PD-AAY-143

PM3524

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT PAPER FACESHEET

1. TRANSACTION CODE: A (A = ADD, C = CHANGE, D = DELETE) — PP

2. DOCUMENT CODE: 3

3. COUNTRY/ENTITY: MALI

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 digits): 688-0202

6. BUREAU/OFFICE: A. SYMBOL: AFR; B. CODE: 6

7. PROJECT TITLE (Maximum 40 characters): Operation Mils-Mopti - Phase II

8. ESTIMATED FY OF PROJECT COMPLETION: FY 83

9. ESTIMATED DATE OF OBLIGATION: A. INITIAL FY 80; B. QUARTER 4 (Enter 1, 2, 3, or 4); C. FINAL FY 83

10. ESTIMATED COSTS ($000 OR EQUIVALENT $1 -)

A. FUNDING SOURCE	FIRST FY B. FX	FIRST FY C. L/C	FIRST FY D. TOTAL	LIFE OF PROJECT E. FX	LIFE OF PROJECT F. L/C	LIFE OF PROJECT G. TOTAL
AID APPROPRIATED TOTAL	1581	800	2381	6562	3400	9962
(GRANT)	(1581)	(800)	(2381)	(6562)	(3400)	(9962)
(LOAN)	( )	( )	( )	( )	( )	( )
OTHER U.S. 1.						
OTHER U.S. 2.						
HOST COUNTRY		495	495		2784	2784
OTHER DONOR(S)						
TOTALS	1581	1295	2876	6562	6184	12746

11. PROPOSED BUDGET APPROPRIATED FUNDS ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE C. GRANT	PRIMARY TECH. CODE D. LOAN	E. 1ST FY 80 F. GRANT	E. 1ST FY 80 G. LOAN	H. 2ND FY 81 I. GRANT	H. 2ND FY 81 J. LOAN	K. 3RD FY 82 L. GRANT	K. 3RD FY 82 M. LOAN
(1) SH	070	073	-	2381	-	2062	-	3272	-
(2)									
(3)									
(4)									
TOTALS				2381	-	2062	-	3272	-

A. APPROPRIATION	N. 4TH FY 83 O. GRANT	N. 4TH FY 83 P. LOAN	Q. 5TH FY ___ R. GRANT	Q. 5TH FY ___ S. LOAN	LIFE OF PROJECT T. GRANT	LIFE OF PROJECT U. LOAN
(1) SH	2247	-			9962	
(2)						
(3)						
(4)						
TOTALS	2247	-			9962	

12. IN-DEPTH EVALUATION SCHEDULED: MM 13, YY 81

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN PRP FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

1 (1 = NO, 2 = YES)

14. ORIGINATING OFFICE CLEARANCE

SIGNATURE: Edward L. Young

TITLE: Mission Director

DATE SIGNED: MM 07, DD 12, YY 79

15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM 07, DD 20, YY 79

AID 1330-4 (3-78)

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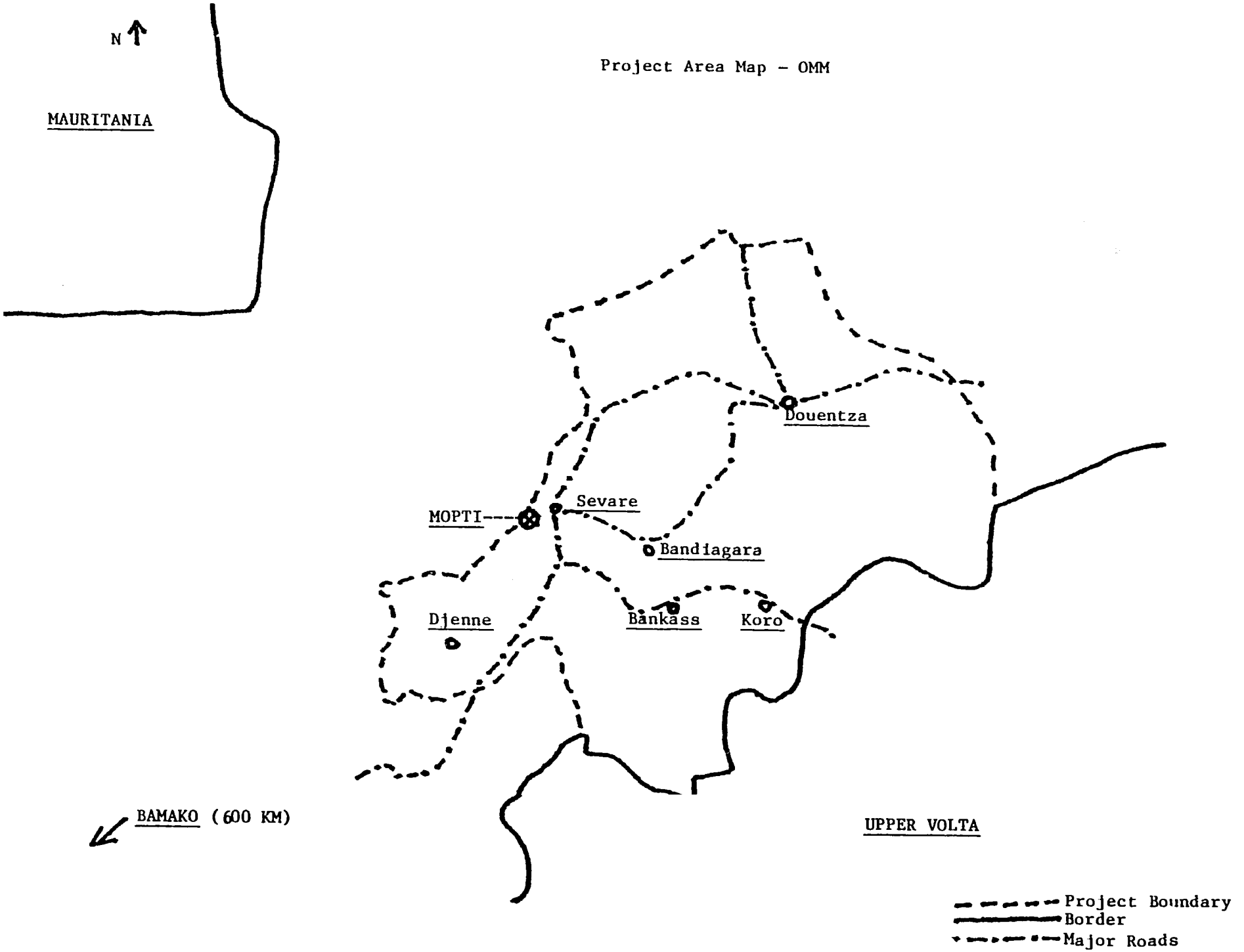
ACRONYMS

AAPC	Afro-American Purchasing Center
AID	Agency for International Development/Washington
BARA	African Bureau of Applied Research (consulting firm)
CAR	Center for Rural Animation
CILSS	Interstate Committee for Drought Control in the Sahel
CMDT	Malian Company for the Development of Textiles
DNAFLA	National Directorate of Functional Literacy and Applied Linguistics
DOT	Division of Technical Operations of TP
FAA	Foreign Assistance Act
GRM	Government of the Republic of Mali
ICRISAT	International Crops Research Inst. for the Semi-arid Tropics
IER	Institute of Rural Economy
IFAD	International Fund for Agriculture Development
ITA	Engineer of Agricultural Works
MDR	Ministry of Rural Development
OACV	Peanut and Cereals Operation
OMM	Operation Mils-Mopti
OPAM	Malian Office of Agricultural Products Marketing
SAFGRAD	Semi-Arid Food Grain Research and Development
SB	Base Sector
SCAER	Society for Rural Agricultural Credit and Equipment
SDR	Rural Development Sector
SMECMA	Malian Company for Agricultural Equipment and Construction
TN	Construction Division of TP (Travaux Neufs)
TP	Ministry of Public Works (Travaux Publics)
USAID	Agency for International Development/ Bamako
ZAF	Functional Literacy Zone
ZER	Rural Expansion Zone

Project Area Map - OMM



PART I - SUMMARY AND RECOMMENDATIONS

A. Grantee and Executing Agency:

The grantee will be the Government of the Republic of Mali (GRM), represented by the Ministry of Rural Development. The primary executing agency will be Operation Mils-Mopti (OMM), a semi-autonomous regional agency of the Ministry of Rural Development located in the Fifth Administrative Region of the country. Other contributing agencies include: the National Directorate of Functional Literacy and Applied Linguistics of the Ministry of Education (DNAFLA), the Institute of Rural Economy (IER), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Semi-Arid Food Grain Research and Development (SAFGRAD) project, and the Ministry of Public Works (Travaux Publics).

B. Recommendations:

1. A grant in the amount of $9,962,000.00 over the four-year period commencing in FY 1980 should be authorized to the Government of Mali for the preparation and execution of the integrated rural development project described in Part II of this project paper. The GRM contribution to the project will amount to the U.S. dollar equivalent of $2,784,000.00 (22 % of total cost). (See Summary of Total Project Costs, Annex

2. The following waivers are recommended for the successful and expeditious execution of the proposed project:

(a) Source/origin (Code 935) procurement of 32 non-U.S.-made mopeds and spare parts.....$20,800

(b) Proprietary procurement of 13,000 light donkey-drawn plows.. .....$1,200,000

(c) Proprietary procurement of one bulldozer and spare parts from Caterpillar for completion of road construction and maintenance program in progress..... $136,000

Justification for these waivers is contained in Annex N of this document.

The Project

1. Background

The Fifth Region is a major producer of grain in Mali and has been a traditional source of food for Mali's food deficit area, particularly the Sixth and Seventh Regions. Traditional farming on rainfed land represents the majority of all production. Millet accounts for about 85% of all food produced in the rainfed areas; sorghum, peanuts, fonio, and, in some areas, vegetables, are also cultivated. Productivity per farm unit is low; living standards are correspondingly meager. Current estimates place the average rural household at an annual income level of $50-$75 per person.

In terms of rural development strategy, the GRM has settled on a geographic zone approach, characterized by the creation of semi-autonomous regional development "Opérations", one of which is OMM, which has been expanded to cover five geographic sectors of the Fifth Region. This area includes some 264,000 ha. of cultivated land supporting a population of approximately 680,000 and farmed by approximately 65,000 extended farm families. It is to these rural farm families that the project is directed.

AID first began supporting OMM during the great drought of the early 1970's, utilizing local currencies generated from the sale of United States grain. The current 5-year integrated rural development project was authorized in mid-1976 and funded for three project years, the goal being to reduce Mali's overall food deficit and the purpose being to increase the production and marketing of rainfed food crops. Rather than continuing with the present PP and requesting funding for the last 2 years, the PP designers decided that the project must have a new PP in order to assure achievement of project purposes and goals.

2. Project Status

a. EOP's in the Original PP: Three-fifths of the way through the project, most of the conditions and outputs indicating purpose achievement have been or are being achieved. More specifically, comparing EOP's with actual achievements to date:

1) Marketing of cereal grains was to increase 5% per year over LOP--Actual increase through official channels has been 6.5%/year:

Campaign		Official Marketing (tons)
1971/72		6,020
1975/76	(base date)	7,561
1977/78		8,071
1978/79		9,150

Another approximately 50,000 tons is sold on the parallel market. This has risen an estimated 50% since 1976 (yields were 33% higher in 1978 than in 1976), mostly due to improved rainfall and an expansion of the project area.

2) Per ha. yields were to reach 1,200 kg/ha. on farms of pilot farmers by year 3 of their participation in the program--The actual average has already exceeded 1,200 tons:

pilot farmers

Sector	Millet
Mopti - Djenne	1,500
Bankass	1,200
Douentza	1,130
Koro	1,120

Source: 1977/78 Campaign Report, OMM

3) Pilot farmers were to continue to use recommended inputs after end of free inputs--too early to tell.

4) 3,000 tillage units were to be in hands of farmers by 1979--Approximately 2,000 plows and multiple cultivators have been sold since 1976 and OMM has purchased 1,200 light plows for sale in 1979 (plus 2,464 donkey carts were sold prior to 1979).

5) 280 agents were to be working with farmers by 1979--OMM's staff will soon be 280, the number foreseen in the original project paper; the 1979 evaluation report recommended no further increases.

6) 1,000 tons of agricultural supplies were to be ~~in use~~ annually for 1979--This has not been achieved because of a ~~storage bottleneck;~~ OMM recently ordered 1,000 tons of phosphate fertilizer but then declined delivery for lack of warehouse space. (The revised project will eliminate this bottleneck.) how?

7) Revolving credit fund of 200 million MF was to be established by 1979--credit fund exceeds this amount by over 50% as of mid-1979.

8) Repayment rate of 80% was to be achieved by 1979--A mid-1978 study of OMM's credit program shows that outright defaults on loans are almost non-existent, although late payments are high (but under 20%).

9) 450 km. roads (later revised to 307 km) were to be completed and 30 wells with km/T costs reduced and women's time spent in obtaining water and wood decreased by 15%--Achievement of these 3 EOP's awaits completion of the road and well construction components.

10) Per ha. yields of 15,000 participating farmers were to increase 5% per year to 900 kg/ha. at a minimum--Production in the project zone has increased one-third from 123,000 tons to 164,000 tons, but this has been due mainly to favorable rainfall and an enlargement of OMM area. Three years have not been enough time for the project to affect productivity per hectare except with respect to a limited group of experimental farmers. However, the project has had two recent breakthroughs in terms of productivity increases-- 1) chemical fertilizers on millet were shown to be an economical input in late 1978 by SAFGRAD(1) and 2) the GRM finally gave its approval for the importation of a light plow for the OMM zone.

(1) Semi-Arid Food Grain Research and Development Project.

b. Status of Project Components:

1) Road rehabilitation--Construction began in June, 1978, and approximately 1/6 of the 307 km. of roads have been rehabilitated.

2) Functional Literacy (under separate financing)--Training of agents has begun. Twenty-three centers have been established.

3) Well construction (30 wells)--An economical way of constructing wells has finally been identified and construction should begin shortly.

4) Blacksmith training--Materials and equipment for 40 blacksmiths have been purchased but not yet distributed/installed because OMM lacked a qualified trainer. However, recently, a trainer has been found, training has started, and all equipment will be distributed before the end of 1979.

5) Agricultural research--ICRISAT has been conducting variety trials at a research station, but no new varieties have yet been developed which out-produce local varieties. ICRISAT is now expanding considerably the scope of its research. *in what way?*

6) Vegetable production on the Dogon plateau--New vegetable varieties and irrigation methods have been tested during the last two years; this program has benefited greatly from the guidance of a horticulturalist provided by the Peace Corps.

7) Agricultural extension--The extension agents presently work with approximately 1,500 pilot farmers a year (3% of the area's total); about 200 of them conduct demonstration plots under the supervision of OMM's extension agents. Yields, therefrom have been almost 100% superior. *to what? measured by whom?*

8) Administrative support to OMM--OMM has moved into its new headquarters financed under the project, and nine 10-ton trucks are moving grain and agricultural implements/supplies, but the warehouses financed under the project were poorly constructed and are no longer useable. Agronomical and sociological data have been gathered to assist the project's future direction.

3. Project Evaluation

The project underwent a major evaluation by GRM personnel and expatriate technicians in January, 1979. A major conclusion was that the project should change its goal from increasing food production and marketing to the broader objective of improving the well-being of those who produce it. Another major conclusion was that the GRM's low producer price policy acts as a disincentive to the farmer (and, hence, marketing through official channels does the farmer no good). Because of this and the fact that the project's marketing goals have been substantially met, the project's purpose (increasing production and marketing of food crops) has been revised and the marketing purpose dropped.

Ick!

but has the situation changed for chrissakes?

Another major conclusion of the evaluation report was that there is no proof that area-wide productivity has increased. As discussed in the Issues section herein, three years is simply not enough time for such broadscale effects to take place, especially where (a) some project components have been in effect less than one year or not at all, and (b) some key breakthroughs in productivity inputs have not occurred (millet and sorghum variety improvement) or occurred only recently (fertilizers shown to be economical and a light plow made available). With significant increases expected in fertilizer use and already taking place in orders for light plows, the project will be clearly at the take-off point regarding area-wide productivity increases when OMM's extension system is re-designed in late 1979 and the agents sent through training. (They have already occurred with pilot farmers who have adopted the full technical package.)

The drafters of the evaluation report noted the following problems of somewhat lesser significance:

--OMM lacks warehouse space to store its farm implements and supplies, and housing conditions for most OMM extension agents and their supervisors are grossly inadequate.

--OMM must find a blacksmith trainer as soon as possible so that the training program can begin; training equipment/supplies and a vehicle are also needed.

--There is no way to tell whether ICRISAT's variety trials will ever prove successful in producing an improved millet or sorghum variety adaptable to the climate of the Fifth Region; moreover, the technical package being proposed to the farmer has not been changed or verified. ICRISAT needs, therefore, to broaden the scope of its work to include testing of such cultural practices as intercropping, crop rotation, plant spacing, use of animal traction, etc. other crops

--The vegetable program is still relatively new and can still benefit greatly from both long-term and short-term technical assistance.

--The OMM extension agents need considerable training or re-training, and the "cascade" training system should be abolished.

--Despite its data gathering efforts, the project continues to lack certain types of data which would assist project management and permit a precise evaluation of the project 4-5 years hence.

--In large part because of the GRM refusal to permit the importation of a light plow, the amount of agricultural implements/supplies distributed annually has been too small in comparison to the 65,000 farm families served by OMM for the project to have a significant effect on productivity for the region as a whole. (OMM has received recently authority to import a light plow; the first lot of 1,200 has been purchased.)

4. Design and Activities of the Revised Project

The original project paper covered a five-year period, and funding was authorized for the first three years. The alternative of continuing with the present project for another two years has been rejected because the original PP was hastily written and contains insufficient detail and guidance for either OMM or USAID. Moreover, a number of directional changes must be made, and without a better document for guidance, both OMM and USAID will be severely handicapped. A project for anything less than 4 years is unrealistic in that (a) the road construction program, (b) warehouse/field offices/housing construction program, and (c) the training program for the extension agents simply cannot be completed within a lesser period. (It should be noted that the $4.45 million in funding for FY 80 and FY 81 is consistent with the amounts projected in the ABS for OMM.)

The project's second phase has been designed with the problems brought out in the Evaluation Report in mind, and attacks them on a broad scale. As stated above, project purpose has been changed from that of increasing the production and marketing of food crops to simply increasing production and productivity of food crops because increasing official marketing does the farmer no good so long as official producer prices remain low (see Issues section). Since the parallel market handles 4-5 times the amount of grain sales as the official market and since prices are much higher on the parallel market, increased production will lead to increased marketing and incomes despite low official prices. The overall goal has been changed from increasing the country's food self-sufficiency to increasing both incomes and the quality of life of the farmers in the project area. The following activities are planned:

a) Data Management, Studies, and Planning

The project will assist OMM in developing an effective agricultural development planning capability. The recently established division of planning and statistics of OMM will carry out the activity. The GRM will augment this staff with an agricultural economist or rural statistician plus an assistant. Short-term technical assistance (6 mo.) will be provided for survey, design, analysis, etc. Productivity and farm size surveys are being carried out in 1979 and will continue to be carried out every year with the assistance of a local contractor. A vehicle and some equipment will be purchased. The director of OMM's statistics department and his assistant will receive short-term training abroad.

b) Agricultural Research

The facilities at the Seno Research Station will be upgraded to include an animal traction research facility; existing structures and housing will be renovated. A utility vehicle and generator will be provided. The GRM has recently appointed one of its technicians presently assigned to ICRISAT as a resident advisor to the station with responsibility for supervising trials. Trials will be expanded to include association of crops, intercropping, sequential cropping, rotation and managed fallow. Research will include the development of simple modifications in the design of plows, carts, etc. so as to increase the number of tasks which they can perform.

A program of multi-locational testing is also planned. Assisting this effort will be a long-term field trials advisor to be associated with SAFGRAD, and a Malian agronomist trained by ICRISAT. The OMM agent assigned to the station will receive short-term training in the U.S.

c) Dogon Vegetable Production

Vegetable production is a very important agricultural activity in certain areas of the project. Lack of water is clearly the major constraint. Research in vegetable production will focus initially on increasing the supply of water and improving the efficiency of water utilization for irrigation. Vegetable storage, marketing, and terracing activities will also be studied to determine ways in which OMM might give assistance. A resident horticulturalist advisor will be provided for two years. Short-term consultants (5 mo.) in irrigation, engineering, and marketing will be brought in.

d) The Extension System

The Evaluation Report concluded that the "en cascade"(1) training system should be replaced by a broader training program focusing more on the agent's role in terms of how he relates to the farmer and his environment. OMM has agreed to replace this system by 1980 with a broader one designed in collaboration with a local contractor. Five extension agent supervisors will be sent to the U.S. for short-term training. OMM has also agreed to design, by September, 1979 and in collaboration with a local contractor, a 2-4 year training program which will reach all of its extension agents in the field.(2) The extension program will change its focus from single "pilot farmers" to "pilot villages" so that the field staff can reach up to 10 times as many farmers annually as they are presently reaching. The agent will deal with the village as a whole, as opposed to a select group of "pilot farmers". To improve the "esprit de corps" of the poorly housed field staff and the villagers' receptivity to them, housing will be constructed for 6 extension agent supervisors and half (17) of the ZER heads. Finally, short-term technical assistance will be provided to design the extension training program and the "pilot village" innovation.

e) Village Associations

In addition to the "pilot village" approach to extension work, the project will also form village associations of the type developed by the cotton operation (CMDT) so as to decrease operating costs of the credit program and increase further the number of farmers reached by the field staff. Five to six villages will be selected for 1980. OMM will advance credit, supplies, and, perhaps, funds for marketing in accordance with aggregate needs; credit for individual needs will be distributed by the association. Short-term technical assistance (8 mo.) will be provided.

f) Credit and Agricultural Equipment/Supplies/Distribution

A recent study predicts demand for farm equipment/supplies will increase 30% annually for OMM. So, the credit fund will be augmented from

(1) Headquarters training head instructs division heads, who in turn instruct sector heads, etc.

(2) A ceiling of 254 has been placed on the number of OMM's field staff, and as the GRM adds to it "moniteurs" (paid by the GRM), untrained "encadreurs" (64 are paid by the project) will be dropped.

$711,000 to approximately $1.4 million by the end of the project; this fund will be used for purchasing work animals, too. This increment in the size of the credit fund may not be necessary, however, if the GRM's credit institution (SCAER), now bankrupt, is replaced by a rural banking system with IFAD support. In any event, no additions to the credit fund will be made until a viable interest rate is established.

