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PDP/HOGC

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE ("X" appropriate box)
[X] Original [ ] Change [ ] Add [ ] Delete

PP

DOCUMENT CODE 3

2. COUNTRY/ENTITY
Guinea-Bissau

3. DOCUMENT REVISION NUMBER

4. PROJECT NUMBER
657-0002

5. BUREAU
a. Symbol: AFR
b. Code: 1

6. ESTIMATED FY OF PROJECT COMPLETION
FY 79

7. PROJECT TITLE - SHORT (stay within brackets)
[Agricultural Development]

8. ESTIMATED FY OF AUTHORIZATION/OBLIGATION
a. INITIAL mo. 7 yr. 76 b. FINAL FY TQ

9. ESTIMATED TOTAL COST ($000 or equivalent, $1 =)

a. FUNDING SOURCE	FIRST YEAR FY TQ			ALL YEARS		
	b. FX	c. L/C	d. Total	e. FX	f. L/C	g. Total
AID APPROPRIATED TOTAL	500		500	500		500
(Grant)	(500)	( )	(500)	(500)	( )	(500)
(Loan)	( )	( )	( )	( )	( )	( )
Other 1.						
U.S. 2.						
HOST GOVERNMENT		In kind			In kind	
OTHER DONOR(S)						
TOTALS	500		500	500		500

10. ESTIMATED COSTS/AID APPROPRIATED FUNDS ($000)

a. Appropriation (Alpha Code)	b. Primary Purpose Code	c. Primary Tech. Code	FY TQ d. Grant	FY TQ e. Loan	FY 77 f. Grant	FY 77 g. Loan	FY 78 h. Grant	FY 78 I. Loan	ALL YEARS J. Grant	ALL YEARS k. Loan
PC	120	080	500							
TOTALS			500							
11. ESTIMATED EXPENDITURES			-0-		370		130			

12. PROJECT PURPOSE(S) (stay within brackets) [ ] Check if different from PID/PRP

[To provide the GOGB with supplemental assistance to increase agricultural production including seed improvement, identification and control of plant diseases and land reclamation.]

13. WERE CHANGES MADE IN BLOCKS 12, 13, 14, or 15 OF THE PID FACESHEET? IF YES, ATTACH CHANGED PID FACESHEET.

[ ] Yes [X] No

14. ORIGINATING OFFICE CLEARANCE

Signature: E. Dennis Conroy 6/8/76

Title: E. Dennis Conroy
Director, Office of Regional Affairs

Date Signed: mo. 6 day 8 yr. 76

15. Date Received in AID/W, or For AID/W Documents, Date of Distribution: mo. day yr.

AID 1330-4 (7-75)

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ANNEXES:

Project Development Team

David Cohen, Team Leader
John Foley, Agricultural Consultant
Lloyd Kendall, Education Consultant
James Samson, Education Consultant
F. M. Bergier, Engineering Officer

I. A. Description of the Project

Subsistence agriculture is the principal economic activity of over 85% of the population of Guinea Bissau. The country has no industry and there are no exploitable mineral resources. Thus, agriculture is also the main source of desperately needed foreign exchange. However, as the result of a thirteen year war for independence from Portugal, the country suffered severe setbacks in the agricultural sector. Rice, the main food staple, which once was so abundantly produced that it was exported, is now being imported. Other basic food demands are also being met by imports. Accordingly, the Government of Guinea Bissau has designated agriculture as a priority sector for development assistance.

The program proposed herein will comprise AID's initial assistance in this sector. It is expected that once this program is implemented, other complementary assistance projects will also be developed (in such areas as entomology, herd improvement, grain storage, etc.). The present program coordinates with existing activities supported by the United Nations and other international donors.

The goal to which the proposed project will contribute is to provide a supply of food sufficient to feed the population of Guinea Bissau and eventually to establish

exportable surpluses to earn foreign exchange. It is expected that the project purpose will support the goal by providing the GOGB with a capacity to increase agricultural production, including seed improvement, identification and control of plant diseases, and reclamation. The project will provide needed inputs in these three areas and consultant services for further agricultural planning.

In the seed program, funds will be provided to construct two 300 MT storage facilities in Bissau and renovate another 1000 MT of capacity in existing facilities located around the country. In addition, the required equipment for the establishment of a seed investigatory laboratory (to be located in Bissau in conjunction with the plant pathology lab included under this project, and a soils testing lab furnished through private British assistance) will also be purchased with project funds. Short term technical assistance and training in the areas of seed research, storage, production, packaging, etc., will also be provided through the two years of the project.

The control and identification of plant diseases will be undertaken with equipment purchased for the establishment of a plant pathology laboratory. Limited amounts of short term technical assistance and training will be provided.

Two D-6 bulldozers and MF-1105 tractors with earth scraping attachments will be purchased to provide the Commissariat of Agriculture (CA) with a capacity to carry out land reclamation and irrigation activities. Also included in this element will be limited amounts of short term technical assistance and observational training.

Implementation responsibility will be with the Commissariat of Agriculture. It is the CA's intention to establish a basic agricultural investigatory capability for which the inputs (both material and human) of this project will form the nucleus. General project monitoring responsibility will be taken by the resident AID representative who will arrive in Bissau in June 1976 and TDY technical personnel from AID/W.

At present, there is extremely limited agricultural development capacity in Guinea Bissau. Although agriculture has traditionally been the economic basis of the country almost since its discovery, the colonial Portuguese authorities, until the time of their departure in September 1974, did little or nothing to modernize this critical sector. Because the GOGB has established a socialistic style economy, technologies and methodologies determined to be important to improved production can and will be quickly and effectively transmitted to farmers who look to the government as the unique source for essential agricultural inputs. Thus, it

can be safely concluded that the proposed project will have a significant impact on increasing the consumable and perhaps the exportable food supply.

By the end of the project, it is expected that (1) the quality of seeds used by Guinean farmers will be improved (i.e. will produce more and better crops), (2) a plant pathology program will be accurately identifying plant diseases and the means for eradicating them, and (3) the land reclamation program will have opened up at least 4,000 ha. of new arable land.

