

UNCLASSIFIED

Project Paper
Ghana 641-0102

**MANAGED INPUTS AND DELIVERY OF
AGRICULTURAL SERVICES (MIDAS II)**

Amendment No. 1

Agency for International Development
Washington, D.C. 20523

February 28, 1983

UNCLASSIFIED

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR

FROM : AFR/PD, Norman Cohen 

SUBJECT : Ghana - Managed Inputs and Delivery of Agricultural Services (MIDAS II) 641-0102
PP Amendment No. 1

Problem: To approve the redesign of the subject project and reduce the authorization level from \$21,117,100 to \$12,450,000.

Discussion: The MIDAS II project was authorized August 21, 1980 at an AID input level of \$21,117,100, of which \$9,405,300 was grant funded and \$11,711,800 loan funded, with a PACD of September 30, 1983. The PACD was subsequently changed to September 30, 1984. As of February 17, 1983, \$12,450,000 (Loan \$7,000,000; Grant \$5,450,000) has been obligated.

The goal and purpose of the MIDAS II Project were in principle the same as in MIDAS I, except that AID's inputs under MIDAS I were channeled to the agricultural sector on a national level, whereas under MIDAS II AID agreed to direct its resources into a specific region of Ghana. Unfortunately, redirecting the MIDAS project toward a specific region did not overcome the inherent implementation problems caused by political instability and poor economic management. During the implementation of MIDAS I and II there have been five changes in the government and the economic decline has accelerated as GOG was unable or unwilling to address its macro-economic stabilization issues. The MIDAS project has not received adequate support from the Ghanaian cooperating institutions and a number of the project's six components simply are not working. Faced with these implementation problems, the Mission began an intensive review and dialogue with the participating agricultural sector agencies and the Ministry of Finance and Economic Planning. From these discussions there is an agreement in principle (see Annex C of Amendment No. 1 to PP attached) to modify certain components and to completely discontinue others of the MIDAS II project. The details of the changes planned for the MIDAS II project are set forth in Amendment No. 1 to the PP, but the major purpose of the project now is "to improve and expand the institutional capacity of the Ghana Seed Company, resulting in a viable, independent, profit-making company." The following is a summary picture of the changes planned in the MIDAS II project.

Components to be Discontinued:

- A. Research - Ministry of Agriculture has failed to provide the land and buildings for the research center. Contract with IITA will be terminated on March 31, 1983.
- B. Fertilizer - The government has failed to establish the Ghana Fertilizer Co.; thus TA not required.
- C. Extension - Service to the small farmers could not be carried out because it was dependent on the research and fertilizer components.
- D. Credit - The lack of fertilizer, pesticides, etc., and the triple digit rate of inflation have negated the justification for a credit component.

Components which will continue to be part of MIDAS II:

- A. Seed - The development of the Ghana Seed Co. is now the primary component of the revised MIDAS II project.
- B. Marketing - This is a small experimental component designed to improve food marketing.
- C. Extension - Although the extension service to the small farmer is out, the home extension assistance to the small farm family through a nutrition education program will be continued.
- D. Credit - The credit component which provides technical assistance to the Agricultural Development Bank will be continued.

We have reviewed the Congressional Notification (CN) requirements with GC/LP and it was agreed that no CN is required. As a result of the project issue meeting, a few minor changes, such as an amendment to the IEE, was made in Amendment No. 1 to the PP and there are no current issues to be resolved.

Recommendation: That you approve the redesign of MIDAS II by signing the attached Authorization Amendment No. 2, reducing the authorization level for Loan funds from \$11,711,800 to \$7,000,000 and Grant funds from \$9,405,300 to \$5,450,000.

Attachments: Authorization Amendment No. 2
Amendment No. 1 to PP

Drafter: AFR/PD/CCWAP: *GHazel*

Clearances:

DAA/AFR:ARLove *1/12/00 1/12/00*
GC/AFR:DRobertson *1/12/00*
GC/LG:RLester *[Signature]*
AFR/CWA:DWalsh *[Signature]*
AFR/DP:GCauvin *[Signature]*
AFR/TR/ARD:FMertens *F. M. JER*
AFR/DP:LSaiers *[Signature]*
AFR/PD/CCWAP:RAnderson *A*

AUTHORIZATION AMENDMENT NO. 2

Name of Country: Ghana
Name of Project: MIDAS Phase IIL
Number of Project: 641-0102
Number of Loan: 641-T-020

1. Pursuant to Section 103 of the Foreign Assistance Act of 1961, as amended, the MIDAS II Project for Ghana was authorized on August 21, 1980. That authorization was amended to extend the PACD from September 30, 1983 to September 30, 1984 by Action Memorandum dated November 19, 1982. That authorization is hereby further amended as follows:

- a. Of the planned authorization of \$11,711,800 in loan funds \$7,000,000 have been obligated. The balance of \$4,711,800 will be deauthorized.
- b. Of the planned authorization of \$9,405,300 in grant funds, \$5,450,000 have been obligated. The balance of \$3,955,300 will be deauthorized.

2. The authorization cited above remains in force except as hereby amended.

Date

2.28.83

F. S. Ruddy

F. S. Ruddy,
Assistant Administrator

Drafter: DRobertson 2/17/83

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT DATA SHEET	1. TRANSACTION CODE <input type="checkbox"/> A = Add <input checked="" type="checkbox"/> C = Change <input type="checkbox"/> D = Delete	Amendment Number 2	DOCUMENT CODE 3
2. COUNTRY/ENTITY GHANA	3. PROJECT NUMBER 641-0102		
4. BUREAU/OFFICE AFR	5. PROJECT TITLE (maximum 40 characters) MGD. INPUTS & DEL. OF AGRIC. SVCS-II		
6. PROJECT ASSISTANCE COMPLETION DATE (PACD) MM DD YY 09 30 84	7. ESTIMATED DATE OF OBLIGATION (Under "B" below, enter 1, 2, 3, or 4) A. Initial FY 80 B. Quarter 4 C. Final FY 81		

8. COSTS (\$000 OR EQUIVALENT \$1 = 2.75)						
A. FUNDING SOURCE	FIRST FY 80			LIFE OF PROJECT		
	B. FX	C. L/C	D. Total	E. FX	F. L/C	G. Total
AID Appropriated Total	9,270	180	9,450	11,750	700	12,450
(Grant)	(2,270)	(180)	(2,450)	(4,750)	(700)	(5,450)
(Loan)	(7,000)	(---)	(7,000)	(7,000)	(---)	(7,000)
Other U.S.						
1.						
2.						
Host Country	---	2,600	2,600	---	13,000	13,000
Other Donor(s)						
TOTALS	9,270	2,780	12,050	11,750	13,700	25,450

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)	210	230	010	5,450	7,000	-0-	-0-	5,450	7,000
(2)									
(3)									
(4)									
TOTALS				5,450	7,000	-0-	-0-	5,450	7,000

10. SECONDARY TECHNICAL CODES (maximum 5 codes of 3 positions each) 070 040 020 120 140 060	11. SECONDARY PURPOSE CODE 133
--	--

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)			
A. Code	BSW	BRW	
B. Amount	42,800	18,300	

13. PROJECT PURPOSE (maximum 480 characters)

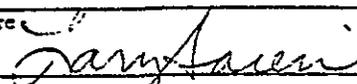
MAJOR-IMPROVED AND EXPANDED INSTITUTIONAL CAPACITY OF THE GSC, RESULTING IN A VIABLE, INDEPENDENT, PROFIT MAKING COMPANY.

MINOR-STRENGTHENED INSTITUTIONAL CAPACITY OF THE ADB AND THE HOME EXTENSION/NUTRITION UNIT OF THE MOA.

14. SCHEDULED EVALUATIONS Interim MM YY / MM YY Final MM YY /	15. SOURCE/ORIGIN OF GOODS AND SERVICES <input checked="" type="checkbox"/> 000 <input checked="" type="checkbox"/> 941 <input checked="" type="checkbox"/> Local <input checked="" type="checkbox"/> Other (Specify) 935
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16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

This revised PP will set AID's Funding commitment at the current obligation level of \$12.45 Million which is a reduction from the authorized level of \$21.117 Million as follows:
 Grant component is reduced from \$9,405 to \$5,450
 Loan component is reduced from \$11,712 to \$7,000

17. APPROVED BY	Signature 	18. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY /
	Title LARRY SATERS ACTING DIRECTOR	

ACRONYMS

ADB Agricultural Development Bank

AID Agency for International Development (U.S.)

GOG Government of Ghana

GSC Ghana Seed Company

IITA International Institute for Tropical Agriculture, Ibadan, Nigeria

MFEP Ministry of Finance and Economic Planning

MIDAS II Managed Inputs and Delivery of Agricultural Services, Phase II

MOA Ministry of Agriculture

MPEC MIDAS Project Executive Committee

PP Project Paper

USAID/G U.S. Agency for International Development Mission to Ghana

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- B. Revised Logical Framework
- C. Letter from USAID to GOG
- D. Ghana Seed Company Revised Implementation Plan - dated April 1982.
- E. List of Commodities to be Purchased.
- F. PNDC Secretary for Agriculture Letter 11-1-82.
- G. Economic Analysis.
- H. Amendment to Initial Environmental Examination

VIII

I. Summary and Recommendations

- a. Project Title : MIDAS II
b. Project Number : 641-0102
c. Grantee and Borrower : The Government of Ghana
d. Primary Implementing Organization : The Ghana Seed Company
e. Total Project Cost : A.I.D.
Grant \$5.45 million
Loan \$7.00 million
Total \$12.45 million
- G.O.G.
New Construction \$3.8 million
In-Kind \$9.2 million
Total \$13.0 million
- f. Life of the Project : Four Years
g. Goal (Unchanged) : Increased agricultural production on small holdings, leading to higher levels of income and welfare for small scale farmers in Ghana.
h. Purpose : Major - Improved and expanded institutional capacity of the GSC, resulting in a viable, independent, profit-making company.
Minor - Strengthened institutional capacity of the ADB and the home extension/nutrition unit of the MOA.
i. Project Description: The project will provide funds for equipment, technical assistance and training to assist the Ghana Seed Company to carry out its program of seed multiplication and distribution. In addition, the project will provide funding for technical assistance to the ADB and a unit of the M.O.A.
j. Recommendation : That the revised project be maintained at its current obligated funding level of \$12.45 million with the understanding that no additional funds need to be obligated to complete the project.

(PACD - September 30, 1984).

II. Project Description

A. Background

The MIDAS I project, which was authorized and obligated in FY 76 (\$10 million loan of which \$2.3 million was deobligated 9-30-82) and a \$5.2 million grant), was designed to be the initial stage of a national program to develop and strengthen national and regional agriculture institutions to provide coordinated services and goods to small scale farmers. The project consisted of six basic components: credit expansion, fertilizer procurement, processing and distribution, seed multiplication, small farm systems research, marketing and demonstration/extension. The overall goal was to increase agricultural food production through the small scale farmers which would have a favorable effect on the incomes and living standards of the farmers. However, as implementation of MIDAS I proceeded it became apparent that the goals and objectives of the project were too complex for successful completion. For example, (a) moderate institutional improvement in the Agricultural Development Bank (ADB) through technical assistance was offset by the lack of credit funds for the farmers; (b) substantial progress was made in strengthening the home extension program but no progress was made in crop extension, research and fertilizer. This uneven pace of progress in implementation of MIDAS I took place during growing political instability and poor economic management. The project had to deal with four different governments. Related to the political instability was the poor economic management resulting in distorted cost/price relationships. These distortions reduced production incentives. As MIDAS I concluded the small farmer sector faced the same problems that existed at the time the project was designed. The project was designed to address the problems but not the causes which surfaced as a result of the political instability and poor economic management.

As the Ghanaian economy continued to decline a series of discussions and negotiations with the GOG and foreign donor community led to a revised agricultural strategy by the GOG and donor countries. The essential elements of this strategy were that the GOG would address macro-economic policy issues and negotiate a series of stabilization measures with the IMF. In addition, the GOG requested that donor assistance in the agriculture sector be provided through regional-wide integrated development projects targeted towards more manageable areas. This resulted in the development of the MIDAS II project which would channel USAID's assistance towards the Brong-Ahafo region except for the seed component which would continue on a national level, while other donors (U.K., IBRD, Germany and FAO) would undertake projects in the Upper, Northern and Volta regions.

MIDAS Phase II - The MIDAS II project was authorized August 21, 1980 at an AID input level of \$21,117,000 of which \$9,405,000 was grant funded and \$11,712,000 loan funded with a PACD of September 30, 1983 (3 year period). The PACD was subsequently changed to September 30, 1984.

Obligated as of November 30, 1982 was \$12,450,000 (loan \$7,000,000; grant \$5,450,000). The breakdown of the obligated grant funds as of September 30, 1982 is as follows:

Obligated as of 9-30-82	=	\$5,450,000
Less disbursement as of 9-30-82	=	<u>1,469,819</u>
Undisbursed 9-30-82		\$3,980,181*

*\$1.3 million of undisbursed funds have not been earmarked as of 9-30-82.

Of the \$7 million in loan funds obligated on 8-29-80 only \$369,000.00 was disbursed. The goal and purpose of the MIDAS II project were in principle the same as in MIDAS I except AID's inputs under MIDAS I were channeled to the agricultural sector on a national level whereas under MIDAS II AID would concentrate its resources in a specific region. Unfortunately, there has been very limited progress on the MIDAS II phase since the project was authorized and obligated. For various reasons, the GOG has never adequately addressed its macro-economic stabilization issues. As the economic decline accelerated, the cooperating agriculture institutions in the MIDAS II project were pressed to maintain staff and support levels and were unable to strengthen their institutions by increasing inputs and services as projected in the MIDAS II PP. The MIDAS project activities, as is true with most economic activities, have not been able to receive adequate support from the Ghanaian cooperating institutions. In addition, the MIDAS II project has six components which are somewhat related to each other and in some cases dependent on the other components of MIDAS II for successful implementation. In some components inaction or deficiencies in one component created a negative impact on other components. For example, the failure of the fertilizer distribution system had serious adverse effects on the credit and extension components.

Compounding the implementation problem of Phase II of the MIDAS project was the coup on December 31, 1981 which resulted in the fifth change in the GOG administration since MIDAS I was approved in 1976. During CY 1982 the economic decline has accelerated with inflation reaching 72% a year and the parallel market rate of exchange for the cedi ranging from 40 cedis to 60 cedis and more for \$1.00 U.S. With the official exchange rate at 2.75 to \$1.00 U.S., the credit and savings system is being quickly eroded. With the foreign exchange reserves fully depleted, basic consumer goods are almost non-existent. (For more information on this subject, see the economic analysis section). With implementation almost at a standstill, caused in part by the economic and political instability, the Mission began an intensive review and dialogue of the MIDAS project with the participating agricultural sector agencies and the Ministry of Finance and Economic Planning. From these discussions there is an agreement in principle

(see Annex C) to modify certain components and to completely discontinue other components of the MIDAS II project. Since the marketing and extension components will continue as described in the MIDAS II PP, there are no further discussions on these activities in this amended PP. The components to be discontinued are outlined but the focus on the paper is on the Ghana Seed Company and the implementation actions planned to make the GSC a stronger organization.

1. RESEARCH - This component was to assist the Ministry of Agriculture (MOA) establish a research capability to improve and expand linkages between the MOA and other institutions providing services to small farmers. During the time period of MIDAS I and II (six years) the GOG has failed to provide the land and buildings for the research center. Accordingly the AID funded contract with IITA will be terminated on March 31, 1983 and this component will be dropped from the MIDAS project.

2. FERTILIZER - Under this component AID was to provide TA to a planned Ghana Fertilizer Company which was to be established as a fertilizer more accessible to farmers. As is true with the Research components, the GOG has taken no action during the MIDAS I and II time period to implement this component. The fertilizer component will be dropped from the MIDAS II project.

3. EXTENSION SERVICES - This component was divided into two categories, (a) extension service to help the small farmer increase production which was to be carried out by the MOA's extension division, and (b) the home extension unit which was a nutrition education program for small farm families to be implemented by the MOA assisted by the Home Science Department of the University of Ghana. One of the handicaps to the MOA's extension service to the small farmers was its links to the Research and fertilizer components neither of which were fully implemented. This coupled with the MOA's failure to adequately staff the extension division and the centralization of the MOA where MIDAS II was a regional project, made this part of the extension component of MIDAS II unworkable. However, the home extension services has proven to be effective and AID will continue to support this activity which will cost no more than \$250,000 over the life of the project.

4. CREDIT - The credit component consists of two parts, technical assistance to the ADB and expansion of credit to the small farmers through the ADB. The technical assistance to improve the institutional capacity of the ADB has been effective and will be continued. However, expansion of credit, which was to be funded in part by the local currency generated from the importation by AID of small farmer tools/equipment, will not be implemented. The tripple digit rate of inflation which is decapitalizing the purchasing power of the ADB credit fund and the lack of farmer supply items such as fertilizer, pesticides, etc., eliminates the need for the component in the MIDAS II project.

5. MARKETING - This component, which was always looked upon as experimental, was designed to improve food marketing through (a) working capital loans to traders, (b) a service repair center workshop, and (c) improve the physical facilities of district market centers. The ADB is the implementing organization.

6. SEED - The GSC is one component of the MIDAS I and II project which has enjoyed reasonable progress in implementation and is developing the institutional capacity to serve as the foundation for any efforts the GOG may take to overcome its food shortage problems. There will be some minor modifications in the implementation plan for the GSC as outlined in the PP but the objective to establish a nationwide processing and distribution system for improved seeds remains unchanged.

In summary, this amendment to the MIDAS II project is to, (a) provide full support to the GSC, (b) U.S. technical assistance to ADB, and (c) funding support for Ghanaian TA, tools and equipment for the home extension and marketing components.

B. Detailed Description of the Project Amendment

1. Project Goal:

The general goal is "to increase agricultural production on small holdings, leading to higher levels of income and welfare for small-scale farmers". To achieve this goal the GOG must give priority attention to agricultural production and undertake economic stabilization measures.

2. Revised Project Purpose:

The major purpose of the project is "to improve and expand the institutional capacity of the GSC, resulting in a viable, independent, profit making company". With the growth of the GSC into a viable company and the corresponding increase in the quantity and quality of certified seed, there will be a very positive effect on agricultural production in Ghana provided GOG fiscal and pricing policies are adequate and there are sufficient incentive goods for the farmers. Research results in Ghana indicates that the use of certified seed over traditional seeds can increase yields by 20% to 80% over the current yield. However, in the short run there are macro-economic circumstances in the country which have created severe transportation and incentive constraints to the farmer. These may preclude him from pursuing increased agricultural production but he may adopt the certified seed as a labor saving device. A secondary purpose of the project is "to strengthen the institutional capacity of the ADB and the home extension unit of the MOA".

3. Revised Project Strategy

Under the amendment, the focus of the Project will be shifted from the approach of providing assistance to a specific region (Brong-Ahafo) through six sub-project components (seed, credit, extension, marketing, fertilizer, research) towards helping to develop the GSC into a viable,

independent company with lesser assistance also provided to the home extension, marketing and credit components. The home extension, marketing and TA to the ADB (credit component) are all minor components of this amendment and will be carried out as set forth in the MIDAS II PP except that the credit component only relates to the TA to the ADB. Therefore, this amended PP will not address those components but they are reflected in the financial summary.

The extension assistance to farmers, fertilizer and research components were not being implemented and are being discontinued. The revised target, albeit more limited, centers on the institutional development of the Ghana Seed Company which should have a direct impact on increasing food production and improving the living standards of the small farm families.

4. Revised Project Outputs:

There will be a new seed production and processing plant at Winneba and new equipment installed at Winneba and Tamale. These physical improvements coupled with the training of technicians and managers will have a major impact on developing the GSC into a viable company which will produce the certified seed to increase the food production in Ghana.

5. Revised Project Inputs:

AID will provide project funding for the following inputs:

- a. For the purchase of machinery equipment, vehicles and spare parts - \$8.1 million.
- b. For participant training, contractor support and other costs - \$1.3 million.
- c. For the cost of two U.S. contractors to provide TA to the GSC and ADB - \$3.0 million.

6. Intended Results:

The project is expected to result in the long run, but probably not within the two remaining years of the MIDAS II project, in a viable, private sector seed company which is urgently needed to assist the GOG in its efforts to meet the food production needs of Ghana. The revised MIDAS II project should have a positive effect on the management of the ADB, the home extension services and the marketing components. In addition, the production of certified maize should be increased to 20,000 bags per annum which is an increase of 100% over current production. Rice production should increase from 40,000 bags to 50,000 bags or a 25% increase in production. Based on the above production, the GSC will generate sufficient income to cover all of its operating cost.

III. Project Analysis

A. Technical Analysis

1. GENERAL

Seeds are basic to agriculture. They must be available for planting every acre of land that goes into production each year. Seeds are made available by various means: (a) the farmer saves his own seed; (b) private seed companies produce and market the seed; (c) a government agency produces and makes available seed to the farmers. In most of the developed world seed production and supply is handled through the private sector. In some developing countries, however, neither are incentives great enough nor the climate right to encourage the development of a private seed industry. In such cases, they must be made available by the government.

Ghana organized a Seed Multiplication Unit (SMU) as a part of the Ministry of Agriculture soon after independence (1961) to provide for production and distribution. Seed production and distribution increased dramatically during the first ten years of the program.

In 1973 the Government of Ghana (GOG) requested USAID to finance a study to assess the seed program then being implemented by the SMU. Following an analysis by Mississippi State University (MSU) the GOG requested assistance in strengthening the SMU and in developing an indigenous private certified seed production program.

During 1975, the MIDAS Project was designed. The seed component was incorporated into the design from recommendations made by MSU. The objective was to strengthen the capabilities of the SMU to provide sufficient quantities of improved and proven varieties of seed. This was to be done at a cost reflecting real market value and acceptable to Ghanaian farmers so as to enhance their productive capacity.

It became apparent that while progress was being achieved as planned, severe shortages of building materials and contract arrangements in the construction of the seed processing plants delayed completion of the facilities.

During Phase I the SMU continued to improve its operations and competency, and in 1979 was converted to the Ghana Seed Company (GSC), a parastatal company with a charter mandating it to produce and distribute improved seed and to sell it at a real profit not to exceed 20 percent.

USAID financed sufficient equipment for two seed processing plants to be financed by the GOG. In MIDAS II the GOG agreed to construct two additional processing plants while USAID agreed to finance requisite commodity procurement and technical assistance. Only one of the plants (at Winneba) is under construction, It is about 50% complete and scheduled to be finished before late 1983.

2. PRODUCTION

The production of high quality improved seed to enhance the productivity of the agricultural sector requires more time and inputs (expense) than does the production of "farmer grain" for the general commercial market. Seeds of greater production potential of new hybrids, varieties, composites, synthetics, etc., are continually introduced into a Seed Program by researchers (IITA, CIMMYT, Crops Research Institute, Grains Development Board), and must be maintained genetically and mechanically pure to insure their continued higher production potential. Thus, an orderly and systematic scheme must be set up for the production and maintenance of high quality seeds into foundation and certified seed classes.

In Ghana the GSC has been organized and designated as the agency to produce foundation seed, the first generation increase of breeder seed supplied by the research agencies. To accomplish this, foundation seed farms have been established at strategic centers in major crop production regions in Ghana. Table 1 shows the location, acreage and production potential of the foundation seed farms presently operated by the GSC.

The production capability of these foundation seed farms is sufficient to sustain the anticipated growth in certified seed production generated by this project. To sustain this level of production capability, additional farm machinery will be purchased as indicated in Table 2. In addition, GSC will consolidate their foundation seed farms to facilitate the establishment of a centralized equipment maintenance shop for each region. This action will decrease maintenance and production costs and enable more efficient use of resources and inputs thus increasing production and net income potential.

The GOG has wisely delegated the second stage in the systematic seed multiplication system, that of producing certified seed to private farmers or contract seed growers. These farmer-seed growers plant foundation seed from the GSC and produce certified seed which then becomes available for mass distribution to small farmers and home gardeners throughout Ghana.

Certified seed growers are rigidly screened and selected based upon their resources and production capabilities to maintain and produce high quality certified seed with genetic potential similar to that of the original high yielding breeder seed. Some of the more rigid criteria for certified growers are at least 50 acres of land, adequate equipment, accessibility to roads, available financing and loyalty. Even though some growers have diverted part of their seed on occasions to other markets, more rigid contracts, additional grower applicants and pricing structure has tended to stabilize the supply of certified seed.

The GSC does a good job in supervising the production of certified seed. Not only are the contract growers selected with precision but also their production practices are closely scrutinized. Seed inspectors of the GSC usually make at least four visits to the certified grower during the production season - during land preparation and planting, weeding and spraying (six weeks after planting), roguing during flowering, and during harvesting.

Table 3 shows the number of growers, location, acreage, current production capability, and projected production potential as a result of project inputs. Table 4 shows the estimated demand for certified seed. It is apparent that current capabilities for certified corn seed production falls 35,000 bags short of the estimated demand, while certified rice seed production is approximately on target at 40,000 bags. However, with the anticipated emphasis of this project revision in both the Winneba and Tamale regions, the estimated production goals will be attainable and/or maintained.

The certified seed growers who produce seed for the GSC automatically comprise a Seed Growers Association. These are experienced farmers who cooperate with the GSC in developing and expanding the seed industry in Ghana. These grower organizations may enter into lease agreements with the GSC to utilize the foundation farm equipment which is designated for the operation of the GSC foundation seed farms. Such cooperation will enhance the production of certified seeds; however, use of this equipment on foundation seed farms will have priority.

Further analysis of the production component revealed that in many cases growers were located too distant from the regional centers, especially at Tamale and Kumasi. In addition, growers lacked transportation to deliver the certified seed to the processing center. These issues have resulted at times in either added costs for GSC to pick up the seed, delay in getting seed to the processing center, or the growers disposing of the seed to other markets.

To overcome this problem the GSC has agreed to locate contract growers within a radius of 10-15 miles of the seed processing plants. The purpose of this is to reduce transportation costs and to enable the GSC to adhere to the terms of their contracts with the seed growers associations by collecting and transporting the seed on a timely schedule.

Table 1. Ghana Seed Company Foundation Seed Farms, Acreage and Production Potential.

