately 160 m² including a fuel depot area.

All these buildings should be constructed in a way to insure solar insulation and maximum circulation of fresh air, as air conditioning will not be used. As much as possible of the construction should be made by wood and other locally available material.

Housing: 3x100 m² (Type 1) houses are needed for the professional staff at the Center with 2 bedrooms with air conditioners, 1 guest room, full bathroom, living room and kitchen with possibilities for refrigeration and freezer. A duplex house with similar standards (Type 2) and 2x60 m² living areas each will also be needed. For some of the locally-employed staff, 8 houses (Type 3) of 50 m² will also be built and furnished.

The design of all the houses will maximize passive thermal cooling while insuring the use of standard local building materials and techniques. Simplicity, comfort and reduced recurring costs will be the key parameters of design.

Power Plant with a 6000 W Photovoltaic cell and storage battery and control system supplemented by two 7 kVA diesel motor generating sets for peak hour energy use. To house these components a complex of three, small masonry buildings and associated structures are necessary: a 30 m² engine room, a 20 m² fuel shed with a 8000 L tank, a 20 m² battery-electrical control room and approximately 10 m³ of concrete foundations for the PV collector supports.

The plans and budget for construction have been designed so that the Forestry Center can be autonomous in electricity, water, workshop facilities, etc. However, if feasible, the Forestry and IRD Centers could share water, electricity or workshop facilities. These considerations as well as the detailed design of the buildings will be studied by the CIDA Project Architect and USAID Engineering and Energy Advisors, once the final site has been selected.

FIGURE E-1: SITUATION SKETCH OF ZONE I RURAL DEVELOPMENT AND FORESTRY CENTERS

1 cm.= 50 m.

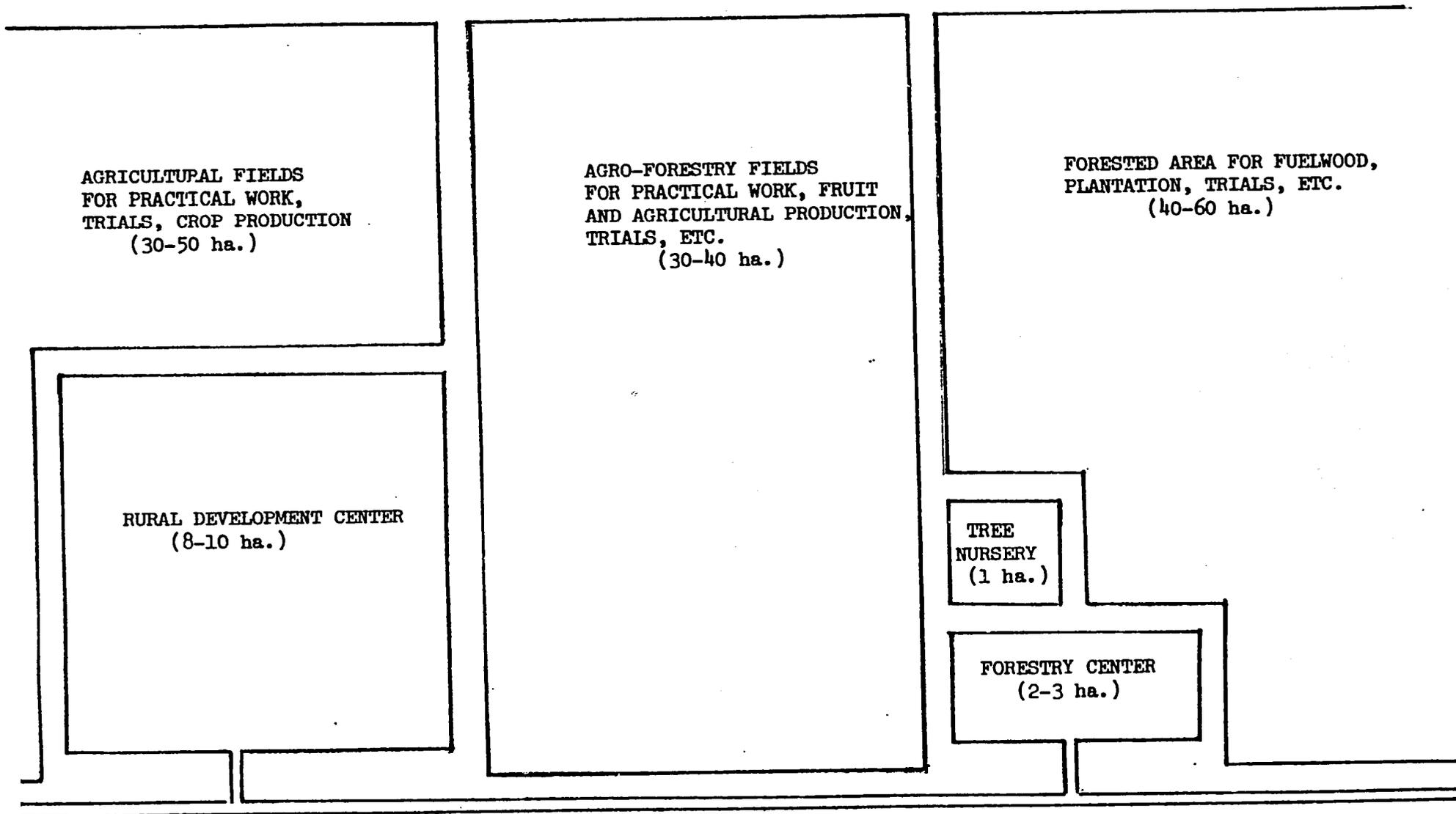


FIGURE E-2: SITUATION SKETCH OF THE FORESTRY DEVELOPMENT CENTER

1cm.=10m.