B. Summary Findings

Intensive review of the conditions in Guinea Bissau have led the Project Development Team to the conclusion that the assistance proposed herein is the most appropriate initially for AID in the agricultural sector of this country. Although time and other constraints have not allowed a sector assessment, it is plainly evident that the Guineans must have the basic capacity to identify the specific nature of their agricultural problems and possess the means to identify the required solutions. The proposed project will be an important move in this direction.

The environmental impact of this project will be a positive one. The net result of research activities will be more arable land, greater agricultural production and productivity, and increased agricultural employment.

Direct beneficiaries of this project will generally be CA employees. However, the principal benefit will accrue to the Guinean farmer through increased and improved production (thus increased and improved income and nutrition). The nation as a whole will benefit from a larger domestic food supply, a decrease in food imports, and an increase in foreign exchange earnings from exports.

This project will receive two year grant funding provided under Section 496 of the Foreign Assistance Act. GOGB contribution will include counterpart personnel, staff salaries, existing seed storage facilities, and laboratory space. The Project Development Team believes that equipment, facilities and personnel will be well and appropriately utilized beyond the span of AID assistance. Implementation should begin immediately after signature of the Grant Agreement in June 1976.

As this project is funded under the provisions of Section 496 (Assistance to the Former Portuguese African Colonies) of the Foreign Assistance Act of 1975, Sections 110(a) and 611 do not apply. However, host country contribution has been maximized, costs have been determined to be reasonably accurate, and the project's prospects for successful implementation are excellent.

C. Project Issues

The primary project issue has been resolved by

deleting the artificial insemination portion of the project. It is planned that two consultants will go to Guinea Bissau to develop an appropriate herd improvement program.

II. A. Agricultural Overview

As stated in the Development Overview in Annex A, the economy of Guinea Bissau is based on traditional agriculture. As such, this sector is expected to provide the major source of employment and foreign exchange to the nation's inhabitants.

Geographically, Guinea Bissau is located on the West African coast and is situated between Senegal and Guinea. Much of the country is comprised of a low coastal plain with numerous swamps, especially in the southwest. There are a large number of rivers of which the major ones are the Geba, Cacheu, and the Corubal. The land rises gradually toward a savanna in the east, with the highest elevation of 985 feet being in the southeast corner of the nation.

The soil is largely alluvial and fertile. Palms and mangrove thickets cover most of the lowlands along the coast and the rivers. Further inland is a transitional zone with hardwood forests, and in the interior are tree-dotted grasslands.

The climate is tropical with a mean average temperature of 77°F. There are distinct dry and rainy seasons

with the latter being from June to November. Rainfall averages approximately 2800 mm along the coast and 1000 mm in the interior.

The principal crops of Guinea Bissau are rice, peanuts, and palm oil. Rice production at one time was 170,000 tons and was exported; however, as a result of the war for independence, production dropped drastically and the country is now importing this staple commodity. Major production declines principally occurred in the regions occupied by Portugal, while the zones liberated by the PAIGC were self-sufficient. It is the goal of the GOGB to re-achieve national self sufficiency in rice production within two years.

The agricultural potential of the country must be rated as excellent. In addition to relatively flat, fertile land, there is an abundant supply of water resources to be drawn upon. Prior to the war, land under cultivation was divided into the following uses: rice 31.7%, peanuts 21.8%, corn/sorghum 32.1% and others 14.4%.

Livestock and poultry are areas which have been marked by the Commissariat of Agriculture (CA) for future priority. To date, however, little of importance has been achieved. Native cattle are generally mature at about 400 pounds, provide small amounts of meat, and insignificant quantities of milk. Virtually all of Guinea Bissau's current

milk needs are met by imports.

Another of the problems created by the small size of the cattle is that very few of these animals are large enough for working. Thus, most farm work is still done by hand. An assumption must be made that Guinean agriculture as it develops will pass directly from hand labor to tractor power, bypassing the animal traction phase.

B. Background Description

The possibilities for agricultural development in Guinea Bissau are substantial. Although much of the country has been used for agriculture for hundreds of years, very little has been accomplished in the way of improving varieties, initiating new agricultural practices, and passing these improvements on to the farmer. The war for independence broke up the colonial system, which did not actively promote agricultural modernization, and has replaced it with a socialized system which has the opportunity of making rapid gains if proper resources and guidelines are provided. The Commissariat of Agriculture has indicated to AID areas which have priority in its program for increasing the agricultural productivity of the country.

The production of seeds to be used in the national seed distribution program has been identified as one of the important needs at this time. Seeds for the 1976 crop were imported by the UN and other donors and distributed throughout the country. Farmers will use this seed and will pay

the government back with a like amount of seed when their crop is harvested. At the present time, the CA has no facilities or equipment to receive, sort, test, treat, or store this seed for the coming year. Substantial losses will occur unless this situation is corrected.

A high priority is also placed on storage for seeds. Before the war there was a total of 3300 tons of storage scattered throughout the country belonging to the government. These structures are made of adobe and mud block and are at present in various stages of disrepair. Some buildings require only a few tiles for the roof and screen for the windows, while others need substantial roof repairs and new doors. These buildings were often used during the war for barracks. The buildings are of various sizes (40, 60, 70, and 100 tons storage capacity). Some of them are poorly located and eventually will be used for something else or torn down. None of the facilities are in such poor condition that they cannot be repaired. The average cost of repair is estimated at $7/ton for materials. Labor would be furnished by the GOGB.

There is also a need for 600 tons of seed storage at the Pessebe station which will be the center of storage for seed for the whole country. This is new storage and will cost an estimated $130/ton.

With a capability for selecting and storing seeds,

it follows logically that selection should also be made on the basis of disease and insect resistance. This will require trained personnel and laboratory facilities which do not at present exist. Thus, another sector of priority is the area of plant pathology. There is no laboratory in Guinea Bissau for determining plant diseases and few, if any, trained personnel in this important field.