LOCATION	CROPS									
	MAIZE		RICE		GROUNDNUT		SORGHUM		COWPEA	
	ACREAGE	PROD. (bags)	ACREAGE	PROD. (bags)	ACREAGE	PROD. (bags)	ACREAGE	PROD. (bags)	ACREAGE	PROD. (bags)
WINNEBA										
Okyereko	150	900					2	10	10	4000
KUMASI										
Kwadaso	48	240							5	1000
Ejura	120	480							4	800
TAMALE										
Nyankpala	20	120			5	30	5	15		
Nabogo	20	120	100	800						
Kpome	20	120	200	1,600						
BOI,GA'TANGA										
Nasia			200	2000						
Vea	27	135					5	25		
Doha	10	50								
Tono	8	40			9	72				
HO										
Logba	100	700								
Asikuma	14	70								
Kpetoe										
TOTAL	537	2,975	500	4,400	14	102	12	50	19	5,800

Table 2. Certified Seed Growers, Acreages, Current and Projected Production

LOCATION	CROPS																	
	MAIZE						RICE						GROUNDNUT					
	Current			Projected			Current			Projected			Current			Projected		
No.	Ac.	Prod. (bags)	No.	Ac.	Prod. (bags)	No.	Ac.	Prod. (bags)	No.	Ac.	Prod. (bags)	No.	Ac.	Prod. (bags)	No.	Ac.	Prod. (bags)	
Winneba	21	1000	3500	21	4000	25000												
Kumasi	8	650	2500	15	1520	5000												
Tamale	21	500	4000	25	1000	8000	44	4000	40,000	50	5000	50,000	45	500	4000	45	500	4000
TOTAL	50	2150	10,000	61	6,520	38,000	44	4000	40,000	50	5000	50,000	45	500	4000	45	500	4000

1/ Projected capacities reflect seed production potential using the new equipment rather than expected outputs on September 30, 1984 (PACD).

Table 3 Demand for Certified Seed of Improved Varieties

CROP	YIELD ^{1/} (Bags/Ac.)	TOTAL Ac. (000)	SEEDING RATE (lb./Ac.)	NAT'L SEED Requirement (Bags)	Expected Farmer Replacement Rate (%/yr.)	Estimated Farmer Demand Certified Seed ^{2/} (Bags)
MAIZE		1200.0	25	150,000	33	49,500
RICE		200.0	75	107,142	50	53,571
GROUNDNUTS		400.0	80	400,000	25	100,000 ^{3/}

^{1/} Maize = 200lb/bag

Rice = 140lb/bag

Groundnuts = 80lb/bag (unshelled)

^{2/} Read - expected farmer replacement rate x national seed requirement.

^{3/} Peanuts in shell

3. Processing

The basic capability to process seeds for upgrading quality and maintaining both genetic and mechanical purity has existed in Ghana since the early to middle 1960s. In fact, seed processing capabilities gradually improved and became somewhat centered in four major regions - Winneba, Kumasi, Tamale and Ho. Prior to any USAID commitment (MIDAS I, II) the capability to process seed with the facilities which existed at these four locations is shown in Table 2. The vision of MIDAS I and subsequently MIDAS II proposed to further increase the processing capability of these four centers to meet the ever increasing demand for improved seeds in Ghanaian agriculture. The rationale behind this approach was based upon the fact that seed processing capability had already been established at these regional centers through limited assistance from previous donor organizations. Thus, a logical approach by both MIDAS I and II was to capitalize upon the existing capabilities in these locations and upgrade the capabilities through additional facilities and equipment.

Initial emphasis was designed to provide for new processing facilities, first at Winneba and then at Kumasi. Depending upon timely completion of this phase, the Tamale facility was to be included later (and possibly Ho). The Winneba unit was considered critical and essential as it is located near Accra and in a profitable maize producing area. Both proximity to Accra for logistical and raw material support and availability of seed sources made this site selection quite favorable. Hindsight, however, revealed that Kumasi should not have been chosen as the second site, but rather Tamale. Production capability, existing facilities and climate should have been overriding factors leading to the choice to Tamale over Kumasi.

Of course, the continuation of declining economic conditions was unpredictable at that time and if these conditions had either stabilized or taken an upturn, then there was ample reason to assume that all three selected sites could have been completed within the time-frame of MIDAS II. It is now quite apparent that construction materials are now almost non-existent. Consequently, the first facility at Winneba is two years behind schedule and is now approximately 50 percent complete.

The completion of this processing facility is of utmost importance, its operational features and successful completion would give a tremendous boost to the seed program. The successful completion of this unit would serve both USAID and GOG objectives and strategy in the agricultural sector. Therefore, USAID will finance the necessary construction materials for completion of the building.

In addition, expansion of the facility at Kumasi will be cancelled and all equipment ordered for it will be diverted to the Tamale site. Annex E

lists recommended equipment procurement for the Tamale unit. This together with the re-location of basic processing equipment already in country (procured for Kumasi under MIDAS II) will upgrade Tamale and facilitate increased capacity. Table 4 shows the processing equipment already in Ghana which will be moved to Tamale.

The acquisition of the supplemental equipment for Tamale, the re-location of existing equipment to Tamale, and the completion of the Winneba facility will provide the necessary capacities to fulfill the project seed demand during the life of this project.

Table 4

Equipment to be Re-located to Tamale Region

Quantity	Description	Remarks
2	Hart No.3 Indent Cylinder separators	1 each originally ordered for Winneba and Kumasi - will not be needed for corn - relocate in Tamale to remove <u>Rothbollea</u> weed from rice.
1	390 bushel surge bin, floor mounted	Re-locate in Tamale to serve the air and screen cleaners.
1	Elevator, 34' ht	Re-locate in Tamale to serve the air and screen cleaners.
2	Gravity separators, oliver model 160	Re-locate to Tamale to remove <u>Rothbollea</u> weed from rice.

4. Drying and Storage

The drying system for the GSC is a batch type drying system that is utilized in two separate ways. One is the use of trailers which are equipped with perforated floors and air plenum chambers that can be taken directly to the seed production fields where they are loaded from the bulk bin of the combines. The loaded trailers must then be taken immediately to a shelter (drying shed) where the drying fans are located. One drying fan is designed to dry two drying trailers simultaneously. The plenum chambers of the drying trailers are connected to the fan by means of canvas ducts. During the drying operation, a competent technician must monitor the air flow and moisture content to assure drying and prevent damage to the seeds. Samples are taken at regular intervals during drying and tested for percentage moisture. After the seeds are dried, they will be moved while still in the drying trailer to the receiving area for processing. This type of drying system is used at the Winneba plant.

The second type of batch drying system is similar to the first except that the bins where the drying takes place are permanent and stationary. The monitoring of temperature and moisture content is carried out in the same way. Stationary dryers as described here are used both at Winneba and Kumasi.

A third type of drying system that can be used in drying seed is a tower type drying in which the seed can be dried in a continuous flow. This type of drying system has been acquired and is ready for installation at Winneba when the building is complete. After installation of this system, four of the eight wagon-type (trailers) will be transferred to Kumasi. This will approximately double the drying capacity at the Kumasi location.

The Tamale processing plant is located in an area where climatic conditions at harvest time are such that drying is not required. Therefore, drying systems are not in use at this processing location.

The storage of seed does not appear to be a major constraint at this time. At Winneba sufficient storage space has been rented to satisfy storage needs until the new processing plant is completed. Upon completion of the new plant, storage space will be adequate for years to come.

Storage area at Kumasi is adequate and is suitable for air conditioned storage. With repair of air-condition units already in place the storage area could be cooled and dehumidified which would enhance the quality of the storage environment. Storage of uncleaned seed at the time of receiving for processing is a problem at Kumasi. A prefabricated building on concrete slab would be suitable for storage of this type.

The storage area at Tamale is adequate at the present time. Two warehouses are available, one with a 10,000 bag capacity, the other with a capacity of 30,000 bags.

If, however, projected seed goals are reached in the Tamale area there will be a need for storage of 62,000 bags of maize, rice and groundnuts. The present 40,000 bag storage area will then be inadequate. However, there is warehouse space available in Tamale which the GSC could rent for additional storage.

5. Marketing and Distribution

Effective distribution of certified seed continues to remain as probably the weakest link in the developing seed program in Ghana. A number of reasons contribute to this, somewhat similar and no doubt repetitious to those plaguing other segments of the program. These include inadequate communication, transportation difficulties, need to increase farmer acceptance of improved seed, and pricing policy. It is encouraging to note, however, that some advances have been made towards improving the system of marketing. These include the recruitment of additional sales agents, one in particular with previous sales experience to head up the overall sales program. In addition a national "Seed Appreciation" week is scheduled for early January 1983 for educational and promotional purposes. It is anticipated that the proper GOG administrative officials will interact in this program and will support the GSC and its marketing efforts and pricing policy.

A major issue in the marketing scheme will be the determination of seed pricing policy. Successful seed programs depend upon selling seed for twice (2x) the official price of commercial grain. This fact is well documented worldwide. Efforts will be made to help the GOG understand the importance of premium pricing for seed.

Another major issue in marketing will be resolved to some extent by the acquisition of the new vehicles already authorized. These vehicles should allow more timely distribution to a wider range of markets.

Some possible marketing advances are as follows:

1. Continue seed sales at all GSC area offices.
2. Promote seed sales at regional and district agricultural offices.
3. Make concerted effort to identify and recruit additional sales agents and design sales incentives.
4. Technical assistance (short-term) expert in pricing structure analysis.
5. Contact agencies for possible assistance - FASCOM, APPLE, GOVA, Commercial banks, German Technical assistance program.
6. Participate in regional market days.

6. Quality Control

In any seed program it is imperative that the seeds produced be of high quality (physical purity, genetic purity, germination, etc.) or else the seed are no better than farmer produced seed. High seed quality is generally insured through seed inspection and certification procedures. Normally an organization producing seed will have its own quality control division, complete with procedures and standards for achieving the desired quality. Verification of quality however, is accomplished by seed inspection performed by another agency, usually the seed control agency in the area in which the seed are produced.

In MIDAS II the responsibility for seed inspection and certification was to have been removed from the Ghana Seed Company, precluding inspection and certification of its own product. The Ghana Seed Inspection Service (GSIS) was to have been established, autonomous from the GSC, and responsible for inspecting all aspects of foundation and certified seed production, processing, storage, and testing. The GSIS, however, did not get off the ground. It was established in name only but never became functional. The necessary equipment to operate the GSIS was ordered under MIDAS II and received into the country. Since the GSIS is not functional the equipment and supplies acquired under MIDAS II have been transferred to the GSC, quality control division. This will expand the capability of this division and the GSC to supply high quality seed to the farmers of Ghana. Even though there will be a transfer of equipment under this plan some additional equipment and supplies are needed. A list is attached.

In summary the basic component of GSC remains intact. The changes that have been made in this document are basic implementation changes. For example, in Kumasi there were plans to build a new seed processing plant but this is no longer going to be implemented. In addition, the equipment ordered for Kumasi and currently in Ghana will be sent to Tamale because it has been determined that the equipment needs of Tamale are more acute at this time.

B. Administrative and Implementation Analysis

1. Organizations Involved

The principal organizations responsible for the implementation of various components of the project are:

- a. The Ghana Seed Company, which was formerly a unit within the MOA but now organized as a parastatal company in 1979, is responsible for establishing a nationwide processing and distribution system for certified seeds.
- b. The Agricultural Development Bank (ADB) which is responsible for providing credit to small farm families and the implementation of the marketing component of this project.
- c. The Ministry of Agriculture (MOA) which has a unit responsible for the implementation of the home extension/nutrition component of the project.
- d. The Ministry of Finance and Economic Planning is the Grantee and Borrower.
- e. Contractors - These will be one U.S. TA contractor (2 advisors) providing management assistance to the ADB and a second U.S. contractor (4 advisors) providing management and technical services to the GSC.

As a result of the redesign of this project the MIDAS project executive committee and the MIDAS executive project manager are no longer required components of the project since all future contacts by USAID will be directly with the implementing organizations. Actually, the MIDAS project executive committee has ceased to function since January 1982 and implementation actions are being channeled directly to the concerned organizations.

The major implementation steps and progress benchmarks are set forth on pages 23 and 24 of this section.

2. Ghana Seed Company

The Ghana Seed Company was organized in 1979 as a parastatal company charged with the responsibility of producing and distributing improved seeds for Ghana's agriculture. The company is organized into the following divisions for efficiency of operation: (a) Administrative, (b) Production, (c) Processing, (d) Quality Control, (e) Sales and Distribution, and (f) Research.

In the administrative division there is a Chairman of the Board, a Managing Director who is in charge of day-to-day operations, a General Manager, and an Accountant - Bookkeeper. With supporting staff they give overall guidance to the direction of the company.

The manager of the production division is responsible for coordinating production of both foundation and certified seed in Ghana. He is also responsible for the registered grower program and the making of contracts for the necessary production of seed.

The processing manager is responsible for the transformation of the harvested seed into the product ready for marketing and distribution. He is also responsible for record-keeping in the processing area to permit cost analysis.

The quality control manager has responsibilities in two major areas. One is in the area of evaluation of quality. Standardized procedures are available, and in use throughout the world, for evaluation of the quality of seed ready for marketing. The second major area of emphasis in quality control is the implementation of procedures to achieve higher quality standards of the seed being produced.

Sales and distribution is the vital link between the Ghana Seed Company and the farmers of Ghana. The Manager of this division is responsible for the sales program and for organizing the distribution of seed throughout Ghana.

The work of the research manager and his division is more basic than that of other divisions but nevertheless as important. He is responsible for the evaluation and development new varieties that will make an impact on the agriculture of Ghana and enter into production and distribution program of the Ghana Seed Company.

For better control throughout the various regions of Ghana, the company has area managers located at Tamale, Kumasi, Bolgatanga, and Winneba. Each area manager has an officer in charge of production, processing, quality control and sales and distribution within that area.

Key personnel of the Ghana Seed Company are shown in the following table:

TABLE 5

Key Personnel of the Ghana Seed Company

Position	Name	Years 1/ Service	Remarks
Chairman of Board	Prof. E.V. Doku	3	Dean of Faculty of Agriculture, University of Ghana
Managing Director	J. Wobil	16	Master of Science in Agronomy
General Manager	E. Blay	16	Master of Science in Plant Pathology
Production Manager	P.K. Opoku	20	National Diploma in Agriculture; Seed Testing in Australia
Processing Manager	F. Hammond	8	Trainee Diploma in Agricultural Mechanization
Quality Control Manager	A. Amihene	2	Bachelor of Science in Gen. Agric.; Seed Training Course Miss.
Sales and Distribution Manager	O. Gyamerah-Amoako	1	Formerly in Marketing Division of Unilever, Accra.
Research Manager	Dr. V.K. Ocran	2	Ph. D. in Plant Breeding
Chief Accountant	E. Erzuah-Nyenzah	2	Professional Qualifications
Area Manager Tamale	H. Akanko	18	National Diploma in Agriculture; Seed Training Course-Miss.
Area Manager Kumasi	T. Bonney	10	Master of Science in Agronomy - Seed Technology
Area Manager Bolgatanga	L. Delimini	10	Bachelor of Science in Agronomy - Diploma Seed Technology
Area Manager Sunyani	E. Hesse-Owusu	14	National Diploma in Agriculture; Seed Training Course-Miss.

1/ Years service with both the Seed Multiplication Unit of the Ministry of Agriculture and the Ghana Seed Company,

The technical analysis of the Ghana Seed Company reveals that the company is organizationally sound and fully capable of producing and distributing seed for the country. There are some factors, however, that limit the effectiveness of personnel within the company. One is poor communication within the organization, particularly between headquarters and the area offices. Some of this is due, no doubt, to inadequate means of communication (no telephone, no radio contact). However, AID has recently acquired two-way radios for GSC which will soon alleviate this problem.

Another factor limiting the effectiveness of personnel is lack of sufficient training for most personnel in the company. There are two areas in which training would be beneficial. Management training is needed by those responsible for day-to-day operation of the company. This, perhaps, includes all those identified in Table 5. Technical training is needed by those responsible for divisional activities such as seed production, processing, quality control, etc. Some of the key personnel have received some seed technology training but more is needed.

Contrary to some opinions voiced, seed production, processing and distribution requires knowledge and skills not part of the usual background and experiences of agronomists. Persons with backgrounds and experiences in these areas are excellent prospects for training - but they must be trained.

Two levels of training are essential for the orderly future development of the seed program in Ghana.

- a. In-depth Professional Training - Needed for specialists who will plan, implement and manage seed program activities and resolve the technical problems that arise. This type of training can best be obtained in specialized training institution in the developed countries. Ghana Seed Company should make provision and schedule the following types of in-depth professional training.
 - (1) Special Courses in Management. (Three months required for completion). Candidates for training at this level should be those in management positions to the company.
 - (2) Special Courses in Seed Technology. (Approximately three months required for completion). Candidates for this type of training are the technical officers associated with some aspect of the seed program such as production, processing, drying, storage, testing, etc. Mississippi State University conducts a course of this type annually, for international participants. Over the next two years the Ghana Seed Company should schedule at least four candidates for this course.
- b. On-the-job-training - Needed for workers manning operational units of the seed program. This type of training can be done by those receiving professional training in (1) above.

3. Seed Contractor Associations

Seed growers attempted to establish a country-wide association about 10 years ago, but this attempt was never completely successful due to inadequacy of communication and transportation. No doubt lack of GOG support at this early date also contributed to a low level of enthusiasm. With the emergence of the GSC, however, the dependency upon contract growers has steadily increased to where now competition to become a contract grower is rather keen. With the need for contract seed production the growers have found renewed enthusiasm for belonging to and supporting a "Growers Association". The association is made up of only those growers who produce certified seed under contract to the GSC. At the present time there are three contract seed growers associations in Ghana. The association in Winneba currently consists of 14 members and will be increased to 21 for the next growing season. This will increase the acreage under contract from 1900 to 4000. The Tamale Seed Growers Association currently consists of 21 members and will be increased to 25 with an increase in acreage from 500 to 1000. The Kumasi seed growers association will remain at 15 members but the contract acreage will increase from 650 to 1520.

The above figures are for certified corn production but there have also been similar increases in Tamale regarding rice production. See Table 2. for statistics.

The relationship between the GSC and the "Seed Growers Association" is designed to be of mutual benefit. As an example, the growers willingly support each other by loaning equipment when needed, while the GSC is willing to pay a premium for the certified seed. Through a continued relationship with selected growers, a sense of loyalty develops which is essential in assuring an adequate supply of certified seed.

To further enhance the capabilities of the contract growers to produce high quality seed, the GSC will be leasing production equipment to the various regional associations. The GSC is considering leasing agreements contingent upon satisfactory fulfillment of production obligations.

4. IMPLEMENTATION PLAN - GSC

Key Progress Benchmarks *

12/82 Order spares for cylinder and gravity separators (USAID)

12/82 GOG complies with conditions precedent to additional disbursements

1/83 * Transfer equipment from Winneba site to Tamale (GSC)

1/83 Technical assistance - pricing consultant (EI)

1/83 Order commodities as per Annex E (USAID)

1/83 First monthly progress report on Winneba plant construction

2/83 Identify 3 participants for 1983 MSU Seed Improvement Training Course (GSC)

3/83 First quarterly report on reaching project goals

4/83 * Number of seed agents for distribution of seeds increased from 40 to 80

4/83 Identify 2 management training participants (GSC) for Washington, D. C.

5/83 * Seventy five percent (75%) of construction of seed processing plant at Winneba completed

5/83 Departure of 3 participants to MSU summer course

5/83 * Wagon dryers installed and operational at Winneba

6/83 Second quarterly report on reaching project goals

6/83 Departure of 5 short term credit trainees from ADB

7/83 Departure of 2 short term Management Trainees

8/83 * Number of samples tested for quality control increased from 900 to 1,580

8/83 Return of 3 short-term participants from MSU short course

9/83 Third quarterly report on reaching project goals

10/83 Request 2 MSU contract consultants to conduct Seed Technology Training course at Winneba

Key Progress Benchmarks *

- 10/83 * Foundation seed yield increased from 4 to 6 bags per acre
- 10/83 * Certified maize seed production increased from 8,750 bags to 14,500 bags
- 10/83 Project evaluation
- 12/83 * Completion of construction Winneba processing plant fully operational
- 12/83 Identify 20 participants for Winneba short course in processing, drying, storage and quality control
- 12/83 Fourth quarterly report on reaching project goals
- 12/83 Audit of GSC begun to determine adequacy of 20% markup
- 1/84* Transfer 4 wagon-type driers to Kumasi
- 1/84 In-country training course in Seed Technology at Winneba
- 2/84 Identify 3 short-term participants for MSU seed course
- 3/84 Fifth quarterly report on reaching project goals
- 4/84 Identify 2 short-term participants for Management Training (Wash., D. C.)
- 5/84 Departure of 2 short-term credit trainees from ADB
- 5/84 Departure of 3 short-term participants to MSU seed course
- 6/84 Final quarterly report on reaching project goals

5. Project Monitoring and Evaluation

A. Monitoring

The Food and Agriculture (F&A) office of USAID/Ghana will continue to have overall management responsibility including supervision of the two TA contractors. REDSO/WA also is prepared to provide assistance to USAID/Ghana when requested. To further assist USAID/Ghana in its monitoring responsibilities a monthly report will be required from the GSC on the construction progress of the Winneba plant, quarterly reports on implementation progress.

B. Evaluation

Based on the Mission's decision to redesign the MIDAS II project and eliminate those components which could not be implemented because of the declining economic situation the evaluation which was scheduled for FY 82 has been rescheduled for October 1983. To assist both the GOG and AID in its evaluation, clearly defined benchmarks have been established in the implementation schedule. The principles of the evaluation criteria as set forth in Annex III-H of the MIDAS II PP are still valid but the end of project results need to be adjusted to reflect the changes and results outlined in the revised PP.

C. Beneficiary Analysis

Socio-cultural feasibility - compatibility of the project with the socio-cultural environment in which it is to be introduced - has been previously described in the original MIDAS II PP. The redirection and scope of the MIDAS II redesign does not alter the analysis in that report.

Five categories of beneficiaries have been identified to gain directly and indirectly the revised MIDAS II project. First and most directly to be affected are the 591 employees and their families who are currently working for the Ghana Seed Company, estimated to total 3,000 persons. A financially viable, profit-making GSC resulting from project inputs and activities after four years is expected to expand its operation and increase employment by 40% to 832 bringing the total number of persons to be directly impacted by the GSC to 4,000.

The second level of beneficiaries to be impacted by increased activities of the GSC are the contract farmers producing certified seed. Currently 136 farmers are contracted to produce seed. The GSC anticipates increasing that number to 156 by the end of the project.

The third level of beneficiaries are the small farmers in Ghana who will utilize the improved certified seed produced by the GSC. It is estimated that under optimal conditions, the seed purchased by GSC can be utilized for planting of (by farmers 435,140^{1/} acres by the end of the fifth year. Assuming that each farmer will cultivate 4 acres using the improved seed,^{2/} a total of 108,800 farmers will be affected. All the more, certified seed usually lasts 2-3 years before replacement of the farmer's certified home stock is needed, so the potential number of farmers affected could be up to triple the number mentioned here.

Women will benefit from the project by using the seed on their own land and through better nutrition if nutritionally superior seed varieties are to be used.

A fifth group of affected people will be the independent sales agents who will gain income by acting as representatives of the seed company, collecting commissions from seed sales.

Lastly, the country as a whole will benefit from the increased production. However, it is also necessary to note that the farmer may not increase production but use the seed as a labor saving device by cultivating fewer acres at the higher yields.

1/ By 1987, the following seed production is projected:

Corn	39500 x 8 acres/sack	=	316,000 acres
Rice	45000 x 2 acres/sack	=	90,000
Peanut	27000 x 1 acres/sack	=	27,000
Sorghum	200 x 10.7 acre/sack	=	2,140

111,700 acres of produced certified seed. 435,140

Acres/sack value based on size of bag and seeding rates by crop.

2/ The average Ghanaian farmer cultivates less than 10 acres.

D. Economic Analysis^{1/}

Introduction

The Ghanaian economy has been deteriorating for over 16 years and continues to do so. Increased government expenditure without matching revenues, a hyper inflation rate (caused by an enormous growth in the money supply), an overvalued exchange rate, a deteriorating infrastructure/transportation network, government price controls, and inefficient state run enterprises have all but reduced a once prosperous economy to near ruin.

Cocoa, mining, manufacturing, and trade have all had reductions in annual output ranging from 3.5 percent to 12.0 percent per year. These declines in production have, in turn produced a negative real GDP growth rate amounting to more than -2.1 percent per year between the years 1975 and 1981. This result, in turn, has led to reduced export earnings which has limited imports because of a lack of generated foreign exchange.

Smuggling and black market activities have also greatly increased in order to avoid the price controls and/or obtain goods (primarily from Togo or Ivory Coast) that are unobtainable through official channels. Thus, the Ghanaian government recently closed its borders restricting legal access/exit to the country only by air and ocean. Manufactured commodities such as soap and matches have become increasingly difficult to obtain while certain basic foodstuffs have become exorbitantly expensive or non-existent. In Accra, for example, the average Ghanaian is unable to obtain flour (to make bread) or bread itself. One egg sells for approximately 4 cedis, and meat is currently sold at the unofficial rate of 25 cedis per pound. The official minimum wage rate is set at 12 cedis a day.

The money supply, was allowed to increase at the rate that it did (between 1973 and 1977 it increased in size by 4 1/2 times) in order to cover government budget deficits, resulting in triple digit inflation. In 1977/78, the government revenues of 1383 million cedis still only covered 55 percent of the budget and by 1980/81, the revenue/expenditure ratio had dropped to 41 percent.

The foreign exchange rate has not been allowed, by the Ghanaian government, to adjust to the inflation and has thus become increasingly unrealistic, giving rise to a parallel market reflecting its truer rates. In the years late 1980, mid-1981, late 1981 and late 1982, the cedi has depreciated on the order of C18 to US \$1, C28 to US \$1, and C50 to US \$1, respectively. The official rate is now C2.75 per US \$1.

^{1/} Annex G presents the economic analysis in greater detail.

The Agricultural Sector

The factors contributing to the above economic situation have acted to dramatically effect the agricultural sector in a number of ways. First, food production has declined, though not as relatively as fast as the cash crop production. The cash crop production declined because of the relatively low government controlled prices. At one point, cocoa in Ghana was being purchased by the government at prices equivalent to one-sixth of that offered to Nigerian farmers. Though the smuggling of the crop has increased, there are risks (including imprisonment) to be undertaken for other forms of marketing. The groundnut oil factories in Ghana have had to stop because they could not purchase a sufficient amount of raw material to keep operating.

