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**EVALUATION OF MANAGED INPUT AND DELIVERY
OF AGRICULTURAL SERVICES (MIDAS) PROJECT,
GHANA**

(USAID/G PROJECT 641-0067)

June 1, 1979

EVALUATION REPORT

**TO MIDAS PROJECT EXECUTIVE COMMITTEE
AND U.S. AGENCY FOR INTERNATIONAL
DEVELOPMENT MISSION TO GHANA**

Report Revised August 15, 1979

*Please note
document is put together
backwards*

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ACRONYMS

ADB Agricultural Development Bank
AESC Architectural Engineering Services Corporation
AFRC Armed Forces Revolutionary Council
AID Agency for International Development (U.S.)
BIRD Bureau of Integrated Rural Development, UST
BOG Bank of Ghana
CRI Crops Research Institute
CSIR Council for Scientific and Industrial Research
DAP Development Assistance Plan of USAID/G
DERPS Division of Economic Research and Planning Services, MOA
FLO Farm Loan Office, ADB
GDB Grain Development Board
GFC Ghana Fertilizer Company
GOG Government of Ghana
GSC Ghana Seed Company
GSIS Ghana Seed Inspection Service
IITA International Institute for Tropical Agriculture, Ibandan, Nigeria
MEP Ministry of Economic Planning
MIDAS Managed Inputs and Delivery of Agricultural Services Project
MOA Ministry of Agriculture
MOF Ministry of Finance
MPAC MIDAS Project Advisory Committee
MPEC MIDAS Project Executive Committee
PIO/C Project Implementation Order/Commodities
PIO/T Project Implementation Order/Technical
PP Project Paper, MIDAS
PRP Project Review Paper, AID
SMC Supreme Military Council
SMU Seed Multiplication Unit, MOA
SRI Soils Research Institute, CSIR
TVA Tennessee Valley Authority
USAID/G The Ghana Mission of the Agency for International Development
UST University of Science and Technology, Kumasi

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**EVALUATION OF MANAGED INPUT AND DELIVERY OF AGRICULTURAL SERVICES (MIDAS)
PROJECT, GHANA, JUNE 1, 1979**

This evaluation is based on conditions of June 1, 1979 unless otherwise noted. This represents 32 months since grant activities were activated on September 29, 1976, but only 12½ months after the loan became effective, May 12, 1978. The project paper (PP specified a Phase I of 20 months followed by two phases of two years each.) Certain targets were set for the end of Phase I. The period to June 1, 1979 corresponds most closely to Phase I, though more time had passed for grant-funded activities; modest starts were possible under grant funds of certain activities originally planned for loan funding; and there had been less time for progress under major loan funded activities.

The term MIDAS staff is used to include all administrative and technical staff of the Government of Ghana (GOG) agencies and Ghana Mission staff of the U.S. Agency for International Development (USAID/G) and its contractors who are directly involved in MIDAS implementation.

The evaluation team consisted of the following:

- Dr. Alfred Asante, Division of Economic Research and Planning Services (DERPS), Ministry of Agriculture, MOA. Technical Specialty: agricultural economics.
- Dr. Robert Jackson, Development Support Bureau, Agriculture Office, AID/Washington. Technical Specialty: agronomy.
- Dr. Stanley Krause, Africa Bureau, Agriculture and Rural Development Office, AID/Washington on detail from the U.S. Department of Agriculture. Technical Speciality: agricultural economics.
- Dr. Patrick Twumasi, Professor, University of Ghana. Technical Specialty: sociology.

This evaluation report is addressed to the MIDAS Project Executive Committee (MPEC) and to USAID/G. It is intended to meet requirements of the Agency for International Development (AID) for periodic project evaluations. It does not directly provide the Project Evaluation Summary required by AID, which is the responsibility of the USAID/G project manager. The present evaluation report is the responsibility of the evaluation team and does not necessarily reflect the views of agencies of the team members.

In addition, Dr. Russell Ray, economist of the USAID/G staff, provided extensive support and participated professionally on a part-time basis.

USAID/G and MPEC and the advisory committee reviewed the draft report in July, submitting their review comments to Dr. Jackson and Dr. Krause in Washington for consideration in final revision. These comments and observations were given full consideration in preparing this revised report. The GOG review is attached to the report in its entirety.

Summary Evaluation Statement
Managed Input and Delivery of Agricultural
Services Project (MIDAS)

This evaluation of June 1, 1979 covers 32 months since grant activities were activated, and 12½ months after the loan became effective. This period approximates the 20-month Phase I of the project paper.

MIDAS is an integrated rural development program established to develop an institutionalized, coordinated system to provide improved agricultural inputs and services to small farmers. The six project components are fertilizer, improved seeds, credit, marketing, research, and extension. Several technical components are large and complex enough to stand as projects. Therefore, MIDAS requires a high degree of coordination and integration within each technical component, between components and between grant and loan activities. Activities are to be coordinated by a high-level inter-ministerial MIDAS Project Executive Committee (MPEC); while activities are executed by existing agencies, excepting new parastatal agencies for specified seed multiplication and fertilizer actions. This system was established to meet the need for improved coordination of services to small farmers.

Phase I grant funding by AID was \$4.78 million, and loan funding \$10 million. Activities of MIDAS during Phase I were to be largely organizational and to assist the implementing agencies in establishing the program's administrative and operational structure for coordination and integration of activities. During Phase II, an expanded rate of program development was envisaged, leading to an accelerated rate of build-up of small farmers participating in the program during Phase III. There has been substantial progress in strengthening some institutions and training staff, particularly in the women's extension and Agricultural Development Bank (ADB) programs. Progress is short of specific targets specified by Annex N of the PP in most components, particularly crops extension, research, and fertilizer.

Construction and the purchase of appropriate equipment were planned for the fertilizer, seed multiplication, and to lesser extents, research and extension components. Construction for the demonstration homes component is well advanced and technician housing for the research component is in place. Training facilities for credit activities were renovated. The more costly construction for seed processing and fertilizer activities was not yet underway. The latter two activities, however, should be placed in context with the relatively brief time since the loan became effective.

There has been almost no opportunity for impact on the target small farmers. The first loan financed fertilizer reached some farmers in May 1979 -- well into the crop season. Moderate institutional improvements in ADB are much more than offset by its lack of funds, and MIDAS-derived improvements in seed multiplication activity (SMU) have not reached farmers.

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Adverse external factors have severely handicapped MIDAS, including extremely high inflation rates, shortages of many commodities and building materials, changes in government, and general malaise in government administration. Internal delays and other problems have not damaged progress and future prospects nearly so much as the combined effect of external forces.

Grant funds are fully committed and a revised budget for the use of the remaining loan funds of this same phase has been proposed. The evaluation and its recommendations were proposed to feed directly into the process of project revision as required for Phase II and a second loan. The evaluation team concluded that supplemental technical analysis of available production packages is needed, including both the agronomic and economic aspects. Economic analysis also is needed at the policy and programming level with respect to priorities, probable effects of fiscal constraints, pricing of inputs, interest rates, etc. This analysis is complex at best against a history of inflation over 100 percent in 1977, and nearly 75 percent annually the last 17 months. The evaluation team considers that economic projections made at this time would be subject to very high estimating errors, such that they would have little value. This is due to the setting of very high recent rates of inflation and the potential of sharp changes in price trends.

Useful economic projections cannot be made in this setting especially for a project involving substantial inputs of personnel, materials, and financial commitments to fertilizer and seed subsidies and to capitalize the credit program.

Some technical revisions are recommended and should be considered by the Mission as it prepares the project paper for an extension of the MIDAS project beyond FY 1979. Ghana faces severe materials shortages. Lack of spare parts, tires and batteries particularly constrains agricultural production and marketing. In the setting of current urgencies, a relatively flexible arrangement allowing the import of critical commodities with the mutual consent of both governments would be highly advantageous to Ghana and no doubt preferred over the greater constraints tied to specific, focused project activities. The evaluation team cannot properly go further.

The economic needs and administrative problems leading to design and establishment of MIDAS still exist, in fact, more acutely than in 1975. The basic strategy merits continued effort. However, it is considered not feasible to complete MIDAS at the originally planned target levels due to high costs to GOG resulting from inflation, currently unrealistic exchange rates, heavy subsidy of fertilizer and seed, rapid losses of real capital in ADB due to inflation, and reduced administrative efficiency compared with original design assumptions.

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A revised implementation plan is needed, providing greater focus and concentration of extension, purchased inputs and credit activities, with perhaps three to five small target areas including a part of Atebubu District. The original implementation plan is too diffuse for current and foreseeable conditions.

There must be a general effort to identify overlapping and other inefficient relationships with activities of other GOG agencies. Information gathered by the evaluation team indicated problems with respect to extension, research, and seed multiplication. USAID/G believes this information was not fully complete or perhaps accurate. The best resolution is further study of these topics by the MIDAS staff.

Agricultural research is highly crippled by fragmentation and overlap. It is beyond the scope of the research activity ever intended with MIDAS to deal comprehensively with this condition. There is a risk, however, that the MIDAS-IITA plan may be so small it will represent another ineffective research fragment, the evaluation believes. USAID/G considers the MIDAS-IITA plan adequate in strategy and scale to produce results.

A complete soil survey of the proposed research site is one need within that component. This detailed survey of the proposed research station site and the soil survey of the Atebubu District are service functions and should not be considered as research.

Substantial technical changes have been made in the seed component without detailed analysis and review. This revised technical design for seed multiplication and processing should be reassessed with respect to investment costs, full operating costs, probable reliability, and the resulting total cost of improved seed after distribution, on an unsubsidized basis. Does the genetic advantage of available improved seed, balanced by careful projections of full operating and capital costs of the current revised design and alternate designs, justify the revised advanced technology? This evaluation team questioned the justification. MIDAS staff subsequently prepared a comparative analysis of the two systems. This analysis is a good beginning, but requires refinement of technical computations and parallel economic estimates should be added as a basis for final decisions. The economic estimates should involve shadow pricing of some items such as diesel oil, electricity, building materials, and perhaps labor. Equipment orders and construction tied to large scale refrigerated and dehumidified seed storage, should be held in abeyance pending completion of the proposed analysis.

The credit program targets involve such high cost to GOG that the feasible funding level should be reviewed. The credit strategy appears sound, but ADB is a significant victim of inflation and current financial stringency. New targets of participants, loan facilities and staff are necessary, coupled

with skilled administration to attract maximum financial support of fiscal and planning authorities.

The limitation of ADB loans to small farmers should continue.

The fertilizer and seed price subsidies must be reduced sharply and eliminated within a very few years. Distribution of these inputs should be taken from the Extension Service and turned over to the private sector as originally planned.

The extension staff should be provided greater mobility on a basis of minimum cost, when they are otherwise able to do crop demonstration and other technical work.

Plans for facilities to mix and bag imported fertilizer elements in Ghana should be approached in several steps. Ghana Fertilizer Company (GFC) should be operational and efficiently managed. MOA should shift responsibility for purchasing and distributing fertilizer to the activated GFC, which should take forceful actions to transfer fertilizer distribution to private commercial companies and cooperatives. A firm and relatively short schedule for eliminating fertilizer price subsidies should be established, and policies implemented to allow the private sector to function while some subsidy still exists. These steps were incorporated in the original design.

In addition, computations should be updated relating to mixing and bagging fertilizer in Ghana vs continued importation of bagged fertilizer. The evaluation team believes some considerations point to further postponement of construction, whereas the preception of the MIDAS team is that the estimates used in project design continue to be valid. Some basic data and considerations in recomputation include the number of blended and unblended fertilizers to be distributed and volumes of each, and total projected financial and economic costs. Economic computations should include the estimated number of years from beginning of construction until net benefits are expected, in the context of Ghana's priority needs for external credits and the imported goods they finance.

The urgent need for truck and tractor repair parts, tires and batteries should be considered for AID financing, perhaps outside MIDAS.

Implementation of seed, fertilizer, credit, and crops extension components discriminates against women as farmers through the traditional cultural practices, though not the policies of MIDAS-related agencies. Action should be sought in strengthening the demonstration homes program, seeking to use this additionally as a base for crops demonstration for women.

The advisory committee must call for and install a significant, but not cumbersome, internal evaluation system. The marketing and credit component already include evaluations, which should be coordinated with a general plan.

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There should be an annual implementation plan and quarterly progress reports linked specifically with annual plans, at the total MIDAS level, capitalizing as fully as possible on existing plans within the component programs.

The Executive Committee is the key to MIDAS strategy. (Without an active and effective Executive Committee, it is little more than a series of associated actions.) It is strongly advisable that the Executive Committee become very active and if necessary, bold in finding and seeking to implement ways to achieve the intended coordinated system for meeting input and service needs of small farmers. This need is magnified in the context of the adverse factors external to the project itself.

I. MIDAS STRATEGY AND ADMINISTRATION

The MIDAS project (641-0067 in the AID system) was established with the following purpose:

"To develop an institutionalized, coordinated system to provide improved agricultural inputs and services to small farmers on a timely and regular basis. Inputs and services provided under the project are: improved on-farm storage, credit, fertilizer, seeds intermediate technologies, and extension and marketing services."

The basic problem situation and strategy is stated as follows in the summary of the basic AID Project Paper (PP). (Underscoring added)

"The agricultural assessment of the Development Assistance Plan (DAP) has identified one overall constraint which must be overcome before agricultural production of the Ghanaian small-scale farmer can be significantly increased. This constraint is the lack of coordinated effort on the part of the institutions serving farmers to provide agricultural inputs and services to large numbers of small-scale farmers on a regular and timely basis. Further sub-sector studies have pointed out the particular problems faced by these farmers in specific sub-sectors. These are insufficient access to credit, fertilizer, improved seeds, marketing, applied research, extension services and intermediate technology. In addition, there is need to improve the mechanism for developing and testing agronomic and storage practices which are relevant to small-scale farming."

"In response to these problems, this project is designed to strengthen the capability of existing institutions which are now serving the agriculture sector to extend their services to more small-scale farmers in order to increase their production and incomes. The institutions to be affected are both private and public, in concert with a recommendation in the DAP that, in addition to the Ministry of Agriculture, all relevant institutions be used if USAID is to actively assist the Government of Ghana in implementing a small farmer development strategy."

"The project consists of six basic components: credit expansion, fertilizer procurement, processing and distribution, seed multiplication, small farm systems research, marketing and demonstration/extension including appropriate emphasis on the role of women."

A. Administrative Structure

This range of activity components clearly established MIDAS as an integrated agricultural development project. The plan for project administration,

however, was different from many multi-activity projects. The common pattern has been to establish a new, semi-autonomous executive agency with authority for most or all component actions. Currently, within Ghana, this is the pattern for the World Bank financed Upper Region Agricultural Development Project, and the Farmers Service Company established under that project. In the case of MIDAS, implementation was to be done by a series of existing agencies, or with specific changes tailored to the individual component. The coordinative function, repeatedly mentioned in the project paper material quoted, was to be performed by MPEC.

MPEC is composed of representatives of each unit responsible for an action component, and chaired by MOA. The committee is unusual in that it was established by legislative instrument under Supreme Military Council (SMC) Decree 165, 1978. The decree further enhanced the standing of MPEC by specifying the minimum rank of the MOA and Ministry of Finance (MOF) representatives as the Principal Assistant Secretary, and of the Project Manager.

The makeup of MPEC, and names of incumbents as of June 1, 1979 was as follows:

MOA - Chairman, Commissioner of Agriculture

Project Manager - T.B. Biney, Member (formerly Deputy Director of Agriculture, MOA)

MOA - Mr. J.H.K. Folsom, Jr., Member, Senior Principal Secretary

MEP - Mr. Joseph Y. Amuzu, Member, Chief Economic Planning Officer

BOG - Mr. C.D. Quansah, Member

ADB - Mr. K. Abease, Member

GFC - Mr. S. B. Nyame-Adu, Member, Chairman, Board of Directors

MOF - Mr. P.K. Agboh, Member, Principal Assistant Secretary

AG - Mr. K.A. Amoo-Adare, Member, Chief State Attorney

USAID - Dr. Oleen Hess, Co-opted Member, Agriculture Development Officer, MIDAS Project Officer

MPEC is empowered to establish committees, and has established an advisory committee (MPAC). The Advisory Committee makeup largely parallels MPEC, but includes less senior representatives of some agencies. The Ministry of Economic Planning (MEP) representative chairs MPAC.