A final area selected for immediate attention is that of water control for land reclamation. Salt water tidal action penetrates for many miles inland and renders vast areas of tidal flats unproductive. These areas have never been farmed. If the tidal effect can be controlled, the amount of productive land available for agriculture will be greatly increased. There is evidence that this can be done, but such an effort requires large machinery to build the necessary dams and dikes. One dam has already been constructed as a demonstration unit and has reclaimed 500 acres of tidal flats that can now produce two crops a year. Impressive returns can be expected from even a small amount of equipment.

C. Project Description

The goal of this project is to provide a food supply sufficient to feed the population of Guinea Bissau and eventually to establish exportable surpluses to earn foreign exchange.

Before the war for independence, Guinea Bissau was able to grow sufficient food for its domestic needs and, at the same time, exported rice, peanuts, and other commodities. At present, rice, milk, and other essential foods are imported to supply basic needs. The proposed project should provide an important input to reverse this trend. New seed varieties along with improved agricultural practices will provide for increased production of rice, peanuts, and other crops. Improved seeds and fertilizers will be adapted rapidly into agriculture because of the socialized system of input distribution.

The purpose of this project is to provide Guinea Bissau with supplemental assistance to increase agricultural production through seed production and storage, plant disease identification, and land reclamation. Once this project has been completed, the following is expected to exist: 1) - reduction in seed imports, 2) an established capacity to process, store, package, and deliver seeds, 3) a capacity to identify and recommend treatment for plant diseases, and 4) the established use of structures for control of tide water as a part of a controlled water and reclamation system. These elements should result in a marked increase in overall agricultural productivity.

1. Seed Improvement

a) Seed Production

This element of the project will provide the GOGB with a capacity to conduct basic programs in the area of seed production. It is the national agricultural policy to supply directly to the farmer seeds, fertilizer, and other materials necessary for the control of insects and plant diseases. To make the proper selection of the inputs to be distributed, the GOGB must have the technical capability to analyze the inputs themselves as well as the agricultural conditions under which the inputs will be utilized. Assistance in soils analysis is being provided through another donor (ACORD - a British PVO).

For the seed technology program, as well as for other elements of this project, the equipment, technical assistance, and training furnished will be as simple and as unsophisticated as possible. There are basically two reasons for this approach. The first is that the technical background of the potential Guinean counterparts will be quite limited. Secondly, there are great demands on the time of the few available minimally qualified counterpart personnel. Thus, the project will have to work within the context of the existing limitations. Given the almost primitive state of Guinean agriculture, it is felt that with

even modest infusions of more modern technology, great gains in production and productivity can be achieved.

As an element of the seed program, a laboratory will be established within the facilities of the CA. This laboratory will conduct basic investigations into the germinating capacity, varietal differences, grading and storing of the seeds of the various crops grown within the country. Basic equipment for the laboratory will be provided by AID, although the laboratory space itself will be a contribution of the GOGB.

Technicians to operate this laboratory will receive both foreign short term technical assistance and training through the AID project. Besides the elements of essential technological transfer, assistance will also be offered in planning a seed improvement program. Accordingly, coordination with other donors and research facilities (e.g. WARDA) will be undertaken.

The seed improvement program will also be augmented by a series of agricultural demonstration farms. These farms will demonstrate to the farmers who receive the distributed seed the proper manner of cultivation. It is expected that these demonstrations will greatly motivate the adoption of new technology and increase productivity.

The successful implementation of this project element will result in a reduction of seed import requirements and in the establishment of an improved GOGB capacity

for processing, storing, packaging, delivering, and controlling the quality of selected, more productive seeds.

Implementation of this element can begin shortly after the signing of the grant agreement. The first technical assistance should arrive in Guinea Bissau in the fall of 1976 to survey existing seed production capability The project includes a total of ten months of short term technical assistance and fifteen months of short term training abroad.

Procurement of laboratory equipment should be initiated in the fall of 1976 as a function of the initial technical assistance. Equipment should arrive in country no later than June 1977, at which time the laboratory will be mounted and set into operation.

b) Seed Storage

An important element of the seed program is storage. The Government has assumed a critical role in the distribution of seed throughout the country. When the seed has been collected, selected, and treated, it must be stored until the proper time for distribution.

The central collection point for seed (as well as for fertilizer) will be in Bissau. The Bissau center will handle both imported and domestic seed. At present, there is no seed storage facility in Bissau. Under the proposed project, two new 300 ton capacity storage ware-

houses will be constructed on existing GA facilities in Bissau (the Pessebe Granja and another nearby farm unit). The cost for this new storage will be approximately $130 per ton - or a total of $78,000.

In the outlying regions of the country there is in existence an additional 3,300 tons of seed storage capacity in old buildings, many of which were damaged during the war. The proposed project will repair approximately 1,000 of storage in sites selected by the GOGB. The degree of repairs required varies significantly from place to place however, the approximate cost of renovation is $7 per ton or a total of $7,000.

Construction and repair will be carried out by the Guinean Department of Public Works (for additional details see Annex B). The facilities will be simple cement and block structures with screened in ventilation around the top of all four walls.

Work on the Bissau facilities can be begun in October 1976 and should be completed in time to receive seed for the 1977 crop. Renovation activities can be initiated as soon as September 1976, once a plan detailing which centers are to be renovated is completed.

Also included under this element are eight months of technical assistance and thirteen months of short term observational training.

2. Plant Pathology

There is virtually no activity in the GOGB in the area of plant pathology. This project will provide a laboratory facility with rudimentary equipment to implement this program. The laboratory space will be provided by GOGB close to the location of the seed laboratory.

This program will provide a capacity for identifying and recommending treatment and control of crop disease The laboratory will conduct investigations into the basic diseases of food crops. After the diseases have been identified, the technicians will communicate with research officials located at established research stations to obtain technical guidance on the preferred methods to control the diseases. Technical advice on rice will come from WARDand IITA; advice on peanuts is available from Bambey, Senegal or IITA. The results of the investigations will be tested in government farms and, when appropriate controls are found confirmed, the processes will be used in government agricultural demonstration farms. These farms will demonstrate to the farmer the proper manner of disease control. The government will supply material for disease control and in some cases the equipment to apply it as they did with a rice program in the 1975 crop year.