The food crops are still being, for the most part, cultivated in the traditional manner using slash and burn techniques on farms generally 10 acres or less. Fertilizer is difficult to obtain - fertilizer imports have declined from a total of 77,840 tons in 1977 (including a carrying over of 17,000 tons to 1978) to 20,000 in April, 1980. In 1982, it is estimated that no more than 6,000 tons of fertilizer were made available to farmers. Second, the infrastructure has deteriorated to such a point that it is difficult to distribute the fertilizer and more importantly, for those farmers who have tractors, the impossibility of acquiring spare parts has virtually idled hundreds of machines. The second aspect of a poor infrastructure also means that the farmer will have limited access to the larger market for his crops in addition to higher crop losses because of on-farm spoilage. Coupled with the lack of basic products (cloth, soap, sugar, batteries, etc.), which can be considered as incentive goods, with which the farmer can spend his income, there is a reduced incentive to produce crops beyond the level of family needs.

Thus, for the reasons of low prices, poor infrastructure, and lack of incentive goods, the agricultural sector has decreased its contribution to the GDP in Ghana. It is within this background that both MIDAS Projects (I, II) have operated.

Changes in the economy will inevitably occur, but at this point it is difficult to state the direction and magnitude of change. Events such as a devaluation, opening of the border, politics, etc., will have impacts in this current uncertain situation.

Ghana Seed Company Analysis

The economic analysis of the GSC was composed of three parts: an examination of past balance sheets/income statements, as financial analysis of the company's profitability, and economic analysis including the social costs and returns. The income statements/balance sheet indicates that GSC is currently close to breaking even but only when depreciation costs of imported capital items are valued at the official exchange rate. The company is currently debt-free though the GOG has assumed the loans for equipment acquired under MIDAS I and MIDAS II. Other than the needed equipment proposed for acquisition in this PP amendment, and the current condition of GSC's vehicle fleet, the company is able to operate without the assistance of GOG (again, given the "official" rate of depreciation).

The financial analysis, based on projected seed sales, and associated costs yielded a Net Present Value (NPV) of \$-2,270,000 under the current operation (without capacity expansion, but including new vehicle purchases) over a 15 year period at a 15 percent rate of return. The internal rate of return would be approximately 13-14 percent. Under the proposed case, the marginal NPV increases by \$15 million. The estimated higher costs of depreciation, salaries, and fuel capped the earnings potential. These estimates should be considered to be conservative, however, given the nature of the cost calculations used in this study.

The social cost/benefit analysis shows that, at a discount rate of 15 percent, the farmers and consumers of Ghana could gain, if the proposal were accepted, up to \$2762 million (\$69 million). If fertilizer was not used by the farmers, the gain could still be as high as \$48 million.

The marginal gain of accepting this proposal over not accepting varies from \$43 million (\$1708 million/40)^{1/} to \$16.8 million (\$420/40) depending on the degree of conservatism one wishes to choose from. These values are in excess of the \$8 million investment that USAID is putting into the GSC and the \$3.8 million in new construction cost provided by the GOG.

^{1/} The shadow price of foreign exchange used in this analysis was set at \$40 to \$1.

E. Financial Analysis

1. Summary Cost Estimate

The grant/loan funds for the revised MIDAS II project will basically be the same as set forth in the MIDAS II PP with the grant funds to be used primarily for technical assistance and participant training, and the loan resources for commodities, equipment and vehicles. Although the project was authorized at an AID input level of \$21.1 million in 1980, only \$12.45 million, obligated to date, will be required to complete this revised project. The \$12.45 million represents \$5.45 in grant funds and \$7 million in loan resources. These cost figures are based on (a) the Mission's records for disbursements or earmarked funds for project components, (b) contract cost for the two TA contractors, (c) identified participant training cost, and (d) equipment costs. The GOG input under the revised PP will be on an in-kind basis and cash to cover the new construction cost. The following table represents the total estimated cost of the project for the four year term (PACD September 30, 1984).

Table

Revised Summary Cost Estimate and Financial Plan
(\$000 (Equivalent))

	AID AUTHORIZED			GOG	AID REVISED COST			
	Grant	Loan	Total		Grant	Loan	Total	GOG
Commodities (Equipment - vehicles and spare parts)	1859.2	7121.4	8980.6	-	1080.0	7000.0	8080.0	
Technical Assistance	3735.9	-	3735.9	-	3000.0	-	3000.0	-
Participants	1175.8	-	1175.8	-	470.0	-	470.0	-
Contractor Support and Other Cost	2634.4	4590.4	7224.8	-	900.0	-	900.0	-
GOG Contribution in-kind	-	-	-	40,000.0				
GSC - In-Kind Administrative/ Operations								9200.0
GOG New Plant								3800.0
TOTAL	9405.3	11,711.8	21,117.1	40,000.0	5450.0	7000.0	12,450.0	13,000

2. Recurrent Costs

The Ghana Seed Company obligation for recurrent costs will consist of meeting annual operating expenses consisting of wages and salaries, seed purchases, transportation costs (including vehicle repairs), general stores, etc. According to the projections of company sales and expenses (discussed in Appendix G), GSC is able to generate the revenues that are sufficient to cover its annual costs. However, when it comes to major purchases of imported capital items, (say, for replacement), GSC is reliant upon the government (through importing licenses) to require the items, paying for them at the official exchange rate.

3. Reports and Audit

a) Reports

By implementation letter the GSC will be advised to submit: (a) quarterly implementation progress reports, and (b) monthly progress construction reports until the Winneba processing plant is complete.

b) Audit

By implementation letter the GSC will be advised to submit to AID in December 1983 the results of an audit to determine whether the 20% difference between the purchase and sale price of certified seed is adequate to cover the operating expenses of the GSC, including the amortization of equipment and vehicles.

IV. Revised Conditions and Covenants

The following changes in the conditions precedent and covenants are proposed to be made in the Grant Agreement or will be incorporated into implementations letters as project requirements.

1. Article 4, Section 4.2 is deleted and the following substituted in lieu thereof:

"Section 4.2 Condition Precedent to Disbursement Subsequent to Third Amendment to Agreement. Prior to disbursement under the Grant subsequent to the third amendment thereof or to the issuance by A.I.D. of documentation pursuant to which disbursement will be made, other than for the project technical assistance contracts, the Grantee will, expect as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

- a. The name of the person at the Ghana Seed Company (GSC) selected as project manager for the project seed component, the name of the person authorized to act on his behalf in his absence, specimen signatures of both persons, and evidence that such person or his replacement has the authority to act on behalf of the Grantee and the GSC on all matters with respect to the project seed component;
- b. evidence that the Grantee has given the highest priority possible to completing construction of the seed processing plant at Winneba by December 1, 1983, and a list of actions to be taken by the Grantee to ensure that such target date is reached; and
- c. a plan of action or list of initiatives the Grantee will take during the next growing season to ensure (1) greater compliance by the certified seed contract growers with the terms of their contracts, and (2) less delay by the GSC in transporting such seed to the processing plants".

2. Article 5, Section 5.2 is deleted and the following covenants added to Article 5:

"Section 5.2. Use of Tractors. The Grantee shall make available the project financed tractors to certified seed contract growers at existing commercial rates whenever such machinery is not being used at the foundation seed farms".

"Section 5.6. Location of Certified Seed Sites. The Grantee shall take measures to ensure that none of the sites selected for growing certified seed will be located more than 20 miles from the nearest processing plant".

"Section 5.7. Reports on Achieving Project Goals. The Grantee shall make quarterly reports to USAID on progress made towards achieving each of the benchmarks as set forth in amended Annex 1, in addition to the general reporting requirements under the project".

"Section 5.8. Reports on Winneba Processing Plant Construction. The Grantee shall submit monthly reports to A.I.D. on progress made during the past 30 days towards completing the construction of the Winneba processing plant by December 1, 1983. If construction is behind schedule and lack of construction materials is not a constraint, requests for disbursements for such materials may be denied until progress is resumed".

"Section 5.9. Audit of the Ghana Seed Company (GSC). The Grantee shall undertake an audit of the GSC during 1983 to determine whether the twenty percent (20%) difference between the purchase and sale price of certified seed is adequate to cover the entire operating expenses of the GSC, including amortization of vehicles and equipment, as well as losses.



**ARCHITECTURAL AND ENGINEERING
SERVICES CORPORATION**
CONSULTING ENGINEERS AND ARCHITECTS

Telephone

P.O. Box

Ghana

Your Ref: GSC/AGE/8/187

Cable: TECSERVICE

Our Ref: S-23/C/3/1705

5th Nov. 1982

Technical Co-ordinator,
Exec. Managing Director,
Ghana Seed Co. Ltd.
Accra.



Dear Sir,

LESSING OF CONSTRUCTION MATERIALS TO COMPLETE
WINGSBA FRASE 4

Your letter dated 3rd Nov. 1982 refers below is list of materials required to complete the project:-

X Roofing	a. Aluminium 22 SWG long span bc 18"-6"x 22"	92 sheets
	b. Aluminium 24 SWG 8x4x4"x 42	165 "
	c. Bituminous roofing felt to B.S.747 (type 1a)	15,618.5sq
2 Windows:-	a. Pair Alumim or Haco Louvre carriers 4 No. clips 1'-11 long -6 wide blades	<u>137 pair</u>
	b. Ditto 2 nd o. clips 3'-9" long ditto	<u>159 "</u>
	c. 3'-6"x 6" wide x 1/2" thick obscure sheet glass with polished edges 155 No.	
	d. Ditto clear sheet glass ditto	<u>1,272 No.</u>
X 3 Iron rod	a. 2 nd Diameter	- 5 tons
	b. 1 1/2" "	- 10 "
	c. 3/4" "	- 10 "
	d. 1/2" "	- 3 "
X 4 Nails	a. 2" "	- 5 cases
	b. 2 1/2" "	- 3 "
	c. 1 1/2" "	- 5 "
	d. 1" "	- 6 "
X 5 Binding wire		- 5 bundles
c Cement		- 500 Tons
3 Paints	a. Snowcem	- 26 Cwt.
	b. Emulsion	- 388 gallons
	c. Oil paint	- 55 "

Yours faithfully,

P.D. MAARO
for: Principal Quantity Surv.

cc: Managing Director,
P.S.C. Accra

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NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes.</p> <p>Increased agricultural production on small holdings, leading to higher levels of income and welfare for small scale farmers in Ghana.</p>	<p>Measures of Goal Achievement:</p> <p>At the end of year 5 of program build up, at least 40,000 small farm families will have access to improved seed, nutrition information, banking services and marketing facilities.</p>	<p><u>PROJECT GOAL:</u></p> <ol style="list-style-type: none"> 1. MOA Food Situation Reports. 2. Annual Agricultural Sample Surveys. 3. Project Monitoring and Evaluation Reports. 4. Results of the Household Expenditure Survey undertaken by the Central Bureau of Statistics. 	<p>Assumptions for achieving goal targets:</p> <p>A. <u>CONCERNING LONG-TERM VALUE OF PROJECT:</u></p> <ol style="list-style-type: none"> 1. That the GOG gives priority to agricultural development, particularly the small farm sector, and that policies, plans and administration respond to constraints of agricultural development with appropriate action program. 2. That the GOG implement a program of economic reform i.e. improving its foreign exchange producing capacity, strengthening the value of the cedi, reducing government expenditures and the budget deficit, and increasing participation of the private sector.
<p><u>PROJECT PURPOSE:</u></p> <p><u>Major:</u> Improved and expanded institutional capacity of the GSC, resulting in a viable, independent, profit making company.</p> <p><u>Minor:</u> Strengthened institutional capacity of the ADB, and HEU of the MOA.</p>	<p><u>END OF PROJECT STATUS:</u></p> <p><u>GSC</u></p> <ol style="list-style-type: none"> 1. Minimum level of 20,000 bags of certified maize seed per year. 2. Minimum level of 50,000 bags of certified rice seed per year. 3. Minimum level of 4,000 bags of certified groundnut seed per year. 4. GSC able to cover at least all of its operating expenses from proceeds of seed sales. <p><u>ADB</u></p> <ol style="list-style-type: none"> 5. Streamlined loan making and servicing procedures in place so that loan applications to loan approval and disbursement of loan funds requires a maximum of 6 weeks. 6. A curriculum implemented at the ADB Training Center to meet the training and staffing needs of the Bank as its institutional capacity is improved. 7. HEU Demonstration activities occurring at five new centers. 	<p>B. <u>PROJECT PURPOSE:</u></p> <ol style="list-style-type: none"> 1.a. Annual Reports of the GSC. b. Site visits, surveys, and interviews with contract seed growers and farmers using GSC seed. 2.a. Records from ADB's Management Information System. b. Annual reports from the ADB. c. MOA extension records indicating the type and extent of services provided. d. GOG records and project progress reports. 	<p>B. <u>AFFECTING PURPOSE-TO-GOAL LINK:</u></p> <ol style="list-style-type: none"> 1. Economic stabilization measures are undertaken by the GOG. 2. GOG fiscal and pricing policies give adequate incentives for increased availability of inputs and participation of the private sector in input distribution and product marketing. 3. The concerned GOG agencies will coordinate and implement their programs to assure that requisite services are provided to assist small farmers increase production and incomes. 4. Sufficient incentive goods are available on the market to encourage farmers to produce a surplus for sale.

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AID 1020 20 (1-72)

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

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

Project Title & Number: MIDAS II (641-0102)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal The broader objective to which this project contributes</p> <p><u>OUTPUTS:</u></p> <ol style="list-style-type: none"> 1. Trained GSC technicians and managers in place. 2. Seed production and processing facilities constructed/expanded. 3. Improved home extension/nutrition demonstration centers in place. 4. Trained ADB staff and upgraded operating procedures in place. 	<p>Measures of Goal Achievement:</p> <p>8. Pilot market interventions tested and evaluated resulting in workable recommendations to be implemented by the MOA.</p> <p><u>MAGNITUDE OF OUTPUTS:</u></p> <ol style="list-style-type: none"> 1. 32 GSC technicians trained by September 1984. 2.a. One seed processing plant constructed, equipped at Winneba. b. One seed processing plant at Tamale upgraded. c. Quality control unit established within GSC. 3. Establishment of 5 new farm home demonstration centers by the HEU. 4.a. 7 ADB technicians trained as Bank Branch Managers and Project Officers. b. 160 clerks, loan assistants, project officers, branch and FLO managers trained at the ADB training center in accounts, loan making, servicing operations, and general banking procedures. 	<p><u>PROJECT OUTPUTS:</u></p> <ol style="list-style-type: none"> 1. GSC Annual Report and Records. 2. Site Visits. 3. Contractor Records and Reports. 4. MOA Records. 5. ADB Reports. 6. Project Records. 	<p>Assumptions for achieving goal targets:</p> <p><u>C. AFFECTING OUTPUT-TO-PURPOSE LINK:</u></p> <ol style="list-style-type: none"> 1. GOC policies and actions will encourage and support the private status of the GSC. 2. Adequate incentives exist in the GSC - personnel policies, salaries advancement - so trained staff and improved institutional systems can be retained. 3. GSC is able to maintain appropriate pricing policies consistent with sound financial management, and to encourage farmers to produce certified seed for sale to the GSC. 4. Materials and services are available locally to enable the GSC to effectively maintain its vehicles and equipment in operating condition. 5. Continued increased awareness by farmers of the importance and value of using improved varieties of seed.

dfv

**PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK**

ANNEX B

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

Project Title & Number. MIDAS II (641-0102)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose</p> <p><u>INPUTS:</u></p> <ol style="list-style-type: none"> 1. Machinery, equipment, spare parts, vehicles for seed processing and storage. 2. Technical assistance to: <ol style="list-style-type: none"> a. GSC in seed production, processing and storage, testing, pricing policies. b. ADB in loan making and servicing, and development of a curriculum and operation of a training center. 3. Participant training in the U.S.: <ol style="list-style-type: none"> a. Participant from GSC on seed production, processing and management. b. Participants from ADB on rural credit and banking operations, and rural credit administration. 	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <p><u>LEVEL OF EXPENDITURE/EFFORT FOR EACH ACTIVITY:</u></p> <ol style="list-style-type: none"> 1. Seed processing and storage machinery, equipment, and spare parts and vehicles. \$8.1 million 2. 2 U.S. contractors. \$3.0 3. Participant training, \$1.4 contractor support and other cost. 	<p><u>PROJECT INPUTS:</u></p> <ol style="list-style-type: none"> 1. USAID Controller Records. 2. Contractor Records and Reports. 3. Project Manager Reports. 	<p><u>Assumptions for achieving purpose:</u></p> <p><u>D. AFFECTING INPUT-TO-OUTPUT LINK:</u></p> <ol style="list-style-type: none"> 1. Procurement of all inputs is done in a timely manner. 2. Vehicles, machinery, and equipment are delivered to the sites in operating condition and are properly maintained through the life-of-project. 3. Qualified participants are identified for training and retained in appropriate positions. 4. Adequate working capital and budgeted funds are made available by the GOG to the implementing institutions when needed. 5. Adequate human resources are available for training/filling key staff and other positions in the implementing institutions. 6. Adequate local construction/fabrication materials are available. 7. Adequate fuel and agricultural production inputs and transportation are available in a timely manner.

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UNITED STATES OF AMERICA
AGENCY FOR INTERNATIONAL DEVELOPMENT
MISSION TO GHANA

2/10/82 Cow
Annex C - 1



Ring Road East, Near Danquah Clock
P. O. Box 1630
ACCRA—GHANA
TELEPHONE 7534

October 29, 1982

His Excellency Eugene Bortei-Doraku
ENDC Secretary for Agriculture
Accra, Ghana

Dear Mr. Secretary:

I would like to take this opportunity to confirm the results of the meeting on October 27 regarding the redesign of the MIDAS II project during November.

There are three categories of action to be taken on the six components of MIDAS. The marketing component and the home extension part of the extension component are in the first category. No changes from the original project design will be made and A.I.D. funding will continue to be made available as originally anticipated. The Ghana Government may make some implementation changes in terms of which Government organization undertakes project actions but these will not affect the basic project design or funding.

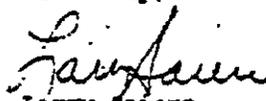
The second category consists of those project components which will be phased out in an orderly manner. These include the research component, under which the IITA contract will be terminated in March 1983. There will, however, be ongoing training for one participant under IITA auspices. The extension (except for home extension) and fertilizer components will be terminated shortly. The lending program of the credit component will also be terminated with funds for the small farmer credit program to be made available from the PL 480 Title I counterpart fund if Government decides that increased funds are required. The redesign team will not be concerned with these components.

The redesign exercise will be confined to looking at the components in category three. These are the seed component, the technical assistance element of the credit component and the small farmer implements program. The seed component effort will include a close look at economic and financial aspects of the Ghana Seed Company operations. The category three components as revised and the category one components will constitute the MIDAS project for the remaining 22 months of its life.

-2-

I want to personally thank you and Deputy Secretary Adam Kaleem for personally contributing so much of your time on this effort. I am sure that with the above mandate in mind the redesign efforts will be successful.

Sincerely,


Larry Sakers
Acting Director

cc: Mr. Adam Kaleem
Deputy Secretary for Agriculture

Mrs. Virginia Ofosu-Amaah
Principal Secretary
Ministry of Finance & Economic Planning

Mr. T. B. Siney, Project Manager
Managed Inputs and Delivery of Agriculture Service (MIDAS)

Drafted by: Larry Sakers, A/Director

DIST: Paul; C&A; P&M; P&A: A/Director

GHANA SEED COMPANY LIMITED

REVISED IMPLEMENTATION PLAN 1982 - 84



Report Submitted To

USAID, April 1982 by Ghana Seed Company Limited

GHANA SEED COMPANY LIMITED
REVISED IMPLEMENTATION PLAN 1982-84

INTRODUCTION

It has been fully recognised that any sound agricultural policy for Ghana should rest on a comprehensive and responsive seed programme. This realisation led, in 1979, to the conversion of the erstwhile Seed Multiplication Unit to the present Ghana Seed Company Limited.

The setting up of the Ghana Seed Company Limited, a parastatal organisation incorporated under the Company's Code, should ensure that there is a quick and effective multiplication and distribution programme for improved varieties of seeds to meet the ever-growing seed needs of Ghana's agriculture and also to set the stage for the development of Ghana's agriculture from a level of traditionalism to a state of modernity.

To bring this about the Ghana Seed Company was made a prime component of the MIDAS project under MIDAS I and has now assumed an even greater prominence under MIDAS II.

OBJECTIVES OF THE GHANA SEED COMPANY

The objectives of the Ghana Seed Company are as follows:-

1. To acquire and take over the operations, assets and liabilities of the Seed Multiplication Unit of the Ministry of Agriculture.
2. To establish and manage farms for the production and sale of seeds and planting materials to meet the requirements of modern agriculture in Ghana.
3. To enter into contracts with state owned organizations, as well as interested seed growing and producing concerns, for the sale and purchase of seeds and planting materials.
4. To distribute seeds on a nation-wide basis with special emphasis on making seed available to small scale farmers and the home gardener.
5. To operate processing and conditional storage plants to meet the increasing seed needs of the country.
6. To carry on research for the development of new varieties of seeds and planting materials.
7. To sell food and feed as by-products of the seed industry.

The objectives of the Ghana Seed Company have however been delayed considerably due to several bottlenecks which were identified during MIDAS I. These include

shortages in construction materials, tardiness in release of local funds for the construction programme, poor contractor performance, lack of adequate transportation and low handling capabilities. For example, when plans were made three years ago, there was general consensus that two 20,000 cmtz bags capacity maize plants would be functioning but today none is functional.

PROJECT DEVELOPMENT INPUTS BY GOVERNMENT OF GHANA

The Government of Ghana, since 1962, has sustained the national seed multiplication programme, firstly as the Seed Multiplication Unit and now as the Ghana Seed Company. Various studies were made under USAID auspices and funding to find the best route for adequacy in Ghana's Seed Programme. The present MIDAS (Management Inputs Delivery and Agricultural Services) was evolved in 1976 when Government of Ghana decided to cooperate with USAID on new strategies to bring to fruition plans that were made.

Government of Ghana was committed to provide local funds for the construction of facilities which would be operated with USAID processing equipment. Government of Ghana was also to provide both recurrent and developmental funds for the Ghana Seed Company for the payment of remunerations, acquisition of some production and transport equipment, as well as for general expansion in capital holdings. A review by Experienced Incorporated - supplied technicians of proposed Seed Multiplication Unit plans resulted in the adoption of the Experienced Incorporated technology which involves larger volume capability plants as well as improved seed storage facilities.

Government of Ghana initially voted 4.4 million cedis for the Winneba Processing plant and has since made funds available in the Government's estimate for the plant's completion. Similar commitments to fund the Kumasi plant were also later made by the Government of Ghana. Although funding had generally been adequate for construction, the material supply situation placed constraints on work progress, hence a decision was reached to first complete the Winneba plant and to consider other plants as the material supply situation improves.

Government of Ghana has funded the construction of kiosks under the Ghana Seed Company's seed distribution programme. It has also funded the acquisition of some trucks and tractors and has made substantial yearly foreign exchange allocation for the acquisition of foreign inputs especially chemicals and poly-sack raw materials. As the Ghana Seed Company becomes self sustaining in its recurrent funded activities the Ghana Government is committed to providing adequate finances for all the development projects of the Ghana Seed Company as equity contribution by Government including the provision of a national headquarters and additional Area seed warehouses. The Ghana Seed Company's existing strategy in respect of on-going and future developments will be to exert persuasiveness in all areas to give needed support to carry out its commitments with USAID in developing the country's seed industry. It would be assumed that an improvement in the economic situation will rekindle USAID's

continued interest and support in developing Ghana's seed programme.

In spite of many shortcomings, the long-term goal of building the Ghana Seed Company to become a self-sustaining profit making institution that can adequately meet Ghana's needs for improved seeds, as stated in MIDAS II project paper, is a goal that both the Ghana Seed Company and the Ghana Government are deeply committed to. However, under present day economic circumstances it is necessary to review programmes, requirements, activities, and services to fit present day realities.

During discussions between a Ghana Seed Company Management team and officials of the USAID Director's office in March 1982 the need was felt for a comprehensive review of programmes and needs of the Ghana Seed Company over the next three years with the view to reaching an acceptable working arrangement with USAID. This exercise is seen as a necessary 'mid-course' correction so that USAID assistance would be channelled to the most urgent and needy areas that hold the key to quick transformation of the Ghana Seed Company.

This paper will attempt to summarise the programme of work of the Ghana Seed Company for the next three years, 1982, 1983, 1984 placing emphasis on those areas where management has seen it fit to make significant alterations from the original plan. A summary will be provided that will summarise all input requirements as well as their costs in a time frame presentation.

This paper takes into account the following assumptions:-

1. USAID will not support construction of the Kumasi Plant as presently envisaged.
2. USAID is prepared to consider a request for the immediate upgrading of the Tamale plant, pending the construction of bigger facilities in the long run.
3. USAID is prepared to assist with building material procurement for the Winneba plant when the need arises.
4. Production equipment as originally envisaged in the MIDAS II will be procured and delivered on schedule, subject to amendments and additions now being proposed.
5. There is to be a waiver on vehicle procurement to enable the Ghana Seed Company vehicle requirements to be procured from neighbouring countries.
6. GSIS is to release all acquired equipment to the Ghana Seed Company which will attempt to accommodate GSIS staff in a joint training and operational programme.

7. Ghana Seed Company will be allowed by the Government of Ghana to operate as a commercial institution and to take its own decision without undue governmental restrictions.
8. Ghana Seed Company will be supported by the Government of Ghana in its capital development programme with adequate funding on a timely basis.
9. Expanded technical assistance by USAID support will be favourably considered.

Progress Achieved Under MIDAS I

During MIDAS I, the organisational structure and preparations for increased operational capacity were developed. A summary of achievements are as follows:-

1. Improvement in management by the provision of USAID Consultants and also by the recruitment of qualified key staff.
2. Improvement in production capability by the provision of MIDAS and Government of Ghana-funded equipment.
3. Provision of 2 sets of processing equipment by USAID for plants at Winneba and Kumasi.
4. Expansion in seed grower programme.
5. Provision of six trucks, four crew cabs and one personnel carrier by USAID helped ease the transportation problem.
6. Start-up of an embryonic quality control programme.
7. Launching of a more aggressive Sales and Distribution programme.