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Sections of this report on individual components will specify the agencies responsible and changes made since the project began.

MIDAS arose from a two-fold determination about small-scale crop production in Ghana. First, a system was needed for improved coordination of services to small farmers and to identify and initiate action on changes or additions to those services. Second, six components (inputs or services) were identified for specific strengthening actions.

B. Actions

The strategy and structure described has been adhered to at the overall project level. The only significant departure has been failure to establish a permanent internal evaluation system. The quarterly reports specified by the PP have not been completed for most components, nor requested by USAID. There perhaps has not been substantial need for such reports as management tools under the level of project activity until recently. The project paper specified that DERPS of MOA would be responsible for data collection for evaluation. MPEC has responsibility for this action, as all others, and has delegated responsibility for specific design and monitoring to MPAC.

C. External Conditions

The adverse effects of political changes, rapid inflation, and shortages of commodities will become evident in discussing each component. These conditions alone have overwhelmed and obviated the initial optimistic assumptions and ambitious projections entering into the project design. AID approved the project in early 1976. Implementation was delayed, however, by cancellation of Secretary of State Kissinger's planned visit to Ghana, April 17, 1976. The project grant agreement was not therefore signed until September 29, 1976. At various times before June 1, 1979, including changes within the SMC in 1978, the senior GOG officials of four institutions directly involved in negotiations were changed: the Commissioner of Agriculture, the Commissioner of Finance, the Governor of the Bank of Ghana, and the General Manager of the Agricultural Development Bank (ADB). The loan agreement finally was signed on December 12, 1977 and conditions precedent to initial disbursement satisfied May 11, 1978.

Many persons reported to the team a general condition of delays, inaction, and low morale in government, reflecting the political changes and economic stress. This situation has affected progress. An implicit or explicit assumption regarding the quality of government administration is vital in forward planning of MIDAS, since many agencies and numerous policy and administrative actions are involved in its implementation.

The rate of inflation was high from the time the PP was prepared in 1975, to 1979. The USAID/G Country Development Strategy Statement, January 1979,

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provides the following annual increases in the "National Consumer Price Index":

1973-74	18.4 percent
1974-75	29.7
1975-76	56.3
1976-77	116.3
1977-78	115.0

Note: Revised data indicate a 1977-78 figure of about 73 percent, based on complete revisions of the series to a 1977 base.

An index of wholesale prices presumably would be better than the consumer price index, but was not available. The two series ordinarily are similar over a period of years. The cumulative effect of this inflation is dramatic; the preceding data indicate 1978 prices 5.85 times those of 1975, using the revised 1978 data. Preliminary data indicated a continued inflation rate of about 74 percent for the first five months of 1979.

Such inflation destroys the projections of costs and returns relating to a series of project actions. Not only are increased funds needed, but already strained government machinery must prepare new requests and take necessary actions. The prices of some commodities and services rise faster than others, raising the possibility that a revised technical design would produce better results, either with respect to the farm level inputs and technology incorporated in the project, or with respect to technology for supplying some inputs, such as fertilizer and seed.

MIDAS staff did not provide the evaluation team a comprehensive current estimate of costs of completing the initial plans. It is believed such estimates at this time would be virtually valueless anyway. However, the point concerning GOG commitments can be illustrated with estimates for the seed component. The value of the GOG contributions to the seed program was estimated as \$3,742,700 in the PP for the first four years. Revised internal estimates of the MIDAS staff in 1979 were \$9,881,000, also for four years. Both estimates include allowances for inflation. The recent estimate reflects changes in design of facilities, as well as economic changes. Nevertheless, \$10 million is a substantial item for GOG. An additional \$10.5 million was projected for the following two years, using a conservative inflation rate of 35 percent. It may be noted that the revised estimates involve apparent mathematical errors, on the low side, in applying the stated inflation rates.

Three reasons for rapid inflation have been low productivity of the Ghanaian economy, including food production, expansion of money supply, and shortages of imported products, reflecting scarcity of foreign exchange.

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These are compounded by mal-administration and feed on each other. The rationale and operations of MIDAS are involved at the cause and effect levels. MIDAS is intended to increase food output through improved inputs and services, and therefore, relieve one of the engines of inflation. Operationally, however, the inflation and shortages of materials have handicapped severely certain MIDAS actions, and further problems are certain.

The economic problems of Ghana have led to serious depreciation of the currency in the parallel market, and official devaluation in 1978. Official currency equivalents were:

February 1973-June 18, 1978	\$ = C1.15
August 26, 1978 to present	\$ = C2.75

There were several small changes in June, July, and August 1978 before the currency was pegged at 2.75. The reported parallel market exchange ratio is far higher. The over-valuation, devaluations, and scarcity of foreign exchange vastly complicate calculations of costs, setting prices on fertilizer and other commodities imported under MIDAS for resale, and arrangements relating to capitalization of the small farmer credit program. The fertilizer and credit programs are affected most severely.

The combination of inflation, over-valuation of the cedi, planned subsidy of fertilizer and seed, and unplanned subsidy resulting from slow and infrequent changes of prices is believed to impose a heavy burden on GOG in carrying out planned MIDAS actions. This will be somewhat further described under the individual components, primarily fertilizer, credit, and seed. It is appropriate for technicians and policy officials of MEP, Bank of Ghana (BOG), MOA and ADB, to review carefully the commitments incorporated in the initial, current, and any alternative project designs. MIDAS staff should try to anticipate their concerns.

These agencies should reconsider the expected benefits in relation to required local costs, and particularly for imported building materials. Casual observation and various reports indicate the existence of much capital equipment in Ghana, currently unused due to shortages of spare parts, or lack of some specific component, containers, or essential raw materials. In this setting, officials responsible for economic policy will appropriately assign higher priority to returning existing capital equipment to use than adding new facilities. This presents a direct challenge to constructing the four projected seed processing facilities and the proposed fertilizer mixing and packaging plant.

The financial burden on GOG can be moderated by changes in producer pricing of fertilizer and seed.

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D. Economic Projections

Major and inter-related further economic changes are certain as a result of the several conditions enumerated: rapid inflation, over-valued currency, large fiscal costs of subsidy programs, and political changes.

The price estimates necessary for cost and income projections are, therefore, subject to wide variability the next several months. None will be made in this evaluation.

The food needs of Ghana make it probable, of course, that costs and income of all major segments of food production and consumption will come into a new approximate balance within a few months. It is not likely that any large group involved in basic food crops (producers, transporters, traders, retailers, and consumers) have accumulated the savings that would allow them to give up a large part of their recent share for long. The worst situation would be a sufficient and extended drop in food prices at the producer level, to cause them to reduce their scale of operations in the next crop season.

The probability of approximate balance does not, however, nearly yield sufficient accuracy to recommend specific production technologies and their attending inputs, nor choices among systems to produce or purchase improved seeds or fertilizer.

E. Actions to Overcome Constraints

The primary actions possible have been to shift project funds, as necessary, among budget items as costs increased, and to spend the money without getting the projected levels of services and commodities. Project management has had to devote extra effort to these political and economic adjustments, diverting them from substantive efforts.

F. Strategy and Administration Issues

Several topics were raised in the course of the evaluation that merit discussion.

1. MIDAS Role. The basic concept and strategy requires that MIDAS be regarded a coordinating/implementing program at an inter-ministerial level and with at least potentially national scope. The only real question involves the possible effect of strategy, identification, coordination, and action stimulation from within MIDAS as an inter-ministerial group, at least hinting at supra-ministerial powers. These responsibilities and powers are logically concentrated in a Ministry of Agriculture, or shared by it and a Planning Ministry.

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However, the need for coordination and action stimulation is great in Ghana. The primary alternative to the MIDAS strategy is the route of many integrated projects as mentioned earlier, establishing a new executive agency, perhaps of a parastatal nature. The long-term conflict between this and building a strong system of "normal" Ministries is evident, particularly for agriculture.

The Commissioner of Agriculture chairs the MIDAS executive committee. The current project manager was a MOA official. Frequent open discussions between the MIDAS project manager and the Senior Principal Secretary of MOA, and the other senior MOA officials and professional persons are vital. It will serve the interests of MOA if considerable responsibility for MIDAS internal evaluation is assigned to DERPS. The Ministry should make a strong effort to strengthen DERPS, if necessary, to include this function. These relationships are believed to protect the logical long-term role of MOA.

2. Role of Advisory Committee. The Advisory Committee clearly is subordinate to MPEC. However, it should at least use its initiative in evaluation and assessment of project activities, discussion of issues, and preparation of recommendations to MPEC for action.

3. Slippages of MIDAS Schedule. In addition to delays in the actual approval of the grant and loan portions, there have been many delays in project implementation. The responsibility appears traceable rather evenly to almost every unit and level involved, both in GOG and AID, and to the time consuming recruitment and processing of both AID and contractor personnel for the project. MIDAS staff now are largely in place for four components, and they have experienced in the amount of time required to get things done, and expediting methods. They should be able to develop more accurate schedules for the future.

The long delays in commodity delivery after PIO/Cs have been issued already have been discussed with AID officials in Washington.

4. Accomplishments in Atebubu District. This district has been selected as the only location where all six components are combined. Project staff hope at least a start of activities under all components will be underway within a few months. It is important to get this done, in the interest of a full test of the MIDAS strategy. In addition, the activities and their impacts on local institutions and the farmers must be systematically monitored to document the results. Both GOG and AID officials must require increasingly tangible documentation of project results.

5. Is the Package of MIDAS Actions Complete? The number of broad components is considered sufficient. Other sections will discuss the adequacy of current plans for marketing and research, and possible reductions in fertilizer and seed multiplication plans.

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6. Annual Implementation Plan. Plans outlined in a PP frequently become outdated due to both internal and external factors, especially with respect to timing. This may be particularly serious for a complex, multicomponent project such as MIDAS. The evaluation team therefore recommends preparation of annual implementation plans as a management tool during Phases II and III. Quarterly plans would involve too much paperwork, but annual plans should be specific with respect to the timing of actions within the year. Quarterly reports also are recommended, and should refer specifically to the annual plan, and account for progress or departures. This will improve planning, monitoring, and evaluation.

7. Sufficiency of MIDAS. The original plans included a breadth of services, administrative structure, and resources estimated sufficient to produce observable impacts. Some of the initial projections now appear highly optimistic, and in any event, adverse external conditions have increased the difficulty of almost everything. In the sense of the logical framework of MIDAS, underlying assumptions have proven invalid. The evaluation team recommends careful consideration of anticipated external factors, such as availability of commodities and the efficiency of government administration outside the project, in redesigning activities and specific targets for Phase II. This report will ask at several points whether the geographic scope and the magnitude of some components should be reduced to increase the probability of observable results.

8. Role of Women. The PP does not have a section on the role of women. Many of the rural women carry out cultivation of a large part of the crops and make many related decisions. Their role in agricultural production is extremely important. Marketing of foodstuffs is dominated by women in Ghana. Therefore, no problem is reported or anticipated with respect to making marketing improvements available, or involving women in decisions. The Home Extension Unit has an excellent design and growing program that addresses several needs of rural women, particularly with information they need in running of the households. While not its emphasis, this program also provides some extension information of field crops to women, as well as information and demonstrations on gardening and small animals. This channel and approach should be considered for further strengthening and expansion.

There was no report or indication of discrimination against women in the design or planned implementation of any component. However, social analysis and discussions of the evaluation team indicate women do not in fact receive a proportional share of improved seed or fertilizer, or credit. Nor is it likely they would receive a proportional part of a reactivated crops extension program without special effort. These conditions are believed to be based entirely on cultural practices. Women are not now commonly accustomed to going to agricultural extension offices or ADB offices. The group lending practice of ADB provides a way to circumvent this problem for credit, to the extent women are integrated into groups

serving both men and women. The question for the several inputs and services is one of how to refine the design and implementation of activities to make them actually reach women as farmers on a more equitable basis, and the urgency of such actions in comparison with other concerns.

G. Strategy and Administration Conclusions and Recommendations

The needs and circumstances that led to MIDAS still exist, more acutely than in 1975 in most respects. The underlying general strategy merits continued effort, though considerable attention is needed about apparent overlaps between MIDAS components and other GOG activities. Examples can be found in extension, research, seed multiplication, and credit. Ghana can afford little duplication of effort. These relationships will be discussed under each component involved.

Questions will be raised in other sections and recommendations made about the relative emphasis on each component, including a potential expansion in activity devoted to the transportation element of marketing.

It is considered not feasible to complete MIDAS at the initially programmed level. That would be costly indeed, with inflation plus reduced efficiency which has occurred and is likely to continue. The feasible level will depend on the amount of resources GOG planning and fiscal authorities are willing to commit, supplemented with AID loan and grant funds. The funding decisions will depend on priorities of the new government and of AID, judgements of the technical people and policy makers about probable results of MIDAS actions in relation to the cost of each, balanced against the need to constrain inflationary pressures and the severe fiscal problems of GOG. Since economic projections are considered not feasible, and other projections difficult at this time, little can be accomplished on resolving these issues.

MIDAS staff should undertake a systematic consideration of the effect of external factors on the project as soon as conditions become more clear. Statements are necessary about established or expected policies of government, expected changes in government organization, and the quality of government administration as these affect MIDAS. These will become vital assumptions regarding forward planning of the project. Economic projections are also needed, although variabilities around these projections are subject to high variation.

Activities of MIDAS during Phase I were to be largely organizational and to assist the implementing agencies in establishing the program's administrative and operational structure and the system for coordination and integration of activities. Some specific targets also were set in Annex N of the PP. There has been substantial progress in strengthening some institutions and training staff, particularly in the women's

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extension and Agricultural Development Bank (ADB) programs. Progress is short of specific targets specified by Annex N in most components, particularly crops extension, research, and fertilizer. Reasons are both internal and external to the project. Internal problems probably can be corrected in Phase II, though the cost and amount of time required for each action must be re-estimated. The evaluation team considers that overall efficiency is reduced. Certainly new assumptions and projections are needed.

MIDAS managers should develop less costly technical plans for the seed and fertilizer components, and seek to reduce duplication and even supplementary relationships within these components as well as others, with programs of other agencies.

The additional major recommendation is that implementation strategy and the scope of the program be revised to concentrate on selected target areas and individuals. The first target area should be within Atebubu District. Perhaps two to four additional areas, probably in other regions, should be selected for credit, extension, fertilizer and seed activities. There should be further focus on a few villages in each target area. The suggestion made by one official interviewed should be considered, that target farmer should further be registered as MIDAS participants. This series of actions, with or without including the registration, would serve to focus the effort, and help to concentrate enough resources to produce results. The implementation strategy would be similar to the former "Focus and Concentrate" project further described in the Extension Demonstration Section.

Work on a revised implementation strategy can begin immediately, as well as analysis of internal revisions proposed in the seed and fertilizer components. Base-line surveys should be initiated and completed in target areas. The SMU program should be continued on a national basis, except to make strong efforts to avoid duplication with GDB. The duplication and possible corrective actions are discussed in the Seed Multiplication Section.

Large scale import actions such as fertilizer, farm equipment, vegetable seeds, and any potentially large-scale, spare parts program have an uncertain relationship to MIDAS strategy, with its stated targeting on small farmers.

MPEC should promptly request MPAC to develop an internal evaluation system, further discussed in the section on Internal Evaluation. After MPAC develops a system with the help of USAID/G and other staff, primary responsibility for data collection and preliminary analysis probably should be assigned to DERPS. A quarterly narrative and statistical report should be filed by each component to MPAC and MPEC through the Project Manager. This is a necessary, but not sufficient, part of an internal evaluation system.

Frequent oral reviews and open discussion of issues is a vital part of the coordinative function of MIDAS. The "Seminar" of April 19 was considered excellent by the evaluation team member present. Much of this spirit and even format should be employed in a quarterly review. The meeting might be scheduled about 30 days after quarterly reports are due, allowing time to prepare and distribute selected portions of quarterly reports as progress summaries and issues papers. Two to three hours should be sufficient for this and to include most other topics requiring attention of MPAC.

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II. SEED MULTIPLICATION

The Seed Multiplication Unit (SMU) of MOA is responsible for activities related to the import, production, certification, testing and distribution of improved seeds in Ghana. Distribution of seeds is carried out through the Agricultural Extension Service.