The training for this program will begin in August

1976 by sending the head of the plant pathology department to the U.S. or appropriate place for observation, and two technicians for an intensive two month course in basic plant pathology techniques. This is to be accomplished while there are still growing crops to be observed. The first TA is to arrive in October - November 1976 to set up the laboratory and plan the future program. The program will then proceed as per the time schedule with a completion date of July 1978. Total training will be 9 months and total TA 12 months.

3. Land Reclamation

One of the most serious problems of agriculture in Guinea Bissau is the drastic influence of sea water and tides which infiltrate the country for as much as 50 miles from the sea coast. Since the country is relatively flat, this creates vast areas of highly saline tidal flats. Very few places in the world have as serious a problem with sea water. The tidal action infiltrates the rivers which are relatively sluggish due to the low elevation and renders them unfit for irrigation for many miles inland. At the same time, the high tide which comes once a month covers the flats with enough salt water to inhibit any productive crop. These flats occupy vast areas which can be recovered for agricultural use. One way of making the land productive is to build dikes along the river bank to keep out the salt water and then flooding the area with rain and fresh water, using high ridges to plant the rice on, which washes the soil so that it can be productive. This system, however, still leaves the river itself saline and the tidal action has the effect of sucking the fresh water out of both the river and the underground water supplies as it returns. Wells drilled near these areas then will yield salt water.

Another means of solving this problem is to put an earth dam across the river. This separates the salt water from the fresh water. The concept is a dramatic one. Land

never before suitable for agriculture can be brought into production. Production of the land that was usable only part of the year because of salt water flooding can be doubled because the river is now fresh water and can be used to irrigate in the dry season. Thus two crops can be grown where only one could grow before.

Most of the land in Guinea Bissau is privately owned. The land which is usable for only part of the year generally falls in this category and, if two crops are grown, would be farmed by the owners.

Land which is reclaimed and is not now in production would become the property of the GOGB. It is anticipated that much of it will be turned over to farming on a cooperative basis under a long term lease, but with ownership residing with the government.

Blocking streams to stop tides and building dikes requires large machinery, and is virtually impossible to accomplish by hand labor. The largest equipment which can be handled in Guinea Bissau (because of a lack of vehicles for moving larger machinery and the condition or lack of roads and bridges) is a D-6 size crawler tractor. This should be provided along with a smaller wheel type tractor and earth mover-scraper (two of each) for more efficient operation.

One such dam was constructed in the dry season of 1976 using a D-6 and D-4 size tractor combination borrowed for the Public Works Department. In one month of operation with this equipment a dam was built across a small stream which reclaimed 500 acres of land for rice production. At $100 per acre (which is a very conservative estimate of its value) this project has opened up $50,000 worth of land (after it is cleared of brush and washed of salt - all hand labor). This process can be repeated in hundreds of locations in the country. Once new land is opened, many new agricul-

tural jobs will be created and food production will be increased, both very positive economic effects.

There is sufficient evidence to indicate that there is a local capability to use and maintain this type of heavy equipment to be provided under the project as the shops at the port of Bissau have years of experience with diesal engines. Furthermore, there is already some equipment of this type in use in the country. No training in operating the tractors will be required as drivers have already been trained.

The equipment should be ordered in August 1976 for delivery between May and August of 1977. Technical assistance for three months, and one month of observation training, will be provided. These technicians will work with Guinean officials in establishing a land reclamation plan, which establishes subproject criteria and priorities. It is expected that during the life of the project, the AID funded equipment will open up a minimum of 4,000 ha. of new agricultural land.

4. Agricultural Planning Consultants and Training.

The above three programs reflect initial assistance which will require additional study and training to develop related activities desired by the GOGB. Funds are provided ($28,000) for TDY consultants in such areas as ground water development, entomology, farm demonstration

techniques, and agricultural research. Short-term observation programs for GOGB officials will also be arranged.

The consultants will be drawn from U.S. academic institutions for the purpose of giving GOGB-CA officials guidance on developing the institutions required for more complete functionings of the agricultural food crop and water development sectors. It is anticipated that four consultants will be required for 4-6 weeks each ($20,000). It is also planned that senior officials of the CA and the commissariat of Economic Planning would travel to the U.S. and other African countries for observation of agricultural institutions and planning. Travel and per diem for five persons of 6 weeks each in agricultural institutional development is contemplated ($8,000).

III. Technical Analysis Including Environmental Assessment

A. Technical Analysis

Although no sector assessment has been completed, the assistance offered in the proposed project is needed and will be well utilized. The GOGB has given itself the role of being sole supplier of inputs and technology to the poor Guinean farmer. There is no large or medium scale farming in the country; thus, for economic as well as social reasons, improving small farmer production is a matter of great importance.

Seed, plant pathology, and land reclamation were the areas mutually selected by AID and the GOGB for initial attention. It was understood by both parties that such assistance would probably form the core of a future broader scope agricultural program.

The short term technical assistance and training furnished through this project respond to the realities of the present Guinean situation. Qualified technicians in the CA are few and generally have limited educational background. Thus, assistance and training must be responsive to the absorptive constraints of these individuals. However, because the state of agricultural technology in Guinea Bissau is so elementary and because it is felt that minimal techno-

logical advancement can result in impressive production gains, the low level of assistance being provided will be highly meaningful and is suitable to the project need. In addition, this program will coordinate with UN, British, French and other efforts already underway to support the agricultural development of Guinea Bissau.

B. Price and Design Analysis

It is the judgment of the Project Development Team that the seed storage to be built and repaired are of appropriate design for Guinea Bissau and are reasonably costed in relation to similar construction observed in the country.

The laboratory equipment to be purchased is necessary and sufficient for the resolution of problems involved and is priced in accord with the most recently available price data including shipping costs.