MIDAS Planning

MIDAS II planning commenced in 1979 and eventually started October 1, 1980. Additional commodities were promised especially farm equipment, vehicles (trucks, pickups) processing equipment for upgrading the Tamale branch from its present capacity to twice that capacity, from about 55,000 bag to 110,000 bag capacity. The equipment for Tamale would handle mainly rice with larger sized cleaners and storage bins than those planned for maize plants at Winneba and Kumasi.

MIDAS II was foreseen to be the period when both the Winneba and Kumasi maize seed plants are to become fully operational. Due to constraints of several kinds, the first objective now must be seen as the completion of the first seed plant at Winneba. The three year time-frame January 1, 1982 to December 31, 1984, must be targeted to include completion of Phase I structures at Winneba.

MIDAS II Project paper contains the original implementation plan of the seed component and it is now clear that due to gross upsets in the timeliness of implementation of the key programmes, a replanning is quite in order.

COMPARISON ESTIMATES OF USAID
(3000)

	PREVIOUS*			REVISED IMPLEMENTATION*		
	LOAN	GRANT	TOTAL	LOAN	GRANT	TOTAL
Vehicles W/Spares		295.1	295.1	653.5	-	653.5
Commodities/ Equipment	2,331.3	256.2	2,587.5	2,234.0	-	2,234.0
Technical Assistance	-	1,875.0	1,875.0	-	1,725.0	1,725.0
	2,331.3	2,426.3	4,757.6	2,887.5	1,725.0	4,612.5

The main areas of activity of the Ghana Seed Company which hold the key to the quick transformation of the Company for the next three years are Management, Production, Processing, Sales and Distribution and Quality Control. Research and Training will also be given considerable coverage.

* Not including Escalation, AAPC Fee, Contingency.

MANAGEMENT

The Ghana Seed Company Management is being further upgraded by:

1. Engagement of qualified personnel to key areas.
2. On-the-job training.
3. Institutional training - both local and overseas.

Presently, most key managerial slots have been filled (see appendix V) leaving only the Stores Section for which vigorous attempts are being made to recruit qualified personnel in the Management bracket especially with respect to stores, finance and sales. With respect to processing, production, quality control, on-the-job training as well as USAID-run courses will be relied upon. The following is a summary of overseas short-courses required for senior and management staff:-

1982	-	4	participants (Mississippi short Seed Course)
1983	-	3	" " "
1984	-	3	" " "

With regard to technical assistance personnel the number of incumbent consultants has been fairly adequate for needs under MIDAS I. It is hoped however that some TTY's and some long-terms would be arranged to cater for installation and start-up of facilities as well as short-duration courses and consultancies summarised as follows:-

1982	<i>NO</i>	2	man months Economic Studies
1983	<i>(K-)</i>	(a)	2-week M.S.U. processing training consultant (TTT 12)
	<i>?</i>	(b)	One Engineer for three man-months for installation and start-up of the Winneba column dryer.
		(c)	Three man-months spare parts, procurement, inventory, mechanical training consultant.
	<i>ON</i>	(d)	One man-month for seed technologist in local seed course training for medium level personnel
	<i>NI</i>	(a)	3 man-months Economic studies
1984	-	Two	man-months workshop consultant for local mechanics training.

We still renew our call for additional long-term consultants as follows:-

1982	-	Ag-mechanic Consultant	-	12	man-months
1983	-	Northern Sector Seed Consultant	24	man months	to focus on production.

We make the above case because we feel there is the need to free the incumbent production consultant from the present diversion of his assignment to cater for ag-mechanic duties. We also feel that as the Tamale Area is strengthened there

will be the need to station a full time consultant there in view of transportation problems which have hitherto hindered consultants' travel to the North.

It is our intention to capitalise on the presence of consultants to build up expertise in the Company. To this end, counterparts would be provided to all consultants at all times. Presently, the need is felt for additional counterparts for the production consultant in the persons of two assistant managers. This need would be met by either internal redeployment or by recruitment from outside. To match the increase in number of USAID consultants, the following postings and counterpart programme will be pursued;

- 1982 - a) Shifting of key personnel to fit job needs.
- b) Replacement counterparts for 12 weeks for Processing and Quality Control Consultants; during May - July.
- c) Senior Stores Officer recruited.
- d) Procurement and Parts Officer recruited.
- e) 2 Assistant' Production Managers recruited.
- f) Internal Auditor recruited.

- 1983 - Continuous upgrading and promotion of in-Company personnel

- 1984 - Finalise reposting of staff to key positions.

Management Strategy

Management techniques to improve on effectiveness include:

1. - Annual Planning conferences in January/February with all Area Managers and Divisional Managers to evolve programme of work, review previous year's performance and set targets in both basic and certified seed programmes for maize, rice and groundnuts as well as sorghum, millet and local vegetable seeds.
2. - Mid-year review meetings, again comprising all Managers, to review targets.
3. - Weekly Management meetings at Head Office to take stock and to take management policy decisions.
4. - Monthly and Quarterly reports from Area Managers.
5. - Area meetings at all branches by Area management staff to take stock of situations and for management policy decisions.

Financial Administration:-

The Chana Seed Company operates a Central Accounting system but with Area accounting set-ups having a large measure of decentralized control over seed

purchase operations. Tight control over fiscal policies has resulted in the ability of the Ghana Seed Company within 2 years to be self-supporting in its recurrent funding. To inject higher accountability into financial control, an internal audit section, aside from the Government-appointed firm of external auditors, will be initiated this year.

Government of Ghana has been and still remains the sole shareholder but other prospective shareholders like the Social Security Bank are likely to join up soon. The Government of Ghana will continue to fund the Ghana Seed Company's construction programme as part of its equity contribution to the Ghana Seed Company.

The Ghana Seed Company's operations have been appraised by an independent consultancy firm, IMAS, and the operations, goals and technology of the Ghana Seed Company have been found to be very feasible. An extract from the appraisal report shows the projected Proforma income statement for the years 1982, 83, 84 as years 2, 3, and 4 as follows:-

Proforma income statement (C'000)

	1982 Year 2	1983 Year 3	1984 Year 4
	50%	60%	70%
1. Total Revenue	24,749	29,458	34,368
2. Cost of Production	11,087	13,305	15,523
3. Gross Profit (Loss)	13,462	16,153	21,536
4. Operating Expenses:			
5. Salaries and Wages*	1,167	1,226	1,257
6. General Expenditure (a)	613	736	859
7. Repairs and Maintenance (b)	80	105	162
8. Vehicle Running Expenses (c)	58	65	72
9. Insurance (d)	65	65	65
10. Provision for Depreciation (e)	449	499	499
11. Interest on Loan	290	290	290
12. Contingency (5% of production cost)	554	665	776
13. Total Operating Expenses (5 to 15)	3,306	3,601	3,930
14. Profit Before Tax (3-13)	10,156	12,552	14,915
15. Net Profit After Tax (50%)	5,078	6,276	7,458

Basis:

* 30% of Total Wage bill

- (a) 2½% of Revenue
- (b) Computed at 10% of Vehicle Cost
- (c) Computed for 5 years average for vehicle running expenses.
- (e) Computed at rate stipulated by Central Revenue for Capital Allowance (straight line) as per Depreciation Schedule.

A Projected Income Statement of the Company for the plan period is attached as Appendix VI.

The targets of the Company are shown in Appendix III and the latest projected income statement as shown in Appendix VI.

Hopefully, the Ghana Seed Company would be allowed considerable autonomy in its seed pricing. T.D.Y. is proposed in this report for a USAID Consultant to initiate procedures and studies to arrive at an equitable cost analysis to ensure fair price to seed growers, adequate returns to the Company and fair prices to Ghanaian farmers.

At this time, procedures have been initiated to cost out various operations from production to sales to ascertain reasonableness of labour and other inputs into these operations. These procedures should tell us for example whether the labour force at the various foundation seed farms, presently very labour intensive, is at acceptable economic levels. The T.D.Y. in Economic studies should help streamline these procedures.

Headquarters Building

Present headquarters building is inadequate. Additional staff would find no office space. All effort is being made to get Government to allocate one of the Drevici buildings on the Achimota Road for Company headquarters.

Arrangements are well advanced and there is considerable optimism to get the allocation through within the next couple of months.

Office Equipment and Supplies

- a. Communications capabilities are to be improved upon by acquisition through USAID procurement of seven (7) Trans-Receiver Radios.
- b. The rest of the office equipment as contained in the Project paper has already been ordered.
- c. Must provide through USAID funding and procurement, Consultant Team's office equipment and supplies which are not available in Ghana: ruled pads (legal type); 3-ring hard back binders, 2-inch rings; scotch tape; staplers, hand calculators; scissors; etc., through budget item \$1,500.00 annually.

PRODUCTION

Production will continue to be the base of the Ghana Seed Company's activities. Due to limitations in the processing, storage and transport areas realistic targets are set on the premise that the Winneba plant will be operational by 1983 and the Tamale upgraded facility operation by 1984.

Seed Production Targets:

C R O P	1982		1983		1984	
	Foundation Bags	Cert. Bags	Foundation Bags	Cert. Bags	Foundation Bags	Cert. Bags
Maize (200 lb/bag)	2,975	18,500	3,000	30,000	3,000	49,500
Rice (140 lb/bag)	4,400	35,000	4,000	35,000	4,000	60,000
Groundnuts (80 lb/bag)	102	31,000	120	33,000	120	40,000
Sorghum (180 lb/bag)	50	200	50	250	50	250

Projected Percentage of Seed Needs to be Supplied

C R O P	YEAR I			YEAR II			YEAR III		
	NEEDED	GSC	%	NEEDED	GSC	%	NEEDED	GSC	%
MAIZE ()	120,000	18,500	15.4	120,000	30,000	25.4	122,000	49,500	40.6
RICE ()	88,000	35,000	39.8	90,000	35,000	38.9	93,000	60,000	64.5
GROUNDNUT ()	350,000	31,000	8.9	370,000	33,000	8.9	395,000	40,000	10.1

Varieties

The following varieties of the main seed kinds maize, rice, groundnuts and sorghum will be grown:-

Maize:	Composite 4
	Composite W
	La Posta
	Golden Crystal
Rice:	FARO 45 (Long season)
	IR 5 (Long/medium season)
	IR 442 (Short season)
	IR 8 (Short season)
Groundnuts:	Menipinta
	Florispan
Sorghum	Naga White

Foundation Seed Production

With regard to the production of basic seed, the present acreage of 770 would be maintained. However, this acreage would be fully cropped to achieve further significant excess over the foundation seed needs of the Company so that

considerable down-grading could be done to procurement certified seed supplies and to serve as carry-over seed for replanting if the need arises. Inputs such as fertilizer chemicals, hoes and cutlasses will continue to be provided from in-country resources. Production equipment for the basic seed farms should however be mainly provided by USAID especially with respect to Winneba, Logba, Kumasi and Truiale basic seed farms. Requirements of these machinery and equipment items over the next three years are summarised below as follows:-

Farm Machinery Requirements

(1982, 1983, 1984) For Procurement January 1983

DESCRIPTION		TOTAL UNITS	UNIT COST	TOTAL COST
			\$	\$
1)	Offset Disc Harrow, Heavy Duty, Wheel type, 12ft width 26" blades.	5	9,600	48,000
2)	Field Cultivator with Spring Mulcher Rift type 13'5" width	5	4,600	23,000
3)	Rotary Slasher, 100 HP Capacity, Heavy Duty	3	2,800	14,000
4)	Plough & Bottom 18" Molboard, Trip type (Introduction and Test Equipment)	2	8,500	17,000
5)	Wagon, Barge type Box 7' x 12' x 4 (336 cu ft) with 10-ton rated wagon gear	5	3,000	15,000
6)	Low Boy Equipment Trailer	1	6,000	6,000
7)	Front End Loader for tractor, Heavy Duty	1	4,000	4,000
8)	Rear Mount Grader Blade 9ft, Heavy duty (125 HP) 3 position Adjustable - Tilt, Pivot & Swing (Rating)	1	3,000	3,000
9)	Dual Wheel for 5 tractors plus tyres	10	3,000	30,000
10)	Corn Planter, 4 row. Plate-type	2	12,000	24,000
				184,000

It should be mentioned that spare parts especially within the framework of a well organised emergency shelf-procurement programme will have to be provided as a back support in view of field conditions in Ghana which take a heavy toll on production equipment. The budget for spare parts needs of production equipment is included in the Budget proposal in Appendix IV.

Pesticides:

a. Insecticides:

Those Insecticides listed in the MIRAS II Project Paper should be provided on an annual basis as follows:- (CIF \$'000)

	Year I	Year II	Year III
Bacillus Thuringensis	0.4	0.5	0.6
Carbaryl	2.7	3.0	3.3

	Year I	Year II	Year III
diazinon	2.7	3.0	3.3
malathion	1.8	2.0	2.2
phoxin	1.1	1.5	3.9
	<u>10.7</u>	<u>12.0</u>	<u>13.3</u>
		Total	36.0

b. Herbicides:

The Production Management Consultant has expressed the request to delete all those herbicides shown in the MIDAS II Project Paper and substituting in their place the following herbicides and funding/procurement is requested from USAID for them.

(CIF \$'000)	Year I	Year II	Year III	Total
Propanil (Stam f-34) Source Roth and Hass	7.5	7.5	9.0	24.0
Erowl (Stomp) Source American Cyanid Co.	5.0	5.0	5.5	15.5
Eradicane (EPTC R-25788) Source; Stauffer Chemical Co	<u>9.0</u>	<u>9.0</u>	<u>11.5</u>	<u>29.5</u>
	<u>21.5</u>	<u>21.5</u>	<u>26.0</u>	<u>69.0</u>

Training in Production

Training programmes would be conducted to upgrade the capabilities in production area as follows:-

- 1982 - Training of technical officers and operators in land preparation techniques in the Northern sector.
- 1983 - Repeat of the above training programme for the Southern sector.
- 1984 - National farm manager training course of 2 week duration.

Certified Seed Production

The Ghana Seed Company will produce only foundation seed. All certified seed will be purchased from registered seed growers with whom contracts would be signed every year for the production of certified seed. Technical support would be used to direct the seed growers efforts. Seed grower programmes would be maintained for Winneba, Kumasi, Tamale and Bolga areas.

The following strategy will be adopted to improve the seed grower programme.

1. The contract seed grower programme will be broadened. This means the number of seed growers and their acreages would be increased. More binding contracts are now in use.
2. Credit advance systems as well as provision of basic inputs are being undertaken to encourage participation.

3. Training programmes to adequately prepare the Seed Growers will be conducted. This programme started in 1981.
4. The Production Division will be equipped with adequate production equipment and transport facilities to enable them produce and evacuate seeds from growers' farm. An appeal has gone from the Ghana Seed Company to the Ministry of Agriculture to give preferential treatment to seed growers in the allocation of tractors, implements, fertilizers and chemicals.

A decision has been taken to curtail the operations of the registered seed grower programme in the Volta Region. This decision has been taken for the following reasons:-

1. Grower performance in the Area has been consistently poor over the past several years.
2. The spread of grower location is so wide that it is difficult to foresee how the programme can eventually be rescued.
3. Grower attitude towards the programme in the Volta Region makes for considerable pessimism towards the future of the programme in that region.
4. USAID has emphatically decided not to construct a seed plant in that Region. Therefore activities in the Volta Region will be limited to the following:
 - a) Maintenance of the Logba farm as foundation seed farm for one maize variety.
 - b) Maintenance of the Ho cold store as a holding depot for excess production which would be transported from other Areas for storage there.
 - c) A vigorous sales programme to ensure that the Region's seed requirements are fully met notwithstanding the cancellation of the certified seed programme, in that region.

The philosophy behind this plan is that the Company seeks to pursue a policy of comparative advantage whereby acceptable conditions in a location will be capitalised upon to provide the needs of Areas with less acceptable circumstances. This philosophy will ensure that the Ghana Seed Company is not unduly spread out but remains a compact, efficient and easily manageable entity.

The main crops of maize, rice and groundnuts would continue to receive the greatest attention under the production programme but vegetables and cowpeas will continue to increase in importance. Already a good start has been made in the identification of adaptable and high yielding varieties of cowpeas, peppers, okro, garden-eggs, onions and tomatoes.

Production of small quantities of seed are presently being done on the Company's own basic seed farms. However from 1983 it is expected that seed growers will be involved in production of at least cowpeas, pepper and okro. It is hoped that by 1984 the need for simple machinery for vegetable seed processing and packaging will be felt. Efforts will therefore be made to develop specifications for such suitable machinery by the year 1983. An estimated amount of \$9,000.00 is therefore provided for procurement of processing and packaging machinery for vegetable seed in the summary as appears in Appendix IV.

Workshop

The need for workshops at the various Seed Company branches is all too evident. For Winneba, plans have been drawn for the workshop with associated spare parts room, tied to the Parts Depot. The contractor should commence on this as soon as 90 percent of Phase I Winneba has been built.

For Tamale, provision should be made to construct a more simple workshop facility; to service both Tamale and Bolgatanga vehicles and machinery. Mechanics tools funding and procurement are requested in 1983 for the Tamale branch.

For Kumasi, some upgrading with minor construction using lumber in enclosing existing roofed open partitions there will suffice for now.

Mechanic Tools and Shop Equipment

			<u>KUMASI</u>	<u>TAMALE</u>
Mechanics Tools Tamale, Kumasi	2 sets each	\$42,000	\$19,000	\$23,000
Shop Equipment " "	2 sets each	\$100,000	\$50,000	\$50,000

P R O C E S S I N G

The area of processing has a big bottleneck over the past several years and indeed this has been amply recognized in the MIDAS project. The Winneba seed plant was expected to have been completed long before this time to enable the Company handle at least 25,000 bags of maize with at least 15,000 of this quantity coming from the Winneba plant at this time. However due to shortages posed by inadequate building materials to begin with, poor contractor performance, and now complete cessation of release of funds for the project, gross delays have occurred which have left the Company with a capability not higher than the situation it found itself in during the 1974 season.

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The situation definitely calls for some drastic measures. All efforts are being made to ensure adequacy of funding to complete the Winneba plant by the end of 1982 so that it can be operational during the 1983 season.

The time frame projection for the completion of the Winneba Seed Center is as follows:

1. Construct a simple parts depot 40' x 60' on site immediately.
2. Complete Phase 1 construction by end of 1982.
3. Install equipment in completed structures in 1982
4. Erect Column dryer to operating status in 1983
5. Construct Workshops and Welfare buildings following 90% Phase 1 construction completion.
6. Install electrical system imported from U.K. in 1982-83
7. Move Winneba Personnel to new Seed Center by March 15, 1983.
8. Provide intensive local training in new seed center
9. Receive 1983 maize seed crop at new seed center
10. Ghana Seed Company would seek USAID support for procurement of building materials should it become necessary.

The Kumasi Seed Center

The Kumasi plant which was to be built after the start of the Winneba plant is no more to be supported by the USAID in its present form. We propose therefore that to enable the central parts of the country to be adequately served with their maize seed needs, an upgrading of the Kumasi facility is called for.

The following suggestions are therefore made with regard to processing and storage in the Kumasi Area:

1. Drying capability of the Kumasi station should be increased by the deployment of the 4 wagon dryers already provided by USAID.

The deployment of the Wagon dryers will prevent pilling of seed grower maize which usually leads to deterioration in quality. The major item required for the deployment of the wagon dryers is a 500 KVA transformer. The existing power supply for the Kumasi station is presently served through a 50 KVA transformer. The Ghana Seed Company has requested for a 75 KVA transformer to help meet the needs for power with the presently positioned equipment plus that which will be required with restoration of the cold store; this request has been directed to the Ministry of Agriculture for Import License.

The four wagon dryer units with two blower fans and sets of three electric heaters per blower fan unit, serving in each case, two dryer wagons requires in excess of 400 KVA power. As stated in the plan for the Winneba seed center, when the column dryer becomes operational, four dryer wagons would be deployed to the Kumasi seed center to increase the capability for drying seed maize there.

The Ghana Seed Company requests USAID for funding and procurement under Waiver to Britain for one (1) 500 KVA Transformer unit. The estimated cost of such Transformer Unit is approximately \$70,000 CIF.

Additional equipment needed includes the following :

One (1) 400 Amp switch with busbar 2/415/50 = \$2,000

Two (2) 200 Amp switches 3/415/50 @ \$1,200.00= \$2,400

2. Projections for use of in-country equipment :

- a) Very minor construction would be undertaken.
- b) The three-screen air screen cleaner will be set up and used.
- c) The Clipper 27 Airscreen cleaner is already in use at Kumasi, under another existing roof structure. One 390 bushel holding bin plus one bucket elevator, 27 ft. overall height to feed this holding bin would be set up. Shelled seed would be fed to the elevator hopper, up to the holding bin and fed into the cleaner. Hand filling and weighing of cleaned seed will be done.
- d. Surplus equipment not used at Kumasi until a new plant is built there or may be deployed elsewhere.

Five holding bins 390, 2-160, 3-70 bushel capacities.

Seven bucket elevators.

The column dryer

Two indent cylinder cleaners with (1) cylinder shells for maize only.

One gravity separator, about 50 bushel per hour capacity,

One slurry treater (may be redeployed to slurry treat maize at Kumasi when treatment material is available).

One dust collector.

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e. Wagon Dryer Deployment:

All eight dryer wagons will be operating at Winneba until the column dryer is operational at Winneba site.

Missing Equipment :

All short landed items as reported in the 1981 Annual Report must be Procured. These are critically needed.

3. Rehabilitation of the Kumasi 400-ton capacity cold store: This is soon to start by the Ghana Seed Company itself. The Ministry of Agriculture will provide Import Licence to import the compressors needed for the rehabilitation. Also additional open storage warehouse facility will be constructed from the Company's own resources by 1984 both as a holding area and as short-term storage.
4. The Company will develop processing capability at the foundation seed farm at Ejura. (Ejura land is owned by the Ghana Seed Company and is part of the Kumasi operation) This location appears to be quite central to a large proportion of grower activity in the Kumasi area and it is believed that the siting there of a 15 KVA generator, one modern maize sheller, one Clipper 27 cleaner, and one Lister Moisture Extraction Unit will go a long way to quickly reduce moisture levels and hold the crop safely until transportation becomes available to cart it to the main location at Kumasi. At least six and as many as Twelve contract growers are close to Ejura. New construction for maize drying and
elling would be needed. Ejura is preferred to Mampong Ashanti, which is another possible location, in view of the fact that the Company presently has presence in Ejura and other supporting facilities are already available especially storage and personnel.

Tamale Seed Centre

With respect to the Tamale plant; the Company wishes to make a strong case for the immediate upgrading of the facility there. Although it was originally planned to build the Tamale plant after both the Winneba and the Kumasi plants have been completed it is now clear that the key and supportive role of the Tamale seed plant makes it imperative that the capability there should be strengthened to enable the Tamale plant continue to play that keyrole. This is more so when one considers that climatic conditions in the Region makes it possible for minimum expenditure in respect of processing and storage, and almost no expenditure at all for drying facilities.

We are developing plans which will make it possible for the construction of additional facility for the Tamale plant in 1984 but we make the

as present ones which are 60ft x 180 ft long, except increase new structure to 250 ft long, for a holding capacity of 240,000 cu ft. or approximately 30,000 bags increased storage capacity.

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In 1983 construct a seed processing building 60ft x 70ft x 37ft height to house equipment which must upgrade bush-produced rice seed containing broken seed in excesses due to harvesting at very low moisture contents, also the weed Rothbulla spp., a grassy weed which breaks up into segments exactly the same size as rice but with differing seed weight necessitating specific gravity seed separator removal. Situation with an extremely critical infestation in traditional rice growing areas. Broken seed would best be removed with disc cylinder, or indent cylinder which is less efficient.

iii. In 1983, procure one 4-screen air screen cleaner, disc cylinder or cylinder shell for in-country indent cylinders, one additional gravity separator to handle volumes from air screen cleaner (Model clipper 160) bucket elevators over and above existing ones left over from Kumasi plant not built, bins of appropriate sizing over those left from Kumasi or elsewhere, bucket elevators, one weighbridge, bagging and sewing equipment for bag closing, and other accessory items as listed on page 21 or 23.

iv. Erect at least four metal silos now in Ghana available from Government of Ghana on concrete slabs, with pole type roof covering for shading, for bulk holding rice seed from harvest until possible to process over a four month period. Provide bin loading elevators and bin unloading augers in the plan, to move seed to the processing line, by truck.

vi. Request USAID funding and procurement of Seed Laboratory Testing Equipment listed as follows:-

Seed Laboratory Testing Equipment

<u>Quantity</u>	<u>Description</u>	<u>Model</u>	<u>Price CIF \$000</u>
2	Gram scales, 610 gram capacity	Seedburo	0.2
4	Moisture meters, portable @ \$500 ea.	Seedburo	2.0
1	Torsion balance, 120 gram capacity 0.1 gram readout	Seedburo	0.3
100	Petri dishes, 150 mm x 20 mm, with covers, glass	Seedburo	0.1
1 set	Seed dockage sieves	Seedburo	0.2
2	Electric lamp w/magnifier @ \$100 each.	Seedburo	0.2
1 lot	Misc analytical lab. Equipment and supplies		1.0
1	Steinlite moisture meter	RCT-B 500	1.2
1	Germinator, dark type, cabinet style single compartment, fully automatic	Seedburo Model 600	3.5
		Total	<u>8.7</u>

b. Alternative II. Assuming by end of Winneba Phase I construction that cement, iron rods various sizes, funding, or any one constraint exists:

- (i) Postpone constructing any additional storage warehouse of processing building. This would retain present storage capacity but upgrade the equipment capability which is becoming critical in view of lack of German support for replacement parts for German made seed cleaners.
- (ii) Procure in 1983, two Clipper Model 167-D air screen cleaners with hand fed feed hopper, attach feed elevator to cleaner hopper, and with bagging-off device. Install in existing warehouses.
Limitations: Does not remove broken seed or Rothbollea to meet standards.
- (iii) Protrude bins and bucket elevator through roof of existing warehouse to employ indent cylinder separators now in Ghana but with cylinder shells for rice to be procured, and to employ gravity seed separator now in Ghana, the first machine to remove broken seed, the second to remove the Rothbollea weed seed.
- (iv) Procure portable U.S. made seed cleaners, Clipper manufactured, for satellite location processing at especially Salaga, 65 miles from Tamale, utilising available storage facilities in District villages as has been done in some years in the past, thus increasing storage capability.
- (v) Provide such other equipment as needed to operate a seed processing plant.
- (vi) Request USAID funding and procurement of Seed Laboratory Testing Equipment as under Alternative I.