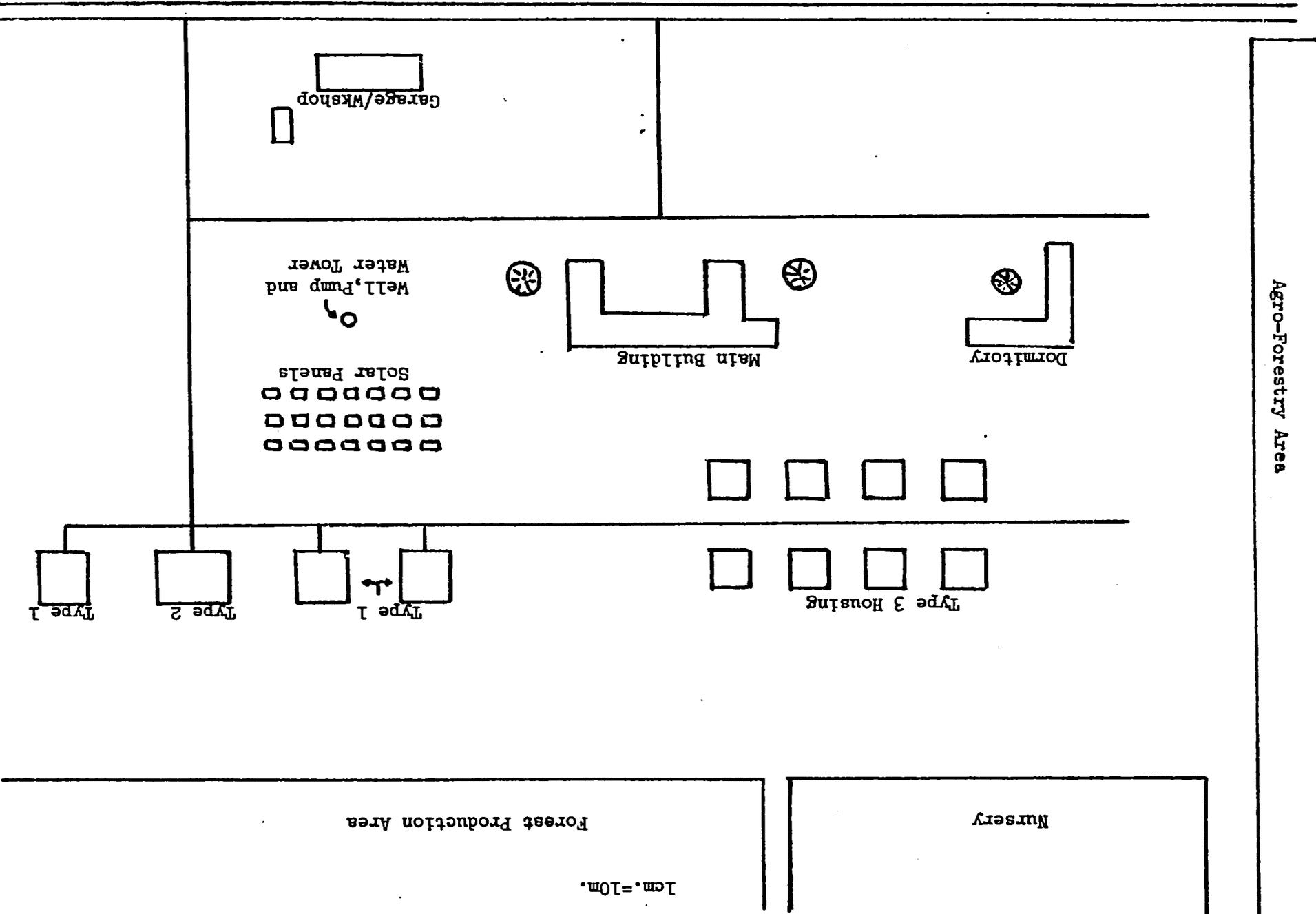
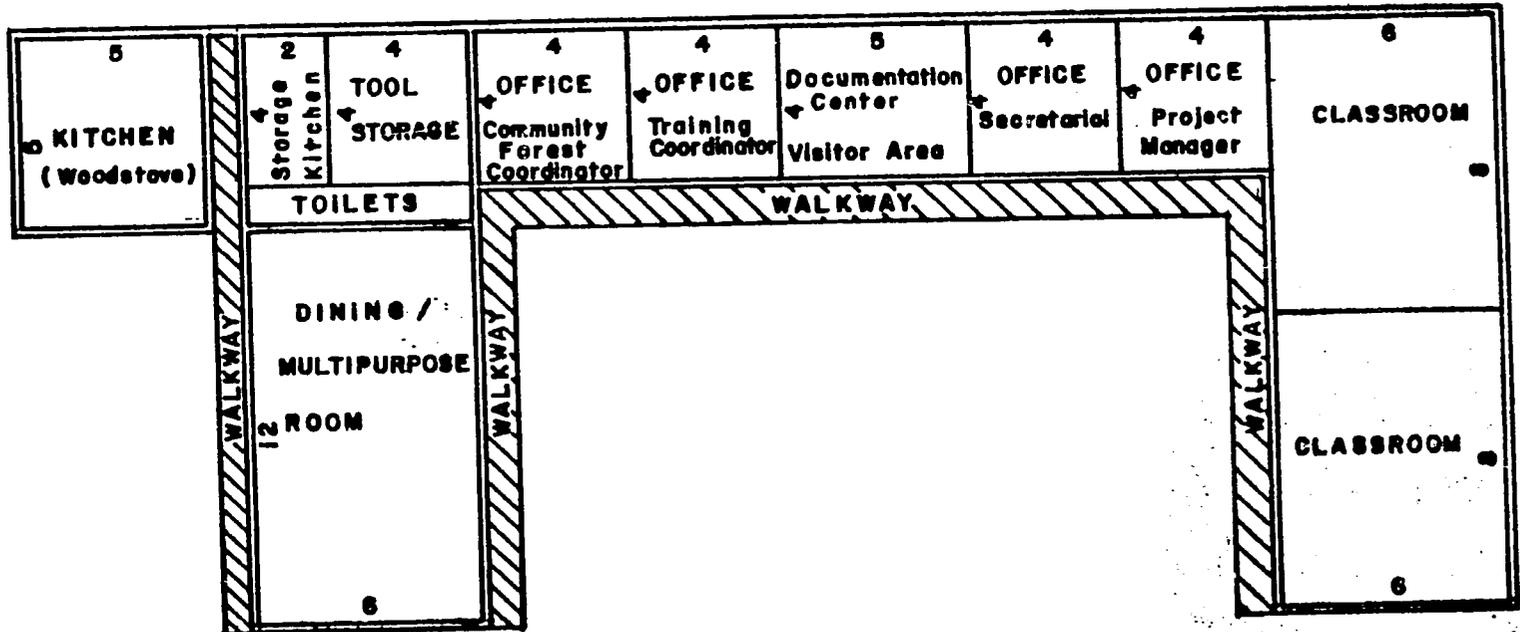