As a special covenant, 5% of all payments for farm implements/supplies will be set aside to be used exclusively to cover OMM's operating expenses. (This 5% represents the commission which OMM presently receives on all sales of SCAER equipment.) To assist the supply operation, the project will construct 15 warehouses and 5 sector-level offices. Short-term technical assistance will be provided. The GRM will provide the five new sector-level credit agents; the project will train them. The head of the OMM credit program will be sent to the U.S. for short-term training. Finally, since delivery of farm supplies takes very long, the project will experiment with two agricultural retail stores. The project will advance funds for the initial inventory; the stores will eventually assume the cost of the managers. A short-term consultant will assist in setting them up. Four more will be built only after the first two prove to be viable.

g) Road Construction

The project will order more equipment (one bulldozer, two water trucks, and two dump trucks), and continue to finance operating costs. $200,000 is provided for road maintenance. The World Bank has been working with Travaux Publics to increase its road maintenance capacity; national self-sufficiency in road maintenance is projected to be reached by 1985. Accordingly, the project's support to road maintenance will end at that time.

h) Blacksmith Program

The project will train 40 local blacksmiths. Equipment/materials for them have already been purchased. OMM will hire two professional blacksmith trainers. Training will be conducted in 4 stages over 3 years; the project will provide vehicles plus operating expenses.

i) Administrative Support

The project will provide 15 replacement vehicles, 22 additional Mobylettes, office furnishings, and 2-way radios. Funds received from OPAM for collecting grain will be used solely for replacing the 9 trucks previously purchased. The project will also provide 35 millet mills to be run by OMM, the initial profits from which will be used to purchase additional mills. (The first will be installed in mid-1979.) By 1984, OMM will have about 100 mills in operation, generating revenues of over $138,000/year; earnings from these mills and the sale of agricultural supplies/implements will reduce OMM's operating deficit, including vehicle amortization, by 1984 to around $185,000. Annex E shows how OMM will eventually eliminate this deficit altogether. Finally, the project will provide a short-term (1 year) financial management advisor to assist the OMM director and his budget manager.

5. Summary Findings

The Project Committee has reviewed the detailed technical, economic, social, financial, administrative, engineering, and environmental analyses carried out for the proposed project (See Annexes A - F). In each case, the project was found feasible and beneficial. The project is also found appropriate within the framework of AID country program and sector strategies (see CDSS). Project approval, therefore, and early execution are recommended.

6. Legal Criteria

The project meets all applicable statutory criteria (see Annex M). Planning and costing requirements of Section 611 (a) of the 1961 Foreign Assistance Act have been satisfied (see Annex K). Section 611 (e) is also considered satisfied (see Mission Director's Certification, Annex K). With respect to the host country contribution requirement, GRM inputs to the project are calculated at approximately 22% of total cost (see Annex O). The GRM has already stated that it wants the project, and a formal request is being prepared.

7. Issues

a) Project Benefits

The January, 1979 evaluation report found no proof of area-wide productivity increase brought about by project inputs; the substantial production increases that did occur seem to have been due almost solely to favorable rainfall and increased project area. This is, in fact, only what should be expected in any initial 3-year period. In particular:

—Increased use of the plow, fertilizers, and seed treatment are the principal ways the project will increase productivity per hectare. Since the light plow was not approved by the GRM's farm machinery division for importation until 1979, wide-spread use of the plow is now only at the take-off point. (Over 1,700 heavy plows were sold 1976-78.) Projections of light plow sales alone for 1979-83 are as follows: 1,200, 1,800, 2,610, 3,654, 4,933 = 14,197. By the end of the project, the percentage of farmers with plows will increase from 3% to 25%. And, sales of the most popular item sold by OMM, the cart, will continue to eliminate one of the most serious constraints to increased production—impediments to marketing.

—Even though the technical package needs improving, productivity of pilot farmers with closely supervised demonstration plots employing chemical fertilizers have shown significant increases - on the order of 100% as the table below shows:

	Average Yields - Millet - Sorghum (kg/ha)		
	All Farmers		Demonstrations
Sector	1976/77	1977/78	1977/78
Koro	520	580	1,120
Bankass	650	695	1,200
Douentza	725	650	1,130
Mopti-Djenné	620	610	1,500

Fertilizers were thought to be too expensive to be viable; the contrary was not s until late 1978 by SAFGRAD; thus, the project's initial slow impact on productivity is no surprise. Greatly expanded sales of fertilizers and plows planned for the project's second phase suggests that significant area-wide productivity increases are about to begin.

--Breakthroughs in variety research take time; ICRISAT's program at the Seno Station has been in operation only 3 years. Testing of varieties and fertilizer response on farmers' fields by SAFGRAD did not begin until 1978.

--Several project components are only in their first year of operation (roads and functional literacy) and several will begin this year (wells and blacksmith training); their effect on labor productivity cannot possibly be felt for several years hence.

--OMM agents have been working with individual farmers; this system, which was supported by the original project paper, takes too long for the spread effect to take hold.

2. Project Viability (see also pages 83-87)

OMM operating expenses (including primes but excluding GRM-paid salaries) are running at about $455,000 annually; these expenses are paid for entirely by the project. If OMM were amortizing its vehicles, total expenditures would amount to about $643,000/year. The GPM will covenant to reduce this project cost in 5 ways:

a) All 66 "encadreurs" paid by the project will be replaced over the next 4 years by specially trained "moniteurs", whose salaries are paid for by the GRM--a $90,000/year reduction in project costs.

b) Over the next 5 years, OMM will install approximately 100 small diesel powered millet processing machines which will generate approximately $138,000/year in revenues.

c) OMM will, for the first time, begin using the 5% commission/sales charge earned on all sales of agricultural equipment/supplies to meet recurring costs. This will not reduce the size of the credit fund because, as a condition precedent to augmenting the size of the credit fund, OMM must raise its interest rates. This will amount to over $54,000 and $119,000 annually in 1983 and 1986, respectively.

d) The $11.50/ton commission received by OMM from OPAM for collecting grain will be earmarked for truck amortization only--this amounts to about $103,000 annually. (See Annex E).

e) Marketing of peanuts (see also pages 86-87)--The only Operations in Mali which approach viability are those that have the authority to market cash crops. The reason why is clear--with peanuts, for example, the Operations receive a 25% mark-up on the producer price from SEPOM, over and above transportation and handling costs. The 5 MF/kg commission earned on millet marketing, on the other hand, is only enough to cover costs/amortization. It is evident to everyone that there is no way that OMM can ever operate on a viable basis without the same kind

of authority in its statutes. Peanuts are the most important cash crop in the project area; the 10,000 hectares produce about 4,000 tons annually. This is small and all of it is locally consumed. Farmers say that they are not interested in planting more so long as there remains no official marketing outlet. Since peanut production in the Fifth Region is presently small, a significant increase thereof clearly would not cause a problem of over-production. Also, the percentage of peanuts marketed through official channels has been decreasing compared to that sold on the parallel market. And the experience of OACV strongly suggests that increasing peanut production would not bring about a decrease in millet production (see page 63). Other than helping to make OMM a viable institution, peanut growing/marketing has 2 significant advantages:

--Soil fertility--like all legumes, peanuts add nitrogen to the soil. Rotating peanuts with millet is also much better than single cropping with millet from the standpoint of soil erosion, a serious problem in the sandy soils of the Fifth Region.

--Farmer incomes--Experience in Mali and worldwide strongly suggests that farmers earn more money by cultivating a cash crop along with cereals than by cultivating cereals alone.

In terms of viability, if OMM could market peanuts, the table on page 86 shows that OMM's revenues therefrom could be expected to be $36,000/year (from 1,000 tons) in 1983 and $108,000 by 1986 (from 3,000 tons). For this reason, the project includes as a special covenant that a study of peanut production/marketing in the Fifth Region will be conducted prior to 1980, and if it recommends that OMM be given authority to market peanuts, OMM will be given such authority prior to FY 81 (and prior to the 1980/81 marketing campaign).

As for primes, which represent the remaining $85,000 deficit of OMM, the GRM should have the financial ability to assume about half of this by 1986, the year OMM is projected to be viable (see page 83); the remaining half should be eliminated when USAID financing stops.

3. Price Policy

In the case of Mali, this issue exists in almost every agriculturally related project financed by AID. The implications of the low official price for food grain (millet and sorghum), now 50 MF (about $.11)/kg, are well known in terms of their negative impact on the financial return to production as well as a disincentive for investment in the production process. Despite the negative impact of the GRM's pricing policy, farmers still find it advantageous to invest in equipment. The demand in the Fifth Region for farm equipment, supplies, and trained work animals continues to grow. The 1,200 plows ordered by OMM for the 1979/80 campaign, for instance, is almost three times the amount acquired for 1975/76 (439). The reason for this is that the official marketing of millet and sorghum accounts for only 15-20% of the amount marketed annually and only about 5% of that grown. The remainder is sold on the parallel market, where prices are typically 100-300% higher, except immediately after harvest. A slight rise in the official price of grain would increase farmer income and thus project benefits, but an increase of official marketing would not. The GRM is still giving some consideration to the recent H. De Meel report which recom-

mended the elimination of forced grain sales to the GRM. The issue clearly cannot be resolved within the context of one project. Nevertheless, the GRM can assure that the situation will not, in fact, worsen for the farmer by means of a special covenant that OMM, which is now responsible for all grain marketing in the project area, will not be allocated a quota to purchase more grain than that purchased in any one year during the project's first phase (9,150 tons).

4. Interest Rates

How does project allocate this "disincentive" among farmers?

The GPM's agricultural equipment/credit organization, SCAER, presently furnishes OMM with all of its agricultural equipment and supplies and dictates the interest rate on all sales. This interest rate (3.1%) is far below the rate of inflation. (Prices of farm supplies/implements in Mali have been rising 8-11% annually.) The GRM policy is to maintain a uniform nation-wide price for identical farm implements. This is good in theory only if the interest rate is high enough to cover all costs, including defaults and interest on loans from the central bank. This is not the case, and SCAER is apparently bankrupt as a result.

The GRM has stated that it plans to replace SCAER very soon with a viable credit institution. The GRM has also had discussions with IFAD in Rome for implementing a rural banking system similar to that in the Philippines. Accordingly, it is anticipated that the question of a viable interest rate will be resolved shortly and outside the project. If additions to the credit fund are necessary, the project includes as a condition precedent thereto that a viable interest rate acceptable to USAID will be established.

G. The PP Design Team:

USAID Project Manager
Lance Jepson
Design Officer
John Heard

Technical Analyses:

George Thompson (USAID) - Engineering
Alex Newton - Econ., Credit, Financing
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Could we say earlier the credit fund would be increased?

PART II PROJECT RATIONALE AND DESCRIPTION

A. Overview and Background of Project

Agriculture constitutes Mali's most important economic sector and the one with the greatest potential for growth. The sector (including livestock) contributes about 64% of GNP, employs over 90% of the active labor force, and is the source of nearly 99% of the country's export earnings, of which approximately 70% is attributable to crop production. Traditional farming on rainfed land represents the vast majority of all production. Within the traditional farming sector productivity per farm unit is very low. Income and living standards are correspondingly meager. The average rural household has an annual income level of $50-75 per capita. It is to this sector that the project is directed.

In terms of rural development strategy, the GRM has settled on a geographic zone approach utilizing semi-autonomous regional development administrations known as "Operations" or "Actions". These have been increasingly effective as delivery systems for agriculturally related services. AID is currently active in numerous Operations and Actions in addition to OMM. Unlike some "Operations", OMM was dedicated exclusively to increasing food rather than cash crop production. The project area has expanded and now covers five geographic sectors (the entire Mopti rainfed agricultural area) covering some 264,000 ha of cultivated land, with a population of about 680,000 in over 1,000 villages. The number of production units (extended farm families) is approximately 65,000 or 400,000 persons. Millet and sorghum production comprise over 95% of the total area farmed, with a strong predominance of millet.

The original PP programmed $8,875,000 over 5 years; the project was authorized for $5,989,000 over 3 years. The project was designed to build on the earlier PL 480 financed effort and expand the area/population covered. The area is traditionally a surplus producer of grain, and the objective was to increase food production and marketing, in large part to supply the chronic food deficit areas of Gao and Timbuktu. In accordance with a phased approach adopted by the project, only the first three years were authorized, and an in-depth evaluation was to be undertaken during the third year. The evaluation forms the bulk of the analytical foundation for this proposed project revision.

B. Rationale and Strategy

Since 1976, OMM has sold 1787 plows, 164 multiple cultivators, 2474 carts, 75 seeders and some fertilizer with 1,200 more light plows to be distributed in 1979 (plus 326,544 seed treatment packages). Thus, perhaps 8% of the 65,000 farming units of the project area will have obtained some form of tangible assistance by the end of the project's first phase. The Evaluation also found that progress had been made in institutional development. Although OMM underwent three changes in management during the past two years, the new director has a highly developed management skill, excellent experience from the successful cotton Operation (CMDT), and a personal dynamism which augers well for the future. The rationale of this revised project is to capitalize on this progress and on past investments in roads, etc.

Even though region-wide increases in productivity have not yet been registered, such increases will be possible once the extension system has

been re-designed and the agents trained. The projected productivity increases will be monitored yearly, starting in 1979. Given the lack of conclusive findings thus far in the project's research component and its data collecting efforts, certain elements of the project, of necessity, must be cast in at least a semi-experimental mode. Although adoption of recommended practices has resulted in increased productivity of about 100%, a complete and appropriate "technological package" has not yet been developed. So a major thrust of the project will be in applied research and demonstration trials along with a strong linkage, heretofore missing, between research and extension. Also, it is important that the project have the flexibility to proceed on a systematic trial and error basis, albeit with carefully studied interventions grounded on the best technical, economic and social knowledge available. The lead output, starting June 1979, will be a second base line survey, already in progress, including training of OMM field agents to do the same.

C. Goal and Purpose of the Project

1. Project Goal: Improved income and well-being of farm families on rainfed land in the Fifth Region.

2. Purpose: Increase the production and productivity of rainfed food crops in the Fifth Region. The current project's purpose of increasing official marketing has been dropped from the project's second phase because the farmer is not really benefitted thereby and targets have been substantially met.

D. Project Impact

Intended beneficiaries include approximately 65,000 extended farm families cultivating approximately 270,000 ha. at an average of three to four hectares each. Of this group, less than 5% are considered well-off by Malian standards; 60% would be considered very poor. OMM's extension services presently have a direct impact on approximately 3% of them annually. This is far too little even though certain components, such as road improvement, impact on many more. Projecting future impact is extremely difficult due to the fact that different services/benefits will be extended/received in varying degrees—not all farmers will accept all elements of the technology package; the potential spread effect from the new extension program is almost impossible to estimate with any precision. Another significant factor is quality—extension personnel will be better prepared, and the technology package will be improved. Finally, the most substantial impact of all may come from entirely outside the project (a breakthrough on GRM price policy). Because a global projection of impact would involve so many assumptions based on significant uncertainties, a global projection of impact has not been made. But the impact on a fully participating farmer can be estimated; his average real net income should increase by at least 60% (see page 58) and more if breakthroughs can be achieved in price policy and peanut marketing. Other benefits include more leisure time, increased involvement of women in development, higher literacy, improved access to markets, and community self-help activities.

E. Project Period and Phasing

This Phase II of the project is for 4 years, beginning October, 1979, and ending September, 1983. The project could become a more comprehensive area development program in Phase III, integrating, under consolidated management, livestock, health, education, public works, and community development, in addition to OMM's present activities. Another potential long-term development is converting OMM into a regional cooperative. (This concept may not be feasible in Mali and will require analysis at a later date; it plays no part in the current proposal).

A major evaluation is programmed to be conducted in the last year of the project (January-March, 1983) which will consider comparative farm level data gathered before and after the first three complete growing seasons effected. On this evaluation will be based decisions and planning for a possible Phase III extension and/or other modifications as required.

F. Project Activities and Outputs:

1. Data Management, Studies, and Planning:

a. Background and Rationale: A 1978 base-line survey of the project area hereafter called the "BARA Study"(1) produced much basic information which was heretofore unavailable, including data on ecology, demography, physical and institutional infrastructure, cultivated/fallowed areas, land use by crops, typologies of production units, and limited data on other economic activities of the population. The studies on typology of the production unit also dealt to a limited degree with the question of motivation, i.e., application or non-application of specific practices. The contractor also brought together information on OMM's personnel, coverage by extension, application of specific practices by farmers, distribution of inputs and credit, area planted, production, commercialization, etc. The weakness of the BARA Study was the failure to obtain data at the farm unit level, i.e., productivity, cost of production, farm budgets and cash flow, use of labor, and income and consumption patterns. Nevertheless, this survey constitutes a useful background against which further evaluation of the project can be carried out and a preliminary basis for establishing a socio-economic research activity at OMM.

The recently established 2-man division of planning and statistics of OMM provides the nucleus of a structure for carrying out such an activity. The extension staff is not trained in data collection, and there are complaints concerning the already heavy load imposed by OMM to tabulate basic data on production, marketing, and supply. With technical assistance from contractors such as BARA, however, the effort could succeed. If continuing data, information, and feedback of the right type could be provided, OMM would be able to respond much more flexibly and effectively to problems and needs as they arise, as well as to plan for the future.

b. The Output: Development of an effective agricultural and rural development planning process and capability within OMM. This objective consists of 5 component parts: (a) An effective, continuing social, economic, and technical field data collection and analysis process; (b) a practical system for taking beneficiary and other field feedback into account in ongoing planning and replanning exercises; (c) a practical system for the incorporation of parallel farming system research findings into the planning process; (d) an effective internal evaluation capability; and (e) development of appropriate planning methodology and skills within Opération Mils.

(1) BARA: Bureau Africaine de Recherches Appliquées, an African consulting firm.

c. The Activity: The main elements of this component are as follows:

1) OMM's Division of Planning and Statistics: As mentioned, this division is already heavily committed to complying with OMM statistical requirements. Under the new project, the staff will be augmented by an agricultural economist or rural statistician plus an assistant. The extension agents will do much of the actual data collection. During the first two years of operation, short-term technical assistance will be required for survey design, analysis and interpretation of data and planning methodology.

The Division will have four major functions as follows: (a) supervision of all studies/surveys to be conducted under the project; (b) development of an information system to give feedback for programming purposes to project management; (c) development of more detailed work plans and reports for the project; and (d) preparation of data for the project evaluations.

2) Social and agro-economic surveys: This sub-activity is actually a series of annual surveys which will gather and analyze field data. The purpose is to develop comparative sets of social and economic indicators which can be utilized to measure the impact of various project interventions on participating producers. At least 5 categories of information will be covered:

- Productivity by zone of millet, sorghum and peanuts.

- Credit Demand and Practices for production and labor requirements. This includes projects at the village level in such areas as marketing and storage facilities, handicrafts, income generation activities for both men and women which could be financed, and other village improvements. Profiles are also needed on credit recipients and non-recipients in such areas as farm size, equipment and available labor.

- Indigenous forms of production and consumption, including land use and tenure, cultivation techniques, animal husbandry, timing and degree of consumption needs throughout the year.

- The micro-economy of the production unit (A range of socio-economic conditions and variables including land, labor, equipment, and other inputs; income from farming and non-farming activities; farm budgets and cash flow).

- Motivation in a changing environment (The objectives and aspirations of individuals, their perception of means to achieve such ends, and reactions to options provided by project interventions will be important to know).

The first step will be to fill in the gaps in the BARA Study, particularly information relating to the micro economy of the production unit. This will require a sample survey and measuring of yields. This effort will also require specialized technical assistance in data analysis and interpretation. The first survey will be carried out in 1979 under the existing project. Information will be updated yearly through follow-up surveys. Resulting time series data will feed directly into the two project evaluations.

3) Planning and Reporting: The other major element of this component concerns the planning mechanism and reporting to management. The following general approach is suggested:

- Planning: Annual 3-5 day seminars should be held with the participation of both field and headquarters staff, plus appropriate outside inputs (IER, etc.) to consider findings of the surveys in order to develop recommendations for OMM management on project direction, specific bottlenecks, constraints, etc. On the basis of this exercise, the work plan for the coming year would be developed by the planning division.

- Management Reporting: Reporting formats will be developed by the Planning Division in consultation with OMM management and short-term technical assistants. AID project management will also assure that relevant information for project monitoring is adequately incorporated. Forms, formats, and procedures will be developed for passing information up the chain from the village level. Great caution must be exercised, however, not to make the system overly burdensome, as is already the case with current procedures.

d. Input Summary:

- Technical Assistance: Six months of specialized assistance in planning methodology, data management, and survey methods will be provided for two months in project years 1, 2, and 3 to focus on the development and execution of the seminar mechanism described above, as well as the interpretation and processing of recommendations into practical elements of annual plan. A local consulting contract is recommended with BARA to provide the necessary skilled Malian insight to execute the above scenario. Finally, a 12-month financial management consultant will be provided in Year 1 to assist the OMM Director in establishing better financial/planning procedures.

- Commodities: A utility vehicle, two programmable electronic calculators, survey and measuring equipment, and a small duplicator.

- Personnel: An agricultural economist or a rural sociologist will be added to OMM plus an assistant trained in statistics. Student enumerators will be contracted for an estimated average of 50 person/months per year.

- Training: Almost all training will occur on the job. The Director and deputy director of OMM's Planning Division, however, will receive four-month specially tailored courses of study in the U.S. in surveys, socio-economic research and planning methodology.

2. Research and the Technology Package:

a. Rationale: The background and need for the proposed research component is detailed in the technical analysis, Annex A, 2, a and b). As is pointed out, there are two major needs: (a) a broadening of the effort from its past focus on varietal improvement to one dedicated to a full production system orientation, and (b) a bridging of the gap that has traditionally existed between research and extension including what this implies in terms of training.

b. The Output: An improved technology package effectively extended to farmers. The sub-components of this output are as follows:

- Improved "systems of production", including treatment of a wide range of potential practices and techniques such as associations of crops, intercropping, sequential cropping, rotation and managed fallow, resulting in: improved economic return per unit of land, a more even distri-

bution of labor, reduced risk crop failure, etc.

- The improvement and extension of animal mechanization beyond simple plowing, to include a number of productive and labor-saving activities.
- The successful testing and demonstration of both varietal and systems of production research results in farmer plots.
- Better trained extension agents in terms of actual experience in applying the technology package.
- Improved varieties of millet and sorghum in terms of yield, disease and insect resistance, and acceptability.
- Improved vegetable production technology appropriate to the Dogon Plateau, including improved efficiency of water utilization.

c. The Activity:

1) Grain Production: In June, 1978, ICRISAT/Mali submitted a proposal to USAID to upgrade existing facilities at the Seno Experiment Station, where a full-time Malian agronomist employee of ICRISAT will supervise station testing activities. (In addition, ICRISAT proposes to establish and staff an experiment station in the Central Zone and create a second full-time expatriate position there to focus on the production system type research called for above.) USAID is now processing this proposal for approval. The proposal, with respect to the Seno Station, will be expanded and complemented by the project as follows:

> The Seno Station is situated in the center of a large and important millet-growing area (the Dogon inhabited Seno Plain). The facilities will be upgraded to include an animal traction research facility, improved housing, the rennovation of existing structures, and a pumping system for the open well already in place. The research program will be directed by a Station Chief(1) to be assigned full-time to OMM. Station trials will be supervised by the ICRISAT advisor. Working together with an agronomist to be assigned from OMM, he will carry out the expanded production systems research effort discussed in the technical analysis, including animal traction.
>
> In order to bridge the gap between the research effort and extension, an ambitious program of multi-locational testing is planned for all elements of the technical package. Assisting this effort will be a resident US field trials advisor who, for the first three years of the project, will be closely associated with SAFGRAD for field testing of farming system innovations. An additional agronomist will be assigned full-time to manage the farmer field testing element and disseminate the findings to extension agents.
>
> The plan for extension of the technology package is two-phased. Each year, those elements which have been developed to the satisfaction of the research staff will be turned over to the multi-locational testing division. They, in turn will train extension agents in conducting demonstration trials. Once positive findings are obtained, the appropriate new elements of the package will be turned over to OMM for general dissemination. Over 200 farmer demonstration trials will be conducted during the life of the project.

(1) The proposed Station Chief is an agronomist who recently completed a nine-month course in cropping systems research at ICRISAT/India.

Regular visits to the station of the extension staff will be arranged, and station personnel, including ICRISAT and SAFGRAD advisors, will periodically present findings to extension agents in the training programs.