A. Progress

1. Original Strategy

In August 1973, the GOG requested USAID/Ghana to support a study to assess the seed program of the SMU and to make recommendations for improving and expanding the availability of improved seeds throughout Ghana. Following an analysis by Mississippi State University, the GOG decided that it would seek assistance in strengthening the SMU and would encourage the participation of indigenous private, certified seed growers in its seed program. The study made several recommendations regarding the organization, staffing and facilities of the SMU. The GOG accepted these recommendations and they form the basis for this component of the project.

The objective of this component is to assist the SMU in expanding and improving its seed production and processing activities and to enable it to distribute on a wider scale through the fertilizer marketing channels larger volumes and varieties of high quality seeds to farmers.

The SMU is currently organized into three sections for operational purposes: foundation seed, certified seed, and seed testing/certification. The foundation seed section multiplies breeder seed to a quantity required for a large-scale production of certified seed. The certified seed section organizes, monitors, and inspects production of contract certified seed growers. It is the duty of the seed testing section to enforce the provisions of the Seed Law (enacted in 1972). The original plan was for the SMU, with AID assistance, to improve the organization, management, staff and facilities at three foundation seed facilities (one each at Winneba, Kumasi and Tamale), two certified seed facilities (one each at Winneba and Kumasi), and a seed testing facility in Accra.

Staff training is an essential element of the new and expanded operations of the SMU. With AID assistance, the SMU will provide its staff with requisite in-depth professional training, operational technical training, and on-the-job training in a number of disciplines related to seed technology.

At the time of preparing the PP, it was noted that the marketing network of the SMU was being reorganized to distribute seeds more efficiently

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to farmers in outlying rural areas. The SMU was to establish distribution agreements with the same outlets which the Ghana Fertilizer Company (GFC) was to use to distribute fertilizer. The SMU was to distribute seeds on a wholesale basis to the firms at strategically placed wholesaling terminals. As with fertilizer, large farmers were to be able to purchase seeds at these terminals. It was the plan for the firms to transport the seeds, using their own transport and storage facilities, to their outlets for retail sale to small farmers. The SMU was to work closely with extension and research personnel of the MOA and Council for Scientific and Industrial Research (CSIR) and the market and extension agents at the Farm Loan Offices (FLOs) to determine the demand for the various seeds in the regions/districts. The SMU, its outlets and the GOG were to establish prices at which the seeds would be sold in each region, allowing for the transport and storage costs incurred by SMU and its outlets.

The project is to improve the capability of the SMU to handle, transport, clean, dry, test and store increased quantities of seed by providing adequate facilities at strategic locations.

Inputs by AID over Phase I and II for this component include (a) loan assistance to equip foundation and certified seed processing facilities and the seed laboratory; (b) grant assistance for the purchase of the foundation seed farm production equipment and vehicles for seed certification and seed transport; (c) approximately 10.5 person-years of participant training. The GOG contribution to this component represents the construction costs and recurrent operating costs of the six facilities.

2. Actual Situation

It is now planned to form the Ghana Seed Company (GSC) and for it to assume title to the present SMU installations, structures, equipment, seed and financial obligations. The SMU staff are to be given the option of joining the GSC in all of its planned for positions. The GSC was legally promulgated by the former SMC in March 1978. At the time of this evaluation, it has not been legally activated.

The marketing network remains as it was originally, primarily the Agricultural Extension Service. The GFC has not been established and, therefore, cannot provide this service.

The certified seeds section of the SMU has the responsibility for monitoring and inspecting production fields to approve the acceptance of the seed. The seed testing section enforces the pertinent provisions of the 1972 Seed Law. It is now planned to amend this Law and establish the Ghana Seed Inspection Service (GSIS) with responsibilities for certifying and testing seed.

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B. External Conditions

1. Effects on Progress

The severe shortage of construction materials such as cement, iron rods, and electrical fittings, for the seed processing centers is likely to cause some delay in the construction of the buildings. The awarding of a contract to a contractor has been delayed recently and this will undoubtedly move the completion date forward from that anticipated at the time the processing equipment was ordered. The MOA has been advised of the desirability for the GOG to purchase the electrical fittings from abroad at an estimated cost of \$100,000 for one plant. GOG foreign exchange availability is practically non-existent for this purchase. Work slowdowns, water shortages, electricity outages and the currency exchange exercise, all of a temporary nature, have had slight delaying effects.

2. Actions to Overcome Constraints

The MOA has committed the construction of the Winneba processing plant by annual allocations of funding provisions. Adequate funding exists for FY 1979 to commence construction. The total projected costs for four seed processing centers have been prepared by the MOA for submission to MEP. A long-term plan of this nature is required to gain assurance of allocation of funds to the project, permitting it to be completed in an orderly manner.

C. Technical Analysis

1. Technical Design

The initial proposal in the Project Review Paper of AID (PRP) did not include production/farm machinery for the foundation seed farms. After close investigation on the farms, it was determined that existing farm production and harvesting machinery was inadequate both in amount and operational condition. In order to accomplish the target outputs of high quality foundation seed grant funds for sufficient seed production farm machinery were included in the PP in the amount of \$175,000. Also included under AID grant assistance were: \$57,500 for 5 pickup vehicles with spare parts; \$150,000 for five 14-ton trucks (one per production facility); \$80,000 for 10 person-monhs for agricultural engineer consultants; \$140,000 for 2 person-years for an organization and management consultant; \$8,000 for one person-month for a seed technology consultant; \$70,000 for 2 person-years for a seed processing specialist; \$46,800 for two vehicles and furnishings for long-term U.S. technical assistance; and \$196,000 for 113 person-months of participant training to be distributed in seed technology, plant breeding and agricultural engineering.

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Total AID loan assistance to equip the facilities consisted of \$233,000 for foundation seed drying, processing and storage; \$256,800 for certified seed drying, processing and storage equipment; and \$17,500 for seed testing equipment. Of these amounts, Phase I loan requirements were \$206,100.

The projected specific GOG contributions for this component consisted of: \$657,600 for the construction of three foundation seed facilities; \$856,800 for construction of two certified seed facilities; \$69,800 for the construction of a seed testing laboratory; and \$1,102,100 for the recurrent and operating costs of these facilities.

2. Changes in Design

The Mississippi State University recommendations on the organization, staffing and facilities of the SMU (dated August 1975) were incorporated into the PP. After arrival of the MIDAS (Experience Inc.) consultants, they carefully reviewed the Mississippi State recommendations with the SMU and USAID F&A officials. This review resulted in significant changes in the implementation plan presented in the PP. The GOG is in the process of requesting formal AID concurrence for the proposed changes which would result in the following:

- a. Seed Processing. Four regional seed processing centers would be established at or near existing SMU Foundation Seed Farms or SMU seed installations.
 - i. Winneba, first plant to be developed. Principal crop - maize.
 - ii. Kumasi, second plant. Construction to be started after that at Winneba is underway. Principal crop - maize.
 - iii. Tamale, perhaps two units. Principal crops - groundnuts, rice, and maize.
 - iv. Ho, possibly to be developed as an irrigated farm. Principal crop - maize.

Some plants would be expected to process sorghum, millet, cowpeas and soybeans at some future date.

Each regional seed plant would process foundation, registered and certified seed. Each class would be processed in separate lines, certified seed with a 200 bushel per hour capacity and the registered and foundation seed in a line with a capacity of 60 bushels per hour.

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Two types of seed drying equipment would be used, wagon dryers and continuous flow column type dryers.

Conditioned seed storage facilities at each location would consist of a structure 260 feet long by 80 feet wide and an inside height of 17 feet, divided into five separate units. Each unit would have its own refrigeration and dehumidification unit. Total capacity would be 50,000 to 55,000 bushels bagged seed at each of the plants. The stored seed in three of the five units would be certified seed for farmers to purchase each year. One unit's seed quantity (25% of the total certified seed available) would be carry-over stocks to be stored and sold the next year. The fifth room would be foundation and registered planting stock.

Equipment capability and structure requirements would be designed to dry, process and store 1,200 bushels per day of bagged seed at 11%-12% moisture content within a period of 42 to 65 days of processing time (for maize).

Design and construction plans would be identical for all four regional centers.

Each Regional seed plant will have the following structures:

- Two wagon dryer sheds
- Column type seed dryer
- Seed processing building
- Conditioned seed storage - both temperature and humidity controlled units for each of the five rooms
- adquarters
- Workshop
- Spare parts depot
- Workers' canteen
- Water tower and tank
- Rest house
- Two bungalows (excpet at Ho)
- Field house for adaptive trials (Winneba only)

All equipment for the first and second seed plants (Winneba and Kumasi) will be procured to arrive in early 1980. Equipment for Tamale and Ho would be procured in 1980 with delivery in 1981 as construction progresses.

The conditioned seed storage will permit SMU to store 75% of the certified seed for 10 months and the remaining 25% for up to 22 months. (See above.)

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Grant funded ten ton and seven ton trucks will be used to transport seed from regional plants to teh various villages and locations.

Each Regional headquarters will have a seed store for retail sales of seeds and a seed testing laboratory for quality control.

The estimated landed costs for the equipment for the seed plants are:

<u>Category</u>	<u>No. of Units</u>	<u>Cost per Unit</u>	<u>Total Cost</u>
Drying	4	\$225,000	\$900,000
Processing	4	187,500	750,000
Temperature & Humidity Control	4	175,000	700,000

Note: Two units to be funded from Phase I at a cost of \$1,175,000. Two units from Phase III at a cost of \$1,351,250 including 15% inflation.

The SMU has a projected expenditure of 24.3 million cedis (\$8.8 million) for the construction of the four seed plants. With a minimal 35% inflation rate and one year lag, an additional 8.5 million cedis (\$3.0 million) will be needed for construction.

- b. Irrigated Seed Farm. The SMU and Experience, Inc. consultant explored the possibility of establishing an irrigated foundation seed farm for maize. A site at Kpandu, about 50 miles from Ho, has been identified where there are 500 acres out of which 100 acres might be developed under irrigation. Financial commitments to develop or equip such an irrigated farm should not be made until full authorization is received to draw water from the lake for such irrigation.
- c. New Foundation Seed Farms. The SMU in 1978 acquired four additional foundation seed farms to expand upon the seed producing capacities. A fifth site, near Kpandu is under negotiation (see above).

The Phase III budget requests include the machinery and equipment for these farms. The cost of the farm machinery for these five farms would be largely amortized during the initial five year period at which time it is anticipated that the Ghana Seed Company would be able to purchase all necessary replacements.

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d. Ghana Seed Inspection Service. The PP does not identify or elaborate on any specific plans for a Seed Certification organization or Seed Testing laboratory.

i. Seed Certification Plan. Commonly used seed certification operational practices in other countries, adapted to Ghanaian conditions, would be promulgated and established within the GSIS to commence activities in 1980. The 1972 Ghana Seed Act would be amended to change the seed certification responsibilities from the SMU to the GSIS. The latter would be a semi-autonomous body in the MOA. Grant funds for vehicles will be requested in the amount of \$79,400.

ii. Seed Testing Laboratories. A central seed testing laboratory would be set up in the GSIS, Accra. Three branch laboratories would be established in Kumasi, Tamale and Ho in conjunction with the seed certification branches. In addition, seed testing laboratories would be set up in each of the four regional SMU headquarters to perform quality control seed testing and inspections.

Seed testing equipment for all of the GSIS laboratories would be procured with loan funding at a landed cost of \$65,000. The equipment for the two SMU regional seed testing laboratories would be procured along with the seed processing equipment with loan funding, to arrive in January 1980. The equipment for the other two regional laboratories would be purchased along with seed processing equipment for the other two plants for delivery in 1981.

e. Seed Production Sub-activity. In the PP under Phases I and II, three foundation seed farms were planned; but under this current revision, the number has been increased to four. Increased acquisition costs coupled with a limitation of \$175,000 in grant funds for the first two Phases resulted in inadequate equipping four foundation seed farms. Additional farm machinery for the four farms in the amount of \$53,000 is requested from grant funds, Phase III.

f. Farm Workshops. A workshop is to be established at each of the four seed processing centers. One shop foreman and two mechanics will be trained for each location under requested grant funding in Phase III. One senior stores engineer for the GSC headquarters would also be trained in the U.S.

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No provision was made in Phases I and II for training nor for shop equipment for maintenance and overhaul of the farm machinery or seed processing equipment. One set of mechanics tools, estimated to cost \$13,800 and one lot of shop equipment, \$60,000 are in the process of being ordered from grant funds. An additional amount of \$221,400 is requested for this same equipment for the other three centers. The estimated cost for training is \$150,000 for 13 persons for 10 person-months each.

Five sets of mechanics tools for the new foundation-certified farms are requested. At these sites, smaller workshops would be constructed than those at the regional centers. The cost for these tools is estimated to be \$75,000.

- g. Introduction and Testing Program. Provisions have been made for the start-up of a testing center at the Winneba Center. A minimum area of three acres is planned to be irrigated and up to 200 acres of rainfed land is available. A research section, to be headed by a plant breeder, has been made a part of GSC. Introduction and testing work is greatly needed to determine adaptability and usefulness of already developed crop varieties from International Centers and other foreign organizations. Farm machinery for plot work and sprinkler irrigation equipment are requested to be grant funded at an estimated cost of \$30,000.

3. Progress

- a. Construction. Preliminary designs for various structures for the Winneba plant were prepared in mid-March 1978. Earlier MOA had engaged the services of the Architectural Services Corporation (AESC) for the architectural, engineering, tendering, and construction supervision. A project architect was permanently assigned by AESC to coordinate all AESC service needs for the four centers. Construction drawings and details of material quantities were completed by mid-April 1979. It is planned to close the bids for the construction of the seed processing building at Winneba by July 15, 1979.

The MOA has committed the construction of the Winneba plant by annual allocations of funds. Sufficient funds were allocated for FOF FY 1979 to commence construction. The allocation must be made again for FY 1980 since obligation is not expected by June 30. The total projected costs of the four seed processing centers has been prepared by the AESC Quantity Surveyor and submitted by the MOA to MEP. The

total amount for the four centers for Phases I and II is 24.3 million cedis or \$8.8 million. No allowance has been made for inflation. It is virtually impossible to estimate cost in the face of rates over 10% in 1977 and 1978.

- b. Commodities. By mid March 1978, lists and specifications for all equipment needs for the seed processing and storage facilities had been completed. Project Implementation Orders for Commodities (PIO/Cs) for the procurement of the equipment were prepared by the end of CY 1978. The seed processing equipment for Winneba and Kumasi was ordered in January 1979 on a PIO/C issued for \$375,000. At the same time one set of mechanics tools for Winneba was ordered for \$13,800. A third PIO/C was issued for \$35,000 for shop equipment, but at the time of the evaluation, the supplier was requesting an additional \$25,000 for a total of \$60,000.

AID has supplied the following from grant funds and the units are all in the country:

2 10-ton trucks	3 Tractor-drawn sprayers
1 Pickup	3 Corn pickers/huskers
1 Suburban	1 Rice combine
5 Tractors	2 Clipper seed cleaners
3 Tandem disc harrows	1 Side winder shredder
4 Mulchers	Tools and spare parts

- c. Staff. Two consultants from Experience, Inc. have completed their first two year assignments. One is being replaced later this year and a third will join still later.'

In 1978, three SMU participants were programmed to attend a three-month seed improvement course, but due to administrative delays, they were not able to attend the course. Three SMU nominees were selected for the same course in 1979, but funding was approved for only two.

- d. Seed Distribution. The SMU delivered the following to the farmers during the past three crop seasons:

	<u>1977</u>	<u>1978</u>	<u>1979</u>
Maize (100 lb. bags)	10,000	11,600	15,000
Rice (160 lb. bags)	26,000	55,500	42,000
Groundnuts (80 lb. bags)	9,000	10,000	6,000
Sorghum (180 lb. bags)	980	7,000	500

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- e. Organization. The Ghana Seed Company was legalized in March 1978, but has not been legally activated. Initial funding is to be provided by MOA, but private participation is expected within a few years time. An expatriate co-managing director is expected in the fall of 1979. This is one of the positions mentioned under Staff.

4. Current and Foreseeable Requirements

The PP does not address the issue of the quantities of improved seeds that the SMU will produce, nor the amounts the farmers will purchase. In the revised plan, the seed requirements for 1979 are presented along with the planned supply from SMU.