The heavy equipment involved (tractors) are of a size sufficient to do the work involved and is priced according to recent U.S. price data, plus shipping.

This project will make full use of existing technology in several ways. Technical assistance will be provided at appropriate times to orient development of the host country's potential and incorporate new methods and ideas into the agricultural system. Opportunities will be provided for local technicians to travel to the U.S. or other

suitable places to receive training in their areas of specialization. Literature will be provided where necessary to build up a library resource in these areas.

Guinea Bissau can be expected to continue these projects once they are implemented because they compose a vital part of what is needed to develop the critical agricultural sector.

C. Environmental Impact

1. Seed Storage

a) The new seed storages to be built are to be located on GOGB-CA land at the Pessebe research station on the outskirts of Bissau. These buildings will be of the same type as present buildings at the station and will be located to have easy access to roads within the station. The proposed structures present no aspect which could be considered a hazard in terms of safety, health, or environment.

b) The repair of existing storages will consist of restoring them to operational condition with no change in shape, size or style. The proposed repair of these structures presents no aspect which could be a hazard in terms of safety, health, or environment.

2. Land Reclamation

The process of building dams and dikes to control the tidal action in relation to fresh water streams and underground water supplies will have a positive effect on

the local environment in making unusable land fertile.

The dams will stop the saline tides from mixing with the fresh water in the streams and will stop the high tide from overflowing the salt water tidal flats above the dam. The soil thus affected can then be cleaned, washed by fresh water, and put into rice production. The useless salt flats are thus transformed into valuable land contributing to the food supply of the country.

The dikes along the streams above the dams control the flooding during the rainy season and because of the dam the water is always fresh. Thus, the combination of dike and dam can be used for double cropping and the tidal flats will yield still more food for the country. In stopping the tidal action by the dam the ground water above the dam is not subject to the suction of the tide and wells will begin to yield fresh water close to the rivers. There is no hazard to health, safety, or environment in any of the proposed structures or activities in this project. Thus, an environmental assessment is not necessary.

It is the opinion of the Project Development Team that the technical design of the project is adequate, that cost estimates are reasonable, and that adequate planning has taken place.

IV. Economic and Social Analysis

A. Social Analysis

This project is expected to increase the productivity of agriculture in Guinea-Bissau. It is, therefore, expected to increase income of farmers and others involved in the agricultural sector, provide more jobs, and generally raise the living standard of the country's population. Providing an increased capacity for earning foreign exchange will lead to an increased availability of essential import items which are often unavailable on the local market.

The GOGB has a very egalitarian position toward women and has given them a full and complete role during their liberation struggle. That attatude and approach carries over to the part women play in the GOGB which includes several women in influencial positions. We feel confident that the GOGB will give women an opportunity to participate in this project's operations and will, in discussions with the GOGB, make our interest in their doing so clear.

B. Economic Analysis

The economic justification for this project is not quantifiable because of a general lack of data. However, the activities supported herein will raise incomes of local farmers, provide more jobs, improve nutrition through expansion of the food supply, increase foreign exchange earning capacity, and lead to a better quality of life in Guinea-Bissau.

In some aspects of the project, like land reclamation and flood control, the direct returns from the operation of the equipment furnished can pay more than the cost of the equipment. In other areas the eventual returns on equipment investment may be even greater, but it will

be over a longer period of time.

Project activities are of the highest national priority of the GOGB. There is no doubt that for aslong as

Guinea-Bissau remains a predominantly agricultural country, the project will continue to have government support. Thus, when the A.I.D. participation under this project is complete, personnel trained and facilities developed with project funds will continue to be well utilized.

V. Budget Estimate 1/

A.I.D. Input

A. Summary - Equipment and Construction

1. Seed Production		
a. Seed laboratory equipment	$ 5,000	
b. Storage for seed		
1) new (300 tons @$130/ton)	$ 78,000	
2) repair (1,000 tons @$7/ton)	$ 7,000	
2. Plant pathology laboratory equip.	$ 2,000	
3. Land Reclamation		
a. 2 D-6 @$80,000	$160,000	
b. 2 MF-1105 @$20,000	$ 40,000	
c. 2 7-1/2 yd. scraper @$5,000	$ 10,000	
Total equipment		$302,000

B. Summary - Technical Assistance

	Man/Months		
1. Seed production			
a. Seeds			
b. Seed storage	8 (over 3 yrs.)	$ 32,000	
2. Plant Pathology	12 (over 3 yrs.)	$ 48,000	
3. Land Reclamation	3 (over 2 yrs.)	$ 12,000	
	23	$ 92,000	
Total TA			$ 92,000

C. Summary - Training (over 3 years)

	Man/Months		
1. Seed production			
a. Seeds	15 (over 4 yrs.)	$ 15,000	
b. Seed storage	13 (over 3 yrs.)	$ 13,000	
2. Plant Pathology	9 (over 2 yrs.)	$ 9,000	
3. Land Reclamation	1 (one yr.)	$ 1,000	
	38	$ 38,000	
Total Training			$ 38,000
D. Agricultural Planning (Consultants and Training)			$ 28,000
E. Contingency Fund			$ 40,000
GRAND TOTAL			$500,000

GOGB Input

Contributions from the Government of Guinea-Bissau are in the form of counterpart personnel and skilled and semi-skilled workers and laborers; constructions sites, building and land maintanence; and transportation for plant and breeding program, as well as trailers to move D-6 bulldozers and earth scraper.