Figure E-3: TRAINING CENTER / OFFICES / DOCUMENTATION AREA

1 Cm = 2 m

Total Floor Space = 300 m²



6

Figure E-4: DORMITORY FLOOR PLAN

1 Cm = 2 m.

Total Floor Space = 200 m²

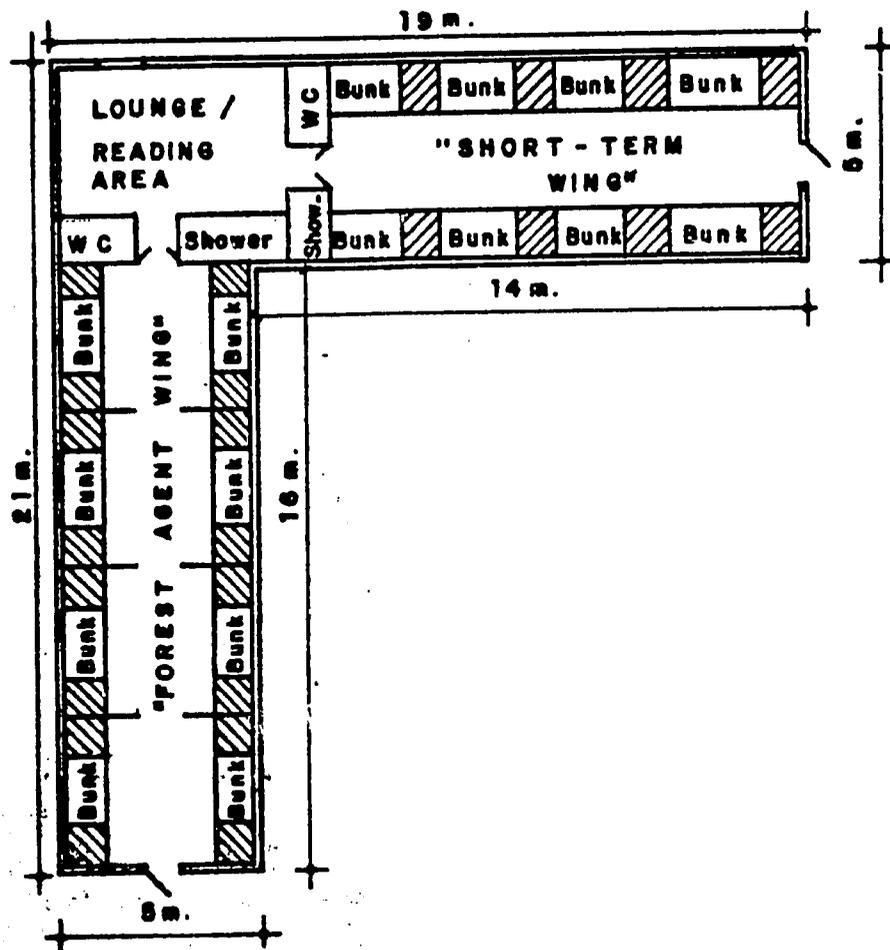
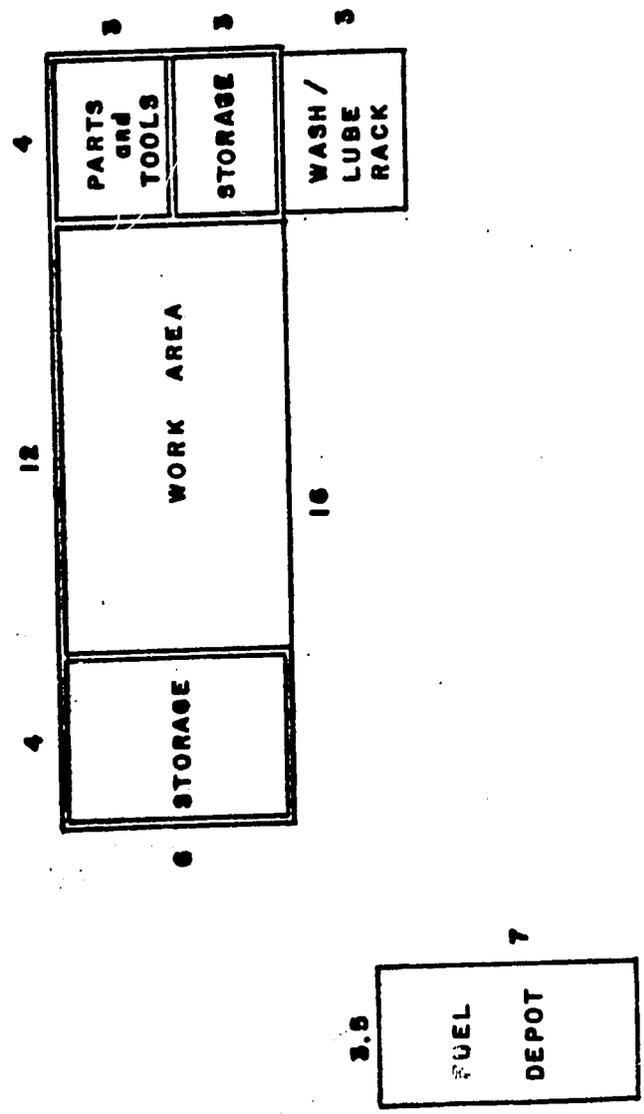


Figure E-5 : GARAGE/WORKSHOP FLOOR PLAN

1 Cm = 2 m.

Total Floor Space = 160 m²



ANNEX F : PROJECT MISSIONS UNDERTAKEN AND PERSONS CONTACTED
MISSIONS UNDERTAKEN

1) AID Project appraisal mission (March 2 - 8, 1980)

Forester/natural resource advisor and economist from AID regional office in Abidjan discussed problem and developed project orientation with Forest Service, and Ministries of Plan, Natural Resource and Cooperation. Appraisal Report (8 pp.) was distributed to all parties. Proposition for nation-wide project.