<u>Crop</u>	<u>Total Requirements</u>	<u>SMU Supplied</u>	<u>Percent of Requirement</u>
Maize (200 lb. bag)	120,000	15,000	12.5
Rice (160 lb. bag)	88,000	42,000	47.7
Groundnuts (80 lb. bag)	370,000	6,000	1.6
Sorghum (180 lb. bags)	33,000	500	1.5

These requirements are presumably based on the total areas planted by each of these crops in 1979. The most common method of increasing agricultural production in Ghana is through increasing the area cultivated for each crop. Assuming this will be continued for the next few years at least, additional quantities of seed will have to be produced to plant these increased acreages.

5. Economic Soundness

No economic analysis of costs and returns of the seed multiplication system, including depreciation, maintenance, utilities costs, etc. has been prepared. None is believed possible until policies of the post June 4, 1979 AFRC government and the succeeding civil government are somewhat known. Reasons were indicated in the Strategy and Administration section.

Seed has been priced by committee action at slightly over the then current price of the grain for food use and held at this level through the following plant seasons. Storage and distribution cost is not added. The

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result in a sharply inflationary situation if seed sold much below the price for food. This situation is absurd on economic grounds and dangerous on public health grounds, due to the risk that hungry people may eat treated seed.

An economically viable seed multiplication processing, storage, and distribution system will require sharply increased prices even if current plans are simplified. The highly sophisticated plans may be prohibitive.

Improved seed with high and recognized potential under reliable field conditions can pay high returns. Technical analysis raises considerable doubt about these requirements: the necessary level of genetic potential, and the degree of farmer recognition of that potential. The limited conversations of the evaluation team near Atebubu certainly yielded no assurance that farmers recognize the potential of SMU seed.

Also, there is the question of priorities in allocation of GOG investments and current expenditures until the seed program can become viable. Currently, updated estimates of GOG expenditures to complete and operate the seed program in the first four-year period are \$10,002,500 by September 30, 1980, and an additional \$10.5 million for the following two years. These estimates used a conservative inflation rate of 35% for local costs, and appear to involve an error of mathematical procedure. The inflation rate evidently was applied a single time and not cumulated year to year, nor compounded. The difference in results is nearly \$5 million for the four years. Certainly the authorities in MEP and BOG must give careful attention to these requirements, and to the allocation of cement and other building materials that is involved.

These cautionary observations will be reflected in the conclusions and recommendations.

D. Institutional Analysis

The formation of the Ghana Seed Company is in the process of becoming legally activated with private participation sometime in the future. This company is to take over all of the assets, equipment, and those SMU staff members who choose to join the GSC. The Company will be a parastatal organization whereby it must make a profit. The establishment of this company should take place in the immediate future, so that the seed industry becomes relatively independent of government financial obligations.

GSIS is now planned to be set up in 1980 as a semi-autonomous body within the MOA. The functions of GSIS have been described earlier and this service should become functional at its scheduled date.

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Since the PP was prepared, the Grains Development Board (GDB) has been established within the MOA. Dr. Quansah, Manager of the GDB, told the team of the four functions the GDB carries out which are: foundation seed production, demonstration/extension services and trials, block farm mechanization, and adaptive research. One of these foundation seed farms is located just outside Accra. The most recent available budget included funds for the GDB's production of foundation seed. There appears to be some misunderstanding between the GDB and SMU with regard to the production of foundation seed.

The Crops Research Institute (CRI) also conducts research aimed at improving crop varieties. The Faculties of Agriculture also do some research on crop improvement. At none of these institutions is there an effective and well organized crop research program. Ghana cannot afford the luxury of such a scattered and ineffective research program as it is now or is contemplated.

The PP does not specifically define the mechanism of obtaining adequate lots of improved seed from the plant breeders. It is stated, "As new and better varieties are identified and proven by the research component of MIDAS, The Crops Research Institute or other sources, they will be incorporated in the program." A clear understanding of the means of supplying and maintaining breeders seed is of prime importance and needs to be addressed in order to have a workable relationship with the various institutions developing crop varieties.

E. Conclusions and Recommendations

The goal and objective of producing improved seed and making it readily available for purchase is sound. Through the use of improved and adapted seeds, farmers can increase productivity and production very economically. Improved seeds can be the most important purchased input to the farmers. It should be sold to them at a cost which is not economically prohibitive. On the other hand, the seed producer-distributor should sell the seed at a price which will cover all the costs of production and distribution. The seed sold should be of a quality which is satisfactory to their needs.

During Phase I of this component, major revisions have been made and plans for implementation altered. The number of seed processing centers has been increased from three to four, five foundation seed farms have been added, the GSC sanctioned and legalized, GSIS formed, the number of seed testing laboratories increased, the establishment of workshops and and repair facilities at the five additional seed farms included, and the development of an irrigated seed farm proposed within this component.

During the life of the project, very little concrete progress has been made in construction, delivery of commodities and staff development. The

projections of seed production are far short of the goals. These facts primarily result from external factors (notably, delay in completion of loan arrangements), rather than internal matters.

Now is the time to reassess this component with respect to both technology employed and a revised set of targets for the next three to five years. Targets should reflect the delays in reaching initial targets, projected needs, financial resources available, commodity availability, and assumptions with respect to time required to complete needed administrative procedures. The level of financial resources made available no doubt will be conditioned on projections of benefits, total costs and timing and financial considerations just mentioned.

The equipment and facilities now under consideration are believed by the evaluation team to be too sophisticated and costly for the country. For example, no estimates of the cost of improved seed when the planned systems is put into operation was available during the team's work in June. Estimates prepared in July represent a useful beginning, but require refinement from a technical and financial standpoint, plus supplemental computation of economic benefits and costs.

There are several significant problems. There is a shortage of both grant and loan funds to complete the goals of Phase I. Larger structures have been designed for the seed centers, yet cement has been in very short supply. Electrical fittings cannot be purchased locally, and already discussions have been held about a request for loan funds for these, while they formerly were to be bought in the local market. The evaluation team considers satisfactory maintenance of the refrigeration and dehumidification equipment unlikely, despite assurances anticipated from suppliers. The operating and maintenance cost will be high if they should remain in operation. Estimates of operating costs may differ considerably, depending on the choice between applying current price charges or economic costs reflecting shadow prices. It should be noted that the MIDAS team is considerably more confident and optimistic than the evaluation team, with respect to appropriateness of the revised technical design.

It is recommended that the first item of priority is to construct the building for the seed processing equipment at Winneba, followed by the second one at Kumasi. The buildings for seed storage at these two centers should be completed next. Until reasonable estimates can be made of the cost of seed production, processing and storage, the purchase of the dehumidifying and air conditioning (refrigeration) equipment should be held in abeyance. The seed drying equipment should be re-examined and perhaps only one type of dryers ordered, either the wagon dryer or column type. Information provided after the team's visit indicated this plan.

One seed testing laboratory for the country should prove to be adequate until more seed is produced. The need for timely test results, and means of transporting samples to get test results are balancing considerations.

Thus, the first and prime objective would be to establish, at most, two seed centers, Winneba and Kumasi, before embarking upon a program that is very unwieldy and which appears to be uneconomic.

Under the German aid program, two large storage warehouses in the Northern and Upper Regions each with a capacity of storing 100,000 bags of seed, mainly rice and groundnuts, have been completed. Seed processing and laboratory testing equipment has also been included. The GDB is producing foundation seed for further multiplication by the SMU and its contract growers. Both of these activities at least parallel if not duplicate those of the seed component of MIDAS. Whether or not current needs are fully met, it probably will be most economic in the long run to concentrate seed multiplication responsibility in one unit. Therefore, there needs to be a close examination of all seed production activities, and corrective actions considered. Such examination and decisions are the responsibility of the highest levels of MOA, or perhaps MEP.

III. FERTILIZER

A. Progress

1. Original Strategy

The use of chemical fertilizer in Ghana has fluctuated widely in recent years, primarily because of varying amounts of foreign exchange available and ac hoc procurement procedures. Demand and useage by farmers appears to be continuously increasing. The MOA imports nearly all of the fertilizer, the exception being that used on specific development projects. The Extension Service of the MOA is responsible for the distribution and sale of fertilizer to the farmers.

Since 1968, the GOG has placed an estimated 85 percent subsidy on the landed cost of fertilizer. The MOA sells the fertilizer at the same price throughout the country, an action which provides no incentive for private firms to participate in distributing fertilizer. There have been discussions in the past that indicated the subsidy would be removed or decreased significantly.

The Tennessee Valley Authority (TVA) reviewed the fertilizer situation in Ghana and made recommendations. Based on these recommendations, the GOG established the Ghana Fertilizer Company in 1975 which was to replace the MOA as the major fertilizer importing and distributing agent. The GFC was to import basic granulated fertilizer elements, prepare mixtures, blend and bag them locally. GFC was to arrange with private commercial firms for distribution throughout Ghana.

The GFC is to be a joint venture with the GOG and foreign partners. The state ownership (GOG) of the company is divided among the National Investment Bank (10%); Bank of Ghana (20%); the Agricultural Development Bank (20%); and AGIP Ghana, Ltd. (10%). The remaining 40% of the GFC will be held by foreign partners who have experience in the production and distribution of fertilizer.

2. Actual Situation

Fertilizer imported under the MIDAS Project is still being sold at the subsidized prices during the 1979 cropping season.

The agricultural extension services of the MOA is procuring the fertilizer from abroad, and then distributing and selling it to the farmers, both large and small. The GFC is not operational and performs none of the duties attributed to it as described in the PP.

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B. External Conditions

The first fertilizer procured to date under MIDAS loan funds was ordered at a time when U.S. factories were operating at their peak and, as a consequence, the fertilizer imported into Ghana was much more costly than had it been ordered for delivery at the slack season and with routine arrangements for shipping.

The GFC has not been able to obtain participation of a foreign partner to provide the expertise required for carrying out the plans for local production and distribution. No doubt, Ghana's pricing policy on fertilizer is one of the factors which discourages any interest from qualified technical partners.

C. Technical Analysis

1. Technical Design

Based on the TVA study and recommendations, in 1975 the GOG established the GFC which was to:

- a. develop an advance purchasing system for bulk fertilizers;
- b. blend and bag fertilizer into types and quantities which would be appropriate for Ghana's farmers;
- c. ensure that the finished product be distributed in an orderly and timely basis, extending to the more remote areas to permit greater accessibility to small farmers.

The GFC is to procure, process, package and distribute fertilizer throughout Ghana at the lowest possible prices, commensurate with a viable operation. This encompasses at numerous outlets throughout Ghana where it will be readily accessible to farmers. Seeds and other production inputs will be marketed through and by the firms which establish the fertilizer distribution system.

The GOG has determined that the subsidy on fertilizer should be eliminated, but has taken no positive action on fertilizer sold to small farmers. The MOA plans to continue distribution of subsidized fertilizer. When subsidies are removed, distribution will be turned over to private commercial firms.

The component is to assist the GFC with its organizational development, fertilizer marketing and distribution process, engineering requirements and staff training. The project will provide:

- a. AID loan assistance in Phase I was to include \$750,000 for blending equipment and \$6.5 million as foreign exchange to import bulk fertilizers.

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- b. AID grant assistance for the life of the project is to provide \$4,000 for additional training materials, \$440,000 for 5.5 person-years of U.S. technical assistance, \$46,800 for two vehicles and household furnishings for the long-term U.S. technicians, and \$32,000 for participant training.
 - c. The GOG/GFC incremental contributions over Phases I and II are to provide \$500,000 for the construction of the permanent blending facility and about \$3.4 million in recurrent operating costs of the GFC.

2. Changes in Design

There have been no changes in the technical design of this component since its inception in the PP.

3. Progress

The only progress which has been made is the importation of approximately 16,750 metric tons of fertilizer at an estimated landed cost of \$4.95 million.

It is not certain and indeed considered unlikely, that fertilizer purchased under the MIDAS loan will primarily reach small farmers under present distribution practices. Fertilizer is freely available at the Extension offices in rural areas and at depots without any reported control of the volume sold. Extension officials estimate that nearly half of all fertilizer normally is used on rice, principally on relatively large farms in the Northern Region. An additional amount is used on cotton. The late-arriving fertilizer in 1979 is believed to be going primarily for use on rice and cotton. Economic incentives are strong on these crops, and these farmers are most likely to be aware of the value of fertilizer. It should be recognized that the evaluation team did not systematically trace fertilizer to its ultimate users; the information used is based on interviews about distribution practices and the perceived results. MIDAS - financed fertilizer reaching the Northern and Upper Regions would be a small part of total use there in any event, since larger amounts financed by other donors are specifically channelled there. Well planned and strict distribution controls would be required to provide much assurance that MIDAS - financed fertilizer would reach the target of small farmers.

The GFC has been unable to obtain a technical partner to participate in ownership and operation of the Company.

4. Current and Foreseeable Needs

As long as fertilizer is available, and particularly at the highly subsidized prices, farmers' demand and consumption is likely to increase

at a steady annual rate. If compound fertilizers are more specially blended, reflecting research results and analysis and thus prove more economical for farmers' use, consumption is likely to increase at a still faster rate. 42

5. Economic Soundness

It may be possible under well-planned conditions to buy bagged fertilizer such as the primary mix in use (15-15-15) and transport it to Tema for about \$250 per ton. The evaluation team did not have more accurate data.

Two hundred fifty dollars per ton converts to 34.4 cedis per 50 kg. bag at the official rate of 2.75 cedis per U.S. dollar. The cost is far higher at a realistic exchange rate. In addition, internal distribution costs are inevitably high, including transport, administrative and selling costs. Specific data are not available and projections of complete distribution costs are impossible at the time of the evaluation.

Brief review of technical response data for fertilizer indicates that use of fertilizer at the recommended levels and early 1979 prices to farmers and crop prices have highly favored the use of fertilizer. Indeed, the low price encourages smuggling, unofficial payments to obtain fertilizer, and inefficient use.

Broad estimates of full costs at realistic exchange rates suggest that the use of fertilizer still would have been economic if the technical data are valid. However, the peasant or small-scale farmer usually requires a benefit/cost ratio of at least three to one, and in some cases more, for him to use a purchased input. These conditions would not have existed if the full cost had been paid.

Thus, the GOG incurs a major financial burden in importing fertilizer under the MIDAS loan, converting the cost to cedis at 2.75 per U.S. dollar, absorbing internal costs, and selling the fertilizer to farmers at a fraction of even the landed cost at the official exchange rate. The GOG is obligated to begin repayment of principal in ten years, and the repayments must employ revenue from goods and services sold at real exchange rates. GOG appropriately will review how much of this obligation it can accept.

Finally, there is the question of building a mixing and bagging plant. The existence of much unused capital equipment in Ghana, including equipment idled by lack of repair parts, has been noted in other sections. The long-term economics of a mixing and bagging plant, vs importation of bagged fertilizer, probably still are favorable. However, it probably would require many years to recover investment and start-up costs. Also, scarce managerial and technical talent would be required. The evaluation

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team believes Ghana has more urgent needs for scarce foreign exchange including loans, and for imported materials financed with such financial resources, than the proposed facility. This is an issue for the analysis and decision of policy officials. They no doubt will require extensive justification of any MIDAS proposal for a fertilizer plant.

D. Institutional Analysis

The importation of three basic ingredients could give considerable flexibility to the ratios of the common fertilizer elements; namely, nitrogen, phosphorous and potash. Bagging at a local blending factory would make it possible to use different size containers and thus could be a more convenient way for the farmers to buy the amount they need for each crop and each season. However, the importation of three granular fertilizer raw materials in bulk shipments, their blending, bagging and distribution may prove to be uneconomic and a financial burden to the country.

As long as fertilizer is sold to farmers at the current heavily subsidized prices, consumption is likely to remain relatively high and probably increase.

The establishment of the GFC and its affiliated distribution facilities through private commercial companies would relieve the Agricultural Extension Service of this burden. At the same time, it should permit the extension staff to have more time to carry out their assigned tasks of a farmer educational program.

E. Conclusions and Recommendations

The purchase and importation of fertilizer from the U.S. at the latter's peak season must be avoided in all future procurement. This extra cost was not passed onto the farmers but was absorbed by the GOG which is sorely in need of all foreign exchange at this time and in the immediate future.