VI. Detailed Equipment Estimate

A. Seed Production

1. Seed laboratory equipment

a. Air conditioner (18,000 BTU)	$ 500
b. Dehumidifier (one room)	$ 200
c. Incubator for seed germination tests	$ 1,200
d. Set of sorting screens	$ 400

e. Moisture tester	$ 200	
f. Moisture tester (brown-Dun)	$ 200	
g. Oven for drying samples	$ 500	
h. Set of scales (balance)	$ 400	
i. Low power microscope	$ 500	
j. Publications	$ 500	
Total		$ 5,000

B. Plant Pathology

1. Laboratory equipment

a. Low power microscope	$ 500	
b. Miscellaneous laboratory supplies and small equipment	$ 1,000	
c. Publications	$ 500	
Total		$ 2,000

C. Land Reclamation

1. Equipment

a. D-6 caterpillar with front blade and rooter on back hydraulic control - 2 @$80,000	$160,000	
b. Massey-Ferguson 1105-D with 3 pt. hitch - 2 @$20,000	$ 40,000	
c. 7-1/2 yard st. pole scraper-earth mover - 2 @$5,000	$ 10,000	
Total		$210,000

1/ All cost estimates are based on local information as of April 1976. There are no figures available on inflation.

VII. Evaluation

Evaluation of this project will be carried out on an annual basis. Both GOGB and A.I.D. officials will participate in the evaluation process. Criteria will be based on projections included in this Project Paper. A report of findings and recommendations will be made in the form of a Project Appraisal Report (PAR)

To supplement these in-house reviews, a special evaluation will performed after the second year of the project to determine the effectiveness and suitability of A.I.D. inputs and to measure project progress against the output indicators given in the project design.

Any redesign of the project that may be necessary will be carried out jointly by the GOGB and A.I.D.

VIII. Engineering Analysis

A. Summary

Under the project, the following construction activities are foreseen:

a) Repair of existing facilities. Among the seed storage warehouses which exist in various parts of the country, and which are in need of repair, approximately 10 units (total storage capacity of 1,000 MT) will be repaired and thus brought into operating conditions. The damage which varies in extent considerably from building to building is mainly to the roof and doors. It is anticipated that a mobile work team of the Public Works Department, which will have roof tiles and other required materials, can accomplish the necessary work.

b) Construction of new seed storage warehouses. The project calls for the construction of total of 600 MT of new seed storage capacity. In general, it is intended to follow the type of facilities already in use in the country and to

adapt this structure as a prototype for modular construction of two 300 ton warehouses each of which would be 30 meters in length and 15 meters in width.

The two new warehouses will be located at the "Granja Pessebe" on the outskirts of the town of Bissau. As to the technical details, the buildings will have 20cm thick concrete or adobe block walls, with reinforced columns connected at the top by a firm beam of the same material. The roof construction will be of treated imported timber, the roof itself of baked brick tiles. Doors will be of native wood and will slide in top and bottom steel rails. Near the top of the wall there will be ventilation openings filled with wire mesh to prevent the entry of rodents and insects. No utilities, such as water and electricity, are needed and no foundation problems are anticipated.

It thus can be assumed that the construction is technically feasible and that it can be completed within reasonable time (about 4 months per warehouse)

B. Construction Management

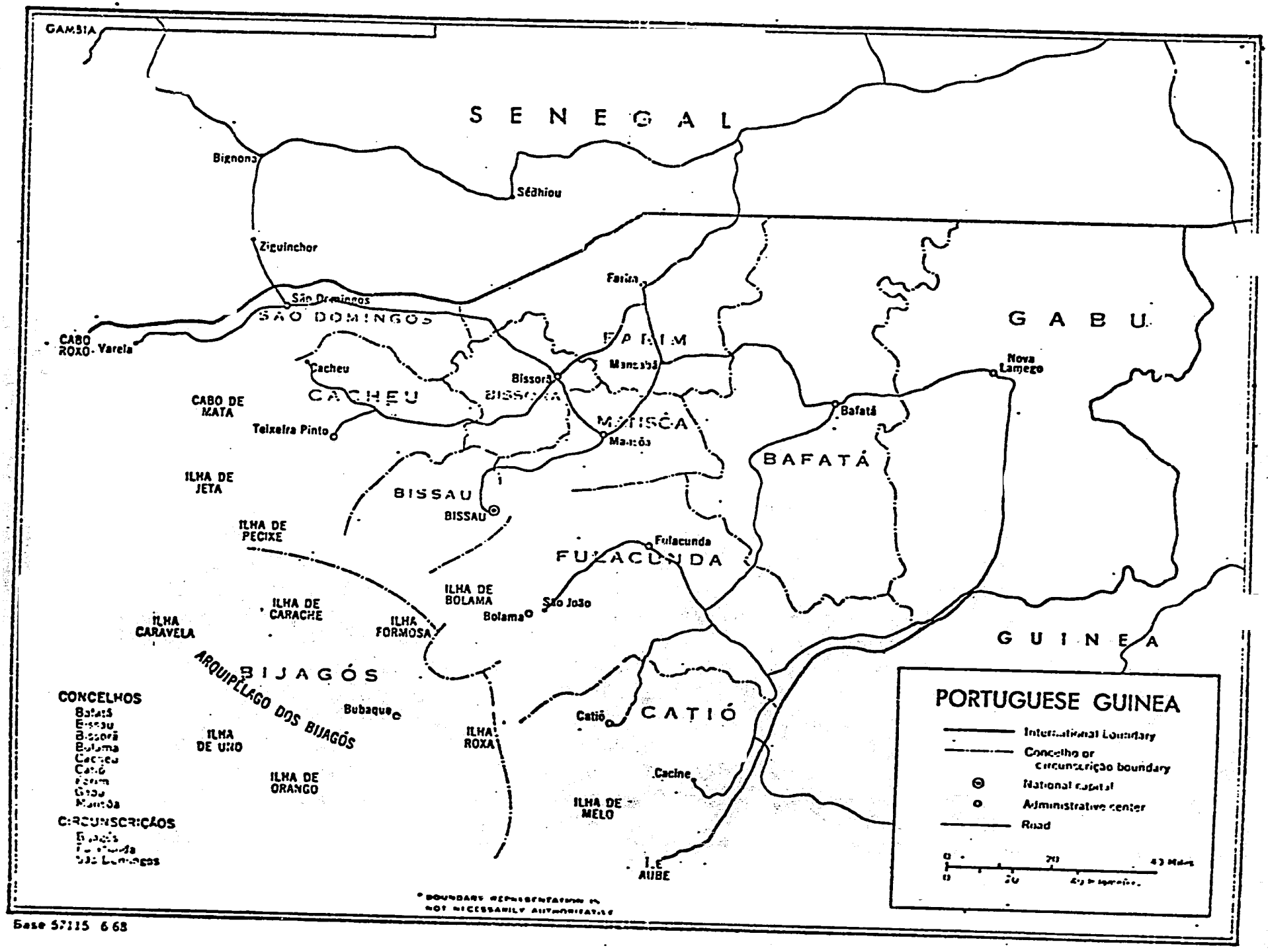
Planning and execution of the construction will be carried out by the Public Works Department for reasons explained in Annex B. In view of the sometimes remote locations of the existing warehouses on which repairs will be done, attention must be given to problems of logistics, e.g. provision of food and shelter for the workers and timely procurement