2) Dogon Vegetable Production:

The vegetable production research component will focus initially on the need to increase the supply of water and improve efficiency of water utilization for expanded irrigated production. In addition, vegetable storage, marketing and terracing activities will be studied for profitable intervention possibilities. Two Peace Corps volunteers have been carrying out valuable initial research in the area. One, an entomologist, has attempted to develop effective pest control measures for the principal local crops, and the other, a horticulturalist, has conducted trials relating to water requirements and irrigation techniques. An especially interesting feature of these experiments is the use of a hand operated pump with a drip irrigation system made from low cost materials available locally.

Under the revised project, a 3-year vegetable production specialist will be provided on contract. OMM will assign a full-time counterpart agronomist. In addition to conducting a variety of trials, a training program for the extension staff in the area will be carried out, and a number of demonstration plots will be developed. Also, short-term consultants will be brought in for specialized studies related to water capture, retention, and conservation (dams, reservoirs, gravity flow systems, additional catchments; some 60 new potential dam sites have been identified).1/ While the Dogon vegetable production system appears relatively well adapted to its harsh environment, considerable increases in productivity and areas cultivated can be achieved through building on the traditional system, particularly in the area of water utilization and fertilizers.

d. Input Summary:

- Technical Assistance: The Malian resident advisor for the Seno Station will be provided by separate agreement with ICRISAT. By the end of his 3-year assignment, OMM should have the capability to continue the program unaided except for short-term consultants. The US multi-locational field trials advisor also will be provided for three years. Although not a SAFGRAD employee, he will be backstopped by SAFGRAD through separate agreement. Regarding vegetable production, a resident horticulturalist advisor will be provided for the first two years. Short-term consultants in irrigation engineering and marketing will be brought in for a maximum of three man months. A market research study for vegetable marketing and distribution, both in Mali and for export, should require no more than an additional two months.

1/ Much of the dam related work is financed by the German aid program with whom OMM will collaborate in carrying out the above activities.

- Personnel: The GRM will provide the Seno Station Chief and an agronomist to counterpart to the field testing specialist (both ICRISAT trained). OMM will provide an agronomist to counterpart the Seno Station Chief, two assistant field trials supervisors, and two moniteurs to assist with demonstration plots. For the Dogon vegetable program, OMM will assign one field trials agronomist plus a moniteur to counterpart the expatriate horticulturalist.

- Training : After two years of experience, either the Seno Station Chief or the ICRISAT trained agronomist will be sent for further training in research methodology in the U.S., with visits to Guatemala to observe the innovative farmer-field testing program there. Other than this, all training will occur on the job.

- Commodities: A utility vehicle for the Seno Station, five mobylettes for field trials assistants and moniteurs, plus animal traction equipment, soil testing equipment and a generator.

- Construction: Construction/upgrading of housing/facilities at the Seno Station will be provided, as per Government Proposal which has been approved by USAID engineer.

- Maintenance: Operating expenses of the research station continue to be borne by the project.

3. The Extension System:

a. Rationale: For background information, see the technical analysis, Annex A, a, a). In summary: (a) The extension program directly impacts on only a relatively small fraction of farm units in the area because of deficiencies in methodology, modus operandi, and level of preparation. (b) A comprehensive program is indicated which will spread the impact of what each agent has to offer over a much larger number of producers, upgrade the preparation of field agents through practical "learn-by-doing" type training, and bridge the gap between research and extension.

b. The Output: Better prepared and informed farmers throughout the region covered by the project. The key elements making up this global output include the following: (a) Revised outreach effort involving much greater use of farmer groups, both with respect to field trails and demonstrations as well as local assumption of time-consuming marketing, supply and credit functions to allow the extension agent greater freedom to pursue his primary activity, i.e., extending the technical package. (b) A revised training program of longer duration which will place the agent in the role of the farmer throughout a growing season in terms of responsibility for a full cycle of production of local crops. (c) A mechanism for bringing and keeping extension personnel up to date with the latest findings and experience from the research program, as well as a practical means of transmitting such experience to area farmers.

c. The Activity:

1) Training: Extension training in Mali is characterized by a style known as "en cascade" whereby the head training specialist teaches the division chief, who in turn trains the sector chief, and so on down. In general, these training programs are linked to relatively static models of technological intervention. The OMM Director has recently agreed to replace the "en cascade" system with another designed by a local contractor. There is a need to broaden training to focus more heavily on the role of the agent, especially at the village level, with respect to how he relates to the farmer and his socio-economic and agronomic environment. The capturing, interpreting, and transmission of farmers problems and feedback to supervisory levels and to the research system is also essential for a more effective program. Further, the use of "tools" of extension must be understood in terms of dissemination techniques, demonstration and instructional aids, group process, methodology, etc. Most of the above concepts are foreign to extension as practiced in Francophone West Africa and must be brought in from the outside in the form of consulting assistance and higher level training and orientation visits for program leaders. This project, therefore, will provide the following training components:

(a) Participant Training: The Director of OMM Extension Division has already received training in the U.S. in extension. The 5 SDR chiefs are programmed for similar 3-month training in the U.S. followed by a visit to Guatemala to observe the farmer field testing program there. This training will focus heavily on the philosophy and tools of extension. The Guatemalan observation will provide an opportunity to observe application of these principles under developing country conditions. Most of it will be in the field with a working agent rather than in a classroom situation.

(b) In-Country Training - The Extension Force: Because OMM does not have enough trained "moniteurs" to fill all the places in the extension staff, OMM has obtained over 100 "encadreurs"; the project pays the salaries of 66 of these. The biggest weakness of the "encadreurs" is that, for the most part, they do not know how to farm. Unlike the "moniteurs", they receive no special training in agriculture, nor do they have the practical knowledge that the farmer himself has about growing crops, the use of equipment, managing the soil and animals, etc. It is difficult for them to gain the necessary respect and confidence of farmers in this siuation. Even if the GRM assigns 20 new "moniteurs" to OMM each year during the project, some will be replacements for departing agents. So quite a few "encadreurs" will remain on the extension force by the end of the project. (Those paid by the project will be the first to be replaced, and they will be entirely replaced by the end of the project). Since it will take a number of years before the "encadreurs" can be phased out entirely, training them is crucial to project success. OMM has agreed with USAID to propose a training program in late 1979 with the assistance of a local contractor and subject to USAID's approval. A substantial percentage of the existing encadreur cadre, perhaps 30/year, could be rotated through a six to eight month training program.

Whatever training program is approved, it is clear that the encadreur will have to work through a complete agricultural production where he will literally learn to farm with his own hands, and how to use, maintain and make monor repairs of tools and implements. He will also have to learn how to handle animals, as an element of the production enterprise.

In addition, the program will include both basic and new developments in technology, especially from the new farming systems research to be provided for the project through ICRISAT. Orientation visits will also be made to the Seno Station and others. Likewise, similar training will be provided in agricultural mechanics and with animal traction by drawing on personnel from the GRM Agriculture Mechanization Service and from CMDT specialists.

The above program is also planned for CTA's and moniteurs 1/ on OMM's field staff but with a greater input of more specialized technical instruction pitched at a higher scholastic level. Special courses in farm budgeting, economics and accounting will be included. Seminars of longer duration will be held with research station personnel. The basic idea, though, will be for them to actually farm through the growing season and "get their hands dirty". With a total current staff of 78 of these agents, it should be possible to train the entire group over a three to five year period.

2) The Approach: In light of the identifiable "spread effect" of extension work thus far, it is necessary to modify the pilot farmer system currently in force as well as utilize group techniques. Attempts will be made to rotate more rapidly from one pilot farmer to another. 2/ Further, greater use of the demonstration value of the pilot farmer will be worked on in terms of motivating groups to attend on-farm sessions and observe results.

In addition, OMM will install "pilot villages", a concept to which the extension agents appear very receptive. (This overlaps with the village organization component discussed below.) In this case the agent will deal with the village as a whole. The idea will be to establish a continuing dialogue with all receptive farmers as a group, rather than only a few of the more affluent participants as in the situation at present. For the group approach (pilot village) to work, extension personnel will need to develop new skills in terms of group process methodology and stronger leadership. This will have to come from a combination of training and supervised practice on the job.

3) The Research Link: An active program will be established of verification testing and demonstration trials on farmers' fields. The extension force, however, must be trained, motivated and assisted to

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1/ CTA: Conducteur de Travaux Agricole, ZER level supervisory agent, requiring 4 years of agricultural training. Moniteur: a graduate of the three year course provided by the CAA who normally becomes an extension agent.

2/ It was explained to the design team that it takes three years to really get a pilot farmer squared away with the technology package - one year to establish confidence, another to establish the package and a third of follow-up to make sure the innovations are properly absorbed.

fully exploit opportunities offered by the program in terms of actually getting farmers under their responsibility out to observe, feel, hear explanations and understand what is happening. This also will require stronger leadership and group skills.

4) Offices and Facilities: It is very important that the extension agent have status in the community so that he will be taken seriously by those he is trying to help. One way, in addition to training and salary, is to provide facilities. At present, neither encadreurs nor moniteurs have offices where they are stationed. The agent handles everything out of the one room allocated to him in the village and literally sleeps with fertilizer, seed, records and all that goes into his job. Not only does this create an unfortunate image, it is also unhealthy. In order to ameliorate this situation somewhat, the project includes construction of simple sleeping quarters for half (17) of the ZER agents. The effect of the construction will be beneficial to the entire system for practical reasons as well as for morale.

d. Inputs Summary: (For complete costing, see ANNEX O)

Technical Assistance: Specialized short-term technical consultants will be brought in to design the extension training program and curricula at all levels in the region. The consultant will also plan and arrange the US/Guatemala participant training element in cooperation with AID's Office of International Training. This will require three months in the first project year. He also assist the extension department to plan, initiate and supervise some of the innovations discussed above. Follow-up consulting of three man months per year is also provided through project year four.

Construction: 80 sq. meter houses will be constructed for half (17) of the ZER-level personnel along with six more substantial houses for the sector-level (4) and division-level (2).

Training: (a) month ea. for 5 CTA's (2 1/2 months in U.S. plus 2 weeks in Guatemala), one per year. (b) Up to 8 months in-country training for 30 encadreurs/moniteurs per year, including travel, per diem, and training materials. (c) Special seminar presentations by the research staff at the Seno Research Station.

4. Village Farmer Organizations

a. Rationale: In order for OMM's extension system to reach a much larger number of farmers, OMM's extension agents must work with groups of farmers/villagers. Group action could cut costs in production, marketing, and supply, and make more efficient use of labor and equipment. Cooperation amongst villagers through extended

patrilineages is a way of life. In some cases this is used to overcome labor bottlenecks in weeding and harvesting; in others for homebuilding and celebrations.

The idea behind this component, therefore, is to attempt to tap the natural tendency of villagers to collaborate in order to improve the spread effect of project services as well as develop organizational infrastructure which can be utilized for a host of "local action" or "self-help" activities down the road.

b. The Output: Development of a model socially and culturally viable village organizational structure for assumption of key agricultural production related activities in order to: (a) Improve farmer income through reduced input and marketing costs to the producer and fuller utilization of local labor; (b) stimulate local savings and investment; (c) reduce the cost of OMM services and unburden the extension staff to some extent to focus more on technology transfer to farmer groups; (d) stimulate village initiative and participation in the agricultural decision making process; and (e) provide a vehicle for a variety of "self-help" initiatives for the benefit of the community at large.

c. The Activity: Any attempt on the part of the government to organize villagers for production related activity in the area will be viewed with scepticism and suspection. The BARA Study, for instance, stressed that it was impossible to obtain straight answers to important questions because the consultants were associated with government.

There is perhaps an even greater constraint with the utilization of cooperatives. Although termed "cooperatives", the management is imposed by government, not by the membership. The motivating force is to facilitate carrying out government production and marketing targets. In the 1960's, the cooperative was also used as a political tool. In the Fifth Region, the cooperative agents have little purpose other than to "witness" government marketing transactions with villagers, a proforma, representational role.

A much better group model is that developed by the Cotton Operation (CMDT), which has been very successful. Villages are grouped into "associations" which are managed by the villagers themselves. The CMDT deals directly with management of the association, advancing credit supplies and funds for marketing in accordance with agregate needs defined by the association. The association distributes credit and supplies in accordance with individual requirements. Association management passes judgement on the legitimacy of expressed needs. At harvest, individuals deliver their crop to the association, receive payment and make reimbursements for credit received. The association delivers the product to the CMDT as well as credit repayment. This type of operation relieves CMDT of much detailed work and accounting.

It is this sort of vehicle which the project will develop. The adaptability of village associations to Mali has already been proven: Activities

must be based on sound understanding of village sentiments as well as cultural and social impediments which may have to be overcome.

1) Groundwork and Initial Studies: An initial study will be made of several associations in the CMDT area of coverage to capture the process through which the association was created and evolved, its relationship to the power structure in the village, etc. Thereafter, a reconnaissance survey will be made of principal villages 1/ in the area from which a sample of 10 or 12 will be chosen for detailed study to develop complete social, cultural and economic and organizational profiles. In addition, intensive discussions will be held with villagers as a whole. Visits to successful associations in the CMDT and other areas will be made by leaders from prospective villages. Finally, some 5-6 villages in the project area will be selected for active promotion of association development. All of the above study and survey activities will be carried out by OMM's Division of Statistics and Planning with assistance of local consultants' guidance inputs from the short-term expatriate advisor in research design, methods and analysis, plus a short-term specialist in village organization.

2) Formation and Initial Implementation: Following selection of the villages, a training program/seminar will be activated for extension personnel who will be directly involved - sector and zone chiefs, the concerned encadreurs and a technician from the Division of Planning and Statistics. The seminar will define concepts, first order objectives, and a sequence of events. Observation and orientation visits will also be made to CMDT associations. The program will stress flexibility with respect to accommodation of distinct village objectives and great caution so as to avoid "imposing" preconceived ideas or models inappropriately. The trained extension cadre will then commence the process of group formation; the process will be gradual. Only those functions will be offered to the group which they desire and which they are adequately prepared to handle. Training for group management will be provided by the extension staff, backed up by local consultants. One of the first elements of this training will be the design and maintenance of a simple record keeping system.

3) Potential Activities and Options to be Pursued: Among the possible activities for assumption by village associations are: (a) Credit - The project intends to experiment with the group credit concept. (b) Supply - Closely linked with credit in terms of agricultural inputs, this area could possibly be expanded to also meet the need for a local, reliable source of reasonably priced consumer goods. (c) Marketing - Village transportation assembly and storage of production not only for OMM/OPAM buying but eventually for parallel market transactions in millet and hopefully other crops, especially vegetables in the case of the Dogons. A security stock could also

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1/ Logically, villages where the functional literacy program is to be implemented should be visited. The continuing of these two project components could be expected to have a high pay-off from mutual reinforcement.

be maintained for emergencies. (d) Equipment Pool - There is a real potential for increased production and return to small farmers from shared use of animal traction equipment, especially the multiple cultivator and the donkey drawn cart popular in the area. Draft animals, both oxen and donkeys could also be stocked and cared for by the association. Equipment and animals could be either rented or sold to members. (e) Extension - By becoming the focal point for extension contact, the village association could increase both the efficiency and the effectiveness of the agent. The association could also take the lead in promoting and introducing farmers to local research sponsored verification and demonstration trial efforts. (f) Savings - There are a variety of ways that village associations could capitalize from the enterprises listed here and others. This is desireable provided that surpluses can be reinvested properly. (g) Livestock - In cooperation with the livestock extension, marketing, and credit outreach program to be developed under the new sector project, associations could work in such areas as controlled grazing around villages, the planting and maintaining of forage crops and grasses, and the finishing of market-grade cattle both on their own and in partnership with local or transhumant herders. (h) Representation - Village associations could become effective vehicles for the expressions of community feedback to OMM. Ultimately, concentrated action by groups of such associations could become a meaningful force in influencing decision making. (i) Self-Help - Eventually, associations could take on a variety of needed community development type activity in such areas as water supply, reforestation, health, and education facilities.

d. Inputs:

--Technical Assistance: This component, as discussed above, will draw to some extent on consulting assistance provided for the data management and planning activity, especially the local contractor. In addition, short-term inputs are programmed in village organization methodology and rural group process, "animation" for assistance in the training of the selected extension cadre, the development of promotion and formation plans and methods, and to periodically review progress and "trouble shoot". Four months of this assistance is proposed for the second year with four more months in year three.

--Other Costs: No additional construction, commodities, or personnel are required for this component. Credit will be provided, however, for village association activities determined to be eligible. Operating costs will also be paid.

5. Credit and Input Distribution:

a. Rationale: There is a need to expand production-related lending to a much greater number of farmers and to provide credit for production inputs such as draft animals and fertilizer. Longer credit terms, higher interest rates, and new credit guidelines/procedures are required in order to put the program on a sound financial footing, while allowing for experimental lending to village organizations.

b. Outputs: An expanded, improved, and viable credit and input distribution system.

c. Activities: At present, OMM has an in-kind agricultural supply/credit system through which plows, carts, seeders, and multiple cultivators are supplied to farmers with credit terms of up to 3 years at 3.12% interest per annum, plus fertilizers, insecticides, and fungicides on a cash basis. During the 1977/78 campaign, OMM sold approximately $200,000 worth of such equipment and supplies. The agricultural supply/credit component of this project is designed to continue this system, while incorporating a number of innovations/experiments.

1) Input Distribution: At present, OMM purchases all of its agricultural implements and supplies from SCAER, the GRM's agricultural credit and supply agency. Most of SCAER's products are manufactured by SMECMA. OMM is now allowed to purchase from other sources whenever SCAER cannot provide the desired items. The current system is cumbersome. It takes a year from the time a farm requests a plow, etc. for SMECMA and SCAER to provide it. SCAER dictates not only the sale price but the interest rates as well, even though the credit fund is entirely OMM's. OMM lacks warehouse space to put the implements; as a result, their transport is not coordinated with marketing for lower costs. Under the project, short-term technical assistance will be provided to improve efficiency in the supply system, reduce costs, and map out an expansion program. 15 warehouses(180 sq m/300 t) to store the agricultural inputs will be constructed together with offices, to permit a faster response capability relative to village needs.

The Retail Store Experiment--As explained in the technical analysis, there is a need to provide local retail supply options to villagers, both for agricultural inputs, as well as to meet basic village and household needs. Several alternatives are being considered. The most advanced option, based on a recent study for OMM by a U.S. cooperative expert, has to do with the establishment of a network of 16 strategically located retail stores under local management. The design team was not satisfied, however, that the necessary skills could be marshalled to manage a system of this magnitude and complexity. Instead, the project will experiment with two retail stores. Sites will be selected (based on criteria established in the above-mentioned study) at the sector level; approximately 50 sq. meters of space will be included in the office/warehouse combination units to be constructed. The project will hire someone from the village to manage the stores; this cost would be assumed by the store in the third year. A small margin will be added to the retail price of each commodity as a commission incentive for sales by the manager. Initial inventory ($10,000 per store) will be advanced from the project's credit fund. Profits from sales in the first two-three years will all be reinvested in the store itself. The initial line of goods will consist of agriculturally related supplies and equipment. Given success with these items, the stores may gradually move into appropriate consumer merchandize, but only where warranted by demand and other factors (competition, etc.). A short-term consultant will be hired to help OMM set up the two stores, train managers, provide credit advice, recommend inventory and establish bookkeeping control, and purchasing procedures. The two stores will be evaluated in the first project evaluation. If findings are positive regarding viability and utility, 4 additional stores can be started in other selected villages. Funding is provided for six stores altogether. With respect to other alternatives, the project's credit fund will be available for the financing of local merchants and market

stall operators on a trial basis. The plan for this will be left to the above consultants.

2) Credit:

Expanded Lending Categories: Credit is needed for the full range of inputs required by the technology package. Under the ongoing project, credit is being expanded to cover draft animals; the new project will expand credit to fertilizer as well, plus other items which may be called for in the future by ongoing production systems research. Concerning fertilizers, one-year loans from the revolving credit fund will be available; OMM has not done this previously. Other single season inputs requiring financing (including labor) may be identified by the research program. As for work animals, the project will provide seed capital ($10,000) for the establishment of a special insurance fund not to be comingled with the regular fund.

Group Lending: As a means of reducing the cost of credit administration and as a potential capitalization activity for village associations, an experimental program of group credit will be carried out. The program will commence with animals using this as an incentive for group formation and borrowing. If successful, the element will be expanded to include equipment for rental or communal use. Eventually, the entire package of inputs might be offered through the group, provided that adequate control and management could be established. Also, a small amount of group credit will also be made available for village enterprises and investments which promise a reasonable return. Possibilities include small bakeries and commissaries. It is expected that productive women's and youth's activities will be identified. For such local endeavors, credit will be offered on a trial basis.

Credit Terms and Interest Rates: Terms and interest rates charged by OMM are presently dictated by SCAER. Interest rates (3.12%) are clearly too low to maintain the real value of the credit fund since inflation over the past 4 years has been running 8-11% annually for farm implements made in Mali. Farmers complain that the 3-year maximum repayment schedule is too short. All of this may soon be changed. If SCAER is replaced by another agency, the most likely replacement will be a rural agricultural development bank, based on the Philippine model--this is what IFAD is apparently suggesting to the GRM. If and when these banks become operational, OMM will need money only to purchase the implements/supplies; the farmer will obtain the credit from the bank and pay OMM. Increments to the credit fund would not be needed. However, the project provides increments to the existing fund in case SCAER continues or there are significant delays in implementation. For the same reason, the project includes a special covenant giving OMM the authority to charge viable interest rates and more flexible terms. (The GRM is already granting OMM such authority with respect to loans for work animals.)

Credit Administration: The credit activity will continue under the administration of OMM's credit division with approval authority for most loans at Sector and ZER level offices as appropriate. In accordance with a recent proposal of the OMM Director, however, five new credit agents will be placed at sector offices who will focus exclusively on administration of the program. The new agents will be trained by the project, both in specially arranged seminars at the CAA's and on-the-job by local consultants. The agents will be in no case lower than a moniteur in terms of academic preparation. (For credit fund accountability procedures, see Annex A, 2, g.)

d. Inputs Summary

1) Technical Assistance: Short-term technical assistance will be provided to improve efficiency in the credit and supply system, for three months each in years 1-4. A Short-term consultant will also develop procedures for advance determination of inventory requirements at the ZER level. The contractor will also assist with the experimental stores component, training of management and procedures for inventory control, accounting, and purchasing.

2) Personnel: Five credit agents will be hired by OMM at the CTA level for assignment to the 5 Rural Development Sector Offices.

3) Training: Supply and retail store management training will be provided on-the-job by consultants. Observation visits will be made to view the CMDT supply system and other successful operations in Mali. The five new management procedures by special arrangement with one of the CAA's.

The Chief of the OMM credit program will be sent to the U.S. for three months of specialized training in cooperative and production credit program management, probably through the USDA Farmer's Cooperative Service.

4) Commodities: 5 mobylettes for the five credit agents, plus office equipment for the new regional offices to be constructed.

5) Construction: 5 offices and 15 warehouses of 300 ton capacity or the equivalent, with up to 6 retail stores (50 sq. meters) therein will be constructed.

6) Credit Fund Requirements: Estimate of Credit Needs
If SCAER is not soon replaced by a new farm banking system, new money will be required as follows: $307,000 in project year 3, and $380,000 in project year 4, $69,000 of this is budgeted for completely new activities such as artisan ventures, women/group projects, commercial activities, peanut mills, etc. As of mid-1979, the size of the fund was $711,000.

So the Credit Fund would, by Year 4, amount to a little over 1.4 million. (See page 55 for basis of estimated needs.)