It is recommended that the fertilizer subsidy be removed as rapidly as possible so that the price reflects the true financial cost. This would not only reduce smuggling of fertilizer to neighboring countries, but at the same time, lessen the budgetary burden of the GOG and reduce the probability of uneconomic uses under the present extremely low prices.

The GOG should make a strong effort to see that the GFC is operational and efficiently managed. After which the MOA should shift the responsibility for purchasing and distributing fertilizer to GFC, which in turn should see to it that the ultimate distributors to the small farmers are the private commercial companies and cooperatives.

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The GFC should work with SRI and other institutions/organizations within the country to determine the most practical, economic and beneficial fertilizer blends and elemental fertilizers. Once these blends have been determined and a re-evaluation of the economic and financial returns of a fertilizer blending and bagging facility has been made, further consideration should be given to its construction.

IV. FARM CREDIT

The objective of this component is to strengthen and expand the small farmer credit operations of the Agricultural Development Bank (ADB). This Credit was intended to allow a larger number of small farmers access through credit to improved production inputs, such as fertilizer and seed.

A. Progress

1. Original Strategy. The basic strategy included strengthening of ADB, specific policy reforms, and expansion of loan funds. ADB would be strengthened through an extensive training program, technical assistance in operations, and financial assistance through buying office equipment and vehicles. Policy reforms aimed at streamlining loan operations through decentralization of authority, improved application forms, and concentration on a form of group lending. Loans under the program were limited to farmers cultivating ten acres or less. The BOG was committed to expand ADB resources through advances equal to the value of farm inputs for resale imported under the MIDAS loan, such as fertilizer and small farm equipment.

2. Actual Situation. There have been no significant changes in strategy or institutional approach.

B. External Conditions

Inflation and related financial problems of GOG present immense obstacles to the achievement of credit targets and virtually challenge survival of the program.

1. Effects on Progress. Inflation rates over 100 percent in 1977 and over 70 percent in 1978 (based on the consumer price index) resulted in rapid decapitalization of ADB. The bank as a whole achieved a small margin in 1978 based on an internal audit. There is no assurance that the allowance for bad loans was adequate; it probably was not, based on reported rates of delinquency. However, this result in financial terms leads to a sharp reduction in real capital in terms of buying power it can extend loans, due to the extent of the rate of inflation.

Also, the full value of commodities imported for resale to farmers under the MIDAS loan is not converted into buying power for Ghanaian farmers since the conversion rate considerably overstates the value of the Cedi.

Delay in approval of the MIDAS loan led to delay of financial resources from this source. The first fertilizer for resale was landed in March 1979.

In comparison to these financial problems, the effect on ADB operations of general shortages of spare parts for vehicles, small equipment, supplies, building materials for offices, etc. appear as relative details. They would be significant if ADB had the financial means to expand.

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1. Action to Overcome Constraints. From the point of view of strong supporters of the ADB program, external authorities, primarily BOG should maintain the integrity of the credit program by additional advances to offset the rate of inflation. Another, and perhaps alternative line of reasoning is that they should at least reduce the effect of the over-valued currency by reinputting prior advances, when the Cedi-dollar exchange rate was 1.15:1.00, on the basis of the current rate, 2.75:1.00. This represents a factor of 2.39.

There is another option, at least theoretically in future operations. This is to neutralize the effect of inflation by "indexing" loans. Borrowers would be required to repay principal recomputed on the basis of a specified price index, plus interest. It probably would be extremely difficult to gain acceptance of this practice in Ghanaian agriculture, but continued inflation may force the choice.

It should be noted that the same factors sharply affect the financial resources and monetary management concerns of the Ghana government. GOG must be careful that advances of funds really will achieve desirable and productive purposes in full proportion to expenditures. A "liberal" policy extending over a number of such cases would add to the fuel of inflation unless the productive response were sharp and rapid. The responsibility of monetary authorities in these circumstances is to assure that their actions provide part of the solution and do not add to the problem. The request for extensive reports, high standards, and strong justifications by BOG from ADB should not be taken as proof of their disinterest in the credit program. A degree of tension is not surprising, and ADB should continue to present its case as strongly as possible.

At the level of loan operations, the external factors leading to scarcity of funds for loans sharply restricts the number and size of loans. There now is discussion, but no action so far, about making revised plans concerning the number of ADB branches and offices.

C. Technical Analysis

1. Technical Design. The ADB had 13 branches and 8 subordinate loan offices in September 1976. The target was to establish 15 to 19 new FLO's in the first 20 months and a total of 39 new outlets in the first four years. The number of borrowers (participants in groups, primarily) was about 42,000 in 1975 and a peak of 72,000 in 1976. The target was to extend credit to an additional 10,000 to 14,000 farmers in the first 20 months.

Credit operations were rather conventional, though handicapped for small farmer credit by being centralized. The target was to decentralize by providing better trained staff and by authorizing them to make loans up to certain limits. Actions were projected to simplify application forms and otherwise streamline operations.

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An extensive in-country program was planned, plus some training in the U.S. A full-time expatriate training officer was provided.

Funding was provided to purchase vehicles for the new facilities and also appropriate office equipment.

2. Changes in Design. There have been no significant changes.

3. Progress. This evaluation represents 32 months since grant activities started, but only 12½ months of loan activities. In this time 9 additional credit facilities were started. The number of participants was 40,263 in 1978, slightly below the 1975 level.

The amount of cedis in current terms has increased, but the real value has declined sharply, based on the consumer price index, as indicated by the following tabulation of loans to small farmers:

<u>Year</u>	<u>Current Cedis</u>	<u>1973 Equivalent of Loans</u>
1973	4,848,913	4,848,913
1974	9,353,101	8,068,498
1975	8,856,384	5,767,197
1976	10,241,870	4,267,059
1977	16,675,723	3,212,014
1978	19,358,459	2,155,250

The average loan per participant in real terms has fallen sharply from 1973-74 levels, and somewhat from 1976 to 1978. The target set in the PP in 1975 was an average loan of 500 cedis per participant at 1975 price levels, growing to 1000 cedis per participant by the end of the sixth year to allow for expansion and increased use of purchased inputs. The actual average was 212 cedis in 1975, and 481 cedis in current terms in 1978. However, with an increase in the price index of 485 percent, the 1975 equivalent of 1978 loans was only 82 cedis.

Considerable progress has been made in training, with five courses completed and 37 trainees now in the field.

Several actions were taken in early 1979 to increase delegations of authority to branches and FLO's install a new group loan application form, develop and maintain improved internal records and monitoring, etc. ADB and AID financed contract staff were not entirely satisfied with the changes achieved, and were working for further improvements. Tangible actions during April, May and June 1979 no doubt were built on earlier foundations, but nevertheless represented solid accomplishments.

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While certain targets with respect to numbers of facilities, etc. have not been met, the progress in these terms has been fully ample as long as loan funds are so limited. Loan offices have been forced to stop receiving applications, have refused many, and have only partially met many requests.

The widespread refusal of loans and provision of only part of the needs of applicants is extremely damaging. Borrowers who cannot get their full credit needs from ADB probably will go elsewhere for additional credit. They probably will repay other loans before ADB, due to higher interest plus the expectation from other sources of further loans to finance the next crop season. Only the group sanctions in group loans provide much protection from these tendencies. In many or most cases, repayment of loans without expectation of further loans may damage the productive ability of farmers or impose personal hardship. Documentary evidence of these relationships was not sought, but all persons connected with the ADB program either volunteered such reasoning to the evaluation team, or endorsed the reasoning.

4. Current and Foreseeable Needs. The primary need is a large increase in loan funds. However, even with the strongest expected support from BOG and other key policy agencies, the original targets are not realistic. Savings and demand deposits at ADB branches provide some funds, but this is not expected to grow rapidly. Therefore, action is needed to set new targets and establish revised plans with respect to numbers of facilities, staff, and geographic coverage.

The program started with about 40,000 participants. Bringing these up to the standard of 500 cedis each in terms of 1975 values, and providing for 10,000-14,000 additional borrowers, as projected would have required 146 million to 158 million current cedis at the end of 1978. Realistic forward projections of inflation rates indicate the prohibitive amount of financing required to meet the targets set in the PP: 68,000 additional borrowers with 1,000 cedis each in 1975 terms, and presumably the same level for the initial 40,000 borrowers. The evaluation team considers it impossible to select a meaningful set of specific estimates of inflation rates at this time.

USAID/G written comments suggest that an average loan of 1350 cedis be applied in arriving at the number of cedis required at the end of 1978 to reach the PP target. This figure is considered to involve mis-interpretation of data. The only inflation data used in this report are those on page 11 : 56.3 percent for 1976, 116.3 percent for 1977, and 73 percent for 1978, resulting in a total factor of 5.849 for the the three years.

New targets may appropriately be established for Phases II and III, with respect to average loan amounts. Small loans are desirable, as long as they are sufficient to satisfy all or most of the credit requirements of the target small farmer, allowing him to secure the minimal inputs that will allow him to increase his output or otherwise provide an increased income.

ADB considers lack of staff housing and continued lack of sufficient vehicles significant handicaps. After new targets are set, USAID/G may want to consider with GOG policy officials the priority uses of materials and equipment bought with AID loan funds. An independent recommendation and decision for the credit program is not appropriate.

5. Economic Soundness. The economic results of using credit for farm production inputs depends on the costs of those inputs, cost of the credit itself, production, responses to the items financed, and prices received. With two inputs heavily subsidized, fertilizer and seed, and credit also subsidized through a substantially negative real interest rate, it would require poor technology indeed to lose at the farm level. Still, there is some indication much of the credit is used to hire labor to expand farm operations rather than to purchase improved inputs. This raises a question about the farmers' recognition of the value of the purchased inputs, more properly discussed in other sections. It is sufficient to say here that any technology that repays total costs certainly will be highly profitable at the farm level if those inputs and the credit are subsidized.

Comparable analysis should be completed at the social level including all costs. This is considered impossible under current conditions for reasons presented in the Strategy and Administration section. The issue is most complex for credit since the full set of inflationary, cedi valuation and fiscal issues come to focus on this program. Finally, realistic projections of loan recovery rates are needed and were not available to the evaluation team. The PP set a target of 10-12 percent losses and 10-12 percent delinquency at the end of Phase I. ADB staff report insignificant bad debts and 18 percent delinquency under the group loan program. This result, if it is based on solid data, would be very favorable. MIDAS staff consider 20 percent losses a realistic goal for the long term.

Thus, the true issue is whether the economic benefits at the society level of inputs purchased through credit have such a high return to the economy that fiscal authorities can afford to allocate funds in a sharply inflationary situation to the credit program, and in what amount. The subsidiary issue is the existence of a revenue collection system that will allow government to recover its costs, or avoid other expenditures. Data are not sufficient to provide answers; the analysis and decisions must remain primarily with monetary, fiscal, and planning officials.

D. Institutional Analysis

The original institutional design has been followed rather closely. The primary institutional issue today is not a question of structure but simply the number of facilities required to carry out lending services covering whatever limit of funding may be available. Five hundred participants has been identified as a minimum number to justify a branch or office. The PP set a

target of annual growth from 500 to 2000 in three years, suggesting this as an efficient level. This and other data suggest that a loan facility should have from two to eight million cedis in loans at mid 1979 price levels to provide the equivalent of 500 cedis each at 1975 price levels to 500 to 2000 participants.

If the target number of borrowers and loan facilities must be reduced sharply, should the program be concentrated in selected districts? This appears necessary on economic grounds, and while not politically ideal, must be accepted.

E. Conclusions and Recommendations

Production credit is vital to realize increased output and higher productivity from small farmers in a short period of time. The design and strategy of the ADB system appear sound, except that their ability to survive under conditions of rapid inflation and related financial stringency is in question.

The general conclusion about the credit component in relation to Phase I targets divides into two parts. Some institutional targets have been largely met, and others partially, such as expanding the number of facilities. Targets reaching closer to benefits and farmer impact, the volume of loan funds and number of farmers reached, have not been met at all. Loan funds in terms of buying power in 1978 were only 37 percent of the 1975 level. The institutional progress is meaningless under these conditions. ADB is a significant victim of the economic situation of Ghana.

ADB should continue to strengthen its internal operations and present the case for its credit program to BOG as strongly as possible. The case for capital restoration to offset the effects of inflation is strong, but has not been identified as a definite commitment or obligation. However, ADB and MIDAS management should not expect miracles from BOG.

ADB and other lenders may be forced to "index" loan repayments, tying the amount to a price index, if inflation is not sharply reduced.

Once the constraints to loan funds are identified, new targets must be set concerning numbers of participants, loan facilities, and staff. Concentration in a few regions is considered necessary, with a reduced target number of facilities. Atebubu District should be served adequately, in order to provide a good test of the MIDAS strategy. The Atebubu test will guide in further expansion if financial constraints are reduced, and if the pilot test is successful.

Most or all the loan needs of each borrower accepted should be met, with a strong effort to meet the continued needs of each one.

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ADB should investigate ways to insure truly equal availability of credit to women farmers. However, the evaluators recognize this is not a need comparable to working on the critical issues facing ADB.

ADB falls short of the hopes and targets set in the MIDAS design. ADB has discussed the suitability of the specification that the small farmer credit program be limited to farmers having 10 acres or less in crops. A system of variable ceilings has been proposed, involving the type of crop and productivity in the area. The idea is to provide financing to a farm unit that will provide a specific potential net income. While economic rationale is good, implementation would introduce much complication and possibility of evasion. The pressure on ADB staff at all levels to finance larger operations probably is considerable. No change in the 10 acre limit is recommended at present. Virtually all adverse external factors fall full force on the credit program, so the credit program internally cannot accept full responsibility for its problems. Work should be directed to continuing the basic strategy with reduced targets, and the strategy not abandoned at this time.

V. SMALL FARMS SYSTEMS RESEARCH

The goal of this component is to conduct applied research, properly designed to address the constraints to improving the production, income and welfare of the rural poor, which is essential to the growth, development and stability of Ghana.

A. Progress

Some technology exists for extending to small farmers but a substantially increased technology package is required, both in quantity and quality, to achieve the project goal.

Agricultural research is undertaken by the numerous member institutions of the Council for Scientific and Industrial Research (CSIR) and the universities, governed by the National Council for Higher Education which are all independent of the MOA. Applied research is one of the components of the Grains Development Board of the MOA. Coordination between the CSIR, the universities and the MOA is very limited and minimally effective. There is little applied research and even this is not readily available to farmers.

The Agricultural Sector Assessment of the DAP underscores the critical need to increase understanding of the interrelationships between cultural, sociological, ecologic, biological, agronomic and economic factors that typically underlie the activities of small farm systems in Ghana. The PP addresses the need for a problem-oriented, applied, multi-disciplinary research capability within the MOA.

1. Original Strategy. The MOA is the main vehicle by which farmers in Ghana are provided with farm inputs and extension services. Basic and applied research efforts, however, have been left primarily in the hands of CSIR and the nation's universities. There is and has been a dearth of research results from these institutions and what little there are available have not reached the farmer due to a lack of communication between the research institutions and the MOA which provides the extension services to the farmers.

This component of the Project is to be limited basically to the Atebubu District. After considerable discussion within the MOA, it was requested by the MOA that the University of Science and Technology (UST) Faculty of Agriculture be the implementing agent for the GOG. Thus, UST will provide the management and senior research staff that will eventually take over the management and operation of this component in the Atebubu District. However, unlike previous research staff efforts, the MOA will provide extensive support in the area of support staff and extension services.

Research, properly designed to address and eliminate some of the constraints the small farmers face, is essential to stimulating an increase in the production on small holdings. To understand the role of technology in rural development, it is imperative to understand the natures of the

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interactions of technology with physical, socio-cultural and economic factors, level of institutional development, availability of trained manpower and the existing physical infrastructure. These interactions have profound implications for the steps necessary to develop technology which is suited to specific conditions, the means of communicating technology to the rural people who must make decisions relative to their production and consumption patterns, and the forms of sociological organization which must evolve to make use of the technology developed. An understanding of the nature of these interactions must form the basis for a research program strategy. Appropriate research, responsive to all of these factors, can seldom if ever be conducted by one or two researchers isolated from the mainstream of research. Instead an interdisciplinary team of researchers is required to insure that all these factors are considered as the research program is planned and initiated.