and delivery of construction materials. The latter also applies to the two new warehouses to be constructed. In this regard, it is recommended that AID exercise certain advisory functions so as to ensure that no delays will be encountered in execution.

C. Construction Cost

As mentioned earlier, the amount of repairs to be done on the 10 existing warehouses varies considerably from unit to unit, from replaing a few missing tiles to structural repairs on the roof and other parts of the building. An average cost of $7 per ton is being assumed.

In regard to the new warehouses, a cost per ton of storage of $130.00 is considered a good approximation.



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ANNEX A

DEVELOPMENT OVERVIEW

From its discovery in 1446 until its independence in September 1974, Guinea Bissau had been a Portuguese colony. The economy today is based on traditional agriculture, with the principal crops being rice, peanuts and palm oil. Except for a brewery and the necessary logistical elements to maintain a substantial military presence, the Portuguese left the nation with relatively little in the way of economic infrastructure.

The principal objective of the present government, which is controlled by the African Party for the Independence or Guinea and Cape Verde (PAIGC), is to bring social order and economic development to the new nation. The PAIGC was founded in 1956 to make demands on the Portuguese authorities to improve the economic, social and political conditions of the colony. Actual hostilities directed at independence began in 1963.

As the PAIGC liberated areas of the country, beginning in the mid 1960's, it established an effective and elaborate administrative system. Illustrative of the efficiency of the system is the fact that during the war the liberated areas were self-sufficient in food production and operated a program of basic education.

The population, which grows at an estimated annual rate of 2%, is calculated to be between 700,000 and 800,000

people. It is estimated that 20% speak Portuguese and 80% an unwritten creole dialect of Portuguese. A number of tribal languages are also spoken. The GOGB has decided that Portuguese is and will remain the official language.

Guinea Bissau covers an area of 36,125 sq. km., comprised of eight administrative regions and 37 districts. The country has many rivers, some of which are navigable as far as 70 miles upstream. Annual rainfall averages about 2,800 on the coast and about 1,000 mm in the interior. The majority of the rainfall occurs between the months of May and October.

There are no reliable statistical data on the economy. The information which does exist comes from the colonial period and does not reflect the present situation. The GOGB estimates per capita income to be under US $120 per year, a figure with which the local UNDP office concurs. The current annual trade deficit is over US $30 million. A major constraint in the implementation of GOGB programs is the chronic lack of funds. Nevertheless, the principal priorities have been identified as being education and agriculture.

Illiteracy is estimated at between 85% and 90%. Strong emphasis has been placed on providing everyone with a five year primary education. This policy builds upon the wartime practice of including education programs as an essential part of government.

Agriculture is the backbone of the nation's economy and, at present, its sole source of export earnings. It is the policy of the GOGB, to the extent possible, to relate the priorities in education and agriculture by including agriculture as an important element in school curricula. An aspect of this objective is to stop or reverse the increase in migration to Bissau, the nation's capital and its principal urban center. Bissau's pre-war population was about 35,000 and has now grown to about 75,000. Unemployment in the capital is high, but the government has had difficulty in convincing the unemployed to return to productive work in the fields.

ANNEX B

NOTES ON PROCEDURES AND PRACTICES REGARDING THE CONSTRUCTION OF BUILDINGS IN GUINEA BISSAU

A. Introductory Remarks

The information and data furnished in the following is based on:

(1) Conversations with Engineering personnel of the Public Works Department (PWD) in Bissau.

(2) Conversations with Mr. Barry Lusche, who is supervising for UNHCR the construction of hospitals for war refugees returning to Guinea Bissau.

(3) Physical inspection of the construction of a ne school in Bissau.

B. Construction Methods and Materials

The most commonly used type of building construction is the reinforced concrete skeleton or beam and column system. The reinforced concrete is sometimes replaced by lightweight steel framing, such as in the school currently being constructed near the Hotel 24 September, which was donated by Sweden.

The aggregates for concrete, both for structural purpose and the fabrication of hollow blocks, does not meet normal requirements - the sand is too fine and uniform, while the coarse aggregate consists of lateritic fragments. In certain locations there also exist deposits of basaltic rock, which may be suitable for crushing. The laterite,

while perhaps not as ubiquitous as in some other Est African countries, appears to be of good quality. It is mined from pits with the help of medium size bulldozers. As mentioned before, some of this material lends itself to cutting into masonry stones and is actually used for this purpose. There is only one small factory for bricks or roof tiles in-country Some hand shaped and sun-baked clay bricks are produced occasionally and used in building walls. The Swedish Government intends to erect several small brick factories, utilizing locally available raw materials.

For mortar, the materials used are cement (imported) and the above mentioned poor quality sand. The same is true of the concrete blocks, which in addition to the factory cited above are manufactured in hand presses at the PWD compound and other locations. The product is poor to very poor. There seems to prevail a prejudice against asbestos and corrigated metal roofing, as the only materials being used are tiles imported from Spain or Portugal.

As for timber, the locally grown varieties are heavy and difficult to shape. There exists two small timber mills in the country. Most locally grown timber is reserved for export to obtain badly needed foreign currency. Also, in many areas the stands were heavily depleted during the recent fighting, and the authorities do not permit cutting in these areas. Imported construction grade timbers have to be treated before use to prevent destruction by termites

and other agents.