7) Other Costs: In addition to existing budget support, funds are required as follows:

Year	1	2	3	4
Retail Store Salaries		1.5	1.5	1.5
Seed Capital (Insurance Fund)	10			

6. Village Blacksmiths

a. Rationale: Under the original paper, $100,000 was allocated to the blacksmith program. The need for such a program was reaffirmed by the 1978 base line survey of the OMM area which covered 55 blacksmiths. The survey reaffirmed that the difficulty associated with replacing broken parts of agricultural equipment is a major problem for farmers. A considerable number of these implements were found not being used for this reason. The survey also revealed that area blacksmiths are very poorly equipped. Only seven, for example, had a permanent covered shop; the rest worked under shade trees. In addition the survey showed a serious lack of materials. Finally, the survey revealed that few of the blacksmiths had the necessary knowledge of new techniques to make the essential parts, even if the equipment/materials were available.

b. Output: The development of village capability to produce farm implements and spare parts recommended by the technology package.

c. The Activity: Of the 55 blacksmiths surveyed in 1978, 19 were selected for training. All equipment/materials has been ordered and most of it received. No training has yet taken place because OMM lacks a professional blacksmith trainer. The head of Genie Rural's "Machinisme Agricole", however, has agreed to do the training until two for the program have been located and hired. The training of the initial 19 blacksmiths will commence in the dry season of 1980 and will consist of the following: building of shops, training, and installation of equipment. In the initial program trainees will become familiar with the major farm implements sold by OMM and then learn to make the following spare parts: mould-boards, hoes, rakes, water cans, screws, nuts, bolts, plow and weeding blades. The number of blacksmiths to be trained will be 40. The two professional blacksmiths to be hired by OMM will receive additional training for 1-2 months at the CMDT's blacksmith training program. Welders will be purchased form the project's credit fund. The trainers' salaries will be a GRM contribution: their equipment will be funded by the project. All training will be done on site at the blacksmiths' shops rather than at OMM headquarters; this is to ensure an effective exchange of ideas and that the trainers understand the blacksmiths' problems. The training will be in 4 stages: (1) Construction of permanent shops and installation of equipment. (2) Fabrication of simple blacksmith tools and spare parts for agricultural implements; use of new tools such as screw-cutters, drills, etc. (3) Learning welding techniques and how to estimate costs and establish price for repairs -- 45 to 50 days. (4) Maintenance and repair of water pumps; use of heavy welding equipment -- 15 to 20 days.

d. Inputs Summary:

1) Training: 2 professional blacksmiths trained in-country at the CMDT, 2 mo. each, and 40 blacksmiths trained in four stages for four months each over a 3 year period.

2) Commodities: 1 utility vehicle, 2 mobylettes, 2 sets

each of blacksmith tools, materials, and acetylene/oxygen welding units.

3) Operating Expenses

7. Marketing:

One of the fundamental objectives of the GRM is the marketing of surplus grain from the Fifth Region. This is a function of OPAM. Gradually Operation Mils has assumed the responsibility, however, for buying the grain from farmers and trucking it to central points. By 1978, OMM had essentially taken over the entire task for which it earns a 5 MF/kg commission plus transportation costs at fixed amounts. Prior to the marketing season, quotas are established for each operational unit, i.e., SDR, ZER, SB down to the village level. Implicit in the marketing quota is a certain measure of compulsion. In terms of the revised project, no specific new marketing activity is included because it is not possible to justify an investment in a system which, on the face of it, does not contribute to an improvement in farmer income. In the future, if there is a breakthrough on the price issue and/or if an economically sound program of diversification is encouraged, AID should reevaluate its position.

8. Infrastructure:

a. Rural Roads Component: Of some 307 km of rural roads programmed for improvement in the current project, over 50 km have been completed. The slowness in commencing this activity was solely due to slow delivery of equipment. The road brigade was organized in early 1978 and work began in June. It is now fully operational, except that the brigade is in serious need of additional water trucks and dump trucks, as well as a second bulldozer. Otherwise timely completion of road construction will be impossible. For details, see ANNEX F, Engineering Analysis.

b. Village Water Supply Component: The current project anticipated the construction of 30 open wells in villages lacking water for both domestic and animal use. As of January 1979, however, only two wells had been partially constructed. The work plan proposed that "Operation Puits", an agency of the GRM charged with developing domestic village water supplies, would do the work. Efforts to move the program forward have not succeeded. So efforts were made to have the work performed by the Hydraulic Service of the GRM; they likewise failed to yield a solution. Finally a contractor was identified, which had the capability to bore holes, equipped with tubing and hand pumps, in lieu of the originally open wells. The contractor proposal reflects a construction and equipment cost of approximately 1/10 to 1/4 the cost which had been proposed by either Operation Puits or Hydraulic Services. The conclusion of an agreement to proceed with the above contractor, expected shortly, should break the impass which has blocked development of the badly needed activity to date. Obligated funds in the current project should entirely cover the cost of the revised program.

c. Construction Component: Planned construction includes office/sleeping quarter/supply room complexes at sector and ZER headquarters. This will include units for five sectors, of which one unit requires office only, and somewhat smaller units for 17 of the 34 ZER level offices. The rationale for this construction has been given. Also, for image reasons, it is important that ZER Chiefs have some form of officially supplied office and facility so that they will have a certain status and be taken seriously by the villages in which they work. There is also an important health reason to separate the Moniteur and his sleeping quarters from fertilizer and other farm inputs. Small offices for the five new credit agents will also be included at the sector level. Other construction will include two additional houses for Department heads. In addition, a vehicle maintenance facility will be constructed to perform badly needed periodic maintenance on the vehicles and mobylettes. For details, see Engineering Analysis, ANNEX F.

d. Communication: Both in terms of the needs of the project itself, as well as the overall USAID communications development plan for all rural projects, a radio net will be established under the new project. The project will fund a Base Station at Opération Mils headquarters in Sevaré and satellite stations at Bankass, Koro, Douenza, Bandiagara, and Tieninka. The Road Brigade will also have a unit. A USAID base station will be funded outside the project. For obvious reasons, this will greatly facilitate project monitoring and coordination.

9. Functional Literacy: The Functional Literacy activity of the project, already funded by separate grant agreement, is to develop and carry out an innovative small-scale functional literacy program in the Fifth Region under the general supervision of Opération Mils. DNAFLA is responsible for the training of the village literacy teachers and Chiefs of the Zones d'Alphabetization Fontionelle (ZAF), who direct literacy activities in the zones. DNAFLA is responsible, as well, for supervision of the writing of texts and the printing of literacy materials. The role of OMM is to coordinate the functional literacy program with its own extension and other programs and the rural health program in Koro. In all, 44 villages are to participate in the program, 15 in the first year.

Initial progress has been excellent. The program is well launched and working actively to train ZAF agents. Opération Mils is enthusiastically collaborating and expects to utilize committees formed as nuclei for improved extension activities. In planning for the village organization component of this project, it is expected that the local organizational infrastructure established by the literacy program will serve as excellent building or rallying points around which can be developed viable village farming organizations for carrying out some of the basic agriculturally related functions that OMM has in mind in terms of marketing, supply credit, and other activities.

10. Community Development: The current project includes a small community development component not officia-ly scheduled for continued funding

under the new version. The activity itself, however, will probably continue on OMM's own initiative - drawing on the rural health project and its own modest financial resources. The effort is currently advised by a personal services contract through mid-1979. He has recommended several target areas in which OMM should implement a proposed community development strategy. Construction of two rural community centers by the villagers themselves in each of the target zones has begun. Locally trained community development agents will be recruited; they and village leaders will draw up a plan of community development objectives which would include women and youth activities, cooperative endeavors relating to cottage activities, and other rural works. This effort will be coordinated with the Village Organizations and Functional Literacy elements of the project.

11. Administrative Support:

a. Financial Management Advisor: OMM has experienced difficulties in dealing with all aspects of financial management and accountability. Although some progress has been made, there still exists a need for additional assistance. Thus, the project will provide a full-time advisor for one year to assist management in overhauling the present system toward making it more functional as a decision-making tool.

b. Milling-Machines: $65,000 is included for the puchase of 35 food processing machines. The rationale for this activity is explained in the financial viability section, page 84 .

c. Vehicles: Funds are included for the replacement of 15 utility vehicles plus an additional project vehicle to be stationed at USAID, and 20 mobylettes.(1) Since revenue generated from grain marketing will be sufficient for replacement of the transport trucks, no funds are included for their replacement.

d. Operating Expenses: OMM will assume most of these expenses (now financed by the project) by the last year of the project. (See Annexes E and O.)

e. Functional Literacy: AID funding under the separately authorized functional literacy program will end in September, 1981, at which time the project will assume its operating expenses, estimated to be $50,000 annually. In this program, which is in progress, over 500 OMM farmers are already learning OMM's package of improved practices. The program stands to reach as many farmers as OMM's extension system and, thus, should be given top priority.

(1) The remaining vehicles/mobylettes are provided under specific project components.

PART III - IMPLEMENTATION ARRANGEMENTS

A. Project Organization and Administration

1. GRM Management : Operations are dependencies of the Ministry of Rural Development (MRD). They enjoy relative independance in terms of program planning and implementation. OMM is governed by a board of directors which provides national policy level direction. While project negotiations are carried out with the MRD, AID deals mainly with OMM's Director. OMM has a staff organization designed to carry out multiple activities simultaneously. (See Organization Chart, Figure 1). OMM recently moved into new headquarters. A headquarters staff of 26 manages 227 field personnel in a three tiered pyramidal structure: the Rural Development Sector (SDR) corresponding to the "Cercle" (5 offices), the Rural Expansion Zone (ZER) which operates at the village level (normally including about 10 villages) and the 138 extension agents. The January, 1979 evaluation of the project concluded that the staff is of sufficient size (but lacks training).

The new Director of OMM is a professional manager of long experience from the highly successful cotton Operation, CMDT. In the impression of the design team, formed through a series of discussions and negotiations, he is also a dynamic leader and a thoughtful, incisive planner. OMM has suffered over the years from the high turnover of managers in the past (three in the past two years); this is not likely to occur in the future. Institution building is a significant part of the project, especially in the area of data management, planning, agricultural research and extension. Finally, specialized technical assistance will be provided to management for 12 months in the first year to focus exclusively on financial management, especially in the area of accounting.

2. General Support by the GRM: Salaries are paid out of the GRM budget. Beyond this, OMM is a relatively self-contained operation, including internal capability for the full execution of almost all functions. There is no need, for example, to depend on another organization for extension, credit or marketing, etc. The following GRM agencies contribute to various aspects of the OMM program: (a) The Ministry of Health is executing an AID financed rural health program in one circle; the plan is for this to spread to the other four circles during the coming years. (b) The Ministry of Public Works (TP) is responsible for the Road Brigade (even though the brigade works exclusively for OMM); TP is responsible for the road maintenance program too. (c) The Ministry of Education through DNAFLA has commenced an AID-financed functional literacy program. The capacity of these organizations to carry out these jobs is not in question — they are already doing it.

3. USAID Management: As there is no general technical assistance contractor, project management falls on the shoulders of the USAID staff. A full-time position has been assigned exclusively for management of this project for two years now. USAID functions in support of the project will include procurement, construction, a series of short-term consulting inputs, and a substantial monitoring role. It is expected that the USAID project manager will spend more time in Sevaré and in the field throughout the Fifth Region than was formerly required due to the additional demands of the revised effort.

The management and monitoring job should be made somewhat easier by the use of a local contractor, probably BARA. It will provide continuing technical assistance during the first year in the area of data management, and planning, and village organization. Secondly, there will be US contractors — one for the first three years advising the multi-locational trials work out of the Seno Station and the other advising regarding vegetable production. They will be a continuing source of information, not only in the area of research and extension, but also with respect to what is happening in general. Finally, the Data Management activity will be producing not only socio-economic survey findings on an annual basis, but also a constant stream of data repotts, findings and feedback on operations which the USAID project manager will have access to any time.

B. Implementation Plan

1. General: The Pert Chart (See ANNEX J) lists key actions to be taken by the project between mid-1979 and the end of the new project's first year. Unlike a new project, project implementation is not a serious issue. OMM has already had 3 years of experience managing the project; it will receive 1 year's technical assistance in financial management using the project's first year to improve financial practices. Similarly, the Department of Public Works (TP) has already had one year's experience in building the roads. DNAFLA is already in the process of implementing the functional literacy component again without significant problems. The GRM has already appointed one of ICRISAT's Malian technicians to be the resident advisor at the Seno Research Station; so no problem exists regarding ICRISAT's collaboration. Similarly, SAFGRAD has an on-going program of research throughout Mali, including the Fifth Region, and the coordination with SAFGRAD of the proposed field program headed by a field trials officer presents no problems - it only awaits his arrival to set-up activities and trials. Finally, the base line study by OMM for 1979 with the assistance of BARA has already begun, under old project funds.

Only 2 components face implementation problems — the blacksmith program and the well construction program — and these are not significant. Regarding the well program, a local contractor has proposed a new design (covered wells as opposed to open ones) and construction will begin in 1979 once the contract is signed. (This is really a part of the old project only, since no new funding for well construction is proposed.)

C. Evaluation Plan

Evaluation arrangements are discussed throughout this paper. The entire project is oriented toward evaluation. Comparative data collection and analysis for determination of impact will be a critical and priority activity of the project and will have a corresponding priority on the part of AID project management and project contractors. The evaluation schedule is as follows:

Spring 1981: This will be an independent contract evaluation which will focus on farm/village level data generated from the social/economic surveys conducted in 1978-80. It will also cover other program indicators such as contractor performance, USAID and GRM support. In particular, it will focus on the following:

(1) the effectiveness/problems of the new training program for OMM's encadreurs and moniteurs,

(2) the effectiveness/problems of OMM's new extension system, which will focus on groups of farmers and village organizations,

(3) the effectiveness/utility of OMM's new planning and statistics division,

(4) how well research and extension activities are being coordinated,

(5) the operation of OMM's credit program for purchasing work animals,

(6) the viability of the millet grinding machines, and

(7) the effectiveness/problems of the blacksmith training program.

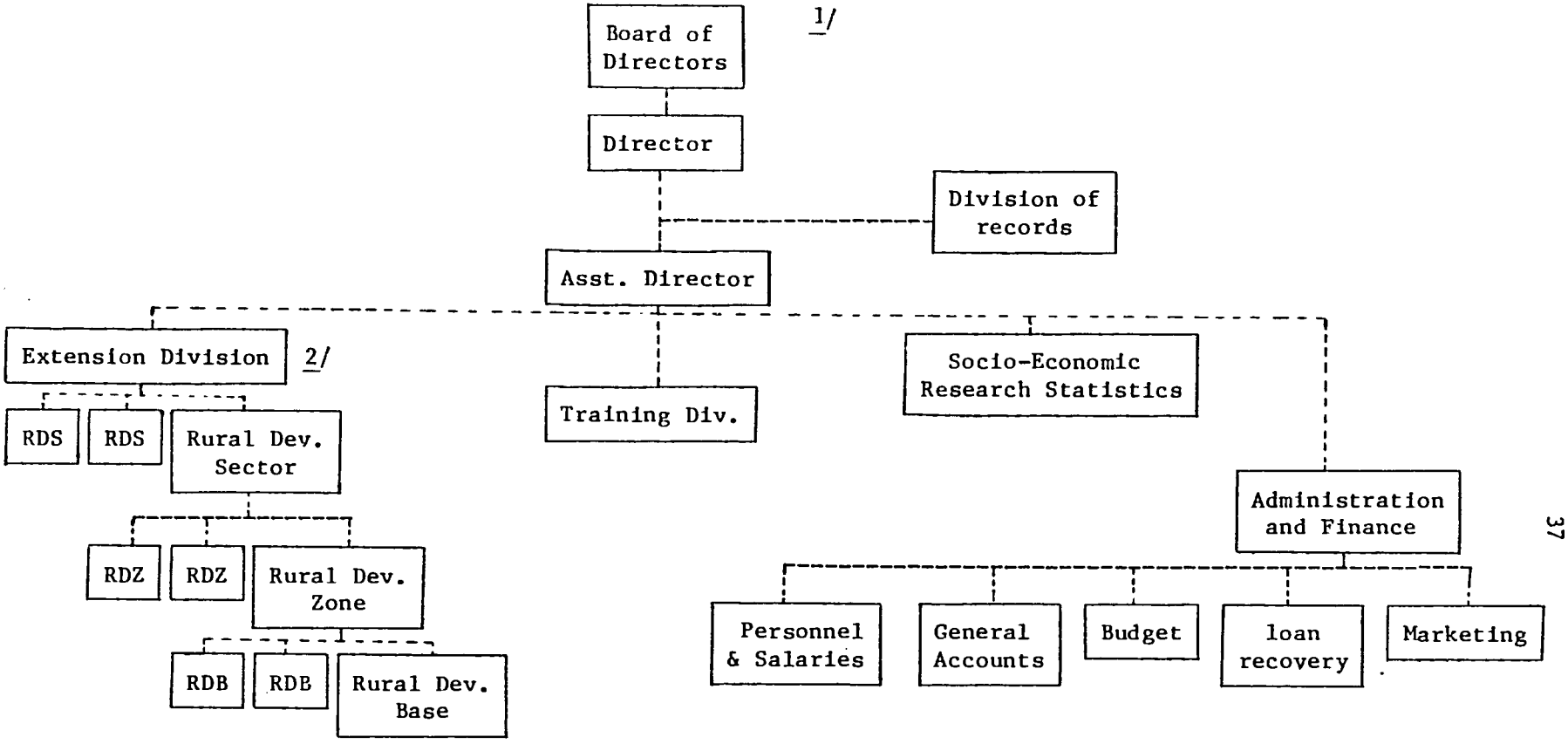
It will result in decisions concerning planning toward possible expansion in a Phase III effort or phase-out.

Spring 1983: This will be a final project evaluation and will cover much the same ground as the one in 1981.

These evaluations will be by independent contractors with GRM participation. They are funded by the project at $50,000 each and include three-man teams for two months each. Team composition is expected to include the following disciplines: Evaluation/management, agronomy/extension, and agricultural economics (also covering credit and farm input distribution).

FIGURE 1

OPERATION MILS-MOPTI ORGANIGRAM



1/ The Board of Director meets annually to review past performance and to make policy changes.

2/ A Sector services several Zones and corresponds geographically to a Cercle. A zone services several bases and corresponds to an arrondissement. A base services several villages.

ANNEX A

TECHNICAL ANALYSIS

1. General Conclusions:

AID experience in the 1970s will testify that any project falling into the "integrated rural development" category is bound to be plagued by difficult technical issues. Operation Mils is no exception. The technical package is still evolving. Thus far, for example, there has been no real improvement on local, village varieties of millet and sorghum in terms of yield, return, or taste. Much more significant benefits, however, can be realized from adoption of certain farming system or "agronomic practice" elements of the package, especially animal traction. Likewise, 100% increases in yield are being obtained from the application of fertilizer. Also, the 1978 on-farm testing program of SAFGRAD in the Fifth Region and elsewhere was very significant in that it showed use of fertilizers as economical even if the produce is sold at official prices. So for the first time the project has a strong basis for pushing the use of fertilizers. The low official producer price is not critical to project success or benefits so long as 80-90% of marketed food continues to be sold on the parallel market.

2. Technical Findings:

a) Agronomy and Extension

(1) Existing Conditions

(1.1) Agricultural Practices: The project area consists mainly of light, sandy soils with limited areas of heavier clay. Rainfall averages from 500 to 700 mm, occuring June to October. Millet and fonio are produced in the sandy soil area while some sorghum is grown in the clay zone. Most of the land is cultivated by hoe done on mounds of earth. Soil is removed at each of two weedings, and finally the mound for the succeeding crop is formed between mounds of growing grain. Animal manure and compost are widely used.

Mixed planting is common and interplanting of cowpeas and peanuts is common. Interplanted crops are important local sources of food as these have shorter cycles and are eaten before grain seeds are fully mature. Crop rotation is rarely practiced other than bush fallow. The frequency of rotation varies depending on population pressure. Since over 90% of cultivated land is sown in millet and sorghum, true rotation is effectively non-existent. Grain is harvested by cutting off the heads, which are stored in earthen bins. Farm storage units are well constructed, raised from the ground, reinforced with timber and are effective. Losses to insects and other pests are negligible, and grain can be kept for several years. One or more years' food requirement is commonly stored during good years, with selling/holding determined by parallel market prices and the crop outlook for the next harvest.

(1.2) The Existing Technological Package and the Research Base: Research for improvement of millet/sorghum production has been conducted in variety improvement, tillage and cultural methods, pest control, effects of manures, composts and chemical fertilizers, etc. During the past year, however, cropping system/crop associations research has been undertaken by ICRISAT on experiment stations. Efforts by ICRISAT to bring about genetic improvement of millet have centered largely on selection within populations of local varieties. These variety experiments have not yet brought about changes in yield potential. 1/

Studies on soil preparation, weeding, in-line planting, seed treatment, and increasing plant populations, on the other hand, have provided a base for defining a package of cultural practices which should produce greater yields. The more important elements of the package are (1) plowing with the first rains to permit in-line seeding and weeding with a multiple cultivator, (2) establishment of a good uniform stand with an optimum population per hectare, and (3) treatment of seed with a fungicide to assure a higher precentage of germination. Of the three, only plowing and seed treatment (the most widely practiced) have been generally accepted in the OMM area. The amount of plowing is increasing, although the large investment required limits use generally to larger farmers.

Extensive studies of response to manures, composts and chemical fertilizers carried out at research stations, and to a limited extent on the Seno Plain, have uniformly shown that phosphate is the most limiting nutrient element for millet; for sorghum, nitrogen rapidly becomes limiting after phosphate requirements are met. No data exists to measure the impact of traditionally prepared manures and composts on yield although this is undoubtedly a useful practice, having been adopted almost universally. (Farmers actually pay herders to pasture animals on their fields in the dry season.) Outside of soil moisture, the low fertility level of the soils, especially of available phosphorous, is the most limiting factor to increasing productivity. Extensive experimentation with millet/sorghum has shown that while response to the finely ground local rock phosphate is delayed (little response the first year), when used at three times the rate of superphosphate (in terms of P_2O_5 content on a 4-5 year rotation cycle) the response is essentially the same as for the more soluble commercially imported type. 2/ Next in importance is the lack of timely weeding which can be resolved in part through use of the multiple cultivator.

(1.3) The Extension Service: The extension service is

1/ Field trials initiated under OMM with a new early-maturing short-stemmed millet variety, M_2D_2 eventually demonstrated inferiority to local varieties.

2/ OMM is considering purchasing some 500 tons of the local phosphate but has refrained thus far due to the lack of available storage.

organized on a 3 tiered pyramid structure, corresponding to geographical and administrative divisions: the Sector Développement Rural (SDR), of which there are 5, the "Zone d'Expansion Rural" (ZER), of which there are 34, and the "Sector de Base" (SB). This last tier of agents is the one most directly in contact with farmers. The SB agents are supposed to be "Moniteurs". 1/ In practice, the majority (75%) do not meet the moniteur standard, and positions are filled following examinations by contract "encadreurs", who have no special training. Approximately 75% of ZERs are staffed by moniteurs. Of the 5 SDRs, one is staffed by a moniteur, 3 by ITAs 2/ and one by an Ing. d'Agriculture.

The extension approach is based on the use of Pilot Farmers (over 1,500 for the 1978/79 campaign), chosen in consultation with the village council. They are usually larger farmers, have access to more land and labor, are better equipped (in part a function of being a pilot farmer), and have larger non-farm activities than most of the other farmers. They are expected to apply the package of technology and are provided access to inputs and equipment on in-kind credit basis. The extension agents visit them about twice a week during the production cycle (June - October). Each agent has about 10; some are chosen for installing demonstration plots in millet, peanuts and cowpeas. An important difference is that the demonstration farm receives chemical fertilizer.