2) AID Project Identification Document Mission (June 16 - 29, 1980)

Two-person team from AID office in Abidjan gathered data and developed project strategy in considerable detail. Discussions with Forest Service, and Ministries of Plan, Natural Resources, including final debriefing session. PID report (60 pp.) given to all parties. Project restricted, at GOGB request, to Zones I and IV.

3) AID coordinating mission (January 19 - 23, 1981)

Following November, 1980 political activity in Guinea Bissau, trip made by AID project coordinator from Abidjan regional office to ensure project still agreed upon by all parties. Project limited, at GOGB request to Zone I only.

4) AID coordinating mission (May 3 - 7, 1981)

AID project coordinator from Abidjan office collaborates closely with SIDA Rural Development team and Forest Service. Decision made to invite SIDA to make financial contribution to project. All parties (Plan, Natural Resources, Rural Development, Cooperation) concur.

5) SIDA Forestry mission (May 11 - 21, 1981)

SIDA team of two foresters from Sweden visit field and undertake complete discussions with AID and GOGB (Plan, Natural Resources, Rural Development) to ensure utility of SIDA participation in Zone I project.

6) AID coordination mission (May 12 - 21, 1981)

AID project coordinator from Abidjan participate in discussions noted in (5), above.

7) AID/SIDA Project Paper Mission (June 8 - July 3, 1981)

Three man AID-financed team (forester, anthropologist and economist) is joined by SIDA forester to undertake final project design. Numerous meetings with Ministries of Plan, Natural Resources, Rural Development and Cooperation culminates in formal debriefing on June 29, 1981.

3

PERSONS CONTACTED

- Ana Maria de Sá Almeida, Director, Forest Service
- Vasco Cabral, Minister of Plan
- Avito da Silva, Minister of Rural Development
- Boubacar Toure, Director General, Ministry of Plan
- Jorge Oliviera, Director, Zone I Rural Development Project
- Inacio Semedo, Director, International Cooperation
- Leonildo Capucho, Forest Technician, Forest Service
- Carlos da Silva, Ministry of Rural Development
- Bartolomeu Pereira, Min. of Plan
- James Maher, CDO/Bissau (USAID)
- Bosse Hammerstrom, SIDA/Bissau
- Sven Ake Svensson, Devel. Coop. Attache, SIDA/Bissau
- Inger Arnfast, SIDA/Bissau
- Monique Prieure, SUCO/Bissau
- Francois Martell, Forester, Forestry Service
- Denis Cabana, Forester, Forestry Service
- Rui Pereira, Planning Office, Min. of Natural Resources
- Franco Siciliano, Dep. Director, UNDP/Bissau
- Anders Olsen, SOCOTRAM
- Klaus Gunvar-Linden, SOCOTRAM
- Jean Hochet, FAO/Bissau
- Joseph Gussrenhoven, Min. Natural Resources
- Thomas Paulini, Min. of Plan
- Mamadu Bari, Min. of Plan
- El Hadj Sene, Director, Senegal Forest Service

PERSONS CONTACTED (CONT'D)

- Oliver Hamel, Director, CNRF (Senegal)
- Apolinario Cassama, Site Manager, SOCOTRAM
- Pedro Moreno, Min. of Plan/Farim
- Joaquim da Silva, Forest Service, Oio Region
- Mr. Sall, Forest Service, Ziguinchor (Senegal)
- Mr. Huygens, Director, FAO/UNDP Forest Project, Ziguinchor
- Mr. Rappo, Director, Djebilor Forestry School (Senegal)
- Michael Malagnoux, CNRF/Ziguinchor (Senegal)
- Mr. Dubrueil, FAO/Dakar
- Coly Ba, Ass't Inspector, Forest Service/Ziguinchor
- Hubert Lescroart, Societe Casamancaise des Bois, Ziguinchor
- Mr. Guaruglieri, Conseiller agronome, FED/Bissau

ANNEX G: AID Internal Documentation
(not for translation)

1. Facesheet
 2. Action Memorandum
 3. Project Authorization
 4. Conditions, Covenants and Negotiating Status
 5. PID Approval Message
 6. GOGB Request for Assistance
 7. 611 (a) Certification
 8. Statutory Checklists
 9. Waiver - Host Country Participant Travel Responsibilities
 10. Waiver- Flag Carrier Source
- Located at front of PP

ANNEX G 4: Conditions, Covenants and Negotiating Status

Planning for the Guinea Bissau Forestry Project is already at an advanced stage. AID has been in close contact with the GOGB and other contributing donors (SIDA, SUCO) and there is a general understanding and agreement with respect to AID's participation. Although subject to normal programming delays, all donors have indicated their intent to contribute their share of total project funding as per Table 7 of the Project Paper financial analysis. Release of the GOGB contribution has been verbally agreed to by the Minister of Rural Development, Mr. Avito da Silva, who is responsible for allocation of the PL 480 funds. CDO/Bissau expects to receive a written commitment of funds prior to the end of July. SIDA has actively contributed to project design and is ready to formally allocate funds to the project upon approval of the overall SIDA program to Guinea Bissau in November, 1981. Immediately after SIDA/Stockholm approval of the program a specific project agreement will be signed (anticipated December, 1981) between the Swedish and Guinean Governments. SUCO assigns their volunteers to GOGB projects on the basis of a simple GOGB request. SUCO has already begun their manpower search and is clearly intent on supplying its contribution of four technicians according to the project implementation schedules. An agreement between SUCO and the GOGB could be made available prior to the signature of SIDA formalities.