The mortar for masonry utilizes cement, although a good case could be made for its replacement by lime, as limestone can be found in certain localities. Cement, glass and structural steel have to be imported, mostly from Spain or Portugal. Floor tiles are produced locally, but glazed and baked enamel types have to be imported, as have paints, hardware, bathroom fixtures and related equipment. Doors and windows are made manually of local timber as no wood-working machinery exists in-country.

C. Construction Management

Most planning, design, and execution of public construction is concentrated within the PWD. Before independence there were private construction companies in-country, but afterwards these firms mostly disappeared. The firm "Construccioes Unidade e Progreso" is one of the few private entities still in existence, but this too is controlled by the GOGB. There also are a few very small contractors still in business, but most of the work on private construction is done by the Building Syndicates, also under government control

As to the public buildings proposed under this project, the PWD could and would take care both of the design and the construction. This organization has 3,000 employees, including laborers, not all of whom are full occupied.

salaries of most employees appear to be several months in arrears.

The PWD is organized on several levels: it is headed by the Minister for Public Works, below whom is the Secretary-General who is in charge of the architects and engineers, most of whom are expatriates furnished under technical assistance programs by countries such as Brazil, Cuba, Yugoslavia and Angola. The architects who do the design of the buildings are recent graduates and may be lacking experience. Also, they often design buildings which are inspired by the styles of their own home countries, which frequently are not suited to tropical climatic conditions of Guinea Bissau. There is a great shortage on the sub-professional level and of skilled workers. The East German Government Mission is trying to remedy this situation by organizing a school for master carpenters, masons, mechanics, and other relevant job categories.

Also in short supply are engineering and economic planners, programers, and procurement and equipment specialists. The country lacks construction machinery and transportation equipment, particularly trucks. Units in operation are 15-20 years old and there are no spare parts available. Cannibalizing is widely practiced. There isn't a single concrete-vibrator in the country.

As a consequence, manual labor is the rule. The workers are highly motivated, skilful, and efficient.

COST OF CONSTRUCTION MATERIAL -- Selected Items	US $
Reinforced concrete (incl. cement and steel) using 350 kg. cement per m^3	35.00
Concrete hollow block walls, 20 cm thick per m^2	9.30
the same, 10 cm thick	8.60
Wall finishing, per m^2	4.00
Cement (imported from Spain) per 50 kg sack	6.00
Reinforcing steel, from Portugal smooth bars, per kg.	.64
COST OF LABOR -- Selected Categories (daily rates)	
Carpenter	4.70
Mason	4.70
Iron Bender	6.40
Housepainter	5.30
Unskilled Worker	3.00

AID 1020-28 (1-72)

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U. S. Funding _____
Date Prepared: _____

Project Title & Number: AGRICULTURAL DEVELOPMENT

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	Measures of Goal Achievement:		Assumptions for achieving goal targets:
Project Purpose:	Conditions that will indicate purpose has been achieved: End of project status.		Assumptions for achieving purpose:
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
Inputs: 1. GOGB a. Land and building. b. Counterpart personnel. c. Appropriate policy determinations. d. Transportation for plant and breeding programs. e. Trailers to move D-6 & tractor-scraper 2. USAID a. Lab facilities & equipment. b. 2 D-6 parts, 2 MF-1105 parts & scraper c. Short term training. d. Short term tech asst. & consultancies e. Seed storage facilities.	Implementation Target (Type and Quantity) Seed prod. equipment $ 5,000 Seed storage $ 85,000 Plant pathology lab. $ 2,000 Land reclam. equip. $210,000 Seed prod. tech. asst. $ 32,000 Plant path. tech. asst. $ 48,000 Land reclam. tech. asst. $ 12,000 Seed prod. training $ 28,000 Plant path. training $ 9,000 Land reclam. training $ 1,000 Agric. planning cons. trg. $ 28,000 Contingency fund $ 40,000 Total $500,000		Assumptions for providing inputs: 1. Portuguese-speaking technicians can be found. 2. GOGB will be able to handle construction.

ANNEX D

WAIVER AND LOCAL COST

1. Waiver

A waiver of the procurement source and origin requirement in Handbook 15 for grant funded commodities is recommended to Code 935 for steel and cement valued at an estimated $17,000 and for two Massey-Ferguson 1105-D tractors with three part hitch. The building materials will be used in the construction and renovation of several agricultural seed storage facilities. The GOGB has an established trade relationship for these products with Spain and Portugal. Normally, we would only use those sources when the materials are not readily available in Guinea-Bissau.

All government construction in the country is built to standardized specifications. For imported materials the GOGB specifications are derived from the Spanish and Portuguese systems. It would not be cost-effective to import U.S. steel and cement, given the established trading patterns and construction specifications, the distance, the time requirements and the relatively insignificant cost of the items involved.

Failure to waive the requirement for U.S. source grant-funded commodities would increase construction costs and delay completion of the project. The Department of Public Works, unfamiliar with U.S. products and with no regular source of supply, would find their overhead costs increased as well by the complexities related to the procurement and use of U.S. steel and cement.

The two Massey-Ferguson 1105-D tractors, valued at an estimated total cost of $40,000, are required for land reclamation which is critical to the development of the agricultural sector. Adequate spare parts, maintanence and service facilities for equivalent U.S. equipment is not available in Guinea-Bissau nor in neighboring countries. The project tractors would probably be supplied by dealers in neighboring Senegal, from Canadian sources.

For the above reasons it is concluded that prohibition of procurement from the sources indicated above would seriously impede attainment of U.S. foreign policy objectives and the objectives as the Foreign Assistance Program.

2. Local Cost

Local costs are estimated at $68,000, or 15 per cent of the total cost of the project. (See page 24 of the Agricultural Development project paper for a detailed budget). The principal local cost elements are estimated as follows:

I. Construction		$68,000
Seed storage facilities	$62,400	
Renovation of seed storage facilities	$ 5,600	
II. Operating Cost		
None		