It is estimated that the pilot farmers receive 40% of the time of the extension agent. The remaining 60% is taken up mostly with input and equipment distribution and marketing, with probably less than 5% spent working directly with other farmers. The pilot farmers are expected to be available at their fields for consultation with other farmers, but organized visits initiated by either extension agents or pilot farmers are practically non-existent. In sum, the extension program hardly touches the bulk of farm units.

(2) Constraints:

(2.1) Technology: The lack of fertility limits productivity seriously. Farmers recognize this and do all they can with manure and composts. Such remedial measures are only partially effective, however, as phosphorous is so generally and acutely difficient. Although chemical fertilizers are presently used to only a small degree in the project area, 3/

1/ They have 8 years basic education, plus 3 years in agricultural vocational school (CAA).

2/ They have 10 years basic education, and 4 years in agricultural vocational school.

3/ A thirty fold increase in fertilizer use was registered between 1973 and 1978 but relative to the total area cultivated, this is minimal. Field trials indicate a yield response of up to 100% for fertilizer.

recent tests by SAFGRAD throughout Mali (including the Seno area) give strong evidence that commercial fertilizers are of definite economic advantage to the farmer assuming existing marketing practices. Without plows or multiple cultivators, the maximum amount of land a typical farm family can handle alone is between three and four hectares. The constraint on the use of animal traction is primarily economic. As for research, limited research at experiment stations and on farmers' fields remains a serious constraint on the medium-to-longer-term outlook for improved productivity. Also, thus far, there are no figures to show differences between overall averages, pilot vs. demonstration plots vs. agricultural productivity at large.(1)

(2.2) Extension: While there are deficiencies in the service both in levels of preparation and methodology, these appear not to present a serious constraint to increasing productivity. The yield constraint is largely a function of the weak technology package and the cost of application of key elements of the package, such as plowing and use of fertilizer. Given these limitations, a better prepared service could not be expected to have a significant short-run impact on productivity. In anticipation of an improved package down the road, though, upgrading of personnel should move forward. There is a clear constraint, however, in terms of degree of coverage of the farming population, as shown under (1.3) above.

(3) Proposed Interventions:

(3.1) General: In the short-term, the factors which could have the greatest immediate impact on production and productivity are wider use of animal traction and chemical fertilizers, and increased producer prices. The medium and longer term potentials are much broader. They offer the hope of "breakthroughs" in several areas: (a) research for the improvement and expansion of the technical package, (b) improvement of the extension program to deal more effectively and completely with the farming population, (c) establishment of a more effective input and equipment distribution and credit program, (d) development of a village level mechanism for greater involvement of the rural population in the management of essential agriculturally related activities, and (e) improved local varieties acceptable to villagers.

(3.2) Specific Interventions:

(3.2.1) Research: A program for expanding agronomic research related to the project area has been prepared by ICRISAT. It provides for special attention to three interrelated problems, in addition

(1) One set of figures, quoted as showing increases of 50% and 100% respectively between overall yields and those of the pilot farmers, could not be substantiated. Other figures obtained from field worksheets in SDR Doro for 1978-79 reflected increases of 17% of overall SDR yields. Records from the same area, however, showed a range of yields for demonstration plots ranging from 250 kg to 1,900/ha, with 50% of all plots yielding 1,000/ha or more. Thus, these figures, at best, are probably of limited validity.

to variety testing, uniquely relevant to the project area:

(a) "Systems of Production" research, a new stream of investigation seriously undertaken only last year. A wide range of factors are studied; associations of crops, intercropping, sequential cropping, relay cropping, rotation cropping, multiple cropping, etc. The objective is to determine systems which (1) provide the greatest economic return per unit of land, (2) distribute labor input more evenly during the cycle, (3) reduce the risk of crop failure from irregular rainfall, and (4) contribute to maintenance or improvement in soil fertility (use of legumes; deep rooted species, etc.)

(b) Applied research, involving direct application of natural phosphates and synthetic fertilizers, manure, food crop rotation with legumes, association of legume crops with grain crops, systems of managed fallow using perennial legumes, and animal feeding (forage production) for lower cost mechanization.

(c) Improved use of rainfall. This can be approached through a variety of techniques to reduce run-off, increase organic matter soil content, weed more effectively, and attain higher levels of soil fertility in general.

(3.2.2) Animal Traction: A program component is needed to extend mechanization beyond plowing and, especially, to improve weeding through multiple cultivators and other appropriate tools which could be largely manufactured by local blacksmiths. The opportunity to capitalize animals (donkeys and oxen) used in the traction program through better feeding from by-products and legume feeds also should be demonstrated. The current system of selling equipment with a minimal amount of training on how to use it results in reduced returns. Extension agents need to be much better prepared in this area.

(3.2.3) Field Application of Production Systems: Production systems research is really the total of the above, yet should be carried a step further. The close linkage between agronomic research on experiment stations and on-farm tests is essential for assuring that practices developed will be applicable to field conditions. A full-time field trials staff is needed. Such activity fits well with the objectives of SAFGRAD. The advantage of coordinating OMM's field trials with SAFGRAD will be access to its areas of technical information and services. Moreover, the intimate association between SAFGRAD and ICRISAT will insure close collaboration between field trials officers and ICRISAT's research activity. In addition, OMM's extension staff will be directly involved with the farm trials for the invaluable training. This component will be carried out at, and from, the Seno Station.

(3.2.4) Pilot Villages: In addition to upgrading the level of training of OMM's extension agents, the project will modify the existing system of Pilot Farmers. Experimentation with a "pilot village" approach should be undertaken as part of the program for promotion of village associations. This will involve dealing with the village as a whole in the extension effort. A continuing dialogue with the entire village rather than with a few of the more affluent farmers should impact on a much

greater number of beneficiaries of varied circumstances. The method will require leadership of a higher level; therefore, it will have to be adopted very gradually. Another advantage of the village approach has to do with bringing about attitudinal changes relative to local initiative, organization, self expression, and self reliance.

b) Horticultural Production in the Dogon Vegetable Producing Area:

(1) Existing Conditions: The Dogon Plateau is uniquely adapted to irrigated vegetable production during the dry season due to its physiography, consisting of a massive rock formation with little soil cover. Water from rainfall is trapped in pockets, fissures, open ponds, and occasionally in underground pockets reached by hand dug wells. Numerous small rock/earth dams have been built to retain the water. According to a 1976 survey, about 940 extended farm families (7,500 people) are involved there in vegetable production; they cultivate about 220 ha. of land. While a number of vegetable crops are produced (tomato, potato, peppers, cabbage, eggplant, etc.), onions represent over 75% of production. These are produced in thin layers of soil which are held on the rock base by hand made rock terraces. The thinness of the soil limits vegetable types which can be produced and accounts, in large measure, for the dominance of the onion. Irrigation is accomplished by hand with gourds, and frequently involves carrying water some distance, often uphill. Lack of capacity to store sufficient water is the main limiting factor. Compost, manures, and chemical fertilizer are commonly used. Experimental plots in Bandiagara show yields of 10-70 MT/ha, leaf and bulbs.

Total annual production of onions is estimated at about 4,000 tons, most of which is marketed to distant points. The early crops are sold fresh through private traders, sometimes on a commission basis. Large lots are assembled at principal towns from which they are moved out in heavy trucks. Once the supply becomes heavy, prices drop to 1/2 to 1/3 of earlier levels. At this point, much of the crop is dried in balls. While stories of exploitation by traders are common, the spread in price for fresh onions from the Bandiagara to the Bamako market--on the order of 100%--is not excessive for a crop of this nature.

As for OMM involvement, during the 1977-78 crop year, an extension staff was established in the area; activities to date have been limited.

(2) Constraints: Lack of sufficient water is clearly the most limiting constraint to expanded production. There has been a considerable effort (assisted by the German Aid program) to increase the capture and retention of water by construction of small dams. Some limited trials have been undertaken to measure water utilization and determine optimum volume and timing of watering. As yet, no conclusive recommendations have emerged. A number of suggestions also have been made regarding water management and labor conservation. These include use of hand-operated pumps and small reservoirs for gravity irrigation and the installation of drip systems. Testing of these alternatives began recently. Besides water, no other precisely defined constraints have been identified; the second most significant constraint may

simply be the lack of information and experimental data.

(3) Proposed Interventions:

(3.1) Improving the Efficiency of Water Utilization: A series of experimental trials are recommended to measure precisely the water requirements of the crop - especially of onions - at different stages of growth, and to relate such information to irrigation practices. A complementary activity should be measurement of water loss from reservoirs, which would permit production planning as a function of water availability at commencement of the growing season. Since this varies, depending upon rainfall preceeding the cycle, the proper balance between water availability and area planted is essential. Knowledge of water requirements at different stages of crop growth will also permit determination of production options, e.g., limiting the area to that which can be optimally watered for maximum yield or, perhaps, the use of less than the optimum amount on a greater area for higher total production. Alternatives to hand watering should also be explored and tested under practical field conditions. One of the more promising options is the drip system. (An effort should be made to design systems, the components of which can be manufactured locally, such as plastic pipes and simple diaphragm pumps, a few of which are already in use.(1)

(3.2) Increasing the Supply of Water: Supply can be increased by reducing water loss from existing catchments or by construction of additional dams. Most of the existing dams and catchments leak. This stems in part from construction defects, especially improper grouting. These structures should be studied to determine possibilities for correcting defects. A second approach would be construction of additional catchments. In the farmers' view, this is the greatest need. The GRM Rural Engineering Service has identified over 60 new potential dam sites. Both German and French programs are providing assistance for construction of new dams.

(3.3) Improvement in Production Technology: Vegetable production technology on the Dogon Plateau has evolved over centuries. It would be presumptuous to change the system without first understanding alternatives. Much experimentation, therefore, should preceed any operational interventions. Nevertheless, the following 3 alternatives would appear logical: (a) improve the supply of chemical fertilizers and seeds, (b) increase the supply of tools and equipment to ease the labor burden, and (c) provide transportation assistance. At a minimum, the OMM system for distribution of farm equipment on credit should be extended to vegetable producing areas. Besides trials on irrigation, a number of other experimental initiatives should be undertaken: e.g., expansion of the production base by introduction of new vegetable types, introduction of new varieties of currently produced vegetables (especially large bulb onions for which there seems to be a substantial demand), a study of diseases and pest control, calculation of response to fertilizer, options for non-onion preservation, etc.

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(1) The hand operated pump in use is imported but could easily be manufactured locally.

(3.4) Marketing: Transportation is a serious impediment to marketing and could probably account for some of the low producer prices. While terrain makes solution of this problem especially difficult, mall animal drawn carts could probably help appreciably. Group procurement of transportation equipment should be investigated. The establishment of a reliable price information system reporting levels at different points in the chain, both retail and wholesale, could be beneficial in terms of bargaining with traders.

(3.5) Technical Assistance: Proposed activities will require the full-time support of a horticulturalist (2 years).

c) Credit and Input Distribution:

(1) The Existing System: Under OMM's in-kind agricultural supply/credit system, plows, multiple cultivators, 1-ton carts, and seeders are supplied to farmers on credit, while fertilizers, insecticides, and fungicides are supplied on a cash basis. The table below shows that significant progress has been made in terms of improved distribution of these items over the past five years.

Table 1
Supplies/Equipment Purchased from SCAER by OMM

Implement/Supply	1974-75	1975-76	1976-77	1977-78	1978-79
Cart (TRP)	699	509	550	899	1,025
Multiple Cultivator		9	37	54	73
Seeder				40	35
Plow					
TM (heavy)	84	137	568	498	683
Bourginon (light)	48	303	38	--	--
Seed Treatment (packages)	38,366	60,093	106,785	107,164	112,595
Fertilizer (tons)	3.7	10.9	10.2	27.6	46.2

Source: OMM Statistics

In value terms, the cart is by far the leading item, due to its multiple agricultural and other uses, including rental and hauling for additional income. Carts accounted for 81% and 70% of the total credit given out during the 1975-76 and 1977-78 campaigns, respectively. In terms of farmer-perceived needs, however, the plow is viewed as the greatest priority, in large part because a light plow was not available before 1979:

Table 2
Farmers' Conceptions of their Greatest Needs(1)

Plow	35%
Cart	33%
Animals for plowing	30%
Multiple cultivator	2%

(1) BARA credit study of the OMM area in 1978, which entailed extensive questioning of 143 farmers.

During the 1977-78 campaing, OMM sold approximately $200,000 worth of agricultural supplies/equipment, about half on credit. Although the amount of credit increased 2.25 times between the 1975-76 and 1977-78 campaigns, approximately 1/3 of this increase was the result of the extension of the zone of operations covered by OMM, rather than from intensification of demand. Total fertilizer use does not exceed $5,000/year in value.

OMM purchases all of its agricultural equipment and supplies in cash from SCAER, the GRM's agriculture credit and supply agency. In the period from November through January, OMM agents tabulate farmer demands for equipment, after which an order is placed with SCAER. OMM must wait approximately a year to pick up the order. OMM is bound by SCAER's pricing and credit policies; a 5% commission goes to OMM to cover operating costs and transport. In addition, OMM is required to charge an interest rate of 3.12%/year, with a 1/3 down payment and loans not to exceed 3 years.

Table 3 below shows the distribution of the sum spent by a farmer for a TM plow (1/3 down-payment, plus 3-year credit):

Table 3

	Amount (MF)	%
SMECMA	50,472	84.9%
Bank (3%)	1,514	2.5%
SCAER (5%)	2,524	4.2%
OMM (5% plus interest)	4,913	8.4%
TOTAL	59,423	100.0%

Obviously, the farmer is getting a good deal because he pays only about 18% (8,951 MF) more than the factory price, and this is paid over a 3-year period. The fact that SCAER is in financial difficulty attests that its share is not sufficient.

The 5% commission OMM receives, on the other hand, is probably more than adequate to cover transport from Mopti to the sector, plus storage and administrative costs.(1) With respect to credit administration, since OMM presently hires no additional agents to handle credit only, personnel costs could be viewed as close to zero. There being no additional data (especially on storage costs), it is not possible to prove that the 5% commission is sufficient. Concerning the 3.12% interest rate, it is clearly insufficient to maintain the real value of a credit fund. The table below shows that SMECMA's prices are increasing at the annual rate of about 7.5-11%:

Table 4
SMECMA Prices FOB Bamako

	1975-76	1976-77	1977-78	1978-79	Annual Increase
TM Plow	40.382	41.885	45.580	50.472	8.9%

(1) In the case of the TM plow, for example, the actual cost for transport and storage is only about one fourth of the commission.

Table 4 (cont.)

	1975-76	1976-77	1977-78	1978-79	Annual Increase
Cart (TRP)	53.910	62.812	69.430	73.550	10.9%
Multiple Cultivator	70.799	73.450	79.482	87.430	7.4%
Seeder	56.150	57.415	65.570	72.125	8.7%

Just to maintain the real value of a credit fund, therefore, OMM would have to charge interest of 9-10%. An additional amount is needed to cover defaults, which (in the sense of refusal to pay) are extremely rare. Delinquency is more common, however. (OMM charges no extra fee for late payment) The situation varies dramatically from Sector to Sector. Of the loans given out in the 1974-75 and 1975-76 campaigns for example, the amount remaining unpaid was 17.2% and 50% in Bankass, respectively, and 15% and 10% in Koro. One of the reasons for the higher rate in Bankass is that farmers there are closer to the border and are more accustomed to immigrating in the dry season to Upper Volta and the Ivory Coast for work, making it impossible for an OMM agent to locate them for collection. Also, the OMM agents in Bankass are reluctant to press farmers for fear of losing their acceptability in the village.

(2) Needs/Constraints:

(2.1) Terms and Conditions of Credit: Surprisingly, farmers in the OMM zone place the low official price of millet as only third on their list of principal constraints to loan repayment. (See Table 5) Rainfall is the most significant determinant. Running second by a good margin is the high price of draft animals. In Douentza, for example, the price of a donkey and an ox increased from 5,900 MF and 41,600 MF, respectively, in 1975 to 34,000 MF and 77,000 MF in 1977. If a work animal dies, the farmer cannot utilize his plow, as is frequently the case according to the BARA Credit Study. Furthermore, Table 6 shows that farmers consider the easing of credit terms to be more important than the cost of the material.

Table 5
Percentage of Farmers Finding the Following Items as Principal Constraints to Loan Repayment

Inadequate rainfall	96%
High price of work animals	65%
Low price of millet	43%
Inadequate land size	28%

Source: BARA Credit Study, 1978.

Table 6
Farmers' Affirmative Responses as to How to Improve the Credit System

	Farmers with Plows	Farmers without Plows
Prolong the existing 3-year credit period	54%	44%
Lower the price of the material	21%	30%
Other/no answer	25%	26%

Source: BARA Credit Study, 1978

Table 6 also suggests that interest rates could be increased without an appreciable drop in demand if the repayment period could be prolonged. In summary, credit for work animals (recently available under the existing project) and an extending of credit terms appear to be of fundamental importance to improving and expanding the credit system.

(2.2) Other Sources of Financing: OMM has a near monopoly on credit for agricultural supplies, the only other sources being relatives and priests. As for work animals, OMM farmers obtain only about a quarter of the necessary purchase amount from agricultural sales, especially millet, illustrating the point that repayment capacity should be judged on the basis of a number of income variables rather than solely on the agricultural production operation. (Carts, for example, generate their own revenue.) Note Table 7. Farmers do obtain some credit from local merchants for food, but such borrowing is not believed to be significant. 1/

Table 7
Source of Funds for Purchasing Work Animals

1.	Agricultural sales	27%
2.	Artisan/commercial sales	20%
3.	Work outside Mali only	11%
4.	Sale of other animals only	16%
5.	Gift from a relative outside the farm	5%
6.	Combinations of 1-5 above	16%
7.	Other	5%

Source: BARA Credit Study, 1978

1/ While this competing debt could be a cause of delinquency, it is not one of the items that farmers mentioned as being important. This will be verified in the survey to be carried out by the Data Management Activity.

(2.3) Management (Credit Administration): One of the more serious constraints facing OMM is its lack of expertise in credit management. On the other hand, the present system is simple to operate (the extension agent handles everything). The new project, however, contemplates expansion of the credit program in both size and complexity. Formal and on-the-job training will be needed. (See following section on proposed interventions.)

(2.4) Retail Supply: A U.S. cooperative advisor was hired to carry out a preliminary feasibility study for the establishment of agricultural retail stores. The resulting study recommended 16 such stores which would also provide a modest selection of basic village household goods. It was not clear to either OMM or the design team, however, how the necessary skills would be marshalled to manage such a system. There were a number of other questions as well, such as potential competition from local merchants, inventory control, accounting, etc. Nevertheless, the proposed model is very attractive from the standpoint of increasing farm equipment/supply sales and providing an activity which could generate income. With this in mind, the project will experiment with 2-6 such stores on a trial basis.

(3) Proposed Interventions:

(3.1) Retail Stores: The project will experiment with 2 retail stores operated by OMM, following a feasibility study, to test the model. The potential benefits are two-fold: (1) farmers will be able to purchase agricultural equipment on the spot, and (2) previously unavailable or exhorbitantly priced consumer items could become available. The Retail Store Study recommended that two sites be selected from among the Bankass, Koro, Douentza, Konna and Doundako Circles. The initial inputs will be minimal in order to keep early costs as low as possible. (For details of establishment, management, and expansion, see Project Description.) After the stores have been operating several years, a study of their viability will be undertaken. If they are shown to be viable, the project will construct 4 additional ones. Even if the 4 additional stores are constructed, the entire component will cost no more than about $70,000 in inventory and personnel costs, plus construction (included in warehouse construction plans).

(3.2) Credit

(3.2.1) Program Expansion

- Credit for Draft Animals: This program, begun under the existing project, will be continued. Interest rates are viable and not tied to SCAER. $10,000 will be deposited in a special account to serve as seed capital for an insurance fund, which will be maintained by a 2 1/2% insurance premium on all loans.

- Loans to Groups: As a means of reducing the cost of credit administration for Operation Mils, an experimental program in group credit is proposed. There are opposing schools of thought on group

credit, and the utility of the mechanism depends to a great extent on local custom. It is believed worth the experiment, however, in order not to overlook a valuable opportunity for increased viability of both OMM and farmer associations. In the experimental scenario envisioned, initial group lending would be confined to the purchase of animals. Such loans, in fact, could be an incentive for group formation. (Group loans for animals have been successful in a small herder cooperative operation in the Gao area. Repayments have been 100% on schedule.) Given early success, group lending could be expanded to include farm equipment for rental or shared use by members. Group credit also will be tried on an experimental basis for village enterprises such as bakeries, commissaries and the like, provided that low level feasibility studies show real potential from the project for a solid financial return. (See Project Description for details and possibilities.)

(3.2.2) Credit Terms and Interest Rates: If SCAER is replaced as anticipated by a rural banking system with the assistance of IFAD, the level of interest rates and terms will no longer be a problem. OMM would continue to act as a supplier, but would receive cash which the farmer would get from the local bank. The credit fund would not need additional capital. There is, however, no assurance that such system will come into effect during the life of the project, although it is most likely. As a means of protecting the real value of the credit and assuring a viable credit system for OMM, the project includes as a covenant that OMM can establish interest rates and terms other than the ones dictated by SCAER. It also provides additional capital, all in years 3-4, in case the rural banks do not materialize as planned. It is clear that interest rates would have to be at least 12%. Also as a special covenant, OMM will set aside the 5% commission/service charge on all sales to be used for covering OMM's general operating expenses. (This amount is presently added to the credit capital fund.)

(3.2.3) Training: A training program is recommended for both the Chief of the OMM credit program (U.S. training) and for the five proposed credit agents to be assigned to Sector offices. OMM agents at the ZER level will be trained in-country by a local consulting firm in all aspects of farm credit systems. This will include learning how to: (a) analyze resources and credit problems, (b) make operational changes and adopt improved methods, (c) identify medium and long-term agricultural investment opportunities, capital requirements, rates of return to the farm and benefits to the economy, (d) undertake fundamental research on institutional credit for agricultural development and to utilize this information in planning annual and long-term credit programs, and (e) operate agricultural retail stores and a diversified supervised credit program.

(3.2.4) Credit Fund Accounting and Responsibility: The OMM agricultural credit system should continue under the administration of OMM's Credit Division. Loan approval authority, however, should continue to be at the Sector and ZER level offices of OMM as appropriate. Large loans or those that are otherwise unusual would be sent to headquarters for approval. It is recommended that a $687,000 dollar grant be added over a 4-year period to the amount existing in OMM's current blocked account to

establish an agricultural loan fund of $ 1.4 million. All of this will be added in years 3-4 and, as stated previously, may not be needed at all. This would be released in quarterly advances against OMM's annual credit projections to meet scheduled credit needs. The loan fund advances will be deposited in the BDM in a special account. The head of OMM's financial division will continue to be responsible for accountability and reporting, but he will have no loan approval authority. He will monitor withdrawels to ascertain that they are in conformity with the general loan policies and specific regulations. All loan repayments and interest earnings will, immediately upon receipt, be deposited back into the OMM agricultural loan fund account in the BDM.

The head of OMM's financial division will prepare and submit a monthly report to OMM Director and USAID Project Manager containing:

1. Cash balance at beginning of month.
2. Deposits of principal and interest payments.
3. By category, number, and value of loans outstanding at the beginning of month, number, and value of loans made during the month.
4. Number and amounts of loans past due broken down by category will be reported to reveal delinquencies of 30 days, 60 to 180, etc.