I. Prior to the first disbursement under the Grant, or to the issuance by AID of documentation pursuant to which disbursement will be made, the Cooperating Country will, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Specimen Signature
- b) Evidence of the source and availability of funds for the GOGB contribution to the project (\$1,072,000 equivalent in Guinean pesos).

II. Prior to disbursement under the grant, other than up to a maximum of \$20,000 for English language training, the Cooperating country will, except as AID may otherwise agree in writing, furnish to AID, in form and substance satisfactory to AID:

- a) Evidence of a binding agreement between the Grantee and the Swedish International Development Agency (SIDA) under which SIDA will finance approximately \$3,665,000 (in equivalent Swedish Crowns) and evidence that the conditions precedent to effectiveness (other than those related to the AID Grant) have been fulfilled.
- b) Evidence of binding agreement between the Grantee and the Canadian University Service Overseas (SUCO) under which SUCO will furnish four volunteer technical assistants to the project for four years each, and evidence that all conditions precedent to effectiveness (other than those related to the AID Grant) have been fulfilled.

III. Prior to disbursement under the grant or the issuance by AID of documentation pursuant to which disbursement will be made for procurement of the training center power plant, the Cooperating Country will, except as AID may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID:

- a) Evidence that a site for the training center has been selected and made available to the project.
- b) Preliminary plans and specifications for the training center.
- c) An executed contract for construction of the training center.

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ANNEX G5: PID APPROVAL CABLE

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TOR: 0824
CN: 04719
CHRG: AID
REDSO-3
INFO CHRON DCM

AIDAC, REDSO/WA FOR FORT/HRALSKY

E.C. 12065: N/A

TAGS:

SUBJECT: GUINEA BISSAU FORESTRY PROJECT 657-0005 MEETING
TO REVIEW DECISIONS MADE AT SECOND PID REVIEW

REFS: (A) ABIDJAN 03281; (B) BISSAU 0625; (C) STATE 083755
(D) ABIDJAN 1157; (E) BISSAU 071 PARTS 1 AND 2; (F) ABIDJAN
1412

1. SUMMARY

IN RESPONSE TO REPELS (A) AND (B), THE PID REVIEW COM-
MITTEE RECONVENED A MEETING ON 04/17/81 TO REOPEN DIS-
CUSSIONS ON THE GUINEA BISSAU FORESTRY PROJECT AND THE DE-
CISIONS MADE AT THE SECOND PID REVIEW HELD 02/11/81. THE
COMMITTEE AGREED THAT THERE ARE NO MAJOR PROBLEMS WITH THE
TECHNICAL ASPECTS OF THE PID BASED ON INTEGRATION OF THE RE-
VISIONS OUTLINED AS A BASIS OF WORK. THE COMMITTEE AGREED
TO APPROVE THE PID BASED ON SUBJ INTEGRATION OF TECHNICAL
CONSIDERATIONS. THE MAJOR CONSTRAINTS WILL REVOLVE AROUND
THE AVAILABILITY OF FUNDS TO DEVOTE TO THIS SECTOR IN VIEW
OF THE BUDGETARY CONSTRAINTS AND THE COMMITTEE ESTABLISHED
USG'S PROJECT FUNDING LIMITATION FOR THIS PROJECT AS DOLS
500,000. THE COMMITTEE AGREED TO PROCEED WITH THE PP DESIGN

PLEASE WITH NOTATION TO BOTH REDSO/WA AND CDO/BISSAU OF
THE FUNDING LIMITATIONS IMPOSED AT DOLS HALF A MILLION.
AND IMPLEMENTATION BASED ON AVAILABILITY OF FUNDS WHICH
MAY OR MAY NOT BE FORTHCOMING DURING FY 81/82. IF FUNDS
ARE NOT AVAILABLE THE PROJECT WILL BE CONSIDERED A
"SEELF" PROJECT. ALSO IT WAS REITERATED THAT THE USG'S
ROLE IN FORESTRY SHOULD BE CLEARLY DEFINED AS NOT BEING
ONE OF LEADERSHIP BUT RATHER THAT OF A PARTICIPANT
IN THIS SECTOR. AID/W IS AGREEABLE TO IDENTIFYING OTHER
FUNDING SOURCES (REGIONAL) TO COVER POSSIBLE SUB-
ACTIVITIES RELATED TO FORESTRY AS PER COMMENTS, IN PARA
3 BELOW. REDSO/WA AND CDO SHOULD IDENTIFY SUB-ACTIVI-
TIES WHICH COULD BE FUNDED SEPARATELY. END SUMMARY.

2. PROJECT FUNDING CONSTRAINTS

AID/W WISHES TO CORRECT AN EARLIER MISCONCEPTION OF
AID/W IN REPEL (A) PARA 4, ACTION NO. 1 OF DOLS 2.

Kennedy
For
9/5

MILLION FOR GUINEA BISSAU. BECAUSE OF RECENT CHANGES IN BUDGETARY OUTLOOK THE AAPL FOR GUINEA BISSAU WILL REMAIN AT DOLS 2.0 MILLION THRU FY87.

BASED ON THIS AAPL OF 2.0 MILLION THERE IS LITTLE OR NO FLEXIBILITY TO DEVOTE THE KIND OF INVESTMENT NEEDED FOR FORESTRY TO ACHIEVE A LEADERSHIP ROLE IN THIS SECTOR.