2. Actual Situation. The strategy described immediately above has not been changed.

B. External Conditions

The delay in signing of the Project Implementation Order, Technical (PIO/T) for the International Institute for Tropical Agriculture (IITA) contract has caused considerable postponement in negotiating and completing the contractual arrangements with IITA. It was not until May 1979 that the PIO/T was finalized. The contract was signed during this evaluation, June 1979.

C. Technical Analysis

1. Technical Design. This component will establish a research station within the district which will be staffed by a multi-disciplinary research team of Ghanaian and IITA scientists, the applied research effort is planned to encompass:

- a. Agronomy-cropping and farming systems for the Atebubu District.
- b. Agricultural economics - the economics of research results.
- c. Rural sociology - sociological/cultural factors affecting adoption of new practices and technology.
- d. Extension methods and materials for extending research results to farmers as well as feedback from the farmers.
- e. On-farm storage - new structure and systems for reducing crops storage losses.
- f. Entomology and pathology - short-term consultancies as the need arises.
- g. Environmental analysis - monitoring environmental impacts of intensified farming activities.

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Given the experimental nature of this component all AID inputs will be grant funded over Phases I and II. The original budget included:

- a. Approximately \$640,000 for 13 person-years of U.S. technical assistance through the IITA contract (4 person-years for a farming systems specialist, 4 person-years for an agronomist, 4 person-years for a farm storage specialist, 5 person-months for an entomologist, and 5 person months for a plant pathologist); \$40,200 for furnishings for long-term IITA contract staff.
- b. \$72,000 for 4 person-years of participant training (2 person-years each for an agronomist and farm systems specialist).
- c. \$40,000 for vehicles and spare parts.
- d. \$30,000 for laboratory and office equipment.
- e. \$2,000 for survey equipment.
- f. \$32,000 for field surveys.

The estimated GOG contribution consists of:

- a. \$72,000 for 12 person-years of Ghanaian senior staff (4 person-years each for a rural sociologist, farm management and marketing specialist.
- b. \$96,000 for 20 person-years of support staff including a livestock specialist, a veterinarian, an extension specialist and fisheries specialist.
- c. 28,400 for clerical staff.
- d. \$69,600 for operating costs of the research station over the life of the project.

2. Changes in Design. The draft IITA Contract states that the purpose of the work is to assist the GOG to develop a small farms system research capability with initial implementation in the Atebubu District. This effort shall include the development of systems of land management which will increase and maintain soil fertility of the upland and hydromorphic soil regimes of the area's major food crops, the identification of improved agronomic practices for these crops which are consistent with the capabilities and circumstances of local farmers, and the testing of combinations of improved food crops and cultural practices. As an addition the project will endeavor to train a cadre of Ghanaians to assume responsibility of all aspects of the Small Farms Research Program at the earliest date possible.

The objective is to obtain a sound knowledge of the existing farming systems, the socio-economic environment, and their associated plus factors and constraints in the locality served. The effort will consider and rationalize the farm economics, practicability and social implications of the innovations proposed.

To perform the work necessary to meet the purpose and objective noted above, IITA will provide the following staff:

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Land management/systems Agronomist for 36 person-months
Agronomist/Breeder for 36 person-months
Short term consultants for special research problems and may include pathologists, agronomist, statisticians, physiologist, plant breeders, agricultural economists, rural sociologists, etc.

3. Progress. As mentioned above, the IITA contract was signed in June 1979. A 600 acre tract of land has been made available near Atebubu for the research farm; 10 acres will be selected within this area for the trials and another 10 acres for the buildings.

The Soils Research Institute (SRI) of the CSIR has been given a grant to conduct a soil reconnaissance survey of the Atebubu District and this should be completed by early 1980.

Living quarters consisting of six mobile homes have been erected at Atebubu, a few miles from the site of the proposed research farm. At the time of the team's visit, water and electricity had not been connected to these units. The units must be air-conditioned as they have sealed windows.

Attempts are being made to recruit a Ghanaian staff to work on this component. If additional training of these recruits is required it will be done either at in-country universities or at IITA.

4. Current and Foreseeable Needs. The soil survey of the District should be completed as soon as possible to determine the soil types/classification now under cultivation or having an agricultural potential. At the same time a more detailed soil survey of the 600 acre research farm should be made. The grant document with SRI should be amended now to reflect the needs for this survey of the research site. The soil types of the District should be compared with that of the research farm to insure it will be located on a soil representative of the major agricultural production.

5. Economic Soundness. Economic analysis of research investments is almost impossible in the short run in any situation, and subject to controversy in the long run. Conceptually, a research breakthrough may allow a specific reduction in the cost of producing a crop. The difficulty arises in separately estimating costs and returns, including shifts in prices resulting from increased output, as those costs and returns relate to the research, the extension activity, and the productive process itself.

The only supportable conclusion is that successful research (through good organization and staffing, or through pure luck) may pay high rewards. The payoff usually is slow, and the certainty in any small activity is low to moderate.

D. Institutional Analysis

The PP, as noted above, explicitly states the need for a problem-oriented multi-disciplinary research capability. It is extremely doubtful that this multi-disciplinary approach can be undertaken with two full time scientists and a few consultants from IITA plus some Ghanaians who are to be recruited and trained in the immediate future.

The evaluation team considers this component as now designed another example of the diffusion and erosion of a research program for Ghana. Notably, the MIDAS research component is not clearly coordinated with CSIR. It is noted that USAID/G is more confident, and considers that the component offers a coordinate approach to various research activities at a pilot experimental level.

It is going to be extremely difficult to recruit and post Ghanaians to the Atebubu research farm. There are too many vacant posts in research/education in locations with many more amenities and professional advantages for qualified Ghanaians to be attracted to this site.

E. Conclusions and Recommendations.

Even though the responsibility for agricultural research is primarily divided between the CSIR and the universities, other institutions/organizations play a minor role in this endeavour. The Grains Development Board, and two other components of the MIDAS project are examples, and there are still others.

The level of effectiveness, and amount of research aimed at removing the constraints with which the small farmers have to contend, is minimal. About the only parts of the research program which are adequate are land and buildings. Trained staff, transport, and laboratory and field equipment need better and more support.

The research priorities for the agricultural sector are established by the MOA. However, the research is not coordinated nor is it related to the MOA's priorities. As pointed out above, there is much duplication of effort. There is such a dire need for applied agricultural research in Ghana, that steps must be taken to improve the situation as early as possible. Some of these should be given immediate and continuing action under a national program, and other specifically under MIDAS. It is not proposed to expand MIDAS sufficiently to encompass a multi-disciplinary national program. However, in the immediate future it is apparent to the team that greater emphasis should be placed on agricultural research. The scope and magnitude of a program of this nature is no doubt of such size that an independent project should be designed by some donors, and made operational.

National Program

1. Establish an effective and operational control system to insure against duplication of effort and most important, one which would address the removal of constraints to increased agricultural productivity.
2. Design a research program which would be in line with the priorities of the agricultural sector of Ghana, particularly reflecting the needs of the small farmers. The priorities established must be made known to all researchers.
3. Set up at one institution a multi-disciplinary research program with adequate staff members to conduct overall research on the major food crops of the country. This would include improvements to each crop and the techniques associated with that crop and just as important, consider the crop associations and farming systems of the small farmers.
4. By working in conjunction with the extension system, establish a two way system of dissemination of results to the farmers and gather information from the farmers concerning their problems which in turn should be solved by the research staff.

Midas Actions

5. Restudy the MIDAS research component in relation the preceding criteria and objectives, and revise or expand moderately to insure that it contributes at least modestly.
 - a. Are the institutional and professional linkages with other research activities adequate?
 - b. Is the amount and professional breadth of personnel sufficient to conduct a meaningful program and expect to achieve results?
6. Are adequate facilities and equipment available to support the research team at the Atebubu station and off-station in the District? Should most of the research be conducted at the station during the early stage?
7. As new plans and decisions are made regarding national research programs, adjust the MIDAS research component accordingly.

VI. EXTENSION/DEMONSTRATION

"The primary objectives of this component were (1) to expand the field demonstration programs of the Extension Service and the Home Extension Unit of the MOA using appropriate fertilizer mixes and improved seeds and cultivating practices, and (2) to strengthen the capabilities of the Home Extension Unit, supported by the Department of Home Sciences of the University of Ghana, to serve more women in their roles as farmers, farm laborers, and home managers."

A. Progress

1. Original Strategy. "Both the Agricultural Extension Service and Home Extension Unit are faced with several problems in their programs to effectively assist farmers. The principal difficulties center on limited availability of appropriate applied small farm research results, insufficient transport, materials and equipment to conduct demonstrations, inadequate evaluations, and more importantly, too much involvement in the distribution of inputs, leaving little time for extending information, farm visits and organizing demonstration programs." The strategy was to work toward solving these problems by expatriate technical assistance, training of Ghanaians in the U.S., provision of vehicles, limited equipment, and materials for demonstrations. Availability of small farm research results would be improved through the research component of MIDAS and from other research activities. The distraction of extension staff with distribution of fertilizer and seeds would be removed by assigning this function to the private sector.

2. Actual Situation. The strategy has not changed in any significant way, but the degree of implementation has been slight in the primary production-directed crops demonstration program.

B. External Conditions

Inflation and GOC political changes have handicapped and delayed somewhat the progress directly under this component. These effects have been moderate, however, since activities of this component are not significantly dependent upon the availability of materials and direct financial assistance. Shortages of local building materials have slowed progress in the demonstration homes activity. The effect of external conditions on the fertilizer and seed components have complicated, but not prevented, action to transfer fertilizer procurement, and fertilizer and seed distribution to the private sector and thereby allow extension officers to do their technical work.

C. Technical Analysis

1. Technical Design. The primary thrust in crops demonstration was to increase the number of fertilizer and seed demonstrations on a national basis. This would be related to other project components relating to the use of fertilizer, seeds and agronomic practices, and the research component. AID

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funding included grant funding for fertilizer and seed for the first year, and training aids and demonstration materials throughout the project. A resident extension specialist was planned. A few vehicles and limited equipment, supplies, seeds and fertilizer were funded.

Crops extension work would be done by the Extension Service, MOA. This service had about 24 senior technical officers, 600 senior production officers, 32 senior technical officers and 300 technical officers (a total of 956) at the time of project design. The senior technical officers have university degrees and production officers have university diplomas. Technical officers have a basic 3-year certification training course. Production officers and technical officers are posted with district or sub-district responsibilities. They are charged with disseminating information to farmers through meetings, farm visits, receiving office calls, and establishment of demonstrations.

The Home Extension Unit was charged with encouraging improved nutrition through production of foods rich in protein and vitamins, encouraging improved storage and preservation techniques to reduce losses and to extend seasonal availability, and also providing information on improvement management techniques of the farm and household resources. This program was started in 1970, and in 1975 had 15 supervisors and 57 field extension programs reaching women and youth in their villages.

The unit was supported from the Department of Home Science, University of Ghana. That support was extended under AID funds outside of MIDAS in 1975, to build a workshop/laboratory on the University campus.

MIDAS assistance plans included (a) an additional 40 farm/home demonstration centers over a 10-year period, (b) purchase of vehicles and demonstration materials, (c) completion of the University laboratory, (d) fertilizer and seeds for demonstrations, and (e) 60 person-months of participant training.

2. Changes in Design. There have been no design changes in crop demonstration.

The home extension design has been modified by a primary focus on programs centered at a limited number of demonstration homes. These homes provide visual evidence of improved techniques and will provide practical experience to selected women on a living and working basis. Techniques and designs include design of improved houses, housing components, furnishings, stoves, storage facilities and methods, improved sanitation, gardening, foods from trees in the compound and garden, and the propagation and care of chickens, rabbits and goats. All substantive elements of the original design are included; the design revisions primarily provide increased focus and concentration of the activity.

The Grains Development Board was established prior to MIDAS. One of the objectives of the GDB is to extend research results to farmers producing cereal and legumes by carrying out demonstrations of improved

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cultivation practices throughout the country on maize, rice, sorghum and groundnuts. The extension services provided by the GDB are in many cases a duplication of those provided by those of the MOA. Cases of contradiction of extending information to the farmers were cited to the evaluation team. The GDB staff give the farmers a set of instructions for cultivation of a crop which sometimes are different from those of the MOA extension workers.

3. Progress. The Extension Service has had to curtail its assigned duties due to the shortage of transportation for the staff to move from their offices to the farmers, and the diversion of some of the staff from their assigned duties as extension officers to that of distribution agents for seeds and fertilizer. Some staff members have been lost to such agencies as GDB.

The Home Extension Unit has been able to complete the construction of one demonstration home, and nearly complete five others. The original plan was to build seven more, but it has been decided not to complete the seventh.

4. Current and Foreseeable Needs. The Home Extension Unit might wish to consider the construction of a very limited number of houses which are less costly to build. This might be partially accomplished, for example, through the use of thatch for the roof instead of corrugated asbestos sheets.

Until the Agricultural Extension Service can divest itself of the responsibility of the distribution and sale of fertilizer and seeds, it will not be effective as planned and expected. Probably more important, as long as the staff is paralyzed and immobile because of the lack of transportation facilities, namely vehicles including 4-wheel types and motorcycles, the extension workers will not and can not make farm visits. The number of staff members is more than adequate given their current transport facilities. If the sales responsibilities are removed and more vehicles are made available, then there may be a shortage of technically qualified officers.

5. Economic Soundness. Economic analysis of extension faces similar but greater problems than analysis of research. Improved technology is assumed to exist, which would allow a farmer to increase his net returns through greater output or lower costs. An extension program would convey this knowledge to the farmer. The difficulty arises in estimating the changes that occur and then separating research, extension and other sources of those charges. Analysis of extension in various developing countries indicates the possibility of excellent results. The payoff is likely to be slow unless results of the improved technology are dramatic, or the extension staff are highly successful in gaining the confidence of producers.

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Similar reasoning applies to the demonstration homes activity, though the benefits may be more in terms of quality of life and improved health.

D. Institutional Analysis

Shortly after the coup in 1966, the MOA requested USAID/G to assist in re-establishing their more or less defunct agricultural extension service. Ray Johnson was assigned the task of advising the MOA by making recommendations for organizing and developing an extension program. Johnson recommended what he called the Focus and Concentrate program. It was designed to focus upon limited geographic areas and four food crops and concentrate available resources within those specific priority areas and their specific crops.

He recommended:

1. That a three-year pilot intensive agricultural production program be implemented as the initial step.
2. That extension's presently available technical personnel, and such new personnel as could be provided for expansion, be first concentrated on these areas and crops, and that an expanded program of training and in-service training be initiated.
3. That the Extension Service be divested within two years of its commercial activities such as Direct Services, Mechanical Services and Seed Multiplication Farms.
4. That National and Regional overall staff vacancies be filled within a year's time by technically qualified fieldmen who could and would be expected to travel at least 35 percent of their time.

That the entire Extension Service be made more mobile, not being limited to areas of concentration. Very limited numbers of four-wheel transport vehicles at national and regional levels should be made available. District level supervisors could use motor bikes. Field men at farm level should have bicycles.

No additional vehicles should be provided, however, unless government budget and regulations permit the use of same for field work at least 60 percent of the time. The three recommended area programs, however, should not be started unless the employees could be made mobile immediately. The countrywide transport could be arranged for and provided over a staggered period subject to resources available.

5. That the Extension subject matter staffing at National and District levels in agronomy, fertilizer use and economic entomology where the intensive production areas are located be filled on a priority basis. Ghana's Extension field men are not technically educated in Agricultural Universities. Hence, for them to be able to furnish immediately the techniques to cultivators, requires the intensive training of these field men in the essential techniques followed up by regular and full backstopping by technical persons.

This is where the Extension subject matter specialist comes in.

6. That total country wide resources in agricultural research agencies, agricultural universities, agricultural training institutes and the Agricultural Credit and Cooperatives Bank be made available as needed in this recommended pilot operation. Such agencies and even those in the Ministry of Agriculture outside of the Extension Service which now carry on Extension-type activities should have such work transferred to the Extension Service. The Extension Service should eventually be the sole voice of the Ministry of Agriculture when speaking to farmers. This is especially true in a country which has such a critical shortage of top level technically trained and competent manpower.

This will not come about without very strong top level control and coordination. The use of budgeting controls would probably be required.