(3.2.5) Suggested Forms and Procedures for Determination of Credit Requirements by Sector

--Loan Forms: With assistance of the OMM technicians, the farmer will fill out a FARM LOAN PAPER at the credit office detailing present farm/farm family size, crops grown, and corresponding hectarage. This will serve as a valuable data base for future analysis. To insure the accuracy of the information, the village council will sign the FARM LOAN PAPER. The LOAN APPLICATION FORM will be filled out each season or as new credit needs arise. It will be sent to the credit office for approval after signature by the extension agent and village council's determination of whether someone has the capacity to take out a loan. Loans exceeding 300 dollars may be sent to the OMM Director for approval if the applicant's repayment ability is questioned.

--Credit Projections: Prior to acceptance of loan applications, the area credit officer will determine the seasonal credit demand by type of loan (short or medium-term). Based upon this determination, "credit lines" will be opened to credit officers. This will enable the OMM Director and OMM's Credit manager to establish lending ceilings to each area office according to demand. Credit offices whose total loan applications exceed their "credit lines" must submit a justification to the OMM Credit manager for approval of an adjusted credit line. The suggested forms are as follows:

SUGGESTED FARM LOAN PAPER

Name_____ Credit Office_____

L.D. No_____ Village _____

No. of Immediate Family Members_____ Date_____

Size of Earn_____

No. of Work Animals_____

No. of Cattle_____

CROP GROWN	NUMBER OF HECTARES	ESTIMATED YIELD
I.		
2.		
3.		
4.		
5.		
6.		

OTHER INCOME SOURCES (SPECIFY)

I.

2.

3.

Signature of Applicant_____

Attestation of Village Credit Council_____

OMM Extension Agent Signature_____

Farm Loans cont.

LOAN APPLICATION

STATUS

Approved _____

Not Approved _____

Due _____

Paid _____

Credit Office _____

Farm's Name _____ Village _____

L.D. N° _____

ITEM (S) TO BE FINANCED :

	Description	Unit Price	Total
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

Repayment te-ms:

Date Due _____

% p.a. to be applied _____

Signature of Qpplicant _____

Attestation of Village Credit Council _____

OMM Extension Agent Signature _____

Loan Forms cont.

AREA CREDIT OFFICE APPLICATION FOR CREDIT LINE

I. No. of farmers in zone of intervention _____

2. No. of credit supervisors in intervention _____

3. Estimated value of individual loans for:

   a. Work animals _____ MF

   b. Plows, harrows, other _____ MF

   c. Fertilizers _____ MF

   d. Agro-chemicals _____ MF

   e. Animals for fattening _____ MF

   f. Labor costs _____ MF

   g. Other _____ MF

4. Estimated value of group/association loans _____ MF

   total estimated credit neede _____ MF

5. Total loans Applications Approved Last year _____ MF

6. Credit line application Last year _____

7. Line 5 as a percent of line 6 _____ %

8. Percent repayment of short-term credit Last year _____ %

9. Repayment rate of medium-term credit _____ %

(3.2.6.) Estimate of Credit Fund Requirements 1/

	1980/81	1981/82	1982/83	1983/84
Plows 2/				
TM	13	19	26	36
Bourgignon	166	241	337	455
Carts	162	235	329	444
Multiple Cultivators	15	22	30	41
Fertilizer 3/	12	24	46	82
Seeders	5	6	8	10
Fungicides	5	7	10	13
Sub-total	378	554	786	1,081
Work Animals 5/	29	51	76	103
Experimental fund	2	4	8	11
Retail Stoves Inventory	--	20	20	20
Artisan/Women Ventures	2	4	6	10
Other Ventures	2	4	6	10
GRAND TOTAL	413	637	902	1,235
Repayment on Loans 6/	100	130	170	285
Available From Credit Fund	655 7/	540	425	570
Inventory/Credit Needs	-0-	-0-	307	380

1/ This table is based on the pessimistic assumption that the IFAD-sponsored rural banking system does not take effect during the life of the project.

2/ Sale of plows, carts, and multiple cultivators are estimated to increase 45% from Year 1 to Year 2, 40% from Year 2 to Year 3, and 35% from Year 3 to Year 4.

3/ Fertilizer sales are estimated to increase 100%, 80% and 60% from Year 1 to Year 4.

4/ Fungicide packets are estimated to increase, mainly from improved and timely delivery, by 40%/year.

5/ Loans for donkeys/oxen are estimated to increase 75%, 50% and 35% from Year 1 to Year 4

6/ Only about one-half of OMM's sales are on credit; the other half are on a cash basis. Repayment on loans as estimated at 25% of the total amount loaned in preceeding years, for 4 years' duration.

7/ Credit Fund availability is estimated by taking present size of fund ($711,000 in mid-1979, plus cash sale reimbursements from the previous year, minus the grand total of sales from the previous year.

ANNEX B

ECONOMIC ANALYSIS

1. Introduction:

The analysis consists of three parts, a farm budget, based on typical project beneficiaries, to determine feasibility at village and farm levels, a benefit/cost analysis to determine viability of the project, and a macro-analysis of the project's impact on local economic institutions.

2. Farm Budget/Micro Analysis:

At the end of this section are two tables: a farm model for the Fifth Region, and the return to labor per work day for millet/sorghum production. The intent of the farm model is to determine whether the existing technological package for the OMM area (stage 1 - animal traction, and stage 2 - fertilizer and a donkey cart) seems reasonably likely to produce extra income to the farmer. The following assumptions are made in the model:

a) that the farmer will expand hectarage under cultivation from 4 ha. to 5.5 ha. with the introduction of animal traction;

b) that yields will increase 33% as the result of animal traction, and that they will increase 100% if combined with a medium dose of fertilizer (See ANNEX A, 2, a);

c) that more increased hectarage will go into peanuts than millet;

d) that the type of animal traction to be employed is a donkey-light plow;

e) that farmers will earn considerable income from the rental of their carts; and

f) that the actual prices received by the farmer on the average for his produce will be 20% above the official producer prices.

Assumptions (a) and (b) are based on agricultural research in Mali; assumption (c) is based on the fact that peanuts give a slightly higher return/ha. than millet/sorghum; assumption (d) is based on ecological conditions of the OMM area and resulting agronomic recommendations, and assumptions (e) and (f) are based on BARA's Base Line Study of actual practices in the OMM area. Under these assumptions, as can be seen from the Farm Model table, the farmer will make considerably more money the more advanced technology he uses. This accords with the research and findings on fertilizers of SAFGRAD in 1977-78. The project thus appears on sound footing in terms of attempting to introduce improved technology to the farmers of the OMM area.

The objective of the second table, Return to Labor, with respect to millet and sorghum, is to shed light on the question of whether the farmer has an incentive to adopt new technology and/or increase millet production in response to the two fundamental variables, official prices and parallel market prices. The existing farm labor wage in the OMM area is 350 MF/day (300 MF plus lunch). IER, in all its studies of production costs, values farm labor at 550 MF/day. The table shows that, under official prices, the farmer's return to labor using traditional cultural practices is approximately the existing daily wage. Since this wage is considered low even by villagers, this would suggest that he does not have much incentive to increase production.

Even at official prices, however, the table shows that the farmer definitely stands to gain in terms of the value of his labor time if he goes to stage 1 and/or stage 2. (Interestingly, his labor time is worth more if he obtains a donkey and plow than if he receives a 25% higher price for his millet while continuing with traditional practices.) This, in turn, suggests why farmers in the OMM area give priority to getting donkeys and plows than to raising the price of millet.(1) Secondly, if the farmer has the capacity to withhold selling most of his millet on the parallel market for four or five months following harvest (true of medium and larger farmers in the area), he has an even greater incentive to increase production, particularly if he can obtain credit for plows, donkeys, and carts.

3. Benefit/Cost Analysis

Assumptions

a) Value added by project at farm level

The analysis will incorporate all assumptions concerning the farm unit used in the preceding micro-analysis.

Farmers will fully attain expected increases in output the first year of participation.

To simplify analysis, the farmers purchasing carts will also purchase plows. They will use fertilizer and will produce at the F_2 level shown in the farm model. Farmers purchasing only the plow will produce at the F_1 level.

The introduction of animal traction will improve the efficiency of labor. It is assumed that the farmer will continue to work as much as before with the effect of plow usage reflected in increased production.

The increase in production as a result of employing the new methods will occur without additional labor, or other inputs, by the farm family except as noted in the farm model. The value of increased outputs measured at the farm gate prices, less those costs noted, will be attributable solely to the project.

(1) BARA Study. Also, see page herein.

Farm Model - Mali's Fifth Region - Family of 8 [1]

P= Present (traditional)
F_1= Future (P plus plow & donkey)
F_2= Future (F_1 plus fertilizer & cart)

	Area (ha)			Yield (T/ha)			Production (T)			Price[2]	Gross Value ('000 MF)		
	P	F_1	F_2	P	F_1	F_2	P	F_1	F_2	MF/kg	P	F_1	F_2
1. Production Crops													
Millet	3.2	3.5	3.5	.6	.8	1.2[3]	1.9	2.8	4.2	50	95	140	210
Sorghum	.5	.6	.6	.6	.8	1.2	.3	.5	.7	50	15	25	35
Peanuts	.2	1.3	1.3	.4	.6	.9	.1	.8	1.2	72	7	58	86
Fonio/Niébé	.1	.1	.1	.3	.3	.3	.1	.1	.1	50	5	5	5
Sub-total	4	5.5	5.5								146	255	391
Sale of Animals[4]											15	15	15
Sale of Straw Mats[5]											9	12	15
Rental of Cart											0	0	25
Grand Total											146	255	391

2. Production Costs ('000 MF)	Seed & Seed Treatment[6]			Fertilizer[7]			Total		
	P	F_1	F_2	P	F_1	F_2	P	F_1	F_2
Millet	1.8	2.0	2.0	--	--	49.4	1.8	2.0	51.4
Sorghum	.3	.3	.3	--	--	8.4	.3	.3	8.7
Peanuts	1.7	10.8	10.8	--	--	12.4	1.7	10.8	22.4
Fonio/Niébé	--	--	--	--	--	--	--	--	--
Sub-total	3.8	13.1	13.1	--	--	70.2	3.8	13.1	112.8
Small Hand Tools							1.8	2.4	2.4
Light Plow: Amortization (15 yrs) 3.3							--	3.3	3.3
Replacement parts 2.0							--	2.0	2.0
Cart: Amortization (15 yrs) 8.1							--	--	8.1
Replacement parts 4.0							--	--	4.0
Donkey: Amortization (10 yrs) 5.5							--	5.5	5.5
Medecine/Grain 4.0							--	4.0	4.0
TOTAL PRODUCTION COSTS							5.6	30.3	112.8
NET VALUE OF PRODUCTION							140.4	223.7	278.2
VALUE OF SUBSISTENCE PRODUCTION[8]							76.1	80.1	80.1
CASH INCOME							64.3	144.6	198.5

1/ Most figures on present practices, farm size, etc. come from the 1978 BARA agricultural study of 5th Region. Of family of 8, 5 are ec. active.
2/ Only about 25% of cereals in the 5th Region are sold through official channels; prices are assumed to be 20% higher than '78/79 official prices.
3/ Based on the results of SAFGRAD fertilizer trials in 1978 in the 5th Region, using 150 kg/ha.
4/ Assumes sale of 2 goats.
5/ Assumes increase from 35 mats (250 MF/mat) to 48 & 60 mats/year - acquisition of a plow & cart, respectively, giving women more free time.
6/ 67% of all farmers in the 5th Region use seed treatment. Cost is 60 MF/package/ha.
7/ Assumes 100 kg triple phosphate/ha & 50 kg Urea/ha for millet & sorghum, and 100 kg triple phosphate/ha for peanuts.
8/ Assumes increase in millet/sorghum/rice consumption from 170 kg/person to FAO derived norm of 180 kg/person (plus 14 kg unshelled peanuts/person).

Return to Labor for Millet/Sorghum Production[1/]

1. Revenue/ha ('000 MF)

Production/ha (MT)			Gross Value 40 MF/kg			50 MF/kg		
P	F_1	F_2	P	F_1	F_2	P	F_1	F_2
.6	.8	1.2	24	32	48	30	40	60
		Cart Rental	--	--	4.5	--	--	4.5

2. Costs/ha (MF)

	P	F_1	F_2
Seed	563	563	563
Tools	563	563	563
Equipment	--	964	3163
Animals	--	1727	1727
Fertilizer	--	--	14114

Total/ha ('000 MF)	1.1	3.8	20.1	1.1	3.8	20.1
3. Net Return/ha ('000 MF)	22.9	38.2	32.4	28.9	36.2	44.4
4. Labor days/ha[2]	65	58	58	65	58	58
5. Return to labor/day MF	352	486	559	445	624	766

1/ Taken from the previous Farm Model, but assuming entire farm planted in millet/sorghum and no peanuts.

2/ Institute of Rural Economy, "Average Costs of Production", 1977. Assumes use of animal traction resulting in savings in labor time under F_1 and F_2.

The cost of implements to OMM are:

	FM	US$
Plow		
TM	54,563	124
Bourgignon	43,243	98
Multiple Cultivator	94,519	215
Cart	79,514	181

A multiple cultivator is assumed to have the same effect on production and incomes as a plow. It is more versatile than a plow and, if used to its full potential, could have a greater impact.

Using the above prices and allocations for the credit fund, the estimated number of participants will be as follows:

	1980/81	1981/82	1982/83	1983/84
Plows				
TM	105	153	210	290
Bourgignon	1,694	2,459	3,439	4,643
Multiple Cultivator	70	102	140	190
Sub-total	1,869	2,714	3,789	5,123
Carts	895	1,298	1,818	2,453
Cumulative Totals				
Carts and Plows	895	2,193	4,011	6,464
Plows Only	974	2,390	4,307	7,031

From the farm model, increases in output, value, and costs will be:

			Farm Price (MF/kg.)	Farm Value ('000 MF)	
Crop	F_1	F_2		F_1	F_2
Millet	0.9	2.3	50	45	115
Sorghum	0.2	0.4	50	10	20
Peanuts	0.7	1.1	72	50.4	79.2
			Sub-Total.....	105.4	214.2
			Other Income.....	12.0	40.0
			TOTAL.....	117.4	254.2

An allowance should be made at the consumer or export level for the value added by the project for that portion of produce marketed. Given the present marketing structure of (1) an official market arbitrarily established not reflecting true costs/benefits of goods and services and (2) an associated, illegal market about which little is known, there is not a sufficient data base for projecting potential cost/benefits beyond the farm level.

The analysis measures net output over traditional production. Estimated benefits and costs are the difference between present and anticipated technology levels.

b) Project costs

Since costs/benefits will be discounted to present value, the inflation factor included in the budget will be omitted.

Credit capital will be omitted to avoid double counting because the farm budget analysis includes provisions for credit payment.

GRM project contribution costs, mainly salaries, will continue beyond the life of project at the rate of $584,000 per year. There will be an additional annual recurring cost of about $400,000 to sustain the development thrust initiated by USAID funding. Thus, total recurring costs will be about $984,000 or 433 million FM.

Project costs used in analysis are:

	FY 80	FY 81	FY 82	FY 83
AID Total Budget ('000 $US)	2,381	2,062	3,205	2,175
Less inflation factor (8-17-27-36)	176	300	681	576
Less Credit Capital			687	
Sub-Total.....	2,205	1,762	1,837	1,599
Plus GRM Costs	584	584	584	584
TOTAL ('000 $US).....	2,789	2,346	2,421	2,183
TOTAL (FM million).....	1,227.2	1,032.2	1,065.2	960.5

Conclusions

Project benefits and costs were discounted to present value at two rates, 8 and 12%. At 8%, the break-even point of benefits equaling costs occured in year eight from the beginning of project. The sum total of benefits and costs for twenty years were respectively 11,746 and 6,900 million Malian Francs, giving a benefit/cost ratio of 1.70.

At 12%, the break-even point occured in year nine. Total benefits and costs were 8,585 and 5,831 million Malian Francs with a benefit/cost ratio of 1.47.

The internal rate of return was calculated to be approximately 23.8%.

The assumptions used for analysis were based upon best available estimates and are considered reasonable. The following are more critical than others to achieving the predicted outcome.

Table a. Net Benefits - F_1 (plows only)

	1980/81	1981/82	1982/83	1983/84 (and on)
Cumulative Participants	974	2,390	4,307	7,031
Production (tons)				
Millet	876.6	2,151.0	3,876.3	6,327.9
Sorghum	194.8	478.0	861.4	1,406.2
Peanuts	681.8	1,673.0	3,014.9	4,921.7
Value ('000MF)				
Millet	43,830	107,550	193,815	316,395
Sorghum	9,740	23,900	43,070	70,310
Peanuts	49,090	120,456	217,073	354,362
Sub-total	102,660	251,906	453,958	741,067
Other Benefits				
Straw Mats	2,922	7,170	12,921	21,093
Total	105,582	259,076	466,879	762,160
Production Costs	24,058	59,033	106,383	173,666
Net Benefits	81,524	200,043	360,496	588,494

Table b. Net Benefits - F_2 (carts & plows)

	1980/81	1981/82	1982/83	1983/84
Cumulative Participants	895	2,193	4,011	6,464
Production (tons)				
Millet	2,058.5	5,043.9	9,225.3	14,867.2
Sorghum	358.0	877.2	1,604.4	2,585.6
Peanuts	984.5	2,412.3	4,412.1	7,110.4
Value ('000 MF)				
Millet	102,925	252,195	461,265	743,360
Sorghum	17,900	43,860	80,220	129,280
Peanuts	70,884	173,686	317,671	511,949
Sub-total	191,709	469,741	859,156	1,384,589
Other Benefits				
Straw Mats	5,370	13,158	24,066	38,784
Cart Rental	22,375	54,825	100,275	161,600
Total				
Total	219,454	537,724	983,497	1,584,973
Production Costs	95,944	235,090	429,979	692,941
Net Benefits	123,510	302,634	553,518	892,032

Table c. MACRO-ECONOMIC AI

	1979/80	1980/81	1981/82	Discounted (FM millio 1982/83
Production Benefits				
F_1	-	81.5	200.0	360.5
F_2	-	123.5	302.6	553.5
Total		205.0	502.6	914.0
Project Costs	1,227.2	1,032.2	1,065.2	960.5
Discounted 8%				
Discount factor	1.0	0.926	0.857	0.794
Benefits	-	189.8	430.7	725.7
Costs	1,227.2	955.8	912.9	762.8
Net	(1,227.2)	(766.0)	(482.2)	(37.1)
Cumulative	(1,227.2)	(1,993.2)	(2,475.4)	(2,512.5)
Benefit/Cost Ratio:	$\frac{11,746.5}{6,900.7} = 1.70$			
Discounted 12%				
Discount Factor	1.0	0.893	0.797	0.712
Benefits	-	183.1	400.6	650.8
Costs	1,227.2	921.8	849.0	683.9
Net	(1,227.2)	(738.7)	(448.4)	(33.1)
Cumulative	(1,227.2)	(1,965.9)	(2,414.3)	(2,447.4)
Benefit/Cost Ratio:	$\frac{8,585.1}{5,831.7} = 1.47$			

IRR: Approximately 23.8%

An estimated 16% of net benefits are attributed to participants using fertilizer at the rates recommended in the farm model. While the predicted yield increases have been shown by SAFGRAD field tests[2] to be easily attainable, chemical fertilizers are not presently used on a widespread basis for millet production in the project area. The time necessary to convince participants to use fertilizer might require more than one crop season and thus delay full realization of benefits. Without any fertilizer application, the internal rate of return would drop to about seven percent.

The increase in efficiency created by the use of animal-drawn machinery will allow the farmer to generate his customary level of production with a considerable labor savings. It is assumed that farmers will choose to maximize income by increasing production of basic food crops.

The analysis assumes prices of inputs and outputs to remain relatively constant during the period under consideration. If outputs generated as a result of project implementation were large enough to significantly alter the present demand/supply situation, this assumption would not remain valid.

The population of Mali is estimated to be 6.4 million and growing at 2.3% annually. Self-sufficiency in cereals is somewhat arbitrarily established at 170 kg/capita or a total of 1.1 million metric tons. For the last three years, weather has been good and official estimates of total production have been about 1.1 million tons, which seems to indicate near self-sufficiency. However, this figure does not compensate for replenishment of farmers' stocks from less productive seasons, inevitable losses, seeding requirements, clandestine exports and, in the case of rice, authorized exports. Production of cereals remains about 10-20% short of the self-sufficiency goal.

The estimated increase in millet/sorghum production derived from project implementation will be 25,187 metric tons annually by 1984. This represents about 2.3% of present production, or enough to offset the increase in demand of one year's population growth. Thus, this project's output will not be large enough to have any significant effect on the cereal demand/supply situation.

Peanut production is expected to increase by 12,032 metric tons and represents about 6% increase in total production. Available statistics indicate that,[3] in recent years, about 50% of production is marketed through the official system (OACV), 10% exported non-processed, and 7% exported as oil and cake. There is an active parallel market for non-processed peanuts which pays prices considerably higher than the OACV. Official government prices established by neighboring

(2) Projet SAFGRAD AU MALI, Rapport de la Campagne 1978

(3) STATISTIQUE ANNUAIRE DU COMMERCE EXTERIEUR, 1974-77; OACV Annual Reports, 1974-77.

countries are, in general, about twice the official Malian price.

The export demand for whole peanuts is for direct consumption in other West African countries. According to USDA estimates[4], average production for area countries during 1972-76 were as shown below, measured in thousands of metric tons:

Senegal	904
Nigeria	569
Niger	121
Mali	119
Ghana	86
Upper Volta	64
Ivory Coast	44
Guinea	26
Sierra Leone	20
	1,953

Senegal and Nigeria are, by far, the larger producers, accounting for 75% of the total. Mali's share of regional production amounts to about 6% of total. Supply available for regional consumption of whole peanuts, and export demand for unprocessed peanuts in Mali, will be determined for the most part by the combined production of the two major producers. Thus, it is not likely that the increase in output of peanuts anticipated by project implementation, which will be less than one percent of total regional production, will significantly alter the demand/supply situation for regional consumption.

4. Macro Analysis:

Nation-wide, as well as in the Fifth Region, rural incomes from agriculture and livestock are roughly equal.[5] As for the Fifth Region, rural incomes there are below the all-Mali rural incomes average. Low incomes are, not unexpectedly, closely associated with extremely low productivity. The following table suggests that productivity per hectare is even lower in the Fifth Region (due mostly to less rainfall) than elsewhere:

Productivity Per Hectare[6]

	Mali	Fifth Region
Millet/Sorghum	750	628
Paddy	1,300	---
Peanuts (Shelled weight)	854	406

(4) Indices of AGRICULTURAL PRODUCTION IN AFRICA AND THE NEAR EAST 1967-76; USDA-ERS Bulletin No. 572.

(5) 1976 Mali Agricultural Sector Assessment.

(6) The all-Mali statistics come from the Mali Agricultural Sector Assessment, 1978, p. 4, for the year 1975. The Fifth Region statistics come from OMM, for the year 1976. Since both 1975 and 1976 were years of normal rainfall, and total production nation-wide and in the Fifth Region were not very different for the two years, the comparison is not inappropriate.