IT WOULD BE COUNTERPRODUCTIVE TO BOTH USG AND GOGP INTEREST FOR AID TO ENTER INTO A LEADERSHIP ROLE IN THE FORESTRY SECTOR WITHOUT SUFFICIENT FUNDS TO CARRY OUT STATED GOALS. AFTER A CAREFUL REVIEW OF TOTAL COUNTRY FUNDING, WE ESTIMATE THAT DOLS HALF A MILLION IS THE MAXIMUM CEILING TO BE USED BY CDO AND PP DESIGN TEAM FOR THIS PROJECT. AS STATED IN OUR EARLIER MESSAGES WE WISH TO STATE THAT OUR MAIN FOCUS IN GUINEA BISSAU IS ON FOOD PRODUCTION: RICE AND FISH. AID/W RECOGNIZES THE LINKAGE BETWEEN FOOD PRODUCTION AND FORESTRY, BUT GIVEN OUR BUDGET LIMITATION, WE MUST NOT GIVE THE IMPRESSION OF ASSUMING A LEADERSHIP ROLE IN FORESTRY.

AID/W IS EXPLORING THE POSSIBILITY OF GETTING RELATED ANCILLIARY SUB-ACTIVITIES FUNDED UNDER REGIONAL PROJECTS, HOWEVER, REDSO/WA AND CDO/BISSAU SHOULD IN DESIGNING THE PROJECT IDENTIFY AND SEPARATE THOSE ACTIVITIES WHICH COULD BE FUNDED AS SUB-ACTIVITIES (SEE PARA 3 BELOW) OF THE FORESTRY PROJECT.

3. DESIGN

FOR THE PURPOSE OF PROCEEDING WITH THE PP DESIGN AID/W REQUESTS THAT THE ORIGINAL PID AND REVISIONS MADE FOR THE SECOND PID REVIEW BE INTEGRATED. TAKING DUE ACCOUNT OF TECHNICAL COMMENTS PROVIDED UP TO NOW, REDSO/WA AND CDO/BISSAU SHOULD DESIGN PROJECT WHOSE SCOPE MATCHES THE FUNDING LIMITATIONS OF DOLS HALF A MILLION.

ALSO AS PART OF THE DESIGN APPROACH REDSO/WA MIGHT WANT TO IDENTIFY AND SEPARATE OUT THOSE SUB-ACTIVITIES WHICH COULD BE COVERED THROUGH OTHER FUNDING SOURCES. SUB-ACTIVITIES SUCH AS TRAINING, RESEARCH AND SOME COMMODITY PROCUREMENT (E.G. FOR ESTABLISHING A NURSERY ETC) ARE EXAMPLES OF WHAT COULD BE FUNDED FROM OTHER SOURCES. AS NOTED IN PARA 1 IF FUNDING IS NOT AVAILABLE DURING FY 81 OR EARLY FY 82 THE PROJECT WILL BECOME A SHELF PROJECT. OPTIONALLY AIP FUNDS OF DOLS 502,000 CAN STILL BE SCOUT FOR SUB-ACTIVITIES IN FY81. AFR BUREAU IS EXAMINING POSSIBLE MEANS OF FINANCING SOME REASONABLE PORTIONS OF THE PROJECT FROM OTHER SOURCES. WE WILL ADVISE RESULTS REFTEL.

ADDITIONAL SCOPE OF PROJECT AND COMMENTS ON TECHNICAL ASPECTS ARE NOTED IN THE SECOND PID REVIEW CABLE. HAIG
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ANNEX 66

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ADM AID

FCR: HRADSKY REDSO/WA DUE DEPART ABIDJAN 7/30/81 AND ANDERS
REDSO/ENG

EO 12065: N/A
SUBJ: GB FORESTRY PROJECT

1. FOLLOWING LETTER RECEIVED BY CDO AND BEING POUCHED REDSO/WA
ATTENTION ANDERS: DEAR MR. MAHER: SINCE APRIL 1980 THE
FORESTRY SERVICES DIVISION UNDER THE DIRECTION OF ANA MARIA DE
SA ALMEIDA, HAS BEEN WORKING TOGETHER WITH OFFICIALS OF AID,
SIDA AND SUCO IN THE DEVELOPMENT OF A VIABLE FORESTRY MANAGEMENT
PROJECT FOR ZONE I WHICH WE BELIEVE IS NOW ACCEPTABLE TO ALL
PARTIES. THE RESULTS OF THIS EFFORT IS DETAILED IN THE
REPORT ENTITLED QUOTE PROFILE OF THE SIDA/USAID/SUCO FORESTRY
MANAGEMENT PROJECT FOR ZONE I END QUOTE. WE CONCUR IN THE
CONTENTS OF THIS DOCUMENT AND ARE AWARE THAT IT IS A VITAL STEP
IN COMBATING DEFORESTATION AND SUBSEQUENT SAVANNAHIZATION OF
ZONE I OF OUR COUNTRY. THE GOVERNMENT OF GUINEA-BISSAU APPROVES
AND SUPPORTS THIS PROJECT AND ACCORDINGLY, REQUESTS
AIE'S FORMAL APPROVAL IN ORDER THAT THE PROJECT MAY BEGIN
WITHOUT FURTHER DELAY. WITH MY BEST REGARDS, SIGNED: SAMBA
LAMIFE MANE, MINISTER OF NATURAL RESOURCES.

2. IN VIEW OF SUBJECT LETTER ASSUME REDSO/WA DIRECTOR WILL
SIGN FINAL APPROVAL DOCUMENT.

3. SIDA DIRECTOR CABLING ARCHITECT TO DVICE ENGINEER ANDERS
AND KCOII AVAILABILITY DATES ONLY SEPT 1 THROUGH 15. WILL
ADVISE DATE ARCHITECT PLANS ARRIVE BISSAU ON RECEIPT SIDA
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BISSAU 1443

Training
Anders
Kennedy
C. Smith
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ANNEX G7

TO: Gordon W. Evans, Director

FROM: Glenn Anders, Engineering Advisor

SUBJECT: 611 (a) Certification for the Guinea Bissau Forestry
Project (657-0005)

The only USAID-funded construction in this project is the purchase and installation of a 6 KW photovoltaic cell-battery storage electrical power system. The componentry for this system has been investigated by our energy advisor, C. Kooi at the NASA Lewis Research Center in Cleveland, Ohio. NASA has verified the cost estimates and offered additional financing to insure correct design, oversight, instrumentation and maintenance of the system (see Abidjan 06244 attached).