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c. Objectives: as listed on page 10:

Maximize at 50,000 bags at 140 pounds of processed rice seed. Alternative II would require greater man power, provide lower capacities in processing, and less assurance of high quality seed than Alternative I. Portable cleaners would be less efficient.

d. Equipment needs for Alternative II are shown in Appendix

Recognising Damango as a key maize production area, a mini facility will be built in the area consisting of a large omnibus warehouse. This has been approved by the Board of Directors. Damango which produces the bulk of the maize seed in the Tamale area is 75 miles from Tamale. The Damango area has provided as high as 5,000 200lb bags maize seed annually. We now make application to USAID to provide machinery for shelling and cleaning. Seed will be held in the all-purpose warehouse to be constructed and part of it would be carried to the Tamale area at the Company's leisure.

The plants over-production at Damongo will be carted at the Company's leisure to the Kumasi and Brong-Ahafo areas for distribution.

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We believe that this cuts down drastically on cost involved in transporting un-processed maize to Tamale with its attendant danger of loss of viability and grower diversion.

When this plan is adopted it is hoped that the Tamale seed plant upgrading will be quite simple involving only rice seed equipment. In the meantime efforts are being made to procure spare parts for existing machinery from West Germany with a view to moving mobile cleaners to the rice production areas. This will make it possible for rice seed to be cleaned and stored in the districts which then reduce expenditure on transportation and labour. Considerable success have been made with the German Technical Assistance team to obtain such spare parts and as soon as these proposals are accepted efforts would be commenced to redeploy these mobile cleaners effectively. It should be mentioned that the sister location to Tamale is the Bolga Area which is presently not adequately covered under MIDAS. However, it too has proved self-sustaining and the Company would therefore support it from its own resources. With the upgrading of Tamale plant it is hoped that the Company would be able to support the Bolga plant to a greater extent from its own resources.

A summary of processing activity projected developments is as follows:-

- i) 1982 - Complete Winneba Phase I construction
- ii) 1982 - Install Winneba equipment into structures as completed ready for 1983 crop.
- iii) Sept. 1982 - Receive electrical items for Winneba plant, immediately start installation. Installation could commence May 1 if items were available.
- iv) Late 1982 - Tender for and award contract for Winneba Workshop, when Phase I construction has been 90% completed. Complete in 6 months.
- v) June, 1982 - Move 3-screen air screen cleaner, 390 bushel bin, one bucket elevator from Winneba to Kumasi. Install under existing roof structure, ready for 1982 processing season.
- vi) July 1982 - Start Damongo omnibus warehouse construction, completion in six months-basically concrete block, reinforced columns, wood roof structure, galvanised roofing.
- vii) Sept., 1982 - Procure Ejura and Damongo equipment through USAID.
- viii) Feb., 1983 - Start Tamale plant upgrading - Alternative I or II as is most feasible-after Winneba 90 percent Phase I completion.
- ix) March, 1983 - Receive and instal Ejura and Damongo equipment in readiness for 1983 seed maize handling.
- x) March, 1983 - Completion of Tamale upgrading.

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- xi) March - April, 1984 - Receive and install Tamale equipment from either Alternative I or II as is more feasible. Move surplus Kumasi equipment as can be utilised. Prepare for 1984 processing season.

The full requests for the Processing Division is as follows:

Equipment for Ejura and Damango Mini Seed Processing Facilities

<u>Quantity</u>	<u>Description</u>	<u>Model</u>	<u>Price CIF \$'000</u>
2	Clipper, 2-screen air screen cleaners w/ electric motor 1/230/50, screws @ \$8,000	No. 27	16.0
2	Combined Sheller/cleaner, w/400 BHP Capacity, w/electric motor 3/415/50, w/magnetic starter switch, spares, accessories, @ \$14,000.	2-A Union Iron Works	28.0
1	Lister Moisture Extraction Unit Complete Waiver-UK or Togo		10.00
1	Auxiliary Heater Unit for Extraction Unit gas-oil fuel fired.		3.0
2	15 KVA Generators producing 230 volts, 50 Hz @ \$30,000		60.0
2	Seedbed aluminium frame elevators No. 816 50 Chain and drag flights w/3/4 HP electric motor 1/230/50, 21th switch, with dolly No. 400, @ \$1,500		3.0
		Total	120.0

Equipment for Tamale Seed Plant

ALTERNATIVE I:

1	Clipper 4-screen, dustless type air-screen cleaner, w/electric motor, w/switch w/screens w/spare parts.	Super 298D	28.0
2	Bucket elevators 35', w/accessories, w/electric motor, @ \$4,867	C-275	9.7
2	Bucket elevators 32', w/accessories w/electric motors, @ \$4,000	C-275	8.0
2	Bucket elevators 30', w/accessories, w/electric motors, @ \$4,000	C-275	8.0
1	Clipper 3-screen air-screen cleaner, w/electric motor, w/screws, w/spares.	68-D	23.0

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Quantity	Description	Model	Price CIF \$1000
1	Gravity Seed Separator, Oliver- Model, capacity of approximately 5,000 pounds/hour, w/electric motors, w/spares	160-A	13.0
1	Seed Treater, Gustafson, 4.5 tons/hr, with Pre-mix tank, motors, w/buzzer	S-100SS	5.0
1	Blower, portable, 1/230/50	Seedburo 98800	0.7
1	Vacuum cleaner, Industrial Type, Tornado, 1-1/2 HP electric motor, w/accessories 1/230/50.	Seedburo 98890	2.0
2	Platform scales, Fairbanks-Morse, w/double beam, pounds # \$1,300	Seedburo #41-3132A21	2.6
3	Fischbein Model Bag closers, sewing machines, portable, with Reel-Type suspension Balance # Model 1550. 1/230/50, \$1,200	D	3.6
1 Lot	Fischbein sewing machine thread, spools for closing 75,000 bags containing 140 pounds of rice seed		1.0
1	Truck Scale, Fairbanks, 24' x 10', 30 ton capacity, with Model 50-5509 Registering Beam (metric), 5kg, weight ticket printout	11-3153A	7.5
2	Disc Separators, Carter-Day size 2520, w/electric motors, 1/230/50 AC, w/spares (for rice)	Style BU-3	14.0
5	Bins: 1 @ 1,000 Bu capacity; 4 @ 400 Bu capacity 1 @ 529 Bu capacity, w/ty legs as specified, w/accessories	Seedburo	20.0
1	Air compressor, w/electric motor 1/230/50	McMaster-Carr	1.2
1 Lot	Misc equipment & accessories to above		20.0
1	36' - 8 inch diameter screw type transport auger, with dump hopper, with electric motor 1/415/50, transportable	Seedburo	4.0
1	25 Utility auger, transportable, screw and tube, 8 inch diameter, w/electric motor, 1/230/50		3.0
		Total	\$174.3

ALTERNATIVE II :

<u>Quantity</u>	<u>Description</u>	<u>Model</u>	<u>CIF \$000</u>
2	Clipper air screen cleaners, w/13ft tandem elevators, w/hopper w/electric motors 1/230/50, extra screens, w/spares @ \$25,000	167-D	50.0
2	Clipper Portable (Transportable) air screen seed cleaners @ \$30,000 (for rice).	Clipper	60.0
12	Cylinder Shells for Hart No.3 Uniflow Indent Cylinder Separators @ \$375.	Hart No. 3	5.0
2	Bucket elevators 30', w/electric motors 1/230/50 AC, @ \$4,000.	C-275	8.0
1	Bin, 390 Bushel capacity, round, 9ft diameter, 14ft to Ht. of fill w/legs, self-standing, w/rack and pinion gate	Seedburo	4.5
1	Seed Treater, Gustafson, 4.5 tons/hr capacity S100-SS w/Premix Tank, electric motors 1/230/50, w/ bagger		5.0
1 Lot	Accessories to above for Alternative II Tamale		10.0
1	36' - 8 inch diameter screw type transport auger, w/dump hopper, w/electric motor 1/230/50 or 3/415/50 (if over 2 HP),	Seedburo	4.0
1	25' Utility auger, screw and tube, 8 inch diameter, w/electric motor 1/230/50	Seedburo	3.0
		Total	149.5

Procurement of Vegetable Seed Processing Equipment

2	Wet Vegetable Seed Separation (Tamale, Bolgatanga)		\$4,000.00
2	Table model Clipper, cleaner with screens for vegetable seed processing (Tamale Bolgatanga)		1,200.00
	Additional screen for 3 existing clipper table model cleaners for vegetable seed processing		800.00
4	Table model Gravity Seed Separator		4,000.00
	TOTAL		<u>10,200.00</u>

QUALITY CONTROL

As the Company increases its volumes one aspect which will engage its serious attention will be the area of Quality Control in order to maintain high standards and maintain for the Company a good reputation.

If through rigidity in quality control the Company compromises on quantities we shall not be perturbed. For it is the Company's belief that it is only through adherence to quality that the requisite reputation is built which will engender the growth of the seed industry. Compromise with quality kills farmers' enthusiasm, decreases demand and finally collapses the seed industry.

The arrival in 1982 of a full-time Quality Control Consultant to handle the GSC Quality Control and the GSIS in a joint programme is a key move. Presently all the Area Offices have some measure of seed control equipment and the following aspects of quality will be handled over the next several years: moisture, viability, vitour, pest and disease and purity. Activities in quality control over the 3 year period is as follows:-

- 1982 - Turn-over GSIS equipment to Ghana Seed Company. All Area laboratories to be brought up to full capability as new equipment arrive from U.S. Local training would be conducted to upgrade analysts from both GSC and GSIS.
- 1983 - Labelling and testing procedures standardised on all seed lots and packages to show germination, date of test, variety minimally. Embryonic team of field and seed inspectors trained for GSIS to commence independent operations. Seed Company still exercises all aspects of quality control from pre-planting through sales.
- 1984 - Testing procedures a joint operation, hopefully GSIS gaining more autonomy and separation from GSC.

Within the Ghana Seed Company, until the GSIS issues new directives, the following minimum quality standards will operate between 1982 and 1984 for the various classes as shown below:-

KIND	CLASS OF SEED	GERMINATION PERCENTAGE	MECHANICAL PURITY
Maize	Foundation	94%	97%
	Certified	90%	95%
Rice	Foundation	85%	97%
	Certified	80%	95%
Groundnut	Foundation	85%	-
	Certified	80%	-

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The main thrust of the Company's internal quality control programme will be directed towards the following areas of operation:

1. Verification of seed source and adherence to field standards

The seed source of contract growers will be verified to ensure that they really plant the varieties given them by the Company. Rigid adherence will be sought through frequent field inspections to ensure that optimum isolation distances are observed and effective roguing is done.

2. Verification of harvest and storage methods

Inspections will be conducted to ensure the right moisture content of 18% - 20% or less at harvest time. Farmers' cob selection and storage methods will be closely followed and instructions put out to avert deterioration.

3. Judicious laboratory testing to ensure adherence to minimum quality standards

Purity analysis in maize seed will be directed at finding the extent of inert matter due to damage resulting from weevils, mechanical breakage at shelling etc. Phytosanitary status will be checked to give a basis for treatment.

Considerable equipment is already available as the GSIS equipment have been turned over to the GSC for the joint quality control programme but there will be need for additional vehicles especially motor-cycles and pickups as well as a few important laboratory equipment and these are included first of all in the requirements for vehicles and then in the summary annex for machinery and equipment.

The Ghana Seed Company requires USAID for funding and procurement of germination papers, wax papers, filter papers, rubber stoppers for flasks, tetrasolium powder for rapid seed viability testing, and blotter germination paper, as follows:

Year I -	\$ 3,000.00	
Year II	\$ 3,500.00	
Year III	\$ 3,500.00	<u>Total \$10,000.00</u>

In addition, request for USAID funding and procurement for the following items are also made: provision for spare and replacement parts for germinators; freon gas for germinators (not available in Ghana); fuses, thermostats, and circuit breakers for seed germinators as follows:

Year I	\$ 1,000.00	
Year II	\$ 1,500.00	
Year III	\$ 2,000.00	<u>Total \$ 4,500.00</u>

The Quality Control Division, Headquarters, has been unable to obtain certain small equipment items needed to conduct seed testing activities properly. These are not available in Ghana. These items with total cost of \$3,900.00 are as follows:

Equipment Requirements for Quality Control Division

<u>Quantity</u>	<u>Description</u>	<u>Model</u>	<u>Price</u> <u>CIF \$000</u>
1	Tag Printer, manually operated Steilow		1.0
5	Rubber Stamp kits, 3-line composable rapid printing tags @ \$50		.25
5	Desk top calculators, with printed read-out tape @ \$50		.75
15	Clipboards, size 9" X 15 1/2"		.1
5	Counting boards, manual, for rice seed, 100 holes, @ \$120		.6
500	Half-gallon Plastic containers, Seedburo 5095 with covers, \$1.10 each/case 48 or more		.7
5 sets of	Dockage sieves: 12 6 1/4" round hole, Seedburo		.5
5 each.	8/64" triangular # 10		
	1/12" round hole		
	1 1/2/64" slotted, and one bottom pan, commercial grade @ \$100		
		Total	<u>3.9</u>
		Grand Total	<u>18.4</u>

RESEARCH

Because of the peculiar needs of the Ghana Seed Company necessitating constant procurement of superior germplasm from both national and international sources as well as the development of improved methodologies and "trade secrets" for the Company's own use a Research Division was setup in the Ghana Seed Company in 1980.

A Research Manager was appointed and two of the Company's farms have been designated for the national programme. These are the Ashiaman garden and the basic seed farm at Mile 38 on the Tema-Akosombo road, although trials could also be put out at all locations of the Company. The time frames of the Research Division are as follows:-

- 1982 - Commencement of trials on local and exotic vegetable seeds at Mile 38 and Ashiaman. Posting of Assistant Research personnel commences.
- 1983 - The Commencement of trials with new maize and rice varieties. Advance work in vegetable seed varieties.
- 1984 - Expand acreage under research to other areas. Recommendations for release of new vegetable seed varieties as well as for maize and rice begin. Release of information of varieties of cereals, vegetables and cowpeas. Commence breeder seed increases.

The following additional items are requested for to supplement the Research Division needs:

5	Knapsack sprayers, 5 gallons	.75
	@ 150	

Total \$50.6

Spare and replacement Parts:

Year II	2.0	
Year III	2.5	4.5
		<hr/>
Total		5.3

BEST
AVAILABLE

Research Division will also have access to the equipment of the Quality Control Division for their work. It will also cooperate in the adaptive trials to be conducted by the Grains Development Project of the Crop Research Institute as well as by WARDA and other joint international project with the view to getting the Company to benefit within the shortest possible time, from research efforts.

A by-product of the Research Division will be the production of considerable quantities of seeds of vegetable crops especially okra, hot pepper, garden eggs, and Bolga onions which will be undertaken at Mile 38, Kumasi, Winneba and Tono. Income from these seeds should help offset a considerable part of the expenditure made on research. The Research Division will also set the stage, in co-operation with the Production Division, to seek to produce some of the traditional exotic vegetable seed types such as okra, cucumber, tomatoes, beans, green pepper, water-melons, etc. This will cut down considerably on USAID funds at least for vegetable seed procurement from the U.S.

Funding for Procurement of Vegetable Seeds (Loan)

The Ghana Seed Company will request USAID to supply vegetable seeds of varieties and kinds which have been trial tested in Ghana and found to be adapted. Under Loan funding, requests are as follows:-

Year I	-	\$233,000.00
Year II	-	263,000.00
Year III	-	318,000.00
		Totals <u>\$814,000.00</u>

SALES & DISTRIBUTION

BEST AVAILABLE

Distribution has remained a weak link in the seed programme of this country as a result inadequacies in communication and facilities required to get the seeds to the farmer. The Sales and Distribution Department of the Ghana Seed Company will for the next two years market high quality seeds. Efforts will continue and intensified to provide these high quality seeds to ensure correct planting distances, high photosynthesis, high yield and profitable crop returns.

A new distribution system has been developed which lays emphasis on supplying seeds to the small scale farmers who find it difficult to travel to the main depots of the Ghana Seed Company. The backbone of this new scheme is the location of a few seed kiosks in key areas as well as the registration of seed agents throughout the country. The latter scheme seems to be catching on and should now make it possible for the Ghana Seed Company to scale down its plans on the location of seed kiosks which was going to be a very expensive venture.

The Distribution system will be expanded annually through an aggressive Sales and Distribution Division and the following will be the features of the system:

1. Sales will be conducted at all Ghana Seed Company Area Offices, Winneba, Kumasi, Tamale, Accra, Ho, Bolgatanga and Ejura.
2. Sales will be carried out by Regional and District Agricultural Officers.
3. Through seed kiosks in Atebubu, Sunyani, Techniman, Mampong, Kumasi, Wenchi, Swedra, Sekondi, Koforidua and Bekwai to begin with.
4. Through FASCOM outlets in the Upper and Volta regions.
5. Through voluntary agencies like APPLE & GOVA.
6. In the Northern and Upper Regions through the Commercial Banks to their customers.
7. Through the Ghanaian/German Technical Assistance Team in the Northern Region.
8. Through van sales on market days in Central, Ashanti, Volta, Brong Ahafo, Northern and Upper Regions.
9. Through sales agents under contract to the Ghana Seed Company.
10. By mutual marketing plans especially with the GMTC in the Ashanti and Brong-Ahafo Regions and later to be spread to involve other Companies and possibly to other regions.

The Sales and Distribution programme is presently inseparable from the Public Relations programme. The Company, has from its own resources, printed 'T' shirts with the Company's Logo which have been distributed firstly to Company employees at a reasonable price, secondly, to key people whom the Company interacts, free of charge and lastly on offer to the public at a reasonable price. It is hoped, that public relations items ordered under MIDAS II would arrive on time

and would be an annual affair as stated in the project paper.
but the greatest need of the Sales and Distribution, as indeed it is for
Production, Processing, Quality Control at this time, is transportation.
The requirements will however be treated under the general heading, Transportation,
which covers the entire transportation needs of the Company.

The Ghana Seed Company attaches great importance to creating a countrywide image
with sales materials bearing the Seed-Company logo on such items as caps, diaries,
signs, pens, T-shirts, etc., which cannot be easily obtained in Ghana. Request is
therefore made to USAID to fund procurement in the amounts as follows:-

Year I	-	\$4,800.00	
Year II	-	\$4,900.00	
Year III	-	\$5,000.00	<u>Total \$14,700.00</u>

TRANSPORTATION

The Ghana Seed Company cannot make any progress without adequate transportation. Indeed if facilities were frozen at the present levels, considerable improvements could still be made by provision of adequate transport. Transport is required for the procurement and supply of inputs to the Ghana Seed Company's as well as to registered seed growers' farms, for the evacuation of seed from farms to processing centres and for field inspections and trekking. Transport is needed to evacuate seeds from storage depots to retail outlets; for market-day sales and to meet bulk orders of organizations. The categories of vehicles required are motorcycles for technical personnel responsible for inspection of farms; pickups for field inspection supervisors, input supplies or management trekking, van sales and stocking of seed kiosks and seed agency stalls. Ten-ton trucks are required for long haulage of seeds and inputs.

The Ghana Seed Company has experienced considerable break-downs with the Chevrolet Crew Cab pickups, 7-ton trucks and 10-ton trucks. Transport problems have had serious effects on haulage of personnel and commodities. Improvements in spare parts and replacement parts acquisition procedures are now seen to give hope to restoring broken down vehicles. The Company's fleet presently consists of

1	-	1978	Chevrolet	Suburban
1	-	1978	"	Crew Cab
3	-	1980	"	Crew Cab
2	-	1978	"	10-ton Truck
1	-	1980	"	10-ton Truck
3	-	1980	"	7-ton trucks

Since the trucks have shown extreme unreliability, the Management's request for funding and procurement as shown by the listing in ~~appendix I&II~~ may seem exorbitant. The Company believes that procurement by waiver from neighbouring countries of reliable makes of pickups and trucks is now urgent. The standardized makes of trucks are: Bedford, Leyland, Mercedes Benz, and Morris. Spare parts procurement through USAID Shelf Item Procurement procedures is looked upon as a very favourable method for standardized vehicles for ensuring timeliness in the procuring of parts for the Company's vehicles.

The Company will do all it can to obtain certain replacement items locally but costs are generally very high and are a costly drain on the Company's resources.

Since contract seed growers have almost no haulage vehicles, the full burden of bringing harvested seed falls upon the seed Company. When the Company's transport is lacking, seed tends to disappear out of the hands of the Company. Therefore, the Company must strengthen its trucking capability to bring in the contract production immediately after harvesting.

Production officers at all branches have been nearly totally immobilized. Motorcycles seem to be the cheapest and most efficient vehicle. Therefore, the

Ghana Seed Company requests for funding and procurement of motorcycles:

Year I (1982) - 10 motorcycles

Year II (1983) - 10 motorcycles

The new Winneba seed plant will require four to five trucks operating daily in harvest time to haul the expected target of starting 10,000 bags in later years. Trucks would be readily deployed to highly concentrated seed producing areas (at Winneba when new plant is operational) (at Tamale for the rice harvest) (elsewhere when seed of maize, rice, groundnuts is stacked up awaiting haulage). Therefore solving the transport problems through adequate number of trucks, pickups, and motorcycles is expected to dramatically increase the volumes of seed brought in and sold at planting time.

The transport requirements as well as mechanics tools and shop equipment for 1982 - 1984 are as shown in Appendix I and II.

JUSTIFICATION FOR VEHICLE REQUIREMENTS

APPENDIX II lists the 10-ton truck needs for the various branches of the Seed Company.

Deployment of trucks especially during harvesting time will assure the Seed Company of capability to haul contract seed growers production. Maize harvesting commences at Winneba in late August, continues into November. Slightly later, maize seed harvest starts in the Kumasi/Ejura, areas, then about mid-September, harvest of seed maize at Logba Foundation seed farm in the Volta Region will begin. Rice, maize, and groundnut harvests in the Upper and Northern Regions start late October and continue into January. In the North, several locations of Foundation farms are used for rice and maize production. Increasing volumes of seed rice are envisioned for both Bolgatanga and Tamale plants. As many as eight 10-ton trucks are needed for the North when seed harvests are at peak times. Deployment of trucks from the South to the North are envisioned when the time requires such action.

Out of the Winneba 10-ton truck numbers (3) requested for, one would be deployed to Logba temporarily as the need arises, then return to Winneba where the need for at least four or five 10-ton trucks would exist at peak of seed maize harvest. One 10-ton truck is expected to be capable of hauling about 80 maxi bags of unprocessed maize to the seed plant per day. The column dryer capability calls for about 300 maxi-bags shelled maize daily for a period of three to four months to achieve the expected capability of this new seed plant.

The Kumasi seed plant coupled with the Ejura mini-facility will require at least three 10-ton trucks to ensure getting harvested ear maize from contract growers to be shelled, dried, and processed in time. Failure to get harvested maize on the ear from the growers' farms has resulted in dismal failures in maintenance of seed quality, not only in the Ashanti Region but in the Volta Region and Winneba Area as well. Transport has been the most crippling factor in attempts to accumulate larger volumes of high quality seed (with high viability, freedom from weevil damage).

Rice and groundnut harvest starts in the Northern and Upper Regions (Tamale and Bolgatanga branch areas) in late October/early November and continues into the end of the year. Ever increasing volumes of both crops for seed demands greater transport supply lest the seed disappears for food purposes, or deteriorates such that it becomes unfit for seed use. Maize seed harvesting in the North occurs at the same time as rice harvest. Deployment of 10-ton trucks would be projected somewhat as follows:-

- Tamale Rice and Groundnut harvests: 5 or 6 trucks
- Danango maize seed harvests: 1 truck
- Bolgatanga rice, groundnuts: 2 trucks

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Transport availability in the North has been very deficient. With expected upgrading of the Tamale facility, the above projection is conservative. Holding bins for newly harvested seed rice will be set up at Tamale into which trucked seed rice will be stored until processed. Storage on growers farms is almost totally lacking.

The 10 motorcycles requested for are very minimal for use by production officers in dealing with contract seed growers from pre-planting through seed harvests. The economical aspects of motorcycles make them very suitable for this purpose.

Pick-ups: Total 20.

The need for replacement vehicles is extremely urgent in the entire Ghana Seed Company operation. Two USAID Chevrolets (Suburban, Crewcab, 1978's) have reached complete unserviceability after several overhauls. Three 1980 Crew Cabs are now continually breaking down. Therefore, encouragement to obtain vehicles under Waiver has been accomplished to permit purchase of Datsun Pick-ups which have a record of excellent performance in Ghana, along with some spare parts being available locally. The Company has some Datsun Pick-ups operational from an original nine of them, 1976 models. These are becoming unreliable also.

Datsun Pick-ups with long box, single seat type, diesel engines are requested. Sixteen such vehicles are needed in Year I (1981/82) while an additional four similar ones are requested for Year II (82/83).

Headquarters:	Division Managers	(4)
	Stores/Procurement	(1)
Branches (5):	Area Managers	(4)
	Sales and	
	Production	(7)

Those requested for Year II are earmarked for filling in those areas deficient in Sales and Production transport capabilities.

Service Van: Total 1

The Production Division requires one equipment Service Van for mobility in servicing broken-down farm equipment and Company vehicles when decision not to use a workshop has been made. The Service Van is to supplement Workshop capabilities, having generator and welding and other essential equipment and tools stocked along with needed parts from the Parts Depot. Transceiver Radios in all locations will alert Headquarters for the dispatch of the Service Van if needed.

Nissan Patrol: Total 2

Two-door type, for Headquarters, for Management field trips to Company branches. Also needed to replace unserviceable 1978 vehicles for dry to day procurement and other office uses.