7. That Ghana quickly examine and make use of experience of other nations which have recently faced the problem of having to concentrate resources to meet real food shortages and which have mounted intensive agricultural area and crop production programs.

8. That assistance be sought for a two-year advisor outside Ghana who has had experience in national extension administration and planning.

9. That the Extension Service organization for intensification of effort be expanded to service more areas or crops as the "focus and concentrate" approach is understood, more budget is available and training has developed sufficiently. The recommended pilot operation should give needed experience.

10. That export crops be supported by Government outside the initial mass food cereal program recommended herein. The farmers of Ghana understand basic culture of the cereals, so that results should be measurable sooner from an investment upon them.

11. That production incentives to stimulate and maintain farmer interest and action be given special consideration. The marketing and distribution of both physical production inputs and of the products grown should be given immediate attention. An example would be in following a policy of producer oriented pricing of crops grown rather than the often more popular consumer oriented pricing.

12. That at the end of the three-year pilot program operation an evaluation of the operation be made with a view towards expanding the area to be intensively served by Extension. Expansion should be on the basis of taking advantage of the experience gained. Expansion should aim towards eventual development of a national program.

At the end of the first three years, this project was evaluated by several different people who came up with about the same number of

different conclusions. The latest evaluation available to the team was probably the most thorough and candid. In this one, it was concluded that the Focus and Concentrate program made a significant contribution in developing an extension program that had wide adaptability in Ghana. If there is little or nothing to extend (lack of research information and results) as is true in most of Ghana, it is not wise to invest large sums of money in an extension service.

E. Conclusions and Recommendations

The current and prospective crops demonstration program, in association with the seed and fertilizer distribution program, is considered too formless, scattered, and small in scale to produce identifiable results. This is particularly true from the current starting point of reported nearly total lack of technical extension work. Not only will results be difficult to identify, but lack of coordination and extension with inputs will reduce the actual results. An action plan designed to more nearly assure that recommended inputs actually are available and used by a major part of the farmers receiving information based on extension demonstrations is needed. The plan should also include the identification of those farmers, through a base line study, who are to be provided the necessary assistance in the form of inputs and technical know-how. During the project, production and financial information should be collected from these farmers to determine the effectiveness of the inputs and technical knowledge.

There should be further planning and efforts to carry crop demonstrations to women as farmers. The demonstration homes program may provide the best base for linking extension staff including the male staff with the information needs of women. Progress may be slow with the best of efforts.

VII. MARKETING

The marketing component of MIDAS was planned and continued to be a small activity confined to Atebubu District on a pilot basis. The primary activity to date has been a thorough analysis of marketing in the district in 1977, ending early 1978, by a competent team from Stanford University assisted by staff members of UST. Their report, "Food Crop Marketing for Atebubu District", dated January 1978, and a supplemental report dated June-July 1978, provide extensive description and analysis. This section relies heavily on their analysis and conclusions.

A. Progress

1. Original Strategy. The primary objective of this component has been to improve the understanding of the traditional food crop marketing system, so as to permit design and execution of effective marketing interventions. Secondly, pilot interventions were to be identified from initial studies and implemented to test results.

The studies and actions were to be implemented by the Development Finance Department of BOG. It was anticipated that interventions would include a pilot program of credit to traders. Traders would be encouraged and assisted in organizing themselves to help plan and implement interventions. A monitoring team was provided, to observe and report, but not manage, the actions of traders and results of interventions.

2. Actual Situation. A one-year baseline study was completed by Stanford University and UST researchers. Three activities/interventions were recommended and accepted. Plans were completed to extend credit to a few traders through the ADB Office in Atebubu.

Second, a service center for maintenance and repair of traders and trucks is planned at Atebubu. Third, modest improvement in selected market facilities were planned.

Agreement was reached with the Bureau of Integrated Rural Development (BIRD) of UST to monitor the program and for Stanford University to evaluate it.

B. External Conditions

Events leading to delay in the grant agreement delayed marketing action somewhat. The Atebubu marketing study was then started very quickly. Budgetary and administrative problems in GOG probably have contributed to certain actions falling essentially 18 months behind the original schedule. Also, price increases have exceeded the inflation rate estimated in the PP. The PP projected costs of marketing actions at \$509,800 including \$460,500 of program for four years at 1976 prices and \$49,300 for estimated inflation. Current estimates for four years total \$484,300 including \$353,500 of program at 1976 prices and \$130,800 for inflation. With about the same total cost, the amount of real inputs was reduced one-fifth.

Essentially nothing could be done within the component to overcome the adverse effects of external conditions.

C. Technical Analysis

1. Technical Design. The design has been described in the preceding Introduction.

2. Changes in Design. There have been no significant changes.

3. Progress. The prescribed marketing survey and analysis was completed in considerable detail. Arrangements have been completed for loans to selected small traders through ADB, with loans planned in July 1979. Plans have been developed to employ a market administrator to provide liaison between District Officials, market councils, traders and trader groups for identifying improvements in market facilities.

4. Current and Foreseeable Needs. All analysis of marketing conditions identify transport for products as a critical constraint not only in marketing but to the food supply. Equipment is strained to its limit or inadequate both to assemble foodstuffs at rural market centers and to transport them onward to the cities. The farmer now employs tractors pulling trailers, primarily, and then three to five ton lorries are standard equipment between towns.

The shortages can be documented from data showing constant or declining numbers of tractors and registered lorries. The Stanford report calculated that all privately owned tractors in Atebubu would be fully employed during the several month marketing season, making an average of 78 trips to evacuate the yams. Several interviews in the Atebubu market on June 11 found instances where both the collection of yams and their onward movement were being delayed.

It should be noted that farmers interviewed in the Stanford study in 1977 did not consider transport a major problem, even though other analysis of the situation indicated it was. In any event, the need is considered substantial today by the evaluation team.

Part of the shortage is due to scarcity of spare parts, batteries, and tires. Scattered data suggest that perhaps half or more of the tractors in the public sector and ten to twenty percent of private sector tractors are idle. No data were noted concerning lorries. Casual observation at numerous locations indicates the problem is extensive.

Further, maintenance cost would be reduced and vehicles could operate more efficiently if road maintenance were improved. Equipment for road repairs is believed to be at least similarly handicapped by lack of spare parts.

Assistance to GOG in the form of a loan for purchase of spare parts for tractors, lorries, and road maintenance equipment suitable for feeder roads is considered a high priority item for AID. No data are available on the scale of the need, particularly with respect to parts, batteries and tires available in the U.S. Most equipment is from European sources, and Japanese to a minor extent. Even so, Ghana may be able to absorb several million dollars worth of these items from U.S. sources. The need for standardization of vehicle and tractor types, durability, and relative costs from various suppliers and countries are major considerations in additional imports.

Beyond spare parts, AID may want to consider a loan for purchase of additional lorries and possibly tractors.

The scarcity of spare parts has been severe. The extent and implications of this situation for feasibility of the proposed workshop at Atebubu were discussed extensively at the April 19 seminar. The issue was, how could enough spare parts be kept in stock at Atebubu? The evaluation team learned that various actions were underway to greatly relieve the shortage of spare parts throughout Ghana. Therefore, plans for the workshop are considered feasible, high priority, and should be continued.

The strategy of pilot interventions and careful analysis of responses is considered appropriate for improvements to facilities, increased credit, etc. Market facilities are relatively primitive, but it is not certain that improved facilities would result in substantial gains. Experience in other countries suggests a cautious approach to "bricks and mortar" market improvements. Ghana probably has more critical needs requiring off-shore purchases.

It may be noted, however, that the wholesale markets of Accra and Kumasi are extremely overloaded and have absolutely minimal improvements. The conditions probably result in additional losses of products and involve some health hazards in the lack of sanitation. These conditions and expected continuation of population growth in the cities will about force major expansion or improvements within a few years. The Stanford report, particularly the June-July 1978 supplement, provides some description and analysis. GOG with the assistance of some donor group should initiate within the next year or two further studies leading to specific planning.

5. Economic Soundness. It is difficult to apply economic analysis to studies, monitoring and evaluation, which are a major part of the current design. The Stanford analysis made a solid case for interventions they recommended, based on 1977 conditions.

It is considered impossible to complete a numerical analysis of the economics of buying and using spare parts or new transport equipment at this time. Reasons were discussed in the strategy and administration section. However, transport is so vital that conditions and price relationships should be expected following current adjustments, that will provide satisfactory returns. Trucking is found to be rather competitive in most developing countries, and certainly in West Africa. There probably have not been excessive margins; only conditions that allow reduced costs will reduce charges for transport relative to other things.

D. Institutional Analysis

Institutional design of marketing actions is rather simple. Minor changes have been noted such as involving ADB in the credit program.

One challenge was noted at the April Seminar. This is in the manner of selecting the market administrator, and insuring that he/she is regarded as a service person to the marketers rather than a government official. It is one of the intended duties of this person, however, to develop suitable organizations among marketers for setting priorities and planning marketing actions. Therefore it would be difficult to involve the various market elements systematically at this time in selecting the administrator. He/she simply must have the skills to gain full acceptance, or should be replaced.

E. Conclusions and Recommendations

The current strategy and composition of the modest marketing component is sound in most respects.

Action is recommended with AID financial support to purchase from U.S. sources spare parts for tractors and lorries involved in marketing. This limitation can only be interpreted in terms of the types and sizes of equipment normally used for these purposes. Parts for road maintenance equipment should be considered. Financing of additional lorries and possibly tractors may be considered.

ADB, BOG, BIRD and USAID/G are involved in marketing actions, and a working committee has been named to coordinate the actions. This committee should be designated a subcommittee of MPAC to coordinate marketing actions, reporting and responding to MPAC.

Current extensive plans for monitoring and evaluation of marketing actions are appropriate for a pilot program; are under skilled technical leadership at Stanford University and executed in cooperation with BIRD, should be continued.

VIII. SOCIAL SOUNDNESS OF MIDAS

A. Extension Education.

This is an important aspect of the MIDAS program. For a meaningful impact it is considered absolutely important to effect changes in the existing cultural farm practices of the small-scale farmer, in order to increase yield. Again, extension education must be instituted in such a way (see recommendations) as to get more farmers to use the desired inputs (seeds, fertilizers). The problem is not just the introduction of new seeds and fertilizers but it is how to get them in numbers to use these inputs.

The traditional method of extension education is somewhat limited by introducing change agents only from outside a given community. For example field extension workers are primarily strangers to the farmers. They are looked upon by local farmers with detachment in an impersonal way. As hard as these field extension workers may try to educate the farmers it seems it is not really good enough in terms of assessing the impact of this "outside" education.

Learning or acquiring new habits if they are to be accepted, requires a complete understanding and restructuring of ideas through actual practice, symbolic interaction and meaningful experience from peers and accepted leaders. When learning takes place it is seen in a change in behavior. Present social knowledge on this issue is that people learn through active participation and involvement.

Home demonstration is a desirable method and the idea that local farmers or farm communities must be encouraged to select their own innovators or informal educational leaders to introduce the desirable inputs also is desirable.

1. Recommendations. As a social technique, community development rests on the premise that local action can be effective if substantial numbers at the grass roots level are involved in setting new strategies in attacking local problems. Change agents need the active support of community members. Farming is a predominant occupation. The recommended model is (1) that local change agents should be trained, (2) that such agents when trained should be encouraged to own farms in the village to use as demonstration units, (3) that in a community of 1000 inhabitants, for example, each agent must be trained as local resource agents for new ideas, and (4) that farming inputs (seeds and fertilizers) must be made available.

The second major recommendation is that demonstration farm homes need to be built in selected districts. The type of Dawenya-home is a good example. Basically the illiterate population of small farmers learns by "seeing", assessing benefits, and actual and continuous contact with the change agents. In this context women will be brought into the picture. As traditional caretakers of the home, it will be accepted by all that they need to learn new ideas to improve the household.

The National Council on Women and Development can play a leading role in embarking upon a program of extension education. The structure of the council permeates through the regions, districts, and the local level. Potential local women are being trained to introduce meaningful changes into their communities. Farming is one of the priority areas.

B. Research

From the social point of view the present Ghanaian society can be perceived from two perspectives. These are the traditional society and the modern sector. The traditional sector is inhabited by rural and mainly illiterate people. To have any meaningful discussion with them, the researcher must first establish a rapport with them, and listen to what they say.

1. Recommendations. The interview method with discussion approach is a useful method. Secondly, a panel discussion method may help the researcher to gather reliable and valid information. By the panel discussion method, the researcher finds opinion leaders etc. from the community and introduces the topic for his inquiry to them. Through this approach many of them may talk about the issue. Women are usually put in the background. To get their inputs, the need is to get into their homes to solicit their views after supper time.

C. Credit

At present women find it difficult to get credit. This is so because traditionally they are expected to work through men, either their husbands or kinsmen. Two categories of women are found in farming who may need credit to expand their farms (1) those working for their husbands and relatives and (2) those working on their own (single women, widows and divorcees). Again the difficulty in obtaining a loan is not restricted to women only. Small-scale men farmers face similar difficulties. They find it difficult to approach the banks. At times middlemen and some quasi-organizations may act as front men. These factors make it financially unwise to get a loan because of the favors expected by so many middlemen.

It is not difficult to argue that women farmers will repay their bills if they are offered loans. They will use them to improve their yield by buying seeds and fertilizers, if available. They will also use them in hiring labor and to increase their acreage.

1. Recommendations. Cooperative organization (nnoboa) should be encouraged -- to form the basis of a loan obtaining system. That is to say, both in the case of women and men, it is easier for ADB to give loans to a group of farmers (which organization can easily be identified) than to individual farmers. Again, through group associations, learning will take place to improve small acreage farms. Extension education can also be instituted in an atmosphere of active participation and group involvement.

D. Marketing

In the field of marketing the traders (farmers also) work closely within the traditional system. Women dominate the workers. The accompanying statistics show the traditional responsibility of women as compared with men:

- 1. Food Production 70%
- 2. Domestic food storage 50%
- 3. Food Processing 100%
- 4. Animal husbandry 50%
- 5. Marketing 60%
- 6. Brewing 50%
- 7. Water Supply 90%
- 8. Fuel Supply 80%

(see J. North et al, Women in National Development in Ghana, prepared for USAID 1975.)

1. Recommendations. The market places need improvement in terms of structure, hygiene and storage facilities. Tractor services and transport facilities must be provided to help to convey food stuffs from the farms to the market places in and outside the community. For this reason standardization of vehicles is advised so that essential spare parts can readily be found.

E. Inputs

If seeds and fertilizer are available small-scale farmers will use them on their main farms (maize etc.). They know about the advantages but the problems are (1) availability and (2) finding the cash to buy them.

1. Recommendation. Demonstration homes and farms are required in the main centrally placed communities to act as education centers. These homes and farms must be operated by well trained local persons.

IX. INTERNAL EVALUATION

Sound management of a large multi-activity project such as MIDAS requires an ongoing internal evaluation system. The PP described a system for this purpose, including systematic outline of kinds of data required.

The evaluation principles presented in the PP are ample. There is need for baseline surveys in target areas, periodic reviews of progress in the institutional developments necessary to the project, progress in making necessary inputs, and finally, analysis of what actions actually reach the target group.

The PP provides some baseline data, but this should be updated and focused on selected target groups through a well designed survey, perhaps early in 1980. Since few MIDAS actions have yet reached target areas, and certainly not sufficiently to change the situation measurably, 1980 would provide a new baseline survey.

The specific design of the survey depends on the design of Phase II activities.

Responsibility for the entire evaluation process should be associated closely with MIDAS management. One option is to appoint an evaluation officer as an Assistant Project Manager. Monitoring the preparation of annual plan and quarterly reports, preparation for the proposed quarterly review sessions, periodic analysis of institutional progress, and supervision of the proposed surveys all would be considered part of the monitoring-evaluation function. This would greatly assist the Project Manager. Another option is to appoint an evaluation officer responsible to MPAC through its chairman. A third option is to assign the full leadership and responsibility to DERPS. If the function is not assigned directly to the Project Manager, the staff person must nevertheless understand he is to execute evaluation plans set by MPAC, and respond to their requests.

MIDAS management may want to invite an outside consultant to help prepare specific evaluation plans. This probably should be done about the time Phase II project plans are being prepared. USAID/G already has had correspondence with the U.S. Bureau of the Census unit associated with AID, concerning its interest and availability of assistance.