My own analysis indicates that the plan and estimate for this system as presented by C. Kooi and supported by NASA are adequate to meet the requirements of section 611 (a) of the Foreign Assistance Act of 1961.

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P. 10000 N/A
SUBJECT: GUINEA/BISSAU FORESTRY PROJECT (657-0000)

THE FOLLOWING INFORMATION ON PHOTOVOLTAIC/DIESEL GENERATOR SYSTEM RECEIVED FROM KOOI BY PHONE ON 17 JUNE. QUOTE KOOI REPORTS A PHOTOVOLTAIC/DIESEL SYSTEM FOR THE FORESTRY CENTER CAN BE INSTALLED FOR DOLS 250,000 ACCORDING TO WCA/LEWIS OF CLEVELAND, OHIO. WCA/LEWIS WILL BUDGET AN ADDITIONAL DOLS 10-150,000 (THEIR FUNDS) FOR DESIGN, OVERSIGHT, SUPPORT INSTRUMENTATION AND TROUBLE SHOOTING UNQUOTE. PAM 3
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ANNEX 5B: STATUTORY CHECKLISTS

5C(1) - COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

- Yes 1. FAA Sec. 116. Can it be demonstrated that contemplated assistance will directly benefit the needy? If not, has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights?
- No 2. FAA Sec. 481. Has it been determined that the government of recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?
- Yes 3. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not controlled by the international Communist movement?
- No 4. FAA Sec. 620(c). If assistance is to a government, is the government liable as debtor or unconditional guarantor on any debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) debt is not denied or contested by such government?
- No 5. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities?

- No 6. FAA Sec. 620(a), 620(f); FY 79 App. Act Sec. 108, 114 and 606. Is recipient country a Communist country? Will assistance be provided to the Socialist Republic of Vietnam, Cambodia, Laos, Cuba, Uganda, Mozambique, or Angola?
- No 7. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression?
- No 8. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property?
- No 9. FAA Sec. 620(l). If the country has failed to institute the investment guaranty program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?
- No 10. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,

 - N/A a. has any deduction required by the Fishermen's Protective Act been made?
 - N/A b. has complete denial of assistance been considered by AID Administrator?
- No 11. FAA Sec. 620; FY 79 App. Act Sec. 603. (a) Is the government of the recipient country in default for more than six months on interest or principal of any AID loan to the country? (b) Is country in default exceeding one year on interest or principal on U.S. loan under program for which App. Act appropriates funds?
- N/A 12. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the

amount spent for the purchase of sophisticated weapons systems? (An affirmative answer may refer to the record of the annual "Taking Into Consideration" memo: "Yes, as reported in annual report on implementation of Sec. 620(s)." This report is prepared at time of approval by the Administrator of the Operational Year Budget and can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstances occur.)

- No 13. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?
- Obligations Current 14. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?
- No 15. FAA Sec. 620A, FY 79 App. Act, Sec. 607. Has the country granted sanctuary from prosecution to any individual or group which has committed an act of international terrorism?
- No 16. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. there to carry out economic development program under FAA?
- No 17. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977, although not a "nuclear-weapon State" under the nonproliferation treaty?

B. FUNDING CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria.

- Government priorities are improvement in small farmer productivity, increasing literacy and improving health
- a. FAA Sec. 102(b)(4). Have criteria been established and taken into account to assess commitment

of its citizens. AID is assisting the first two of these priorities.

progress of country in effectively involving the poor in development, on such indexes as:

- (1) increase in agricultural productivity through small-farm labor intensive agriculture,
- (2) reduced infant mortality (3) control of population growth, (4) equality of income distribution, (5) reduction of unemployment, and (6) increased literacy.

This project is not addressed to this issue, but could be supportive of such a goal.

b. FAA Sec. 104(d)(1). If appropriate, is this development (including Sahel) activity designed to build motivation for smaller families through modification of economic and social conditions supportive of the desire for large families in programs such as education in and out of school, nutrition, disease control, maternal and child health services, agricultural production, rural development, and assistance to urban poor?

N/A

2. Economic Support Fund Country Criteria.

N/A

a. FAA Sec. 502B. Has the country engaged in a consistent pattern of gross violations of internationally recognized human rights?

N/A

b. FAA Sec. 533(b). Will assistance under the Southern Africa program be provided to Mozambique, Angola, Tanzania, or Zambia? If so, has President determined (and reported to the Congress) that such assistance will further U.S. foreign policy interests?

N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made?

N/A

d. FY 79 App. Act Sec. 113. Will assistance be provided for the purpose of aiding directly the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?

N/A

e. FAA Sec. 620B. Will security supporting assistance be furnished to Argentina after September 30, 1978?

5C(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual fund sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

- 1. FY 79 App. Act Unnumbered; FAA Sec. 653(b); Sec. 634A
 (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?
 (a) Congressional Presentation
 (b) Yes
- 2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?
 (a) Yes
 (b) Yes
- 3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?
 None Required
- 4. FAA Sec. 611(b); FY 79 App. Act Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per the Principles and Standards for Planning Water and Related Land Resources dated October 25, 1973?
 N/A
- 5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into consideration the country's capability effectively to maintain and utilize the project?
 N/A
- 6. FAA Sec. 209. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.
 Yes, Project will be jointly funded and implemented by USAID, SIDA (Sweden) and SUCO (Canada)

Yes to 7 (b) and 7. and 7 (e). See Socio-Economic Analysis, Annex B.

US goods and services will be purchased under the project.

The GOGB will finances all local costs of the Project Foreign exchange costs will be funded by USAID, SIDA and SUCO

The USG does not own excess Guinea Bissau pesos.

Yes

N/A

6

FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

12. FY 79 App. Act Sec. 608. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity becomes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

The project will contribute in significant ways to criteria (a), (c), (d) and (e).

a. FAA Sec. 102(b); 111; 113; 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate

technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

This project will attempt to ensure the long-term productivity of Zone I forest and other associated natural resources. It should have a significant impact in maintaining the long-term viability of local agriculture system.