According to the H. de Meel Report of 1978, Mali has a per capita cereal consumption of about 170 kg/person (22 kg. being rice). The following chart shows that Mali presently produces this amount in a year of normal, or at least adequate, rainfall:

Cereal Production, Mali ('000 tons)[7]

Regions	MSC[8] 1975	MSC 1976	MSC 1977[9]	MSC 1978
Kayes	350	350	124	
Bamako	144	106	190	
Sikasso	131	181	220	
Ségou	114	125	200	
Mopti	122	164	186	
Gao/Timbuktu	13	12	10	
TOTAL	874	938	870	1,000
Milled Rice Production[10]	169	159	130	153
Combined Total	1,043	1,097	1,000	1,153
Estimated Consumption Needs[11]	1,048	1,071	1,095	1,120

(7) Source: AID/Bamako and H. de Meel Report of 1978 for years 1975-77, Mali Agricultural Sector Assessment for year 1975, and Agri-Afrique, 1/79 for 1978.

(8) Millet, sorghum, corn.

(9) Below normal rainfall year.

(10) These figures on milled rice represent 65% of total paddy rice production.

(11) H. de Meel Report of 1978 estimates total cereal consumption requirements of 1,095,000 tons in 1978; estimates for other years are based on the fact that Mali has a population growth of 2.3%/year.

All countries surrounding Mali are net importers of cereals. In surplus years, Mali could provide them with cereals. Relevant data from official sources in West Africa show an upward trend of millet and sorghum prices from 41 to 111 MF/kg, c.i.f. (p. 18, CILSS, Club du Sahel Work Group on Marketing, Price Policy and Storage) from 1971 to 1974.

With a total population of approximately 680,000 people, the Fifth Region's cereal needs are on the order of 115,000 tons/year. The above table suggests that the Fifth Region has been producing an excess of over 50,000 tons cereal/year during the past three years. Nation-wide, only about 225,000 tons cereal (approximately 20%) reaches market. The government cereal purchasing agency, OPAM, theoretically has a monopoly on all purchasing. In actual fact, about 65 to 85% of millet, corn and sorghum is sold clandestinely to merchants in Mali or illegally across the border, especially Upper Volta, Senegal and Mauritania, where prices are sometimes double those in Mali. OPAM purchases only about 30-40,000 tons of the millet/sorghum/corn sold -- OMM marketed 8,071 tons of millet/sorghum/corn during the 1977/78 campaign, or about 1/4 this amount.

The table below shows that a significant part of this is shipped to the chronic cereal deficient areas of northern Mali (Gao and Timbuktu):

OPAM Shipments to Other Regions (Tons)[1/]

Campaign	Sikasso		Bamako		6th-7th Region	
	MSC[2/]	Rice	MSC	Rice	MSC	Rice
1973-74					17,662	6,988
1974-75					10,510	11,139
1975-76					8,435	4,125
1976-77	400	720	5,792	1,250	2,547	4,135
1977-78		10		7	3,525	4,535
Total	400	730	6,688	1,257	42,675	30,922

Source: OPAM - Mopti Regional Office, 1978

The parallel market price of millet in Gao and Timbuktu was 100-125 MF/kg in November 1978, 3/ approximately three times that offered in villages of the Fifth Region at the same time (35-45 MF/kg), reflecting the normal scarcity of millet and sorghum in the North. One of the major intended benefits of the project is to encourage cereal shipments north by increasing cereal surpluses in the Fifth Region; this is occurring, in fact, more through the parallel market than through OPAM.

1/ Includes amounts produced outside the OMM zone but shipped to OPAM warehouses in the 5th Region for storage. OPAM storage capacity in the 5th Region is approximately 20,000 tons.

2/ Millet, sorghum, corn.

3/ See Charles Walker's Crop Yield Study in the Action Riz Sorgho Zone (1/79).

As to why OPAM has such difficulty in marketing grain, low prices is the basic reason. Farmers can always get a better price on the parallel market, except at harvest time; and they can usually get a better price if it is sold clandestinely across the border. As shown by the table below, at harvest time in December, 1978, millet was selling on the parallel market in the Seno area of the Fifth Region for the official price of 40 MF/kg (in 12/77 it sold for 50 MF/kg) while in August, 1978, the price was 90 MF/kg:

Parallel Market Prices, Seno Area, 1978

1/78	3/78	5/78	8/78	10/78	12/78
50	50	75	90	90	40

Source: BARA Base Line Study, 1978

The harvest time prices in the villages would undoubtedly be higher if the grain could move more easily to Bamako where prices are much higher. In Upper Volta, the government price for millet is almost double what it is in Mali. It has been estimated by OMM officials that as much as 50,000 tons of cereal is shipped annually from the 5th Region across the Upper Volta border.

The picture for the farmer is not getting any better -- the official price of millet/sorghum has been rising since 1973 at an average of 9%/year (from 26 MF/kg to 40 MF/kg), while the prices of various agricultural implements and fertilizers sold by the government's agricultural credit agency (SCAER) have been rising 8-11% annually since the subsidies thereon were substantially reduced or eliminated in 1976. 1/ From a macro standpoint, the present policy acts to subsidize urban consumers at the expense of the farmers, and the quota which the farmer sells to OPAM is, in effect, a tax. The effect is clearly a disincentive to production, but increases in cereal production and productivity are not impossible so long as OPAM continues to market only 10-20% of the millet sold.

Meanwhile, pressure is mounting for a basic policy modification. The recent H. de Meel Report, which concluded that the "liberalization of marketing will encourage producers to produce more" made a number of recommendations, including most importantly:

a) Liberate the marketing system; officially allow trading to be carried out by private traders and recognize them as principal implementors of marketing activities along with rural development operations, farmers' cooperatives and OPAM. The market, freed from government controls, will encourage the farmers to produce more.

b) Establish a pricing system between the ceiling price (for the consumer) and the floor price (farm gate price) through the intervention of OPAM which will become a price regulatory body instead

1/ There still exists a 13% subsidy on the price of fertilizers, while that on agricultural equipment has been totally eliminated.

of being the sole marketing agency.

If this policy is implemented, OMM farmers and the project stand to benefit significantly.

4. Peanuts

While the recent base line study of the OMM area shows that millet and sorghum occupy 93% of the land cultivated in the Fifth Region, peanuts are cultivated on only about 10,000 hectares, and produce only about 4,000 tons/year (shelled weight). This compares to total peanut production in Mali of 205,000 tons in 1975/76, of which 43% was marketed. So the Fifth Region presently accounts for about 2% of peanut production in Mali and zero official marketing. The low production is due almost entirely to the fact that there is no official marketing of peanuts in the region and thus no way for farmers to get the peanuts to the oil factories; one result is that peanut oil can be difficult to find in the Fifth Region.

Official marketing of peanuts throughout Mali has been falling since 1976, because the price offered to the farmer (60 MF/kg) is only about half that in Senegal and other countries. Some 85% of all peanuts marketed are grown in the zone covered by Mali's peanut Operation, Operation Arachides et des Cultures Vivières (OACV), which extends from the Senegal border to the Upper Voltan border and covers about 20% of Mali's farms. The table below shows that OACV is marketing a decreasing percentage of the peanuts produced each year:

Peanut and Millet/Sorghum
Production in the OACV Zone ('000 tons)

Campaign	Peanut Production	Quantity Marketed	% Marketed	Millet/Sorghum Production
73/74	68.3	40.2	59%	126.7
74/75	110.3	60.1	54%	157.0
75/76	150.0	78.4	52%	213.9
76/77	160.4	76.9	48%	234.7
77/78	102.4	40.3	49%	221.2

The above table also shows that millet and sorghum production in the OACV zone has by no means been replaced by peanut production and that it has, in fact, been increasing; OACV even recommends a rotation of peanuts/cereals/peanuts/cereals. In 1974/75, when the OACV zone produced 157,000 tons of cereals, a slight surplus was created (Mali Agricultural Sector Assessment, 1978, p. 216).

In terms of peanuts and the Fifth Region, several things can be deduced from the above. First, a sizeable increase in peanut production in the Fifth Region would still account for only a very small percentage of total peanut production in Mali; thus, there is little danger of over-production. Second, any official marketing of peanuts in the Fifth Region would help counteract the falling quantity and percentage of peanuts being sold through official channels. Third, the experience of OACV strongly suggests that cereal production will not fall as a result of the expansion of peanut production - - hence the strong recommendation for diversification into peanuts. (See ANNEX E).

ANNEX C - - SOCIAL SOUNDNESS ANALYSIS/VILLAGE ASSOCIATIONS

A. SOCIAL SOUNDNESS ANALYSIS

Since a Social Soundness Analysis has been previously done and because this project is a revision of the original, we feel that no extensive commentary is necessary. However, it is felt that the following remarks are appropriate:

1. The Socio-Cultural Setting

The Seno plain and the Bandiagara plateau are inhabited by Dogon and Peul peoples, all of whom, except for Peul noble families, dwell year-round in permanent villages. In Peul society and village life, there are three social classes-nobles, castes, and ex-slave descendants. The basic unit of production is the nuclear family unit, which, with differing emphases according to social status, practices both agriculture and cattle raising. The noble families live in the permanent villages only through the rainy season, during which they cultivate millet fields adjacent to the village primarily by means of hand-held hoes. Noble women do not help with farm work. They do, however, cultivate a small vegetable patch on ground prepared by their husbands. Once their harvest has been cut, gathered, and put in graneries, the noble families, except for the infirm and very aged, move with their cattle into the bourgous of the Niger inland delta north of the project area. They pass the dry season in the delta, grazing and watering the cattle and trading dairy products to sedentary farmers there in exchange for money or grains and other fodstuffs. Once the rainy season approaches, the noble families return to their permanent villages to farm, sending their cattle with a number of herders to the plains near Douentza to pass the rainy season.

The castes are made up of families headed by blacksmiths, woodworkers, leatherworkers, weavers, saddlers, and the praise-singers and musicians. They all do some farming and may own a few head of cattle, but more emphasis is set on the practice of their specialized occupations. Unlike noble families, casted people remain year-round in the permanent settlement. This latter fact is true of the ex-slave descendents (Rimaibe) who are the true agriculturalists among the Peul. They cultivate bush fields as well as those adjacent to the village.

Peul villages are usually organized by quarter, based on class distinction. Each quarter has its chief, and, theoretically, village decision-making is done by the elders (55-60 years of age or older) as a group without regard to class. In the cases of disputes which cannot be communally resolved, the final arbiter is the oldest (lucid) man among the nobles.

The Dogon inhabit both the Seno Plain and Bandiagara escarpment, cultivating millet as their main crop. The lack of dry season water prevents vegetables being grown in the plains villages, but on the plateau, a substantial dry season vegetable cash crop is grown on hand-irrigated/watered terraces. This consists for the most part of local varieties of onions, for the reasons that, as elsewhere in remote areas of Mali, onions, either fresh or dried, can be transported over long distances without suffering any damage, and because only a thin layer of soil (the prevailing condition) is required for their cultivation. Unlike that of the Peul, Dogon society is essentially classless, there being no castes or stigmatized ex-slave descendants among them. The Dogon family is large, consisting in theory of all villagers related by blood or marriage, united under the head of family, usually the oldest male. However, the nuclear family has its own dwellings and cultivates its own fields with hoes of varying sizes. Although both Peul and Dogon utilize plows and oxen or donkeys to some extent, the vast majority of Dogon and Peul farmers do not have plows because of their high cost and, until recently, their unavailability. Like the Peul slave descendants, the Dogon cultivate both the fields adjacent to the villages, as well as bush fields. The nearer fields are fertilized with animal manure and compost and farmed every year. The unfertilized outlying fields are cultivated for 2-3 years, then left fallow for a like period, or longer if sufficient land is available.

2. Constraints

a) Existing General Constraints

(1) The vagaries of the weather require that farmers plant both early and late maturing varieties of grains so as to provide a hedge against insufficient rainfall.

(2) The lack of access to technology means that the vast majority of farmers still till their fields with hoes. The extension service has not pushed the use of fertilizers; because of the ever-decreasing length of fallow period, fields are becoming progressively less fertile.

(3) The OMM/OPAM pricing-marketing system puts the main burden on those farmers least able to shoulder it. The small farmer most often has to try to buy grains at harvest time in the parallel market, if he is able, to both fill his OPAM quota, however small, an still retain enough millet in his granary to nourish his family until the next harvest. The system poses less of a problem to the farmer who already has a plow or who has more hands available to work his fields or fewer mouths to feed. He can harvest enough to satisfy his OPAM quota, feed his family until the next harvest is in, and still perhaps have a surplus which he can sell in the parallel market at the most favorable time.

(4) The lack of roads and sandy conditions in the project area make transport between many villages feasible only by heavy truck, Land Rover, donkey, or horseback. Thus, extension work by bicycle or mobylette is very difficult.

(5) The only socio-cultural barrier to increased agricultural productivity is that presented by the noble Peul families, who consider cattle to constitute their way of life, agriculture being a necessary but non-favored adjunct.

b) Constraints Relative to Proposed Interventions

(1) Pilot Village vs. Pilot Farmer Vulgarization--No constraint is anticipated. In fact, since the project intends to experiment with group credit at the village level, the extension approach via groups of farmers within the village is a complementary intervention. Moreover, singling out individual farmers as the recipients of specific project benefits, as has been done in the past, exacerbates intra-village jealousies while at the same time aiding those farmers who likely have the least need for assistance.

(2) Group Credit--The preliminary survey indicated that 25% of villagers have no notion of the existing credit system. When the proposed credit program was described, farmers in some villages had difficulty in understanding the mechanics of it and also voiced some apprehension that responsible people might have to pay off loans of irresponsibles who might fail to do so. Many villages of the project area have had little or no exposure to such a sophisticated idea as self-administered group credit. In this area, therefore, the project will have to proceed with caution and do much preliminary assessment and groundwork, building on the solid base of a continuing dialogue with village groups.

(3) Animals--No constraint is seen. The lack of draft animals is, further, seen as less of a constraint to increased production than the lack of suitable plows and fertilizers. Many farmers have animals which have not been trained precisely because the farmer has no plow. And, in some villages surveyed, farmers who had plows but no animals were able to rent animals from other people. Nevertheless, considerable demand for animals has been reported by extension agents. Animal credit on a trial basis will be a worthwhile experiment if aimed at farmers who have two or fewer draft animals.

(4) Agricultural Equipment/Fertilizer--No constraint is anticipated for fertilizer sales if farmers perceive that tangible benefits will be derived from its application. Regarding major capital expenditures for plows and carts, many farmers cannot individually come up with the down payment that is presently required. In addition, some farmers voiced the complaint during preliminary survey that the repayment period is too short, given the meager financial means of the average villager.

(5) Retail Stores--None of the villages visited during preliminary survey had a local store. While villagers offered varying explanations for this, it appeared that there is neither a need nor a demand for a local store in many villages since no private merchants have yet set themselves up in those villages. Furthermore, the cooperative effort that the former government attempted to impose was intensely disliked by the rural populations, and cooperatives in general have a bad reputation. The retail store experiment, therefore, should be implemented only after a thorough demand and feasibility study justify the selection of a particular site.

(6) On Farm Trials/Demonstrations--Farmers already lead such a precarious existence that attempts to do demonstrations or trials in farmers' own fields may meet some resistance. (See recommendations below).

(7) Expansion of Extension Program--No constraint is seen. While the quality of the local agents varies substantially, farmers recognize the fact that they may be able to bring benefits to the village. Moreover, they do not seem to resent the agent as a representative of the disliked OPAM/OMM purchase system, realizing that the agent is not the architect of t[illegible]ogram but, like the villagers, has had it imposed on him. Upgrading [illegible] abilities of the agents should be an important part of the project.

3. Recommendations

a) Regarding the OPAM system, farmers view it very negatively but realize that increased production will allow them to satisfy quotas and retain more grain to sell later in the parallel market. In their eyes, the key to production lies with the plow because it decreases the back-breaking labor of hand cultivation. Therefore, project management must, from the beginning, ensure that an adequate number of appropriate plows can be obtained to meet demand once the credit system is in operation.

b) Since the poorest farmers will be found among the Dogon and the Rimaibe (Peul slave descendants), the extension effort should be concentrated on improving their lot. However, since the noble Peul families do farm during the rainy season, their attitudes toward improved production methods should be ascertained. Even if they are found to resist improved methods, it is not expected that they will resent efforts to assist the Rimaibe since the village as a whole will benefit.

c) The choice of pilot villages will be particularly important. The preliminary sociological survey indicated that the larger villages were more sophisticated, could more easily understand the concept of self-administered group credit, and contained more farmers who already used plows and had thus been exposed to new technology. Choosing large villages in which there is a weekly market and which has a number of satellite villages will ensure that the knowledge

disseminated by the expanded extension service will diffuse to nearby villages. Further, such villages will be the logical sites for the experimental store since the market will be enlarged by surrounding populace.

d) On-site demonstration/trials should be made, if necessary, with a guarantee to the participant that if the crop should fail, he will receive an amount of grain equal to the amount harvested on the same size plot the prior year. These arrangements will have to be agreed on before the trial. Thus, a contingency fund for failure of demonstration, if made on a farmer's usually-cultivated land, should be established.

The overall success of the project will be determined by the extent to which a continuing dialogue is established between farmers and project personnel. The project structure must, therefore, be flexible enough to allow for continuing design changes, which will accomodate farmers' perceptions and needs as they voice them. Via the process of dialogue, the farmers will themselves participate in the design, rather than have it imposed on them. If this is done, whatever village-level constraints are identified can be overcome.

B. VILLAGE ASSOCIATIONS

I. BACKGROUND

Village associations in Mali's cotton Operations (C.M.D.T.) got their start in 1975-76 with the formation of 13 such organizations based on traditional village-level self-help and communal work groups. The next three crop years saw an increase in their numbers so that now (crop year 78-79) there are 233 such organizations operating in the various C.M.D.T. zones. The C.M.D.T. does not push the formation of village associations. The impetus for such associations come from villagers themselves. The C.M.D.T. has two basic objectives it seeks to achieve by aiding with the formation of the village associations: (a) an increase in revenue via a better organization of the entire farming effort which would result in a better quality of life for farm families, and (b) a more intensive, more effective, farmer participation in his own development through transferring the responsibility for local affairs to the farmers themselves. It was intended that the encadreurs be relieved of such activities as management and record-keeping for credit and supplies and thus be free to concentrate on introducing and teaching more efficient or improved agricultural techniques.

II. ASSOCIATION STRUCTURE

The village associations are theoretically composed of all villagers who might be members of the traditional organizations. They are generally animated by the same individuals who direct the traditional groups. Likewise, the composition of the "offices" are similar to those which direct the traditional groups. They consist of President, Secretary, Organizer/Animator, Storekeeper and Weigher. These are often assisted by literate village youth. C.M.D.T. officials point out that all responsables are designed by the villagers themselves. The C.M.D.T. does not intervene in the officer selection process. Moreover, there is no "association of associations." Each village group is independent of all others.

III. MOTIVATIONS AND CONSTRAINTS

From the first year the organizations were created, the C.M.D.T. sector chiefs and their personnel as well as the Training Division have conducted continuing studies of the village groups. The studies have been able to identify the local motivations which contribute to the effectiveness of the groups and also some of the constraints which can inhibit them.

A. Motivations: (1) Since the associations are based on traditional structures already well understood and functioning, no foreign structure was introduced which might encounter village resistance. (2) Problems which could not be solved by individuals, either the farmer or encadreur, might be resolved by communal effort. If village affairs could be managed by the village association, the role of the C.M.D.T. representative would be counselor or trainer only. (3) The association would manage its own credit, purchasing, use of equipment and provisions, and the sale of members' produce without outside intervention. (4) Accumulated revenues would be channeled into investments agreed upon by the association's general membership.

B. Constraints: The C.M.D.T. studies have identified several important factors which can affect the work of the village association. Farmers are fully cognizant of these and how they can be overcome:

1. Internal Constraints: (a) Necessity for all rules or regulations adopted by the village association to be respected by the membership; (b) Necessity for a communal financial security or surety for each individual by the entire membership; (c) Necessity for unanimity in decision-making; an obligation to convince reticent members of such; (d) Need for functional literacy program to facilitate sound organization and management, e.g. credit, provisioning, commercialization, bookkeeping.

2. External Constraints: (a) Necessity for outside support by competent C.M.D.T. personnel who can introduce new techniques, improved methods; (b) Need for integration of village association into developmental structures of the government; (c) Village associations must respect imperatives outlined by C.M.D.T. and certain criteria defined by C.M.D.T. in order to qualify for support.

IV. C.M.D.T. CRITERIA

A. All villages in which C.M.D.T.-supported associations have been or will be created have participated in the C.M.D.T. development effort for several years and their performance is known by its extension agents. Before it will consider administrative and material support for the formation of a village association in the operation's zone, the C.M.D.T. requires the village to meet the following criteria: (1) already-existing traditional community structure which agrees with idea of communal association; (2) stable population; (3) cultivation of a cash crop; (4) total farmer membership; (5) sufficient technical level of farmers, this determined by either a continuous increase in village crop yields or by farmers indicating, through performance, that they respect and understand the value of improved techniques; (6) sound record of credit repayments; (7) commitment to mutual security, i.e., group guarantee for individual members; and (8) presence of at least some literate villagers permanently

dwelling in village -- may be literate in either French, Arabic, or Bambara.

V. C.M.D.T. STEPS IN FORMATION OF VILLAGE ASSOCIATIONS

A. Phase I.

1. Criteria posed by C.M.D.T. satisfied by village (see Section V).

2. Field research by C.M.D.T. personnel in villages meeting above criteria to ascertain: (a) size of cultivated area in cash crops; (b) means of production -- techniques, equipment, etc.; (c) numbers and condition of livestock; (d) amount of credit disbursed; (e) rate, record of repayment; and (f) average income per farmer.

B. Phase II.

1. Analysis of Village Data with Villagers: (a) group organization, its social role, membership, officers, method of choice of officers; (b) determination of group objectives, means of production necessary, management of credit, level of commercialization; (c) definition of group tasks, i.e., material needs, order process, control of supplies, distribution, management, etc.

2. Analysis of C.M.D.T. imperatives regarding its role, credit policies, directives affecting level of commercialization.

3. Comparison of C.M.D.T. imperatives vis-a-vis those of village association.

4. Decision regarding compatibility of C.M.D.T. objectives with those of village group: C.M.D.T. support of village association or not?

C. Phase III.

1. Formal implementation, structuring of village association by C.M.D.T., and villagers according to villagers' choice of structural model.

2.. Establishment of Program of Interventions

D. Phase IV.

1. Evaluation at end of each campaign: comparison of original situation with objectives and results; identification of reasons

contributing to success or constraints inhibiting success.

VI. C.M.D.T. AT SECTOR LEVEL

A. The C.M.D.T. considers the adequate training of its field personnel of utmost importance. Assuming that Katibougou provides the basic agricultural training, the C.M.D.T. gives additional training to agents to specifically assist them in helping to form and counsel the village associations. This added training falls into two categories:

1. History and Theory, which covers: (a) the objectives and operating policies of the C.M.D.T.; (b) criteria for creation of village associations; (c) results of past experience; (d) constraints restricting success of village associations; (e) methods by which the associations function; (f) some management principles; and (g) expected vs. obtained results.

2. Practice, which covers learning how to: (a) operate scales, (b) keep records, (c) manage a warehouse or storeroom, (d) run and maintain machines such as pumps, mills, and generators, (e) effectively communicate with farmers, (f) conduct individual or group interviews, (g) prepare or complete technical forms such as questionnaires, work plans, evaluations, training, etc., and (h) analyze and evaluate the methods and motivations of farmers.