While there are other units that might conduct necessary surveys and analysis, the most logical is DERPS of MOA. In terms of building a logical system for MIDAS activities, this responsibility for DERPS would add to the close association of MOA with the project. An outline of current responsibilities of DERPS related to MIDAS evaluation follows:

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A. DERPS Functions

The agricultural problems identified to be researched by the Department are almost identical to some of the problems which the MIDAS evaluation system is based on.

The Department of Economic Research and Planning Service was established in 1977 with the following four functional sections: (a) farm economics; (b) statistics; (c) marketing; and (d) project preparation and budgeting, to service the six functional departments (General Agriculture, Animal Husbandry, Veterinary Services; Fisheries; Irrigation; Mechanization and Transportation) of the Ministry of Agriculture.

1. Farm Economics Section. Farm Economics Section carries out farm economics surveys. The section addresses itself to: a) collection of (data) information about the availability and characteristics of resources which are at the disposal of farmers and thorough study of their current utilization.

- a. Project Formulation. The analysis of farm economics focuses on key efficiency factors which revolve around costs and returns for farm families.
- b. Measurement of Performance by Agricultural Development Projects. Here, farm economics studies are conducted periodically (annually) on measurement of farm family incomes; changes in size of area cultivated by farmers and rate of adoption of new techniques.

2. Statistical Section. This section deals with data collection related to employment on farms and forecasting of cultivated areas, production of foodstuffs and industrial crops (cotton, tobacco, sugarcane, etc.).

3. Marketing Section. The Marketing Section addresses its studies to the following areas: (a) transportation component of food prices, (b) inter-regional price differentials, (c) intra-regional price differential, and (d) inter and intra-regional movement of foodstuffs.

4. Project Preparation and Budgeting Section. There are three main areas to which this section addresses its activities. These are: (a) collating the budget for the Ministry of Agriculture, (b) identification, formulation, preparation and appraisal of all agricultural development projects under MOA, and (c) project monitoring.

5. Primary DERPS Role in MIDAS. Its services in respect to evaluation in MIDAS Project, are data collection related to agriculture preparation of quarterly reports about the performance of the various projects under the MIDAS Program, and monitoring of the distribution of inputs to the farmers.

A training program for these activities is needed, including selected short courses in the U.S. or elsewhere, and training in Ghana. A short-term consultant is appropriate for this training in Ghana.

1/13/74

Government of Ghana (GOG)

COMMENTS OF THE MIDAS PROJECT EXECUTIVE COMMITTEE
AND THE MIDAS PROJECT ADVISORY COMMITTEE ON THE
DRAFT REPORT OF THE MIDAS PROJECT EVALUATION TEAM

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THE COMMENTS OF THE MIDAS PROJECT EXECUTIVE COMMITTEE
AND THE MIDAS PROJECT ADVISORY COMMITTEE ON THE DRAFT
REPORT OF THE MIDAS PROJECT EVALUATION TEAM

The Midas Project Executive Committee and the Midas Project Advisory Committee have in joint sessions studied the draft report of the Midas Project Evaluation Team and have found the team's report very helpful in guiding the future of the project. The report is most interesting and the views of the Committees on it are set forth below.

EXTENSION DEMONSTRATION

The team made a fair assessment of the constraints to an effective extension service in Ghana, namely, lack of transportation, limited equipment and materials for the conduct of demonstrations, too much involvement of extension staff in the distribution of inputs etc. etc. It went on to recommend divesting extension staff of the distribution of inputs and then made a critical assessment of the strategy of the Midas Project in helping to improve extension work.

It noted that this strategy needs to be reappraised since the Project aims at covering the whole country and thus becoming too diffuse. The team contends that with such a spread the Midas Project would not make any impact. It then recommended that in the midst of so many constraints the extension/demonstration component should concentrate on a limited area, including the Atebubu district, and that the Government of Ghana (GOG) should adopt the approach of the "Focus and Concentrate Programme" (vide VI-7 and 8) which should be buttressed with a continuous in-service training programme. We are in full agreement with the views of the evaluation team.

Role of Women:

After commending the performance of the Home Extension Unit, the evaluation team states that women are likely to be discriminated against since they would be very "unlikely to seek any advice or service from a male dominated (extension) service, page VI-6". We do not agree to this statement since from the interests women farmers show at farmers' meetings and at farm demonstrations it is patent that they do not have any inhibitions whatsoever in seeking advice from male extension officers.

FERTILISER

The selling price of fertilisers, the distribution by extension staff and the advisability of Ghana purchasing a blending and bagging equipment at this time are the major issues raised by the evaluation team.

It is patent that the price of fertiliser in Ghana is subsidized. GOG has accepted the policy of progressively removing the subsidies and this is being implemented. However, when one examines the efforts of GOG in relation to the costs of fertilisers from American sources, these efforts are most unimpressive.

In 1978 and 1979 for instance cost at the sale to GOG for one bag of 15-15-15 fertiliser from Germany was £18.05 while the cost of that from American sources in 1979 was £44.98; in 1978 a bag of 15-15-15 fertiliser was sold at £7.50 while currently the subsidy has been reduced and a bag is being sold at £10.00. GOG will significantly pursue its avowed aim of removing subsidies on fertilisers and thus make it economic for commercial agencies, both public and private, to distribute fertilisers. We are in full agreement with the evaluation team in the advocacy of this line of action for GOG. One cannot gloss over the fact that unless fertilisers are sold above their true costs commercial agencies would be reluctant to use their distributive network in the sale of this input. In order to enable GOG to pursue a consistent programme of subsidy removal, GOG's views on the procurement of fertilisers from competitive sources are being sought.

The evaluation team was under the impression that fertiliser imported under Midas Project was sold to large scale rice farmers in the Northern and Upper Regions. It must be pointed out that fertilisers brought in by the Upper Region World Bank Project and by the Ghanaian-German Agricultural Project were sold in the Upper Region and in the Northern Region respectively while Midas Project fertiliser was sold in the South mainly to small-scale maize farmers.

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The Purchase of Blending/Bagging Equipment:

The team asserts that scarce managerial and technical talent would be required (1) in the operation of a fertiliser blending and bagging equipment. It goes on to state that GOG does not need such an equipment now and explains that such equipment will be uneconomic now since very few blends of fertilisers are used in the country. The team also doubts if there is enough expertise for the management of a blending and bagging equipment. It, therefore, recommends a continuation of the present practice of importing fertilisers already bagged. The Ghana Fertiliser Company (GFC) is aware of the importance of sound management in the economic operation of a blending and bagging equipment hence its effort to secure a technical partner. We are aware that considerable savings can be made in bulk importation of fertilisers and we therefore feel reluctant to accept the views of the team. There is no doubt that improvement in research on fertiliser use will enhance the economic use of a blending and bagging equipment and we would recommend to GOG to review the efforts of GFC to ensure speedy discharge of its responsibilities relative to the procurement and economic operation of a blending and bagging equipment; the cost of this equipment will escalate within a few years.

Distribution of Fertilisers:

GOG has accepted the policy of divesting the extension staff of the Ministry of Agriculture of the responsibility for distribution of fertilisers and we are happy to note that the evaluation team is advocating the implementation of this policy. We agree with the view of the team that GFC should as early as possible assume from the Ministry of Agriculture the responsibility for importing and distributing fertiliser. By GFC assuming this responsibility it will be in a

position to evolve a pattern which could later on dovetail into its overall programme for a fertiliser industry in Ghana.

Role of Women:

We hold the view that the distribution of fertilisers by men does not in any way adversely affect the accessibility of this input to women in Ghana as the team contends at par. 2 page III-4.

MARKETING

The evaluation team does not disagree with the basic concept of the marketing component of the Midas Project. It, however, advocates for a delay in the construction of the Atebubu workshop until the general shortage of spare parts in the country is eased. It is gratifying to note that the team expressed its appreciation in the setting up of a co-ordinating committee of BOG, ADB and US-AID for the selection of traders to be supported by grant funds to activate marketing activities in the Atebubu area and recommends a linkage between the co-ordinating team and the Midas Project Advisory Committee.

We do not agree with the team on a delay in the construction of proposed workshop. We are of the opinion that the workshop will contribute greatly in improving truck and tractor repair and maintenance facilities at present in the Atebubu area. It cannot be gainsaid that there is an acute shortage of spare parts in Ghana. GOG is not unaware of this constraint and it is drawing on its own foreign exchange resources as well as those of friendly countries to help quickly in improving this situation which, the team rightly pointed out, cannot be ameliorated with American credit facilities, since most of the needed spare parts are not American in origin. We are of the opinion that a simultaneous action in construction of the workshop and improvement of the spare parts position is prudent.

In both sections 4 page VII-3 and Section E page VII-7 the evaluation team emphasises the need for maintenance of existing transportation and possible acquisition of additional transportation for improving the marketing system. In paragraph 2 page VII-7 also the team mentions the need for improvements in road maintenance. For the team to suggest then that the proposed workshop in Atebubu be delayed until broad (national) actions have been taken seem untenable because the recommendation from the baseline study provides an approach for testing this intervention on a pilot basis without such an effort being unduly frustrated by the general spare parts problem in Ghana. The approach is to make grant funds available for construction of the modest workshop and purchase of the first year spare part needs. Subsequently, spare parts are to be bought from the workshop's own resources (that is, from profits generated from repairs undertaken at the workshop).

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SMALL FARMS SYSTEMS RESEARCH

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It may be of interest to point out that with regard to the above component the team was tempted to focus more attention on the general research work in Ghana and to lose sight to a great extent on the critical role that the Midas research component will play in fostering a collaborative effort between one of the vital research agencies in Ghana i.e. the University of Science and Technology, and the extension wing of the Ministry of Agriculture.

The evaluation team acknowledges the need for more research work in Ghana and states in par. 2 of page V-1 that "some technology exists for extending to small farmers but a substantially increased technology package is required, both in quantity and quality, to achieve the project goal". It, however, expresses grave concern that many agencies are engaged in research work in Ghana and that it is obvious that co-ordination of the research work of these agencies is ineffective. It goes on further to state that "this (research) component is another example of the diffusion and erosion of a co-ordinated research programme for Ghana".

We contend that the University of Science and Technology is expected to undertake research work and that the objective of the research component i.e. to increase the research capability of the Faculty of Agriculture, University of Science and Technology, is valid and that the pursuit of this objective should not be viewed as "a diffusion and erosion of a co-ordinated research programme". Research work of the Universities is an important link in the chain of research work in Ghana and by helping to strengthen this link Midas Project will be performing an important role. The co-ordination of research work in Ghana is the responsibility of both the Council for Scientific & Industrial Research and the Council for Higher Education and we cannot disagree with the team that the effective co-ordination of research in Ghana is important.

The team expresses doubt on the impact that the Midas research component can make on agriculture in Ghana and after dwelling on the importance of the interactions of socio-cultural and economic factors, institutional development, trained manpower etc. etc. it states in par.1 of page V-3 that "appropriate research, responsive to all these factors, can seldom if ever be conducted by one or two researchers isolated from the mainstream of research". It continues that "instead an inter-disciplinary team of researchers is required to insure that all these factors are considered as the research programme is planned and initiated". We agree with the doubts expressed by the team in that two full time research workers from IITA supported by consultants will not be able to produce an impact. Accommodation for six families is being established under the Midas Project at Atebubu and we recommend that this should be fully utilized by full time resident research workers of various disciplines such as plant breeding, farm management, entomology and agricultural economics. We are of the opinion that a full time entomologist will be more effective than a consultant. GOC will intensify its efforts at recruiting Ghanaians to work with the IITA team and we are encouraged by the responses we have received so far; despite the apparent hardships in the Atebubu area an effective Ghanaian team will be raised in due course. It must also be emphasized that provision is being made for the research component to

expand in future so as to produce greater impact.

The team emphasises the need to ensure that the research problems selected are of high priority. The Midas research component aims at solving problems relating to cereals such as maize, rice, sorghum; legumes such as cowpeas and groundnuts and root crops such as yams. GOG has identified these as high priority areas in agricultural production and the evaluation team should have no doubt with regard to the priority of the identified research problems. We would like at this stage to assert that with regard to the problems to be worked on and the Ghanaian institution - UST - which is participating in the Midas Research component there should be no fear of the research workers being isolated from the mainstream of research in Ghana.

FARM CREDIT

The report of the evaluation team on the farm credit component is good and we are in general agreement with most of the points raised. For instance in par. 3 of page IV-6 the team writes of the need (i) to increase loan funds available to ADB, (ii) to set new targets by reducing the number of participants and (iii) to meet the full loan requirements of participants. These issues have been fully discussed and will soon form the bases for action.

In the full second paragraph of page IV-2 the team states that "the first fertiliser for resale was landed in March 1979, and ADB has received no advance to date resulting from Midas loan funds". It is important to point out that the team has erred in this observation; ADB has received an advance of \$2.3 million even before orders for fertiliser were placed.

The need to restrict the Midas Project to a few regions including the Atebubu area, has been brought out in par.4 of page IV-10. We support this recommendation and are glad to note that it is consistent with the team's observations on the extension demonstration component.

The team expresses grave concern on the erosion of capital as a result of inflation (par.2 of page IV-10) and at par.1 of page IV-3 and again at par.3 of page IV-10, it suggests loan indexing as one of the measures which could be considered to dampen off the effects of inflation. We have noted this - indexing of loans - with interest and shall refer it to the appropriate GOG agency.

Role of Women:

In par. 3 of page IV-7 the team states that "there is discrimination, though not as a policy of ADB" against women in having access to loans. This statement is amplified at pages VII-3 and 3. This apparent discrimination is inherent in Ghanaian culture and it is interesting to note that the granting of loans to groups or associations is one of the modes recommended by the team for reducing the effects of this "discrimination". We do not hesitate to point out

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that ADB is the only bank in Ghana which is administering group loans, at least in farming, and we will like to place on record ADB's approach which could help eliminate this apparent discrimination against women.

SEED MULTIPLICATION

The evaluation team's report on the seed multiplication component is pregnant with many fundamental issues. It's recommendations merit great attention. The team states in par.4 that "equipment and facilities now under consideration are too sophisticated and luxurious for the country" and it goes on to state at page 11-18 that "satisfactory maintenance of the refrigeration and dehumidifying equipment is considered unlikely, and their operating and maintenance cost high if they should remain in operation". We wish to point out that measures have been taken to ensure the continued satisfactory maintenance of these equipment by having orders placed with companies which have reputable and efficient representatives in Ghana who will install and maintain the units. We are of opinion that the fears of the team are mis-placed.

Cost of the seed processing units has been rightly of great concern for the team; this theme is amplified in many sections of the report. We are appreciative of this stance. We are, however, disturbed by the general upward spiral of prices of commodities, particularly manufactured equipment, and if such of the needed equipment is held in abeyance now, it is most likely we may have to pay fantastically higher prices in the near future. Despite what we have said we propose to make certain changes to help reduce initial and operating costs of the seed processing facilities and buildings; we shall have air-conditioning units rather than refrigeration units installed and we will reduce the numbers and sizes of some of the buildings; we will no more construct a guest-house etc.etc. We shall also have one central seed testing laboratory for the Ghana Seed Inspection Service. We agree with the recommendation of the team that one type of seed drying equipment should be purchased (par.2 page 11-18) and we opt for the wagon drier. The proposal that we should as a prime objective establish two seed centres at Winneba and Kumasi is sound and we fully endorse it.

Role of Women:

At page 11-13 the team highlights on the importance of making improved seed accessible to women and states that "under the present distribution system of improved seed through the extension service, there is little likelihood that farm women will purchase any improved seed due to reluctance to go to the extension office". We acknowledge the need to improve on the distribution system for improved seed and efforts will be directed towards this end. We, however, do not agree with the team on its observations on accessibility of seeds to women. In fact women form the bulk of the purchasers of vegetable seeds.

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INTERNAL EVALUATION

We fully agree with the views expressed by the team on internal evaluation of the Midas Project. The linkage advocated to be established with DERPS is welcome and the alternative approaches defined will be discussed with DERPS for a firm action to be taken on one.

CONCLUSION

We would like to place on record our deepest appreciation of the invaluable work produced by the evaluation team during the short period it worked with us. The quality of their work has amply demonstrated the usefulness of the evaluation exercise.