APPENDIX I

GRAIN SEED COMPANY LIMITED
TRANSPORT REQUIREMENTS
MOBILE UNITS

CIF \$ '000

LOCATION	REQUIREMENTS	QUANTITY	UNIT COST	TOTAL COST	1982	1983	1984
INDUSTRIES - ACCRA	NISSAN PATROL	2	9.0	18.0	2	-	-
	DATSUM DIESEL PICKUP	5	8.0	40.0	5	-	-
MINI 2A	DATSUM DIESEL PICKUP	3	8.0	24.0	2	1	-
KIASE	DATSUM DIESEL PICKUP	3	8.0	24.0	2	1	-
OMALE	DATSUM DIESEL PICKUP	3	8.0	24.0	2	1	-
IGLEA	DATSUM DIESEL PICKUP	2	8.0	16.0	1	1	-
	TOTALS	18		140.0	14	4	-

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GHANA SEED COMPANY
TRANSPORT REQUIREMENTS
HEAVY DUTY TRUCK

LOCATION	REQUIREMENTS	QTY	UNIT COST	TOTAL COST	1982	1983	1984
HEADQUARTERS - ACCRA	SERVICE VAN	1	15,000	15.0	15.0	15.0	-
WINNEBGA	10-ton HEAVY DUTY	3	40,000	120.0	120.0	-	-
KUMASI	10-ton HEAVY DUTY	3	40,000	120.0	120.0	-	-
BOIGA	10-ton HEAVY DUTY	1	40,000	40.0	40.0	-	-
TAMALE	10-ton HEAVY DUTY	4	40,000	160.0	160.0	-	-
	TOTAL UNITS	12	TOTAL COST	455.0	455.0		
5 UNITS							
<u>ORIG. COST</u>	SPARE PARTS FOR TRUCKS		9,000	27,000	9,000	9,000	9,000
$\$36000 \times 15\% = 5400$							
$\quad \times 5$							
<u>\$27000</u>							
$\$50,000 \times 19\%$	SPARE PARTS FOR CREW CABS						
5 UNITS \$7500	& SUBURBAN		2,500	7,500	2,500	2,500	2,500
	SPARE PARTS FOR FARM						
	MACHINERY & TRACTORS		50,000	150,000	50,000	50,000	50,000

GHANA SEED COMPANY LIMITED

PROJECTED VALUE OF CERTIFIED SEED CROP 1982-1984

		YEAR I	YEAR II	YEAR III
1. <u>Winneba</u>				
Operational for 1983 maize seed crop				
Year I (1982 crop) Year II (1983 crop)				
Year II (1984 crop)				
10,000 mini maize; 20,000 mini bags (100lb) @ ₵500		₵ 5,000,000	₵10,000,000	₵20,000,000
40,000 mini bags (100lb) maxi				
Adequate Truck Transport requirements have been met.				
2. <u>Kumasi</u>				
Year I (1982 crop): 4,000 mini bags maize				
Year II (1983 crop): 4,000 mini bags maize @ ₵500		₵ 2,000,000	₵ 2,000,000	₵ 3,000,000
Year III (1984 crop): 6,000 mini bags maize				
Adequate truck transport requirements have been met.				
3. <u>Tamale</u>				
a. <u>Rice</u>				
Year I (1982 crop): 35,000 bags @ 140lb @ ₵700		₵24,500,000	₵25,500,000	₵35,000,000
Year II (1983 crop): 35,000 bags @ 140lb (No expansion effect on Year II Projection)				
Year III (1984 crop): 50,000 bags @ 140lb (Processing commences November and is completed by March 1st Expanded processing/Storage available.				

Year I Year II Year III

Table Cont'd

b. Cornments

Year I (1982 crop): 11,000 bags 80lb (Unshelled)	@ ₱550	₱ 6,050,000	₱ 7,150,000	₱ 11,000,000
Year II (1983 crop): 13,000 bags 80lb (Unshelled)				
Year III (1984 crop): 20,000 bags 80lb (Unshelled)				
(Year III expanded storage available)				

c. Maize

Year I (1982 crop): 4,000 mini bags 100lb @ ₱500/100lb	₱ 2,000,000	₱ 3,000,000	₱ 4,000,000
Year II (1983 crop): 6,000 " "			
Year III (1984 crop): 8,000 " "			

4. Balatanga

a. Rice

Year I (1982 crop): 10,000 bags 140lb @ ₱700	₱ 7,000,000	₱ 7,000,000	₱ 7,000,000
Year II (1983 crop): 10,000 bags 140lb			
Year III (1984 crop): 10,000 bags 140lb			

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<u>Bolca, Cont'd</u>		Year I	Year II	Year III
b.	<u>Grainments</u>			
	Year I (1952 crop): 20,000 bags @ \$550	\$11,000,000	\$12,000,000	\$11,000,000
	Year II (1953 crop): 20,000 bags			
	Year III (1954 crop): 20,000 bags			
	(No storage expansion additional equipment)			
c.	<u>Grize</u>			
	Year I (1952 crop): 500 mini bags (100lb) @ \$500	\$ 250,000	\$ 250,000	\$ 250,000
	Year II (1953 crop): 500 mini bags (100lb)			
	Year III (1954 crop): 500 mini bags (100lb)			
5.	<u>HO</u>			
	Year I (1952 crop): No crop inc			
	Year II (1953 crop): Plans pending			
	Year III (1954 crop): Plans pending			
	TOTALS	\$57,800,000	\$64,900,000	\$91,250,000

GHANA SEED COMPANY LIMITED
INPUT REQUIREMENTS 1982 - 84 USAID - FUNDED

Appendix IV

Annex D -

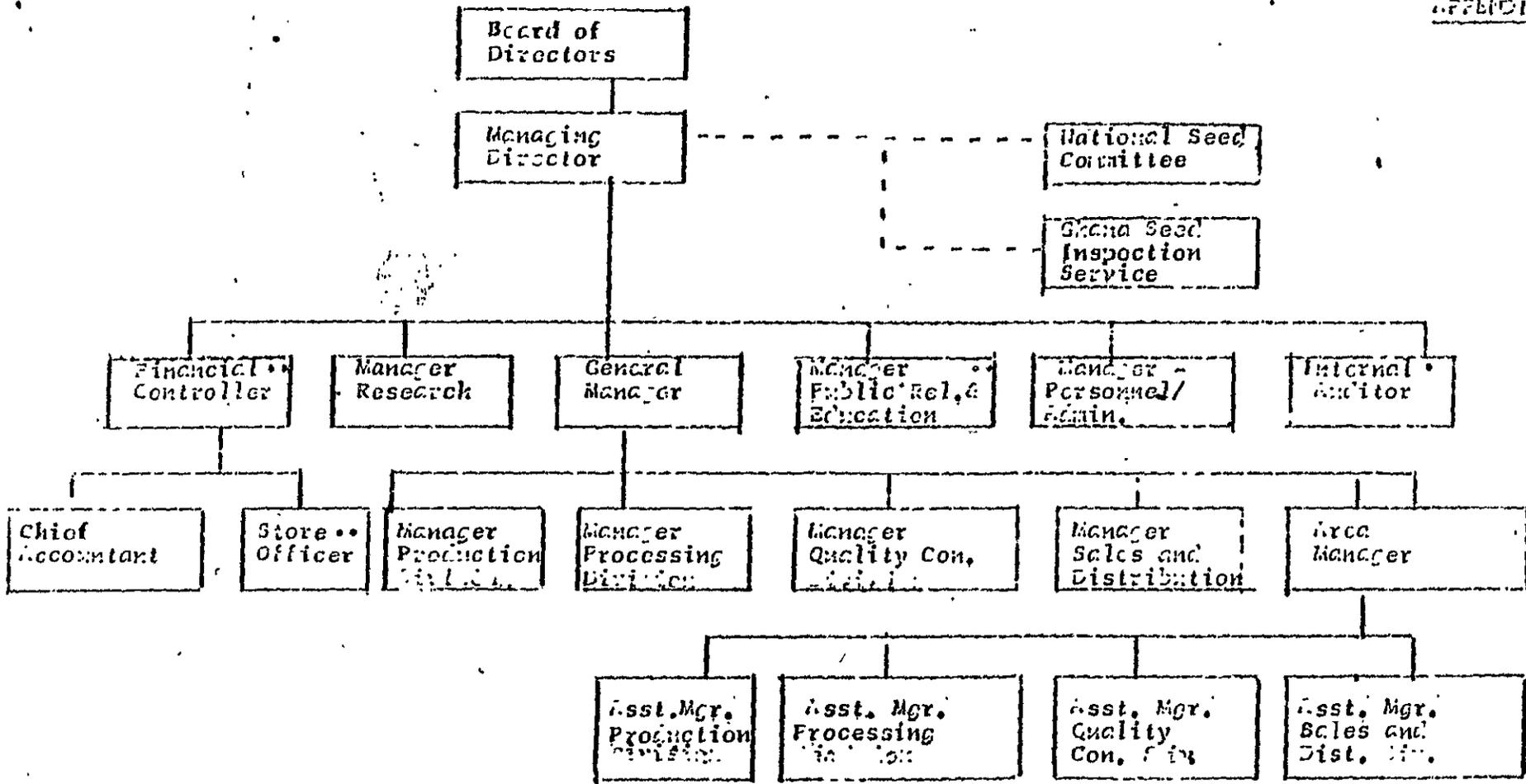
Input Category & Item Loan or Grant	YEAR I			YEAR II			YEAR III			3 - Year
	Jan. 1, 82 - Dec. 31, 82			Jan. 1, 83 - Dec. 31, 83						
	Total No. Units	Unit Cost	Total Cost	Total No. Units	Unit Cost	Total Cost	Total No. Units	Unit Cost	Total Cost	
I. Equipment										
A. Processing Equip. L	1	120.5	120.5	1	174.3	174.3	-	-	-	294.8
B. Quality Control L	1	3.9	3.9	-	-	-	-	-	-	12.6
C. V.G. Seed Equip. L	1	10.0	10.0	-	-	-	-	-	-	10.0
D. Mechanics Tools-Tamale L	-	-	-	1	15.0	15.0	-	-	-	15.0
E. Shop Equip. - Tamale L	-	-	-	1	40.0	40.0	-	-	-	40.0
F. Processing/drying Spare parts L	1	2.0	2.0	1	2.5	2.5	1	2.5	2.5	7.0
G. Electrical (Fumasi) L	-	-	-	1	74.4	74.4	-	-	-	74.4
										<u>453.8</u>
II Vehicles										
A. 10 Ton Trucks L	11	40.0	440.0	-	-	-	-	-	-	440.0
B. Pick Ups L	16	8.0	128.0	-	-	-	-	-	-	128.0
C. Motor Cycles L	10	.9	9.0	10	9.0	90.0	-	-	-	15.0
D. Service Van L	1	15.0	15.0	-	-	-	1	9.0	9.0	27.0
E. Spare Parts Trucks L	1	9.0	9.0	1	9.0	9.0	-	-	-	9.0
F. Spare Parts Pickups, Suburban L	1	2.5	2.5	1	2.5	2.5	1	2.5	2.5	7.5
G. Nissan Patrol L	2	9.0	18.0	-	-	-	-	-	-	18.0
										<u>653.5</u>
III Farm Machinery										
A. Foundation Seed Farm L	-	-	-	1	184.0	184.0	-	-	-	184.0
B. Spare & Repl. Parts L	1	50.0	50.0	1	50.0	50.0	1	50.0	50.0	150.0
C. Emergency Spare Parts L	1	50.0	50.0	1	50.0	50.0	1	50.0	50.0	334.0
										<u>150.0</u>
										<u>484.0</u>

Input Category & Item Loan or Grant	YEAR I Jan. 1, 82 - Dec. 31, 82			YEAR II Jan. 1, 83 - Dec. 31, 83			YEAR III			3 - Year
	Unit Cost	Total Cost	Total No. Units	Unit Cost	Total Cost	Total No. Units	Unit Cost	Total Cost		
IV Supplies & Small Equipment										
A. Quality Control L	1	4.0	4.0	1	5.0	5.0	1	5.5	5.5	14.5
B. Herbicide L	1	21.5	21.5	1	21.5	21.5	1	26.0	26.0	69.0
C. Pesticides L	1	10.7	10.7	1	12.0	12.0	1	13.3	13.3	36.0
D. Office Supplies Tech. L	1	1.5	1.5	1	1.5	1.5	1	1.5	1.5	4.5
E. Sales Promotion L	1	4.8	4.8	1	4.9	4.9	1	5.0	5.0	14.7
F. Raw Materials L	1	115.0	115.0	1	45.0	45.0	1	50.0	50.0	210.0
G. Vegetable Seeds L	1	233.0	233.0	-	263.0	263.0	1	318.0	318.0	814.0
H. Research L	1	20.6	20.6	1	2.0	2.0	1	2.0	2.5	15.5
I. Office Supplies G&C L	1	1.5	1.5	1	1.5	1.5	1	1.5	1.5	4.5
J. Trans. Receives Radio L	7	37.6	37.6	-	-	-	1	-	-	37.6
										1220.2
V Technical Assistant										
A. Tech. Coord/Seed Proc. G	12 mm	110.0	110.0	12 mm	130.0	130.0	12 mm	150.0	150.0	390.0
B. Quality Control G	12 mm	110.0	110.0	12 mm	130.0	130.0	12 mm	150.0	150.0	390.0
C. Production Mgt. G	12 mm	110.0	110.0	12 mm	130.0	130.0	12 mm	150.0	150.0	390.0
D. Asst. Prod. Mgt. G	-	-	-	12 mm	130.0	130.0	12 mm	150.0	150.0	260.0
E. Mech. Engineer/Dryer G	-	-	-	3 mm	15.5	46.5	-	-	-	46.5
F. Spare Pts/Proc/Inv. G	-	-	-	6 mm	15.5	93.0	-	-	-	93.0
G. Seed Technologist G	-	-	-	1 mm	15.5	15.5	-	-	-	15.5
H. Agric. Mechanic G	6 mm	-	55.0	6 mm	-	65.0	2 mm	15.5	31.5	120.0
I. Agric. Economist G	2 mm	15.5	31.0	3 mm	15.5	31.0	-	-	-	62.5
* Title 12 Funded	44 mm	-	-	67 mm	-	-	50 mm	-	-	1,725.0
VI PARTICIPANT TRAINING										
A. Mississippi Seed Course G	12 mm	3.0	36.0	9 mm	3.5	31.5	9 mm	3.5	31.5	99.0
B. Seed Tech. N.C. State G	6 mm	-	-	-	-	-	-	-	-	-
C. Seed Tech. M.S.U. G	12 mm	-	-	-	-	-	-	-	-	-
VII SHELF ITEM PROCUREMENT										
A. Vehicle Replacement Parts L	1	50.0	50.0	1	50.0	50.0	1	50.0	50.0	150.0
Loan		\$2961.6	Grant		\$1821.0					
15% Contingency		444.6	15% Cont		274.0					
Total Loan		3405.6	Total Grant		2,098.0					

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ORGANISATIONAL CHART GRAN. SEED COMPANY LIMITED

APPENDIX 1



- Position not filled
- Position not filled

APPENDIX VIGHANA SEED COMPANY LIMITEDPROJECTED INCOME STATEMENT

	1982	1983	1984
A. SEED SALES	66,800,000	86,825,000	130,675,000
B. SEED PURCHASES	47,887,500	61,687,500	85,375,000
OTHER OPERATING COST/ ADMINISTRATIVE EXPENSES	14,557,810	18,736,647	26,521,794
DEPRECIATION OF ASSETS	672,212	672,212	672,212
	63,117,522	81,096,259	115,369,006
PROFIT BEFORE TAX	3,682,478	5,728,641	14,805,994

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ANNEX E - LIST OF GSC COMMODITIES TO BE PURCHASED

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
1	Air Screen Cleaner Clipper Model 147 BD with 13ft height tandem elevators	i) Blount Agribusiness Group Ferrel - Ross Saginaw, Michigan 48602 ii) Or, other equivalent same specifications.	\$23.0
16	Cylinders for Hart No.3 Indent cylinders separators	SIZE 11 - 8 each SIZE 13 - 8 each	\$10.0
1	Seed Treater (Model S - 100 SS)	SEEDBURO	5.0

- 2 -

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
1	# 5 Western Combined Maize Sheller/Cleaner	Union Iron Works	16.0
2	Portable Bag closers Model D, Fischbein	Dave Fischbein Company	2.5
2	Platform Scales Double beam - metric		1.5
2	Two wheel Minneapolis Type Bag Truck		.40
5	Aluminium Grain Shovel		.15
3	Cast Aluminium Scoops		.03
1	Tornado Industrial Vacuum Cleaner		2.0
1	Hand Electric Blower, Seedburo Model No. 9880		0.50
4	Bag Holders - Two Way Seedburo, Gripmasters Model No. 13		.80
3	Bag-Tag Staplers (ACE MODEL NO. 78200(82))		0.10
1	Air Compressor (Portable Electric) Heavy duty, capacity tank 20 gallons	Mc. Master Carr Catalogue 88	1.5

SP

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
2 Sets	Make-Your-Own Stamp Kit	M.D. Ginn & Company	0.50
2	Universal Bag Holder, Seedburo Catalog No. 80		0.20
4	Deck type B, Oliver 160, Gravity Separator for cleaning Paddy seed rice		6.0
		Sub Total	<hr/> \$70.18 <hr/>

B. VEGETABLE SEED PROCESSING EQUIPMENT

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
2	Wet Vegetable Separator		4.0
2	Table Model Clipper Cleaner with Screens for Vegetable Seed Processing. Additional Screen for existing Clipper table model cleaners for vegetable seed processing.		1.2
			.8
2	Table Gravity Seed Separator		4.0
Sub Total			10.0

C. SEED CENTER ELECTRICAL EQUIPMENT FOR TAMALE,
AND KUMASI

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
1	Generator, 100KVA, 415/240 Caterpillar Model 3304T2 Diesel Set	From Code 899	\$35.0
1	Generator, 25KVA, 415/240V, Diesel Set	"	12.0
1	Transformer, Substation, 500KVA, 11,000/433V 3 Ph 50Hz PF 1500 RPM	"	40.0
1	Generator, 25KVA, 415/240V, Diesel Set		12.0
Sub Total			99.0

D. EXPENDABLE SUPPLIES FOR GHANA SEED COMPANY
LABORATORIES

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE</u> <u>CIF (\$000)</u>
6	Germination Paper Towelling 12" x 18" regular Weight	Anchor Paper Company	.252
6m	Germination Paper Towelling 12" x 18" heavy weight	"	.504
3m	Wax Seed Paper 12" x 18"	"	.189
3m	Envelopes and Opening Kraft	"	.052
36 boxes	Filter Paper Whatman	Science Kit International	.118
15	Forcep, medium point straight, 115m	"	.036
2 dozens	Pencil, China marking, red	"	.040
6	Rat & Mouse poison bait Warfarin 5lb can	WASCO W153538	.124
6	Insecticide, permethrin, 5% WP	FMC Corporation Philadelphia PA 19103	.084
Year I Sub-Total			1.4
Year II Sub-Total			2.0
Grand Sub-Total			3.4

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E. FARM MACHINERY REQUIREMENT

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
5	Offset Disc Harrow, Width to be 10' 4" With notched 26" diameter blades, Mounted to fit category II 3-point Hitch	i) IH Model 770 ii) Other makes with equal Specifications	48.0
5	Field Cultivator	Vibra shank Mounted IH Model 45	23.0
3	Heavy Duty Rotary Cutter	Model GB-722	14.0
2	Moldboard Plow Semi-mounted, four bottom, 18" moldboard extra Hitch clearance	International Harvester	17.0
4	Wagons Running Gear and Barge Boxes	1) Model RGE-10T Unverferth MC Curdy, Kalida, Ohio	15.0
		2) Other makes of same specifications	
1	Low Boy Trailer	same as previously procured under PIO/C-0102-9-00046	6.0
1	Front End Loader	1) New F-348 Model Loaders	4.0
		2) Other make with equal or comparable specs.	
1	Rear Mounted Blade for Attachment to Model 3288 IH tractor	Equivalent to IH Model 50 Blade	3.0
5 sets	Dual Wheels and Tires for tractors	IH 3288 Model	30.0

FARM MACHINERY CONTINUED

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
2	Corn Planter, Trailing Type	Same as previously supplied under PIOC 641-0102-9-00046	24.0
			<hr/>
		Sub Total	184.0
			<hr/>

F. SPARE PARTS FOR FARM MACHINERY AND TRACTORS

Spare Parts for Farm Machinery & Tractors

CIF (\$000)

1983

1984

50.00

50.0 Sub Total 100.00

G. SPARE PARTS REQUIREMENT

Spare Parts for Trucks

CIF (\$000)19831984

9.0

9.0

Spare Parts for Crew Cabs and Suburban

2.5

2.5

11.5

11.5

Sub Total

23.0

II. PESTICIDESa. HERBICIDES

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>YEAR I</u>	<u>YEAR II</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
500 pints	Treflan 4EC (Trifluralin)	1.5	1.5	Elanco Products	3.0
	Eradicane (EPTC)	9.0	11.5	Stauffer Chemical Co.	20.5
To be in one or 5 gallon Containers	Prowl (Stomp)	5.0	5.5	American Cyanamid Co.	10.5
"	Propanil (StamP-34)	7.5	9.0	Crystal Chemical Inter-American (Rohn & Hassco.)	16.5
		<u>\$23.0</u>	<u>\$27.5</u>		<u>50.5</u>

b. INSECTICIDE

In quart or litre ship amount equi-Bacillus Thuringiensis valent to sum		0.5	0.6	Abbot Laboratories Chemical & Agric. Prod. Div	1.1
"	Carbaryl (Sevin)	3.0	3.3	Union Carbide & Agric. Prod. Division	6.3
"	Diazinon	3.0	3.3	Ciba-Geigy Corp. Ag. Division	6.3
"	Malathion	2.0	2.2	American Cyanamid Co.	4.2
"	Phostoxin	3.5	3.9	Degesch American, Inc.	7.4
		<u>12.0</u>	<u>13.9</u>	Sub-Total	<u>25.3</u>

I. EQUIPMENT REQUIREMENT FOR QUALITY CONTROL DIVISION

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
1	Tag Printer, manually operated Stielow E-10	Addressograph Errington Inc.	1.4
6	Desk Calculators, 220 volt W/printed read out tape	Canon U.S.A.	.42
2	Laboratory Scales, 3-beam	Seedburo Equipment Co.	.28
2 sets	Hand screens, 9" 12 sieves with botton pan & storage rack	"	.42
10	Moisture Metres, portable, DC-9 Volt Dole 400	"	3.5
6	Bag Triers, 9" x 1 diameter	"	.17
5	Grain Probe 40" x 1 3/4 diameter	"	.56
576	Sample Containers 1/2 gallon plastic	"	.9
5	Graduate Cylinder, 50 MI Polypropylene	Scientific Kit Inc. N.Y.	0.070
6	Erlenmeyer Flask 100 ml.	"	0.035
6	Erlenmeyer Flask 500ml	"	0.025
120	Petri Dishes 4" diameter	Seedburo Equipment Co.	.30
1	Microscope Slides, plastic Laboratory Pack 50 slides	Scientific Kit Inc. N.Y.	0.015
5	Portable Balance, 101 gm Capacity x 0.01 gram.	"	.70
			<hr/>
			8.795

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J. CONSULTANT TEAM'S OFFICE EQUIPMENT & SUPPLIES

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF(\$000)</u>
4 doz.	Legal Pads, 8" x 12 1/2" Canary colour	Ginns	.042
15	Plain 3-ring Binder, colour Green, 2	Vulcan Binder Cover Company	.060
48 sets	Plain Tabs, Standard 3-hole punched	"	.021
1	Three Hole paper Punch heavy duty	Ginns	.041
100 sheets	Graph Paper-Drawing size 11 1/2 x 16 1/2	"	.020
1 doz.	Assorted colours set pencils #5030023	"	.005
4 doz.	No.2 Lead Pencils	"	.010
300	Coml Envelopes, No. 93/7/8" 8/7/8"	"	.011
2	Desk Staplers, Swingline	"	.027
2 boxes	Swingline Staples	"	.007
2	Tape Dispenser	"	.011
5 Rolls	Cellophane Tape 3/4" Wide 1"	"	.005
5 Rolls	Transparent Scotch Tape, 1/2" wide	"	.009
2	Hand-Held Calculators, battery operated	Sears Roebuck & Company	.042
2	Aluminium Rulers, 15", 8ths and 16ths	Ginns	.007
5 doz.	Bic. Pens, Blue	"	.024
5	Papermate Pens	"	.028

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CONT'D CONSULTANT TEAMS OFFICE EQUIPMENT & SUPPLIES

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
10	Refills for Paper Mate Pens	Ginns	.013
5	Wipe-out correction Fluid	"	.008
Year I Sub. Total			.391
Year II Sub. Total			.450
Grand Sub Total			\$,841

K. EQUIPMENT MAINTENANCE (LOAN)

	<u>YEAR I (KUMASI)</u>	<u>YEAR II (TAMALE)</u>	
Mechanics tools	\$17.25	20.0	
Shop Equipment	\$45.0	50.0	
	\$62.5	\$70.0	Sub. Total \$132.3

L. SEED CENTER - RAW MATERIAL (LOAN) BAGS

Polypropylene Pellets	Year II	\$45.0
for the manufacture of seed Bags	Year III	\$50.0
	Sub. Total	\$95.0

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M. PROCUREMENT OF OFFICE SUPPLIES NOT AVAILABLE IN GHANA (LOAN)

(\$000)

YEAR I	\$1.5
YEAR II	<u>\$1.5</u>
Sub. Total	<u>\$3.0</u>

N. REQUEST FOR STYROPORE P150 PELLETS (LOAN)
FOR INSULATION - WINNEBA

Sub. Total \$50.0

O. SPARE REPLACEMENT PARTS - SEED GERMINATORS

YEAR I	\$1.5
YEAR II	<u>\$2.5</u>
Sub Total	<u>\$4.0</u>

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P. FUNDING FOR PROCUREMENT OF VEGETABLE SEEDS (LOAN)

	(\$000)	
Year I	\$263.0	
Year II	\$318.0	
	<hr/>	
Sub Total	\$581.0	
	<hr/>	
		GRAND TOTAL 1,350.316

<u>QUANTITY</u>	<u>DESCRIPTION</u>	<u>SOURCE</u>	<u>PRICE CIF (\$000)</u>
<u>Roofing:</u>			
92 sheets	a. Aluminium 22 SWG long span 18"-6"x 22"		
165 "	b. Aluminium 24 SWG 18"-6"x 42"		
15,618 sq.yds.	c. Bituminous roofing felt to B.S. 747(type 1a)		
<u>Iron Rods:</u>			
5 tons	a. 3/4" Diameter		
10 "	b. 1/2" "		
10 "	c. 3/8" "		
3 "	d. 1/4" "		
<u>Nails:</u>			
5 cases	a. 2" Length		
3 "	b. 2 1/2" diameter		
5 "	c. 1 1/2" "		
6 "	d. 1" "		
5 bundles	Binding Wire		

DECISIONS ON MIDAS (MANAGED INPUTS DELIVERY
AND ADVISORY SERVICES)

As a result of the report of the Committee that sat in Kumasi to investigate the MIDAS project, there have been a series of meetings between the PNDC Secretary for Agriculture and the Director of the United States Agency for International Development (USAID). At a final meeting on the 27th of October, 1982 the following decisions were arrived at:

1. Two of the six components of MIDAS namely Home Extension Development, and Marketing, will remain as originally designed. No changes will be made in these projects and USAID funding will continue to be made available as originally anticipated.
2. The Research component which has suffered considerable set back as a result of lack of infrastructural development at Attabubu will be phased out and the IITA (International Institute of Tropical Agriculture) contract in this project will be terminated in March 1983. An on-going agreement with the IITA for the training of one Ghanaian Graduate in Crop Research will continue to be honored. Two other components will be terminated namely the Fertiliser project and the general Agricultural Extension Service. The Fertiliser project had never been started since the formation of a fertiliser Company at the inception of MIDAS. The general extension service only operated in Attabubu district and did not expand to make a regional impact as originally conceived. The lending programme of the credit component will also be terminated but the technical assistance element of the credit component will be reviewed in a redesign exercise. Funds for the small farmer credit programme can be made available from the PL 480 Title I counterpart fund if Government decides that increased funds are required. There will shortly be a redesign exercise which will look at the Ghana Seed Company (The Seed Component), the Small Farmer Implements programme, and the technical assistance element of the credit scheme for small farmers. The MIDAS project for the remaining 22 months of its life will consequently consist of the following components:
 - i. The Home Extension Unit
 - ii. The Marketing component - as originally designed
 - iii. The Seed component (Ghana Seed Company) as revised
 - iv. Technical assistance element of the small farmer credit component and the small farmer implements programme, as revised

THE PNDC CO-ORDINATING SECRETARY,
THE CASTLE,
OSU.