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning under sec. 104(b) or health under sec. 104(c); if so, extent to which activity emphasizes low-cost, integrated delivery systems for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

N/A

N/A

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(i) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(ii) to help alleviate energy problems;

(iii) research into, and evaluation of, economic development processes and techniques;

(iv) reconstruction after natural or manmade disaster;

(v) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

Yes

c. [107] Is appropriate effort placed on use of appropriate technology?

The GOGB will furnish 20% of total funds. This is a multidonor project - the GOGB is therefore

d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"?

The project is responsive to the needs of the people, see project analyses.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civil education and training in skills required for effective participation in governmental and political processes essential to self-government.

Yes

g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of economic resources, or to the increase of productive capacities and self-sustaining economic growth?

2. Development Assistance Project Criteria (Loans Only)

N/A

a. FAA Sec. 122(b). Information and conclusion on capacity of the country to repay the loan, including reasonableness of repayment prospects.

N/A

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

3. Project Criteria Solely for Economic Support Fund

N/A

a. FAA Sec. 531(a). Will this assistance support promote economic or political stability? To the extent possible, does it reflect the policy directions of section 102?

N/A

b. FAA Sec. 533. Will assistance under this chapter be used for military, or paramilitary activities?

5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

- | | |
|----------------------|--|
| Yes | 1. <u>FAA Sec. 602.</u> Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? |
| | 2. <u>FAA Sec. 604(a).</u> Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? |
| N/A | 3. <u>FAA Sec. 604(d).</u> If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? |
| None to be financed. | 4. <u>FAA Sec. 604(e).</u> If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? |
| Yes | 5. <u>FAA Sec. 608(a).</u> Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? |
| Yes | 6. <u>FAA Sec. 603.</u> (a) Compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. |
| N/A | 7. <u>FAA Sec. 621.</u> If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities |

of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

Yes 8. International Air Transport. Fair Competitive Practices Act, 1974. If air transportation of persons or property is financed on grant basis, will provision be made that U.S-flag carriers will be utilized to the extent such service is available?

Yes 9. FY 79 App. Act Sec. 105. Does the contract for procurement contain a provision authorizing the termination of such contract for the convenience of the United States?

B. Construction

Yes 1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

Yes 2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

N/A 3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

C. Other Restrictions

N/A 1. FAA Sec. 122(e). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

N/A 2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

Yes 3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-bloc countries, contrary to the best interests of the U.S.?

- N/A 4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S., or guaranty of such transaction?
- 5. Will arrangements preclude use of financing:
 - N/A a. FAA Sec. 104(f). To pay for performance of abortions or to motivate or coerce persons to practice abortions, to pay for performance of involuntary sterilization, or to coerce or provide financial incentive to any person to undergo sterilization?
 - N/A b. FAA Sec. 620(g). To compensate owners for expropriated nationalized property?
 - N/A c. FAA Sec. 660. To finance police training or other law enforcement assistance, except for narcotics programs?
 - N/A d. FAA Sec. 662. For CIA activities?
 - N/A e. FY 79 App. Act Sec. 104. To pay pensions, etc., for military personnel?
 - N/A f. FY 79 App. Act Sec. 106. To pay U.N. assessments?
 - N/A g. FY 79 App. Act Sec. 107. To carry out provisions of FAA sections 209(d) and 251(h)? (Transfer of FAA funds to multilateral organizations for lending.)
 - N/A h. FY 79 App. Act Sec. 112. To finance the export of nuclear equipment, fuel, or technology or to train foreign nations in nuclear fields?
 - N/A i. FY 79 App. Act Sec. 601. To be used for publicity on propaganda purposes within U.S. not authorized by Congress?

ANNEX G 9: Waiver - Host Country Participant Travel
Responsibilities

Issue: Whether an estimated \$20,000 waiver of host country responsibilities for payment of participant international travel should be granted to permit AID to finance all expenses for the training of two Guinean foresters at the university level.

Discussion: Handbook 10, Chapter 15 stipulates that "the cost of international travel, including incidental costs en route as well as the cost of travel between the Participant's city and the point of departure and return in the Participant's home country is to be paid by the host government." CDO/Bissau, based on his past experience in this area, has requested that the REDSO/WA Director waive this requirement, given the small sum (\$5000 per year for four years) and long and complex effort necessary to liberate that amount every year in foreign-exchange poor Guinea Bissau.

It is noted that the GOGB, although classified as an RLDC, will make a major contribution (20% of the total) to this project.

Recommendation: That a waiver of host country participant travel responsibilities be granted so as to permit AID to finance all expenses related to the university level training of two Guinean forestry candidates over four years.

DRAFT ACTION MEMORANDUM FOR THE DIRECTOR, SER/COM

FROM: James O'D. Maher, CDO/Bissau

Problem: Request for transportation source waiver from Geographic Code 000, to permit financing transportation costs on Code 899.

DISCUSSION: The project will require ocean transport from the United States to Guinea Bissau for approximately 10 tons of solar energy equipment to be procured with AID funds.

Liner service to Bissau is only available through Portuguese Lines Code 899 flag vessels. This service is only from New York and Baltimore, and is only available to Bissau by a through bill of lading, with transshipment at Lisbon.

Additionally, the size of cargo to be shipped (estimated cost under \$10,000) is too small to induce any Code 941 liner operator to establish either through bill of lading or direct service to Bissau.

The issuance of the requested waiver will enable the procurement agent to make quicker delivery of the project commodities.

Section 7B of Supplement B, Handbook 1 provides that SER/COM may waive the limitations as to transportation costs contained in the authorization to authorize financing Code 899 transportation under these circumstances. The interests of the U.S. are best served by permitting financing of transportation service on an ocean vessel under flag registry of a free world country other than the cooperating country and countries included in Code 941.

Recommendation: That you approve the requested waiver under Redelegation of Authority No. 40.4.