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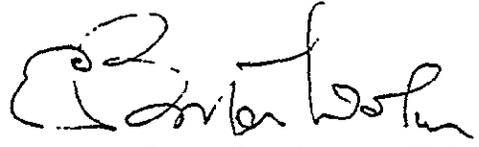
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- v. On-going training for one participant under the auspices of the International Institute of Tropical Agriculture (IITA).


PNDC SECRETARY FOR AGRICULTURE
(PROF. E. BORTEL-DOKU)

cc: The PNDC Secretary for Finance & Economic Planning.

The Regional Secretary
Ebong Ahafe Region.

The PNDC Secretary for Foreign Affairs

The Director ✓
USAID

Mr. T.B. Riny
Project Manager
HTAS.

ECONOMIC ANALYSIS1. INTRODUCTION

The Ghanaian economy has been deteriorating for over 16 years and continues to do so. Increased government expenditure, without matching revenues, a hyper inflation rate (caused by an enormous growth in the money supply), an overvalued exchange rate, a deteriorating infrastructure/ transportation network, government price controls, and inefficient state run enterprises have all but reduced a once prosperous economy to near ruin.

Table G.1 summarizes one decline in production for Key commodities as a result of the above influences. Cocoa, mining, manufacturing, and trade have all had reductions in annual output ranging from 3.5 percent to 12.0 percent per year. These declines in production have, in turn produced a negative real GDP growth rate amounting to more than -2.1 percent per year between the years 1975 and 1981. This result, in turn, has led to reduced export earnings which has limited imports because of a lack of generated foreign exchange.

Smuggling and black market activities have also greatly increased in order to avoid the price controls and/or obtain goods (primarily from Togo or Ivory Coast) that are unobtainable through official channels. Thus, the Ghanaian government recently closed its borders restricting legal access/exit to the country only by air and ocean. Manufactured commodities such as soap and matches have become increasingly difficult to obtain while certain basic foodstuffs have become exorbitantly expensive or non-existent. In Accra, for example, the average Ghanaian is unable to obtain flour (to make bread) or bread itself. One egg sells for approximately 4 cedis, and meat is currently sold at the unofficial rate of 25 cedis per pound. The official minimum wage rate is set at 12 cedis a day.

The money supply, was allowed to increase at the rate that it did (between 1973 and 1977 it increased in size by 4 1/2 times) in order to cover government budget deficits. In 1977/8, the government revenues of 1383 million cedis still only covered 55 percent of the budget and by 1980/81, the revenue/expenditure ratio had dropped to 41 percent.

The inflation rate, because of the rate of growth of the money supply, has averaged over 100 percent in 1981/2 alone. Figure G.1 reflects the effects of the inflation on the consumer price and real wages index.

The foreign exchange rate has not been allowed, by the Ghanaian government, to adjust to the inflation and has thus become increasingly unrealistic, giving rise to a parallel market reflecting its truer rates. In the years late 1980, mid-1981, late 1981 and late 1982, the cedi has depreciated on the order of ₵18 to US \$1, ₵28 to US \$1, and ₵50 to US \$1, respectively. The official rate is now ₵2.75 per US \$1.

Table G.1

Production of Selected Commodities over the
Year 1975/6 and 1980/1

<u>Commodity</u>	<u>1974/75 (avg.)</u>	<u>1980/81 (avg.)</u>
a) Timber - Logs (1000 cubic meters)	679 <u>1/</u>	210.3
b) Gold (1000 troy ounces)	568	419
b) Diamonds (1000 carats)	2470	1026
b) Bauxite (1000 long tons)	333	220
c) Corn (1000 MT)	414	390 <u>2/</u>
c) Rice (1000 MT)	72	50 <u>2/</u>
d) Cocoa	392 <u>3/</u>	258

Sources:

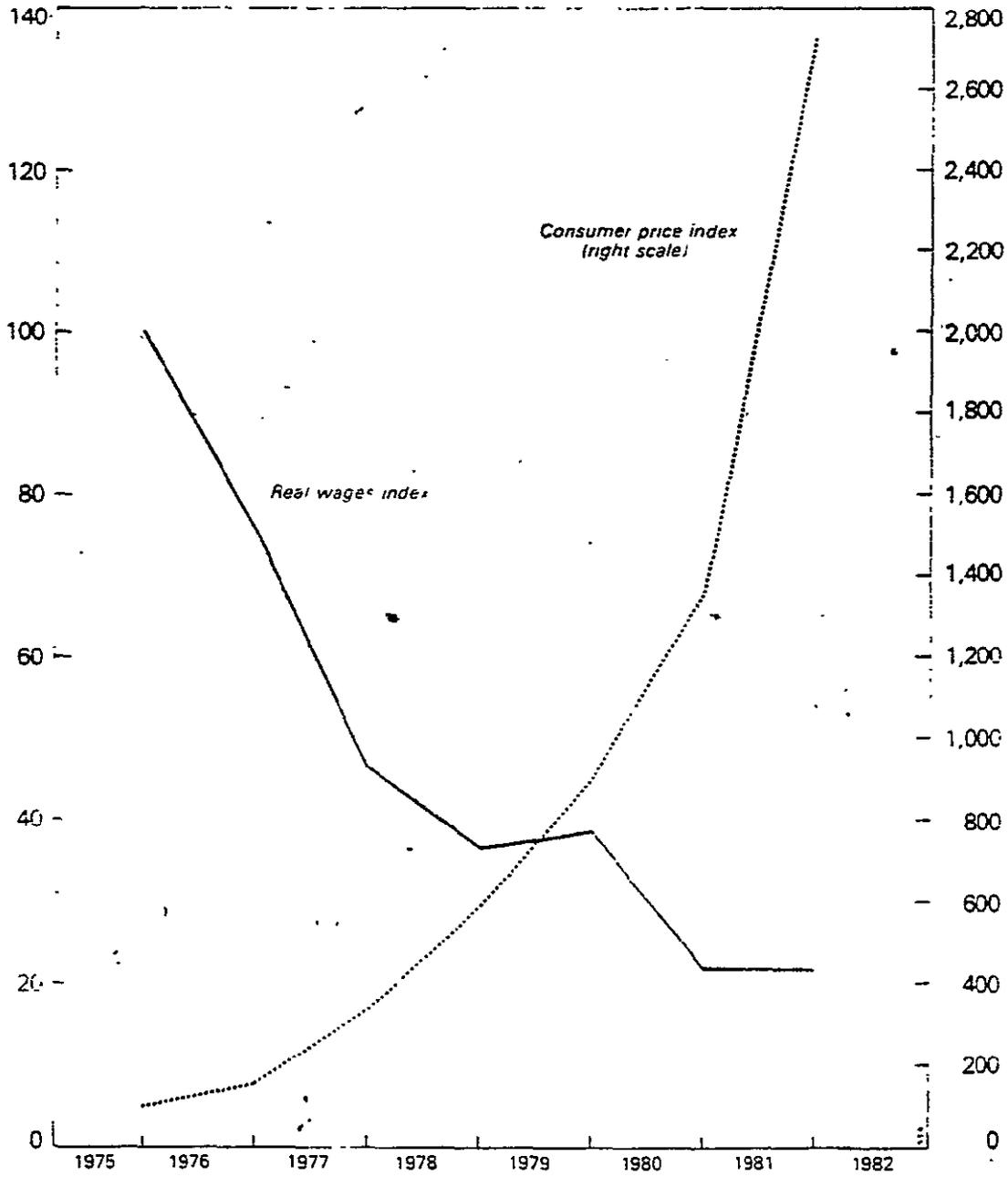
- a) Timber Marketing Board, Takoradi
- b) Central Bureau of Statistics, Accra
- c) ALL DATA: Ghana DIU/ST AID Washington
- d) Cocoa Marketing Board, IMF, International Financial Statistics

1/ 1975/762/ 19803/ Production as received by purchases of the Cocoa Marketing Board

Figure G.1

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CHART 3
GHANA
TRENDS IN REAL WAGES AND
CONSUMER PRICES, 1975-81
(1975 = 100)



Source: Appendix Table 3

The Agricultural Sector

The factors contributing to the above economic situation have acted to dramatically effect the agricultural sector in a number of ways. First, food production has declined, though relatively not as fast as the cash crop production. The cash crop production declined because of the relatively low government controlled prices. At one point, cocoa in Ghana was being purchased by the government at prices equivalent to one-sixth of that offered to Nigerian farmers. Though the smuggling of the crop has increased, there are risks (including imprisonment) to be undertaken for other forms of marketing. The groundnut oil factories in Ghana have had to stop because they could not purchase a sufficient amount of raw material to keep operating.

The food crops are still being, for the most part, cultivated in the traditional manner using slash and burn techniques on farms generally 10 acres or less. Fertilizer is difficult to obtain - fertilizer imports have declined from a total of 77,840 tons in 1977 (including a carrying over of 17,000 tons to 1978) to 20,000 as of April, 1980. In 1982, it is estimated that no more than 6,000 tons of fertilizer were made available to farmers. Second, the infrastructure has deteriorated to such a point that it is difficult to distribute the fertilizer and more importantly, for those farmers who have tractors, the impossibility of acquiring spare parts has virtually idled hundreds of machines. The second aspect of a poor infrastructure also means that the farmer will have limited access to the larger market for his crops in addition to higher crop losses because of on-farm spoilage. Coupled with the lack of basic products (cloth, soap, sugar, batteries, etc.), which can be considered as incentive goods, with which the farmer can spend his income, there is a reduced incentive to produce crops beyond the level of family needs.

Thus, for the reasons of low prices, poor infrastructure, and lack of incentive goods, the agricultural sector has decreased its contribution to the GDP in Ghana. It is within this background that both MIDAS Projects (I, II) have operated.

Changes in the economy will inevitably occur, but at this point it is difficult to state the direction and magnitude of change. Events such as a devaluation, opening of the border, politics, etc. will have impacts in this current uncertain situation. The next section describes how the Ghana Seed Company is operating under these conditions.

II. PROJECT ANALYSIS

Seed production in Ghana has been taking place for more than thirteen years. As previously described, the Ghana Seed Company (GSC) has been in operation for only three years; during the previous years it was known as the Seed Multiplication Unit under the Ministry of Agriculture. Since the GSC will play an important role in the PP amendment of MIDAS II, an economic and financial analysis of the firm was performed to determine the soundness of the U.S. investment in the company. The analysis will consist of three parts: (1) an examination of the firm's balance sheet and income statement; (2) a financial analysis of the firm's profitability; (3) an economic analysis of the firm's impact upon agricultural production. This will involve a measure of the social benefits derived from the use of certified seed and a valuation of the imported inputs and capital at the unofficial (shadow) rate of exchange.

Before the analysis is presented, however, the economic environment in which the company operates should be described. The macro-economic description previously given has already shown the overall milieu in which GSC must operate.

The effects upon the company of a deteriorating infrastructure, price controls, net negative foreign exchange reserves, and hyperinflation have been direct and substantial. First, the poor infrastructure (rural road network) has significantly contributed to the destruction of the company's fleet of vehicles used to acquire and distribute seeds. The lack of a sufficient number of operating vehicles has prevented the company from being among the first purchasers of a crop at the beginning of the season.

In the cases of both 1980-1 and 1981-2, a poor rainfall and/or distribution of rainfall resulted in poor harvests such that the unofficial market price for the crops, (as food) particularly corn, was higher than the government controlled GSC purchase price for the seed. As a result, the farmers, although they have a contract with the seed company, prefer to market their crops at the higher prices, and thus, GSC is only able to obtain low volumes on the seeds. GSC has not begun to strictly enforce the contracts because the contracts are being used as "an educational tool" for the farmers to familiarize themselves with GSC. The use of GSC Seed Contracts is only two years old. Also contracts for future year acreages, plowing services, etc. can be used as a bargaining tool if the farmer doesn't live up to the terms of the Contract.

Second, because there is a lack of foreign currency, GSC, through the government, is unable to acquire certain key materials such as spare parts for the vehicles, and building materials. In particular, the lack of cement, reinforcement rods, and nails have considerably delayed the construction of the seed processing plant at Winneba.

Third, the overvalued exchange rate has been an important factor in determining the private profitability of the company. Since all imported capital goods are valued at the official exchange rate of ₵2.75/\$1, depreciation of the items are understated by a factor of 18 when compared to the current unofficial exchange rate of ₵50/\$1. This resource cost is borne, instead, by the Government of Ghana (GOG).

Fourth, in addition to the purchase price control of seed, GSC must also negotiate with the government for the selling prices of their seed. This, in turn, limits their sales revenue. The company must also deal with the seed consumers, i.e. farmers, who protest if the certified seed price is raised. Commercial U.S. certified seed is sold to (U.S.) farmers at more than four times the commercial crop value. In Ghana, the ratio is less than two to one. Used to lower, controlled prices, farmers may have to adjust to a higher seed price if GSC is to be profitable.

SUMMARY

The major constraints now facing the company include the following: having a sufficient number of vehicles, ability to repair vehicles, price control on purchasing and selling the products, and access to imported materials.

Balance Sheet and Income Statements

Tables G.2 and G.3 present the balance sheet and income statements for GSC's fiscal year (July-June of 1980-1). The current year's income statement has been prepared but not finalized. The balance sheet showed a total value of assets worth over ₵35 million for the year ending June, 1981. The large increase in stocks was due to a large carryover of seeds, chemicals, and stationary. The equity of the company is based on a large government subsidy (income surplus) used to support the company in its second year of operation, and capital surplus, which consists of revalued assets taken over from the Seed Multiplication Unit. Note 2 explains the breakdown of the fixed assets. A 1980 study by the Industrial and Management Services Limited (Accra) placed the valuation of machinery and plant equipment at ₵2.1 million (1981 value: ₵1.6 million) of which ₵.9 million was contributed by MIDAS with the ₵1.2 million balance provided by the Ministry of Agriculture. The largest component of the Fixed assets are the Freehold Buildings and Assets in Progress (more buildings) while the largest depreciation factor is Motor vehicles which is being charged at the rate equivalent to 33 percent of the 1981 value of the vehicles.

Table G.2

Annex G-7

GHANA SEED COMPANY LIMITED
BALANCE SHEET AS AT 30TH JUNE 1981

	FIXED ASSETS	(Note 2)	11,406,089
7,639,850			
	<u>CURRENT ASSETS:</u>		
	Stocks	(Note 3)	9,178,173
1,563,772	Trade Debtors	(Note 4)	3,624,148
809,140	Sundry Debtors	(Note 4)	764,673
44,902	Prepayments		30,600
54,600	Cash/Bank Balance		10,668,853
8,727,845			<u>24,200,447</u>
<u>11,200,259</u>			<u>35,672,536</u>
18,840,109			
	LESS		
	<u>CURRENT LIABILITIES</u>		
	Trade Creditors		438,282
176,416	Sundry Creditors/ Accruals		383,937
60,054			<u>822,219</u>
<u>236,470</u>			<u>34,850,317</u>
<u>18,603,639</u>			
	FINANCED AS FOLLOWS:		
	Stated Capital	(Note 5)	2,000
2,000	Income Surplus	(Note 6)	23,591,991
11,213,305	Capital Surplus	(Note 7)	11,256,326
7,388,333			<u>34,850,317</u>
<u>18,603,639</u>			

The above Balance Sheet should be read in conjunction with the accompanying notes.

DIRECTOR

DIRECTOR

ACCRA

1982.

Table G.2 (cont.)

GHANA SPINNING COMPANY LIMITED

Annex G-3

NOTES TO THE ACCOUNTS FOR THE YEAR ENDED 30TH JUNE 1981NOTE 1: ACCOUNTING POLICIES:

The following are the significant accounting policies used in the preparation of the Accounts.

- a) The accounts have been prepared under the historical cost convention as modified by previous revaluation of assets.
- b) Stocks have been valued at cost or replacement value, whichever is lower.
- c) Depreciation has been provided on fixed Assets at rates, which in the opinion of the directors will amortise the cost or value of the assets over their estimated useful lives.

No depreciation has been charged on farm lands, whilst loose tools are treated on a revaluation basis.

- d) Prepayments represent the unexpired portion of certain expenses.

NOTE 2: FIXED ASSETSCOST/VALUATION

	<u>Cost Valuation</u>	<u>Transfers</u>	<u>Additions</u>	<u>Cost Valuation</u>
	£	£	£	£
Farm Lands	443,900	-	-	443,900
Freehold Buildings	4,130,700	-	24,950	4,155,650
Plant and Machinery	1,787,740	(185,971)	-	1,601,769
Motor Vehicles	565,851	185,971	1,042,147	1,793,969
Furniture and Equipment	94,743	-	271,026	365,769
Fixtures and Fittings	76,244	-	69,654	145,898
Assets in Progress	-	-	3,037,236	3,037,236
	<u>£7,099,178</u>		<u>£4,445,013</u>	<u>£11,544,191</u>

DEPRECIATION

	<u>Accumulated Depreciation 1/7/80</u>	<u>Depreciation for the year</u>	<u>Accumulated Depreciation 30/6/81</u>
Farm Lands	-	-	-
Freehold Building	-	124,295	124,295
Plant and Machinery	-	160,177	160,177
Motor Vehicles	-	254,579	254,579
Furniture and Equipment	-	28,581	28,581
Fixtures and Fittings	-	13,983	13,983
Assets in Progress	-	-	-
		<u>£581,515</u>	<u>£581,515</u>
Net Book Value			10,962,676
Revalued Assets			<u>£43,413</u>
			<u>£11,406,089</u>

NOTE 3: STOCKS

The following is the breakdown of the various classes of stocks at the year end.

<u>1980</u>		
935,826	Seeds	5,486,778
306,045	Chemicals and Fertilizer	2,676,644
154,071	Spare Parts	151,225
17,713	Stationery	285,127
150,117	Other consumables	625,234
-	Sacks	154,025
<hr/>		<hr/>
<u>1,563,772</u>		<u>9,178,173</u>

NOTE 4: DEBTORS

Debtors figures have been stated at book values.
No provision has been made for bad debts.

NOTE 5: STATE CAPITAL

<u>1980</u>		
1,000,000	Ordinary/Authorized Number of Shares	1,000,000 Ordinary
2,000	" Issued Number of Shares	2,000
<u>42,000</u>	Stated Capital	<u>22,000</u>

There are no shares in treasury or any instalment unpaid on any shares at the end of the year.

NOTE 6: INCOME SURPLUS

This includes subvention of \$24,326,389 granted by the government of Ghana to finance working capital and other requirements of the company. This sum is not available for distribution to members in the form of dividends.

NOTE 7: CAPITAL SURPLUS

This represents the amount by which the revalued assets taken over from the Seed Multiplication Unit exceeds its liability as well as Capital grants from government.

NOTE 8: COMPARATIVE FIGURES

Comparative figures have been changed where necessary to reflect the classifications used for this year's accounts.

NOTE 9: TAXATION

The company is an agricultural enterprise and is therefore not liable to tax on its trading results for the year which falls within the first five years of assessment.

Table G.3

GHANA DEFD COMPANY LIMITEDTRADING AND PROFIT AND LOSS ACCOUNT FOR
THE YEAR ENDED 30TH JUNE 1981

<u>4,944,494</u>	Sales	12,810,685
<u>2,225,557</u>	Less Cost of Sales	<u>7,131,749</u>
<u>2,758,937</u>	Gross Profit	5,678,936
	<u>LESS OPERATING, ADMINISTRATIVE AND GENERAL EXPENSES:</u>	
2,246,790	Wages and Salaries	3,414,925
7,800	Rent	48,976
59,574	Vehicle Maintenance	389,074
8,013	Conferences and Seminars	(1,111)
18,525	Printing Stationery	25,191
102,777	Vehicle Running	695,918
146,997	General Expenses	97,236
148,872	Travelling and Transport	402,308
119,741	Equipment Repairs	56,053
14,965	Equipment Hire	35,832
5,146	Advertisements	7,647
-	Insurance	12,134
-	General Repairs	16,029
-	Entertainment	58,683
-	Medical Expenses	10,636
-	Staff Training	16,241
-	Patent Research Expenses	1,200
-	Postages and Telephones	24,115
-	Electricity and Water	11,032
32,000	Professional Charges	77,275
12,199	Directors Fees	13,920
40,000	Auditors Remuneration	60,000
21,475	Bank charges	120,713
-	Loose Tools written off	109,168
-	Depreciation	581,516
<u>2,984,874</u>		<u>8,289,969</u>
(225,937)	Loss before Taxation	(611,033)
-	Taxation	-
<u>(225,937)</u>		<u>(611,033)</u>

The income statement shows a rather large increase in sales over the previous year, partially reflecting the estimated inflation rate and a substantially higher volume of seeds. Both wages and salaries, vehicle running (fuel costs), and traveling and transport categories also greatly increased, resulting in a loss of over one half million cedis. This year's preliminary income statement indicated a sales revenue of approximately ₵26 million, a depreciation cost of ₵800,000, a wage expense of ₵5.9 million and seed purchases (cost of sales) of ₵9.8 million which, along with the other expenses resulted in a modest profit of only ₵112,000. This result was obtained without any financial aid from the government.

For the reasons explained above, seed purchases did not meet the targeted projections, but the company was able to generate a modest profit. However, it should be reiterated, if the company had valued its foreign cost components (chemicals, fuel, capital items, excluding other items such as stationary), at the shadow rate of exchange, a large loss would have been incurred. This point is analyzed further below.

To sum up the presentation of the current state of the company, these facts should be noted: GSC no longer receives government subsidies; GSC expenses are composed mainly of seed purchases and wages and salary. If the resources were valued at the shadow exchange rate, depreciation would also become a major expense. Fourth, GSC is currently free of long and medium term debts although the government of Ghana has assumed the loan burden on previous AID inputs and purchases. GSC is presently barely breaking-even, yet because of the contributions of AID and GOG, has stayed debt-free. The company's true economic viability will be determined within the next few years.

Benefit-cost Analysis

The benefit cost analysis was performed under a number of scenarios which included the following:

- I. Base Case: Assuming seed production will increase at a rate based on historical records,
- II. PP amendment equipment proposal added to GSC capital stock, no fertilizer imported,
- III. Case II, adding in social benefits and social costs, fertilizer imports included,
- IV. Case II, assuming fertilizer imports are not possible,
- V. Case III, assuming acreage or yield benefits are cut to 50% and 25%,
- VI. Case IV, assuming acreage or yield benefits are cut to 50% and 25%.

The benefit cost analysis was conducted using the following model:
Determine Net present value

- (1) Social benefits (when included)
- (2) + GSC sales revenue
- = Total benefits
- (3) Less seed purchase expenses
- (4) GSC operating expenses
- (5) Resource cost of fuel, capital, chemicals (when included)
- (6) = Net benefit

Each of the items 1-6 are defined as follows:

(1) Social Benefits

(a) It is an established agronomic fact that, ceteris paribus, a field planted with certified seed adopted to local conditions will give a higher crop than a field planted with a local variety when rainfalls are normal. The research reports by Akopsoe and Edmeades indicate that when 100 lbs of fertilizer is used under normal growing conditions and farmers are using certified corn seed, yields can be obtained that are as much as 82% higher than the local varieties. The yield difference between fertilized and non-fertilized fields can be, again, as high as 40%. Table 4 shows the estimated yield differences between the local and an average of the four most common improved seed varieties for corn in Ghana. The information for the other crops were obtained from the Ghana Agricultural Extension Service and discussion with the members of the PP amendment team from Mississippi State. Unfortunately, yield differences weren't available for the non-fertilizer local variety case, so it was assumed that yield difference between the certified and local variety was 30% less than what is under the fertilizer case. In addition, it was further assumed that the farmers would only obtain 50% of the yields of those obtained by the agronomic researchers, and that only 80% of the yield difference between the certified and local seed would be captured by the farmer using the certified seed. These conservative assumptions will bring the estimates benefits in line with field conditions. Previous C/B studies have always included the maximum potential yield gain.

1.b. Projections on the amount of annually produced certified seed were made. The manner in which these projections were made is discussed in item 2 below.

Social benefits were thus calculated:

((number of produced certified seed sacks) x seeding rate)
acres/sack^{1/}

X marginal yield difference x crop selling price

Example:

Thus, (2000 sacks corn x 8 acres/sack)
x 1.3 sacks x \$693^{2/} x .9 = \$12,972,960

In addition, marginal benefits received by the large farmer who grew the certified seed were also calculated.

These benefits were calculated as follows:

(Seed purchase price - seasonal low price)

x number of sacks produced

These benefits did not turn out to be a large component of the total social benefits.

^{1/} corn sack = 200 lbs ÷ 25 lbs/acre = 8 Acres/Sack

^{2/} \$693 is the geometric mean of the 1981-2 seasonal low and high unofficial market prices for corn. A factor of .9 was assumed for on-farm seed loss, and the cost of the purchased seed (less the opportunity cost of stored local seed)

(2) GSC Sales Revenue

Sales revenue were calculated as follows:

1981-2 seed selling price x projected number of certified seed bags. The forecast of certified seed sales is based on historical production records, plant capacity, assumption of future economic conditions, and the effect of the addition of new equipment on capacity. Vegetable seed sales equivalent to \$687,500 (\$250,000 imported seeds) were also included.

Two projections were thus determined: one representing the current state of the economy and current production levels. This will be used as the base case. It is assumed, however, that the economy will improve by the end of this decade, and this reflected in an increase production of seed.

The second projection is based on the addition of the new equipment and an assumption of an aggressive marketing program, which, along with an improved economy (only by the end of the decade) will result in greater sales than is previously determined for the base case. Table 4 shows the data relevant to items 2 and 3 discussed here.

(3) Seed Purchase Expenses

This component is calculated as follows:

number of projected produced sacks of seed x 1981-2 purchase price.

(4) GSC Operating Expenses

The preliminary expense sheet for the 1981-82 was used as the basis for calculating the cost incurred by the projected seed production. The items are split into the variable and fixed expenses. Items in the fixed expenses category were placed there based on discussion with GSC officials and the MSU personnel. Some adjustment of the cost made as output increased, but not in direct proportion to the number of bags of seed produced. In particular, wages and salaries were increased based on the projected number of personnel needed for the company - from 591 personnel who are currently present up to a final level of 812. Thus, the 1981-82 wage expense was increased by 1.37 (812/591) in order to project the future wages expense.

The variable expenses were also calculated, as shown in Table G.5. and are expressed in unit values. The carriage cost (hired truck) is included for the first year but excluded when the new fleet of vehicles become available for use. The depreciation schedule is shown in Table G.6.

TABLE 4a

Yield Differences between Certified and
Local Seed Varieties

Crop	Variety	Location	Yield(t/ha)	Diff	Yield (lbs)	Adj. Yld	No.sacks
Maize (fertilizer)	Certified(C)	Tamale	3.67	25%	659	263 ^{1/}	1.3
	Local (L)		2.93				
	C	Kumasi	5.91	30%	1217	485	2.4
	L		4.55				
	C	Winneba	3.73	82%	1512	605	3.0
	L		2.04				
Maize (no fertilizer)	C	Tamale		(1.3 x .7) ^{2/}			.9
	L						
	C	Kumasi		(2.4 x .7) ^{2/}			1.7
	L						
	C	Winneba		(3.0 x .7) ^{2/}			2.1
	L						
Peanuts	C	Tamale	(lbs/Acre) 800	43%	240 ^{3/}	192	(1.8) 3.0
	L		560				
Sorghum (fertilizer)	C	Tamale	1440	50%	480 ^{3/}	384	1.7
	L		960				
Sorghum	C	Tamale	1080	50%	360 ^{3/}	288	1.2
	L		730				
Rice (fertilizer)	C	Tamale	1600	15%	208 ^{4/}	--	1.5
	L						
(no fertilizer)	C		1200	15%	156 ^{4/}	--	1.1
	L						

^{1/} 659 x .5 x .8 = 263. This assumes that farmer obtains half of the research station yield and 80% of the seed difference.

^{2/} Assuming the seed difference is 30% less for non-fertilized case

^{3/} Based on Extension Service data provided by GSC personnel, so no adjustment for agronomi research is made. No fertilizer use is assumed since peanuts are legumes. Marginal yield increase is somewhat high, but total peanut seed production is low.

^{4/} Use of improved rice varieties is widespread, so there is little yield difference between the local and GSC seed. But, it was assumed that, since the certified seed germination rate is higher than the local seed, storage services are provided, no insect damage, etc. is incurred by certified seed, 15% more crop can be obtained by use of the certified seed. This assumption has no valid agronomic research basis, but the MSU agronomists agree that it is a reasonable assumption.

^{5/} NOTE: 1 sack corn = 200 lbs, 1 sack rice = 140 lbs., 1 sack peanuts shelled = 80 lbs, 1 sack sorghum = 220 lbs.

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TABLE 4b

Seed Production Projections

Number of Sacks

		<u>Current</u>					<u>Proposal</u>				
		1983	1984	1985	1986	1987-97	1983	1984	1985	1986	1987-97
Corn	Tamale	2000	3000	4000	4000	4000	2000	5000	6000	8000	8000
	Bolga	50	50	50	50	50	50	100	500	1000	1500
	Kumasi	2000	3000	3000	4000	4775	2000	3000	4000	5000	5000
	Winneba	2000	3000	4000	5000	5000	2000	7000	15000	20000	25000
	Sub-Total	6050	9050	11050	13050	13825	6050	15100	25100	34000	39500
Rice	Tamale	16000	18000	20000	22000	25000	16000	20000	25000	30000	35000
	Bolga	4000	5000	6000	6000	16000	4000	8000	10000	10000	10000
	Sub-Total	20000	23000	26000	28000	31000	20000	28000	35000	40000	45000
Groundnuts	Tamale	2000	2000	3000	5000	8000	2000	4000	8000	12000	15000
	Bolga	10	2000	4000	7000	7000	10	2000	4000	8000	12000
	Sub-Total	2010	4000	7000	12000	15000	2010	6000	12000	20000	27000
Sorghum	Tamale	30	100	100	100	100	30	100	200	200	200
Grand Total		28090	36150	44150	53130	59925	28090	49200	72700	94200	111700

Table G.5

Operating Expenses (1981-82 Estimates)Fixed Expenses

<u>Item</u>	<u>Cost (£)</u>		<u>1/</u>	<u>2/</u>
Travel and Transport	803,890	954,194		1,104,500
Medical Expenses	52,000	61,722		71,445
Wages and Salaries	5,200,000	6,172,250		7,144,500
Electricity and Water	22,390	33,585		
Machinery fuel	42,758	82,578		
Technical Support	79,000			
Farm Research	47,000			
Director's Allowance	13,920			
Postage and Cable	11,000			
Printing and Stationary	575,760			
Conferences and Meetings	94,190			
Audit fees	60,000			
Entertainment	46,600			
General Expenses	159,460			
General Repairs	121,766	140,030		
Rent	113,546	90,870		
Total	7,443,280	8,622,339		9,754,618

Variable Expenses

<u>Item</u>	<u>Cost (£)</u>			
Bank Charges	111,250			
Sacks, tags, twine	1,609,999			
Stores	401,478			
Advertisement	208,661			
Hire of Machinery	212,298	1 106,150		
Carriage	707,564	---		
Total	3,251,250	2,543,686	2,437,538	± 24810 = (1981-2 production)
Unit cost/bag	£131/bag	£102.5	£98.2	

Fuel Cost £85/bag.

1/ Intermediate increase in production according to GSC proposal (years 1984-85)2/ Full scale production according to GSC proposal (years 1986 - 1997)

Annex G-

Table G-6Capital Depreciation Schedule

	<u>Assest Value</u>	<u>Rate of Depre.</u>	<u>Cost</u>
Land	443,900	---	
Buildings	7,192,886	3%	215,786
Plant and Machinery	1,599,665	10.0	159,966
Service Equipment	365,769	6.66	24,385
Fixtures, Fittings	145,898	6.66	9,716
Vehicles <u>1/</u> (20% salvage value)	1,261,904	20.0	205,104
New Farm Equipment <u>2/</u>	618,750	20.0	99,000
New Vehicles <u>3/</u>	880,000	20.0	<u>140,800</u>
			854,757

- 1/ 1982: Based on updated vehicle inventory
2/ 1982: Acquisition of 6 new tractors
3/ beginning 1984-5 fiscal year

Table G.7

Seed Selling, Purchasing and Market
Prices for Various Crops

<u>Crop</u>	<u>Year</u>	<u>Seed Purchase Price</u>	<u>Seed Selling Price</u>	<u>Market Low Price</u>	<u>Market High Price</u>	<u>Official Price</u>	<u>Market Price Used in Analysis</u>
Maize	1979	¢200	¢ 240	90	¢ 250	¢105	
	1980	400	300	200	500	310	
	1981	510	1000	400	1200	400	¢693
Rice	1979	250	300	140	400	250	
	1980	300	500	280	500	290	
	1981	400	700	350	1500	350	725
Groundnuts	1979	175	210				
	1980	200	300				
	1981	400	550				629
Sorghum	1979						
	1980						
	1981	400	800				580 ^{2/}

Farmer premiums for growing certified seed

Maize ¢100 per sack

Rice ¢ 50 per sack

Groundnuts ¢63 per sack

Sorghum ¢50 per sack

1/ Based on calculations using proportional relationships with the purchase/selling and market prices of other crops

2/ Assumed to be 80 percent of price for maize

Vehicle Cost

A recent bid for the purchase of six ten-ton trucks and ten Datsun pick-ups has been issued by the Ghana Seed Company. These vehicles have an estimated value of \$320,000 plus \$48,000 in spare parts. This purchase will replace approximately one-half of the fleet which is in very poor condition.

It is assumed that the fleet will be replaced every five years, and the next replacement will occur in 1988. The salvage value will be included among the benefits, but the depreciation will account for the purchase of the new vehicles.

The repair of the vehicles (including spare parts costs) are based on the year of operation that the fleet is in. It is assumed that the newly purchased cars and trucks will incur only 25% of the current repair cost for the first year, 50% the second year, 75% the third year, and 100% for the remaining two years. The repair cost for the 1980-81 years was calculated to be ₵986,994. Thus 1984's cost is calculated to be $((.50 \times \text{₵}986,994) \frac{1}{2} + (.25 \times \text{₵}986,994))$ or ₵740,245. Since the vehicles are imported items, they will be valued, in two scenarios, at both the unofficial and official exchange rates. Unfortunately, it will not be possible to accurately separate out the foreign exchange component (spare parts) of the vehicle repair bill.

Fuel Costs

Fuel costs were estimated in the following manner:

1. One truck is assumed to be equivalent to two cars in regard to gas consumption.
2. Current vehicle fleet has the equivalent of five operating trucks, ten operating cars (20 car units)
3. 1981-82 fuel expense ÷ # functional vehicles = ₵1,128,611/20 = ₵56,430/car
4. The new fleet of six trucks and ten cars (pick-ups) (22 car units) plus the old fleet will consume

$$(20 = 22) \times \text{₵}56,430 = \text{₵}2,370,083$$

$$2370083/24810 = \text{₵}95.5/\text{bag}$$

1/ For the current fleet, half of which will be retired.

5. An alternative estimate:

(hired truck) carriage plus fuel expense, 1981-2 =
 $\text{¢}1128611 + \text{¢}707564 = \text{¢}1,836,265$
 $1836265/24810 = \text{¢}74/\text{bag}$

6. Averaging items 4, and 5, the result is
 $(\text{¢}74/\text{bag} + \text{¢}95.5/\text{bag}) \div 2 = \text{¢}85/\text{bag}$

7. The fuel cost estimate is probably a bit on the high side. This is because the trucks which carry the seeds may not have been operating at full capacity, resulting in a higher per bag fuel cost.

(5) Resource Cost of Fuel, Capital and Chemicals

These three items will be valued at both their import value (in dollars, converted to cedis at the unofficial exchange rate). The depreciation (capital) expense does not include the valuation of all imported capital items because of the difficulty of acquiring the information on value of each capital item. Only the major items under the farm equipment and processing machine components were included. Major items were those pieces of equipment which were valued at \$5,000 or more and acquired after 1979 (farm equipment) or processing items worth \$3,000 or more and acquired after 1977. Together, the value of the equipment amounted to only 60% of the total plant and machinery equipment value. The chemical expense is considered to be a fixed cost since it is used only, according to GSC officials, for foundation seed production. Table G.8. shows the resource costs for these items.

1/ The unofficial rate used here is $\text{¢}40/\text{\$US } 1$. AID Ghana believes the true rate is around $\text{¢}30/1$. Currently, (November, 1982) the rate is $\text{¢}50$. The choice of $\text{¢}40$ is conservative and may over-estimate the social costs.

Table G-8

Foreign Cost Components

	<u>£(official)</u>	<u>\$ Value</u>	<u>£ (unofficial)</u>
Chemical Expense	278,649	101,330	4,053,220
New Vehicles (1983)	880,000	320,000	12,000,000 <u>2/</u>
Current Farm Equipment	1,055,769	383,916	15,356,640 <u>2/</u>
Current processing Equipment	528,759	192,276	7,691,040
Fuel Cost			300 per bag
Fertilizer			per bag
GSC proposed equipment			
Farm	506,000	184,000	7,360,000 <u>2/</u>
Processing	291,995	106,180	4,247,200 <u>2/</u>
Replacement Farm Machinery	202,500	225,000	9,000,000
Vehicle	880,000	320,000	12,800,000
Annual Vegetable Seed Imports	687,500	250,000	10,000,000

1/ Including the new tractors

2/ These items will be depreciated according to the rates listed in Table 6.

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Foreign Cost Components

Fuel and Fertilizer Resource Cost

It was difficult to determine the exact resource cost for the fuel since the import price for gas/diesel wasn't available. However, gasoline sells for ¢12.30/gal or \$4.47 (official) or \$.31 (unofficial exchange rate). The current gas price in the U.S. is approximately \$1.30/gal, so the gas (and diesel) prices are undervalued by a factor of 5 or so. Thus, the social price of gas was 4 times the calculated fuel bill for GSC. Admittedly, this is a rough approximation, but is probably an over-estimation which would understate the net social benefits.

The value of ¢340/bag is equivalent to \$8.50 per bag at the unofficial rate.

Second, the social cost for fertilizer was also difficult to determine since import prices, like the fuel prices, weren't available. However, in 1980, the import price was ¢600/ton and 50 Kg sacks now sell for ¢30/sack. Using a base figure of \$150/ton for imported fertilizer, and adjusting for inflation, we determine that $150 \times 40 = 600$ fertilizer is priced at one-tenth of its true value. Thus, the calculated fertilizer social cost (assumed to be 1 50 Kg sack per acre on the average) is estimated to be ¢300/acre, ($¢30 \times 10$). Fertilizer usage was estimated to be 1 50 Kg sack per acre of crop grown with certified seed.

Results

The results are limited in accuracy for the following reasons:

- 1) Pricing procedures for the fuel and fertilizer. These costs influence the social net present value. The total discounted social costs of fertilizer for the base scenario is ¢90 million. The fuel social cost is ¢110.7 million.
- 2) The projections for seed production were conservative, thus limiting revenue. A faster growth rate in production could have been assumed.
- 3) Inflation has not been included in the analysis, though the current rate of inflation for Ghana is over 80 percent per annum. Hyper-inflation has the effect of reducing the relative cost of depreciation based on historical values.
- 4) The depreciation cost that was used in this analysis is under-estimated because there are a number of unpacked boxes and equipment waiting for installation upon the completion of various seed plants/sites, etc. Though some of the value of this equipment was included, certainly not all of it was.

- 5) The social benefits of vegetable production resulting from the seed sales were not included in this study, again resulting in an under-estimation of the benefits. These benefits were not included because a) imported vegetable seeds do not directly involve the utilization of the seed processing facilities; and b) their benefits are hard to measure. There are indications, though, that vegetables offer a higher return to the farmer (especially women) than do the more traditional crops.
- 6) The analysis also assumes that the crop selling price (used for calculating benefits) will not change although production will be increased from the use of certified seeds.
- 7) In the base case, it is assumed that farmers who have no fertilizer would be willing to use certified seed, though this presently may not be the case.
- 8) In addition to point 5, if higher yields are obtained solely from the use of certified seed, no allowance (social cost) is included for the increased rate of soil mineral depletion. The following rate would have to increase in order to maintain the same level of fertility though land is not presently a severely limiting factor.
- 9) It is assumed that the Ghanaian economy will remain stable or slightly improve over the next five years. It is also assumed that the processing plants, procurement, training, etc. will be implemented according to the schedule listed in Section IV.
- 10) Delays in implementation will restrict plant capacity and reduce early increases in the sales volume. It is also possible that production will not increase because the farmer may use the seed as a labor-saving device and cut down on the total acreage produced and maintain the (higher yield) same production. If this is the case, then it is assumed that the value of the farmers increased non-farm time is worth of production projected here.
- 11) Lastly, it is assumed that motor vehicles have an average life of five years. Currently, they do not appear to last for much more than three years. Hopefully, the placement of a repair shop in Tamale and Kumasi will increase the lifespan of the vehicles.

Presentation

Table G-9 shows the results of the analysis. Total sales, social benefits, company costs (including seed purchases), and social costs were determined under each of the following categories according to the scenarios mentioned earlier:

- | | |
|-------------------|---|
| 1) Base case: | No fertilizer available
fertilizer available |
| 2) Proposed case: | No fertilizer available
fertilizer available |

Table G-9

Social and Financial Results^{1/}

Social Benefits/ Costs	(\$1,000,000)					
	100%		50% ^{2/}		25%	
<u>Fertilizer</u>	NPV	Margin	NPV	Margin	NPV	Margin
Proposal	2762	1708	1322	946	608	569
Base	1054		376		33	
<u>No Fertilizer</u>						
Proposal	1951	1267	902	671	378	372
Base	684		231		6	
<u>Proposal</u>						
Fertilizer	2762	811	1322	420	602	224
No Fertilizer	1951		902		378	
<u>Base</u>						
Fertilizer	1054	370	376	145	33	27
No Fertilizer	684		231		6	
<u>Financial (100%) ^{3/}</u>						
Base (\$1000)	-2270		Proposal (\$1000)		2728	4999

^{1/} Table Interpretation: The Proposal, assuming fertilizer is available will yield \$2762 million worth of benefits. This is \$1708 million more than in the base case, assuming that fertilizer is also available for the base case.

^{2/} Total Social Benefits decreased by 50%. This could represent a reduction in crop selling prices, acreage, or yields.

^{3/} Social Benefits/Costs excluded.

The project life was taken to be 15 years, at a discount rate of 15%. The table indicates that under the historically-based estimated seed production/cost projections, GSC will incur a small net loss of (minus) ₵2,270,000 over the next 15 years at a 15% rate of return. The internal rate of return would be approximately 13%. The Proposal, on the other hand, would yield net benefits of ₵2,728,000 or a marginal difference of ₵5,000,000. The reason this figure appears to be low is because of the higher equipment depreciation fuel (for transporting seed), and labor costs. In the Proposal, all these categories of expenses increased substantially as seed production increased. Second, if it had not been for the vegetable seed sales, both scenarios would have had negative NPV's. These seed sales are currently permitting the company to cover their operating expenses.

The results on the social returns indicate that there are tremendous benefits to be gained from the use of the certified seed. Even if the calculated social benefits were cut in half, (indicating a 30% reduction in acreage and a 30% reduction in yield differences) the marginal returns under the no fertilizer case are estimated to be ₵671 million, or \$16.8 million at the rate of ₵40/\$1 U.S. Under the fertilizer case, the marginal return, at 50%, would be \$23.5 million at a 15% discount rate. Total U.S. investment into the GSC under this PP amendment is \$8 million. GOG's contribution to the project is approximately \$3.8 million, for a total investment of \$11.8 million. At the 25% level (equivalent to a 50% reduction in acreage and a 50% reduction in yield) benefits still yields a positive marginal NPV at the 15% rate.

Given the potential for error in this study, and the current conditions in Ghana, it would be safe to say that maximum potential total benefits could vary anywhere from ₵2762 million (\$69.0 million, proposal with fertilizer scenario, 100%) to ₵902 million (\$22.6 million, proposal without fertilizer, 50%) or possible lower. 1/

The fertilizer effect under the projected scenario (third category) indicates that ₵420-811 million (\$18.5-20 million) could be gained on the margin. The discounted social cost for fertilizer is estimated to be ₵207 million (for the GSC proposal) indicating a return of nearly four times the fertilizer cost (811/207) at the 100% level. Likewise, the discounted base social cost of fertilizer is ₵90 million and the marginal return is also more than four times the cost (380/90).

1/ One factor not included in this study, which reinforces the magnitude of the benefits obtained here, is that the farmer usually replaces the corn seed every three years, and rice every two. Thus, the second year of seed sales could be to an entirely new set of farmers. These second and third year benefits were not included here. Also, benefits from vegetable production were not included, as mentioned earlier.

Summary

The economic analysis of the GSC was composed of three parts: an examination of past balance sheets/income statements, as financial analysis of the company's profitability, and economic analysis including the social costs and returns. The income statement/balance sheet indicates that GSC is currently close to breaking even, but only when depreciation costs of imported capital items are valued at the official exchange rate. The company is currently debt-free though the GOG has assumed the loans for equipment acquired under MIDAS I and MIDAS II. Other than the needed equipment proposed for acquisition in this PP amendment, and the current condition of GSC's vehicle fleet, the company is able to operate without the assistance of GOG (again, given the "official" rate of depreciation).

The financial analysis, based on projected seed sales, and associated costs yielded a Net Present Value (NPV) of (minus) -¢2,270,000 under the current operation (without capacity expansion, but including new vehicle purchases) over a 15 year period at a 15 percent rate of return. The estimated higher costs of depreciation, salaries, and fuel capped the earnings potential. These estimates should be considered to be conservative, however, given the nature of the cost calculations used in this study.

The social cost/benefit analysis shows that, at a discount rate of 15 percent, the farmers and consumers of Ghana could gain, if the proposal were accepted, up to ¢2762 million (\$69 million). If fertilizer was not used by the farmers, the gain could still be as high as \$48 million.

The marginal gain of accepting this proposal over not accepting varies from \$43 million (¢1708 million/40)^{1/} to \$16.8 million (¢420/40) depending on the degree of conservatism one wishes to choose from. These values are in excess of the joint \$11.8 million investment that USAID (\$8 million) and GOG (\$3.8 million) are putting into GSC.

^{1/} The shadow price of foreign exchange used in this analysis was set at ¢40 to \$1.

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INITIAL ENVIRONMENTAL EXAMINATION

OR

CATEGORICAL EXCLUSION

Project Country: Ghana

Project Title: Managed Inputs of Agricultural Services (MIDAS I),
Amendment 1, (641-0102)

Funding: FY (s) 80-84 \$ 12,450,000.00

IEE Prepared by: Carroll Collier, S&T/AGR/AP
Jane Stanley, AFR/TR/SDP

Environmental Action Recommended:

Positive Determination _____
Negative Determination x

Categorical Exclusion:

This activity meets the criteria for Categorical Exclusion in accordance with Section 216.2 (C) and is excluded from further review because:

Concurrence:
Bureau Environmental Officer

APPROVED Jane E. Stanley

DISAPPROVED _____

DATE 20 Jan. 1983

Clearance: GC/AFR _____ Date _____

I. Introduction

Amendment I of the MIDAS II project shifts the focus of the project from providing six subproject components (seed, credit, extension, marketing, fertilizer, research) to the Brong-Ahafo region of Ghana to helping to develop the Ghana Seed Company (GSC) into a viable independent company. The revised project will also provide lesser assistance in the areas of home extension, marketing and credit while extension services to Farmers, fertilizer and research components will be discontinued.

The original MIDAS II project involved the use of pesticides in its seed, extension and research components. Therefore an Initial Environmental Examination (IEE) of the use of pesticides was undertaken in compliance with Regulation 216.3(b) of AID Environmental Procedures and included in the Project Paper (see Annex VII of the MIDAS II PP). Since the project staff has determined that additional pesticides will be required in the amended project, an IEE of the use of these additional pesticides is required per Section IV.B(3) of the original IEE. The following paragraphs constitute and amendment to the original IEE for the MIDAS II project.

II. Pesticides Proposed for Use and Their USEPA Registration Status

The new pesticides proposed for use in the amended project are: Trifluorolol Oxydiazon; Stomp; Proponil; and Eradicane (EPTC). All these pesticides will be used only for producing seeds at Regional Seed Centers. None will be furnished to farmers. Table I displays the acute LD 50's for these pesticides along with their USEPA registration status. None of the pesticides are in restricted use status in the U.S. and none are under RPAR.

III. Basis of Selection of Proposed Pesticides

See paragraph 1, Section IV.C(2) (p.19) of the original IEE.

IV. Extent to Which Proposed Use is Part of an Integrated Pest Management (IPM) Program

The additional pesticides proposed for use in this project will not be used in an IPM program. Section IV.C(3) (p.20) of the original IEE provides more information on the status of IPM in Ghana.

V. Proposed Methods or Method of Application

All the additional pesticides proposed for use in the project are herbicides. They will be sprayed to the soil before or after planting; a tractor-mounted spray machine will be used to dispense the sprays. Project personnel will administer the spray applications.

TABLE I: ADDITIONAL PESTICIDES REQUESTED FOR USE IN MIDAS PROJECT

Common Name or (Trade Name)	Formulations to be used	Acute Oral 1 LD 50 (mg/kg)	RPAR Issued	Growing Crops to be treated 4 for seed (non- food use)
<u>Insecticides</u>				
Trifluorolin	E.C.	10,000 mg/kg	No	"
Oxydiazon		8,000 mg/kg	No	"
Stomp		1,250 mg/kg	No	"
Proponil		1,285 mg/kg	No	"
Eradicane (EPTC)		2,000 mg/kg	No	"

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Safety procedures will be followed in accordance with Section IV.C(4)(d) of the original IEE (p.22).

VI. Any Acute and Long-Term Toxicological Hazards

The general statements in the original IEE (Section IV.C(5)) are applicable. None of the pesticides proposed for use by the Amendment are known to possess any extraordinary short or long-term toxicological property which would be expected to have significant negative impact on the user or his surrounding environment.

VII. Effectiveness of the Requested Pesticides for the Proposed Use

See Section IV.C(6) of the original IEE (p. 26).

VIII. Compatability of Proposed Pesticides with Target and Non-Target Ecosystems

See Section IV.C(5) of the original IEE.

IX. Conditions under which the Pesticide is to be Used.

See Section II and IV.A and B of the original IEE.

X. The Availability and Effectiveness of other Pesticides and Non-Chemical Control Methods

See Section IV.C(9) of the original IEE (p.26).

XI. The Requesting Country's Ability to Regulate or Control the Distribution, Storage, Use and Disposal of the Requested Pesticides

See Section IV.C(10) of the original IEE (p.27)

XII. Provisions Made for Training Users and Applicators

Users and applicators of pesticides were already trained under the MIDAS II project by a U.S. licensed pesticide applicator.

XIV. Summary and Conclusion

The conclusion of the original IEE remains unchanged and a Threshold Decision of Negative Determination is recommended for the use of the additional pesticides specified in this IEE.