B. Such training is supposed to facilitate the job of the sector chief to: (1) integrate the objectives of the C.M.D.T. agents and the village association in mutually agreed upon actions or efforts, (2) determine the adequacy of the agents' training for such action, (3) determine goals or limits and guide the village groups toward establishing an annual campaign plan incorporating both the production needs and means of the village group, managing the means of production, credit, sticks, repayments, etc., and marketing the produce, i.e., selling to C.M.D.T.

VII. GENERAL REMARKS

Regarding the question of safeguarding revenues, this can be a problem. All V.A.s keep their cash in their village association headquarters (office). The C.M.D.T. experimented with opening accounts for village groups, e.g., at the Koutiala branch of the B.D.M., but this did not work out. Nonetheless, no cases of theft of village funds has been reported.

In the Koutiala sector in 1978, the C.M.D.T. received requests from more than 100 villages wanting to form village associations;

only 30 met the C.M.D.T. criteria and formed associations. Moreover, the C.M.D.T. has not yet had any experiences with village associations that were formed and subsequently failed. And the associations apparently work well even in villages of mixed ethnicity.

Villagers pay a set amount of their receipts to cover C.M.D.T. marketing expenses. For cotton, for example, the expense to the farmer is 2 francs per kilo out of his receipts. This sum goes toward the cost of transport, clerks' salaries, etc. The C.M.D.T. does not force the village associations to commercialize any set amount of their production. Farmers are free to sell what they want in the parallel market. In reality, however, since the C.M.D.T. is the only purchaser of cotton, all production other than auto-consumption is sold to the C.M.D.T.

There are 3 reasons why, at the outset, the village associations in the Fifth Region might be less successful than those associated with the C.M.D.T.: The importance of cotton as a cash crop, the 20 years operational experience of the C.M.D.T., and the higher technical level of Third Region farmers. Nevertheless, there are villages in the OMM zone that are clearly ready for them. Moreover, OMM is sending two of its people to Koutiala to study the village associations. So OMM should start with 5 villages as soon as possible to gain experience.

ANNEX D

INITIAL ENVIRONMENT EXAMINATION

PROJECT LOCATION:	Fifth Region, Mali
PROJECT TITLE:	Operation Mils
FUNDING:	FY 80-83, 9,962 million
LIFE OF PROJECT:	Four Years
IEE PREPARED BY:	Douglas Kennard
	Consultant
	USAID/Bamako
DATE:	February, 1979

ENVIRONMENTAL ACTION RECOMMENDED: Negative Determination

CONCURRENCE: _____ DATE:
Ronald D. Levin, Director
ASSISTANT ADMINISTRATOR'S

DECISION: _____ DATE:

The recommendation for a Negative Determination is supported by the Initial Environmental Examination attached as ANNEX D. Environmental consequences of this project will be minimal and controllable. No significant adverse impacts are foreseen. Recommended soil and water conservations proactices will be observed.

ANNEX D

INITIAL ENVIRONMENTAL EXAMINATION

A. THE SETTING

OMM includes about 60% of the Fifth Region as its project zone. Almost all of it is east of the Niger River. The climate of the project area is sudano-sahelian, receiving about 700 mm of rain in the southern limits of the zone and about 450 mm in the nothern limits. The western part of the project zone near the Niger River is a rocky sandstone plateau with inindating stretches of loose soil which make the area conducive to some millet cultivation; however, the natural springs and subterranean water sources which reach the surface make market gardening the most attractive farming activity. 1/ Immediately adjacent to this area and stretching east to the Upper Volta frontier is the vast Seno Plain. The soil composition ranges sandy to clayey loam. This is the millet and sorghum growing country of the Fifth Region.

The farming population is largely dependent upon the whims of the weather for crop production. On the Seno there are virtually no irrigation or flooding schemes. The people there are dependent upon hand dug wells for water resources, and the water table in some places is over 70 m deep. Currently the lack of alternative water resources makes agricultural diversification difficult. The growing population overtaxes the decreasing number of wells which have year-around water supplies, and this causes the water table to drop even further. The traditional practice of extensive farming -- that is, continual clearing of new land for millet cultivation -- without regard for soil conservation measures, impoverishes the land and threatens this already marginal environment with further degradation. Shortage of clean water resources on both the Plateau and the Plain has obligated these populations to use surface water from ponds and streams which appear during the rainy season. This surface water is contaminated with Guinea worm, schistosomiasis and amoebas, and is a breeding medium for mosquitoes. In some villages the Guinea worm infection rate approaches 100 percent.

The farmers have always cultivated millet as their main staple; they also cultivate peanuts, niébe, fonio, and woandzu. They traditionally cultivate with a hoe and devise their own composting and manuring techniques for fertilizing. The peasant barters his goods for dairy products from the nomadic Peulh herdsmen in the area. Many farmers, in fact, keep cattle for the Peulh, thereby being assured of a continual source of manure.

The road system is composed of a network of earth tracks and non-paved hard laterite surface roads. Though there are sandy stretches, the tracks on the Seno Plain are fairly good during the dry season but virtually impassable during the rainy season. On the Plateau the rugged terrain makes vehicle passage extremely laborious.

1/ The instability of the sandstone strata makes well construction difficult.

B. LAND USE

As crop production in the Fifth Region increases as a result of the project, certain effects will be manifested on the land. Villages which increase grain production may attract farmers from less productive areas. Livestock activity may increase from the interaction between farmer and pastoralist, more bartering activity will probably take place, and the need for animal fertilizer will increase. Similarly, increased vegetable production on the Plateau and cultivation of other cash crops (peanuts, fonio, cowpeas) may affect the population size. This is seen as desirable by the farmers because it will help slow trend of talented youth to the cities. These actions could theoretically put more pressure on the land, and there could be a temptation to increase the amount of land under cultivation. Much of the project zone receives less than 25 inches of rain; trees have been cut down in the past, and the land is cleared by slash and burn. All this makes the soil vulnerable to erosion. During the hot dry harmattan season (mid-March to June) the winds stir up the top soil. If new lands are continuously opened up to cultivation, erosion might increase. The possibility of this occurring seems diminished, however, when seen in terms of population statistics. Urban growth continues at a rate of about 5% in Mali -- over thrice the figure for the nation's rural sector. Indeed, depopulation is more of a problem in rural areas (due to the youth exodus) than overpopulation. It is unreasonable to assume such an increase could not be supported with a minimum of adverse effects on project lands.

Fortunately, a major goal of the project is to considereably upgrade the technical preparation of the entire corps of extension agents to help the farmer cultivate more intensively, improve agronomic practices and discourage random opening of virgin lands. Varied agricultural practices are to be encouraged which are in balance with environmental conservation. Proper execution and quality control of these techniques should preclude aggravating land degradation and in the long run should reverse this trend. A full-time U.S. agronomist will be stationed at the Seno research station of Koporokeniépé. Part of his responsibility will be to carry out an ambitious multi-locational testing program for improved production practices on village fields. A main concern will also be social, cultural and economic acceptability of such practices. In addition, he will monitor the proper application of new agricultural techniques so that they fall within the parameters of environmental conservation.

On the sandstone plateau market gardening is rapidly becoming the dominant agricultural activity, and millet cultivation is secondary. There is a demand on the part of the farmers to increase and develop the network of natural waterways for vegetable gardening. Farmers have reacted very positively to suggestions of improving soil fertility with phosphate and nitrogen fertilizers. The project envisions introducing limited quantities of this on a test basis within the research guidelines set down by ICRISAT. This field work would be carried out under the supervision of a SAFGRAD agronomist. Therefore, there is no danger of natural waterways being significantly polluted by chemical fertilizer in rainwater runoff. A careful analysis will be made to determine what environmental effects this activity will have. (The same process will be carried out for millet and sorghum production.)

There will be no impact on national defense. No other factories or industries in the area with this project would compete for natural resources or labor exist. The project will not introduce alien elements into the environment which would threaten man or the environment.

C. WATER QUALITY

On the plateau there are no plans to expand the waterways or alter the contour of the land in such a way as to cause erosion or release sediment into the water. On the Seno Plain no irrigation work is foreseen which would create additional bodies of water. The project does not plan to alter the natural water resource endowment of the project area. Chemical inputs will be introduced in a limited controlled manner. On the plain fertilizers, fungicides and insecticides will be tested first at the Seno Research Station, then with demonstration farmers, and finally introduced to pilot farmers and villagers in controlled quantities through a carefully phased verification testing process under supervision of qualified U.S. experts and extension agents. During the rainy season there are some standing bodies of water which may come into contact whith such applied inputs; but the relatively small amount of fertilizer to be made available to farmers will cover such a large geographical area that the effect of these substances working their way into surface water will be negligible. Furthermore, the population draws its drinking water from deep wells (50-70 meters) and avoids using surface water whenever possible. The project's well program on the Seno Plain should significantly increase the supply of clean groundwater. The project foresees no dumping of wastes or excavation of earth which would cause erosion, harm the natural habitat, or pollute water resources.

D. ATMOSPHERE

Small amounts of air pollution will be generated in the form of smoke from burning (clearing) of fields; but this has always been a traditional practice and only takes place during a few months of the year. In fact, the extent of slash and burn activity may be reduced as part of the program of controlling the opening up of new lands for cultivation and improving fallow and rotation practices. Greater consciousness of environmental conservation will reduce the amount of top soil being blown away and, therefore, the amount of dust in the atmosphere. These concepts will be part of extension agent training. Fertilizers and fungicides will be introduced selectively under controlled conditions and will be applied manually. No spraying from aircraft or land-based dispensaries will take place. No heavy industrial or mining activity will be part of the project. Contemplated construction will be modest in nature - small houses, storage facilities and offices. Heavy earth moving equipment will not be necessary except for road construction and maintenance, again of a modest level. No commodities of any kind (e.g., pneumatic drills) will create abnormal noise pollution.

E. NATURAL RESOURCES

There are no plans to exploit any natural resources in the area (mining, lumbering, etc.). While the project foresees using water from the canals on the

Plateau, this will be limited to hauling water by traditional farmers' means -- buckets and homemade containers. There are no plans to alter or expand these natural wateways. The project does not envision cutting down trees for meeting construction needs. Natural land forms (knolls, groves, rock outcroppings, etc.) will not be altered.

F. CULTURAL

There is no evidence to suggest that the local cultural characteristics will be adversely affected by the project. Discussions with farmers in the project area reveal that many villagers have always sought wage-earning work outside the Fifth Region during the "off season" and then returned to their fields at planting time. Therefore, the inhabitants have long been used to influences from outside the project area. Furthermore, the villagers are always consulted beforehand concerning any project undertaken which would involve utilization of land or project work in areas to which farmers have ancestral or religious attachment. The majority of village-level extension agents are locally recruited and hence speak the local language. They are always in contact with the village chief and his council and would therefore be aware of sacred landmarks in the area.

With the exception of some population shifting which may take place within and among certain locales of the project zone, the project activities will not cause dispersement of large numbers of people. To the contrary, the population may tend to consolidate itself as the project makes more economic opportunities available -- youth will have the incentive to remain in the villages and thus local talent and energy will be preserved for further rural development. The farmers have always traiditionally had a barter relationship with the pastoral nomads -- millet is traded for dairy products and the cattle graze in the farmers' fields while the manure left behind fertilizes the farmers's fields. Due to increasing population of these two groups as well as their proximity ot one another, the farmer and the pastoralist are becoming increasingly interdependent. This has caused farmers and pastoralists to develop closer cooperative relations. Increased agricultural production resulting from the project will contribute towards greater association between the two groups and thus more mutual economic benefits will accrue to both. Therefore, any resulting cultural modifications will be seen as positive.

G. SOCIO-ECONOMIC

The project should have a positive effect on the social and economic well-being of the people. The increase in grain production, cash cropping, and vegetable gardening should provide the farmer with purchasing power which can lead to creation of village savings. This could be the basis around which women and youth would be able to form community associations for certain activities -- peanut, rice and vegetable cultivation, small-scale reforestation, and gathering of firewood. Women have expressed interest in purchasing carts which would make the search for firewood and water less onerous. Surplus quantities of firewood could be put on the local market,

and other women will then be able to purchase a certain percentage of their firewood needs for which they would have to spend time gathering.

The road improvement program envisions upgrading certain rural tracks and key all weather laterite road segments to facilitate the marketing of agricultural products and the delivery of equipment, goods and services to the project area from the outside. Better transportation service will contribute towards lower unit costs of imported items and allow the farmer greater marketing opportunities since he would have more frequent communication with other regions of Mali and with neighboring countries.

H. HEALTH

The development of cash cropping and market gardening activities will also improve the local diet. This is extremely important for small children and nursing mothers as better health means more economic productivity. The practice of market gardening on the Plateau means that the rural people come in contact with surface water; this has been the cause for such high incidence of schistosomiasis and Guinea worm. However, the project advocates no increasing of these surface water resources until a plan for disease control has been made. This latter will depend upon preliminary environmental studies which will be necessary before measures are taken to eliminate disease vectors. More knowledge must be obtained about the ecosystems that harbor them. Presently, there is a Peace Corps fishery specialist working on the Plateau making a schistosomiasis study. Meanwhile, the peasants' response to market gardening as an opportunity to increase their income has been overwhelmingly positive. Interviews with farmers indicate that this income is necessary for purchasing medicine to cure the diseases which have a crippling effect on their lives. It is logical, then, that with the purchasing power to buy medicine for curing illnesses, farmers will be more receptive to any future program which advocates preventive disease measures.

Although there is no specific line item for health in the project, OMM intends to involve itself in such activities with the Ministry of Health. Currently, there is a separately AID-financed rural health project which is operating in one of the project's five Cercles (districts). The plans are to upgrade the existing health facilities and train selected villagers in basic hygiene and infant care. Money generated from the sale of medicine in villages will be left at the disposal of village councils to be applied towards what they perceive to be rural community needs -- continual purchase of medicine or investment in activities sbch as small scale reforestation, purchase of horse-drawn carts, hand pumps for raising well water or purchase of farm tools. OMM is building on the health project by means of a functional literacy component. As villagers are trained in literacy and numeracy, elements of basic village health care will be included -- here the two projects reinforce each other.

I. REFORESTATION

Villagers say that trees are excellent for retaining moisture and fertility in the soil. Planting trees near wells keeps the water table from dropping,

and wells are more assured of a continual supply of fresh water. Therefore, a combination well and small-scale reforestation program would be mutually reinforcing and would be advantageous for the social, economic and physical environment. A tree nursery/well program also could be a focal point for rational creation of new settlements. In some villages on the Seno Plain populations are growing and water levels in the available wells are becoming dangerously low due to overuse. Some wells only have water during four months of the year. Those villages which have potable water year around are attracting people from less fortunate villages with the result that some villages on the Seno Plain are severely overpopulated and are victimized by decreasing water supply. On the Plateau, villagers have also expressed an interest in reforestation. Available water from the canals would make it possible to plant tree nurseries in conjunction with increased market gardening activity. 1/

J. SUMMARY AND RECOMMENDATIONS

Summary: The project recognizes the fragility of the physical environment due to the low rainfall, lack of soil fertility and increasing population. The project area is susceptible to modest chronic environmental degradation, principally because of soil erosion. OMM personnel and USAID agronomists are aware of these hazards, and the upgrading of extension service personnel will include more rational methods of land cultivation.

Recommendations:

1. Small scale village reforestation should be included in extension service training and promoted as part of the technology package to farmers.

2. Small scale reforestation should also accompany the current project's well program. Small tree nurseries could be started in the vicinity of the wells. Fruit bearing and timber trees could serve as potential income sources to farmers as well as improve their diet. Brush and woody legumes could be planted as dry season forage helping to relieve the nearby pastures of continual grazing. Village level reforestation training for extension agents could be factored into the project's proposed training program for them. Also, OMM might recruit trained agents from the forestry school at Katibougou; there is an English forestry specialist there who says he is ready to assist in launching any reforestation efforts in Mali.

3. Cash crops, fruits and forage grasses should be planted between rows of trees. Shaded areas would give women a chance to rest during water hauling from nearby wells.

1/ By an action memprandum from AID/Washington dated March 23, L979 and 79 State 78567, the project obtained a 5-year pesticide waiver. By 77 State 90003, the project obtained a fertilizer waiver to use 60 tons c DAP fertilizer and 50 tons of Urea.

ANNEX E

FINANCIAL ANALYSIS

1. Financial Management of Project To Date

From June 29, 1976 to February 11, 1979, AID obligated $5,489,000 to the project, of which $4,442,000 was sub-obligated. The amounts and percentages obligated to the major project components are as follows:

		($000's)	%
1.	Well Program	260	5.8
2.	Vegetable Program	10	.2
3.	Road Program	1,405	31.6
	Commodities	(1,263)	
	Operating Expenses	(142)	
4.	Credit Fund	473	10.6
5.	Construction (warehouses, offices)	356	8.0
6.	Ag. Research (ICRISAT)	250	5.6
7.	Community Development Program	54	1.2
8.	Studies/evaluations	82	1.8
9.	Participant training	35	.8
10.	Blacksmith program	127	2.9
11.	OMM administrative support	1,390	31.5
	GRAND TOTAL:	4,442	100.0%

In addition, a $269,000 functional literacy component is included in the project under separate financing. The table below is the project's AID-input balance sheet for the project as of February 1, 1979; it shows that about 10% of project expenditures have been invested in technical assistance and training, while commodities have accounted for almost half of all expenditures:

Operation Mils Mopti Obligations and Expenditures 1/76(1) to 2/79

	Obligations	Accrued Expenditures	Balance
1. Technical Assistance			
a. Vegetable program	9	9	0
b. Community development program	54	38	16
c. Well program	32	32	0
d. Research (ICRISAT)	250	250	0
TOTAL	345	329	16
2. Participant Training	35	25	10

(1) Project expenses incurred 1/1/76 to 6/29/76 but not obligated were covered under the new project.

	Obligations	Accrued Expenditures	Balance
3. Commodities(2)			
a. Op. Mils			
--Vehicles	374(3)	325	49
--Office Equipment	75	57	18
--Irrigation Equipment	1	1	0
b. Road Construction Program (12 trucks, 1 bull, 2 motorgraders, 4 utility vehicles, 1 compactor, trailer, misc.)	1,263(3)	846	417
c. Well Program	228	--	--
d. Blacksmith Program	127	47	80
TOTAL	1,840	1,276	564
4. Construction	356	356	0
5. Credit Capital	473	473	0
6. Studies/Evaluations	82	45	37
7. Operating Costs(4)			
a. Op. Mils			
--Office equipment, etc.	84	84	0
--Mobylettes	111	111	0
--Vehicle fuel/maint.	353	353	0
--Salaries/primes	375	375	0
--Courses	41	41	0
--Miscellaneous	346	344	2
b. Road Construction Program	142	142	0
TOTAL	1,452	1,450	2
8. Unobligated	1,047	--	1,047
GRAND TOTAL	5,489(5)	3,813	1,676

(2) Local and U.S. purchases ordered by USAID

(3) Estimate -- precise allocation greatly complicated by fact that some PIO/C's were for commodities destined for both Op. Mils and the road construction program.

(4) All payments made directly to Op. Mils. Includes estimate of $138,000 operating expenses from 12/15/78 to 1/31/79 ($15,000 each to salaries and vehicle maintenance, $40,000 to Public Works Dept., and remaining to misc.).

(5) Represents 4 project agreement allocations ($2,189,000; $1,600,000; $700,000; $1,000,000).

The following is a more detailed breakdown of OMM's estimated annual operating expenses for 1979 ($000):

	AID	OMM	GRM	
Salaries	90	---	290	
Primes	85	---	---	
Maintenance	280	---	---	
Truck Amortization	---	103	---	
TOTALS	455	103	290	= 843
Vehicle Amortization				85
GRAND TOTAL				928

Project vehicles should be amortized but they are not for lack of funds; 20 Project vehicles amortized over 3 years comes to about $85,000 a year.

2. Financial Viability of Continuing Project

The following is the same breakdown of OMM's estimated annual operating expenses for 1979, 1983 (the last year of the Project's second phase) and 3 years thereafter, not including inflation ($000):

	AID	OMM	GRM
	'79'83 '86	'79'83 '86	'79'83 '86
Salaries	90/ 11/--	--/ --/ --	290/369/ 380
Primes	85/ 85/--	--/ --/ --	--/-- / 43
Maintenance	280/201/--	--/ 79/280	--/-- --
Truck Amortization	--/ --/--	103/103/103	--/-- --
Vehicle Amortization	--/ --/--	--/ 85/ 85	--/-- --
TOTALS	455/297/--	103/254/458	290/369/ 423

As to how viability is to be achieved, each category is discussed separately below:

Salaries--At the beginning of the revised Project, AID will be paying about $7,500/month ($90,000/year) in salaries for approximately 66 "encadreurs". (The salaries of some 100 remaining "encadreurs" are paid for by the GRM.) This amount will be reduced to zero by the end of the Project. As a special Covenant, the GRM will add 20 training "moniteurs" every year to OMM's staff. (All "moniteurs" salaries are paid for out of the national budget.) Since OMM has agreed to limit its field staff to 254, this will force OMM to eliminate almost as many "encadreurs" per year. (Some new "moniteurs" will be replacements, so a little less than 20 "encadreurs" can be expected to be dropped per year.)

Primes-- AID pays approximately $85,000/year in primes. If the Project is carried into a third phase, AID may want to continue them for several years so as to encourage good work by OMM's Field Staff. Eventually, by 1986, this must become a GRM responsibility, even if they are continued only at half the present ratio as projected in the previous table.

Amortization of Trucks-- OMM receives a 5 malian francs/kg. commission for millet/sorghum/corn marketed on OPAM's behalf. This fee covers transportation, handling, storage, interest on capital and losses. In 1978, OMM marketed 9,150 tons of cereal or $103,000 in commissions. This amount is presently being put into an account but not being used. At $34,000/truck, each with an estimated life-span of 3 years, OMM should be laying aside $102,000/year for amortization purposes or almost exactly what it earned in commissions in 1978 from OPAM. To insure that this fund is used for this purpose, the Project includes as a

as a special Covenant that these commissions will continue to be placed into the special account and that it will be used exclusively to replace the existing trucks as needed.

Maintenance/Vehicle Amortization--Maintenance is currently running at about $280,000/year. Coupled with utility vehicle amortization of $85,000, this comes to $365,000/year--the amount which OMM must generate to become viable. At present, OMM has only one source of funds (other than OPAM's commissions) --the commission/service charge on the sale of SCAER agricultural inputs. SCAER allows OMM to charge a 5% commission on all sales of its equipment supplies. This amounts to less thant $20,000/year at present. By 1983, the expected annual sales of these commodities will be about $1,081,000 (see table on page), or about $54,000 income to OMM. This service chargeis intended to be used to cover the operation's operating costs; in fact it is being used to augment the size of the credit fund. (This should be unnecessary because OMM also charges interest, which theoretically should cover inflation and defaults so as to maintain the real value of the fund. In fact the interest ratio dictated by SCAER-3.1% is too small for this purpose and for this reason the Project includes as a condition precedent that OMM will establish a viable interest rate.) So as to ensure that this service charge is used to help make OMM a viable institution, the Project includes as a condition precedent that OMM will set aside these funds to be used solely for paying general operating costs. Annual funds from this source should increase from $19,000 to $54,000 by the Project's last year. With sales of agricultural supplies/implements projected to increase 30% annually for several years thereafter the amount of funds generated from this source for 1986 is estimated to be $119,000.

This leaves $246,000/year which must be generated by new sources. The Project will do this by two means--operating small diesel powered millet processing machines and marketing peanuts.

3. Mills

Private entrepreneurs operate millet grinding/processing machines in Mopti and several villages. The investment ($2,400) is too large for all but the relatively very rich to purchase them, even though there are scores of villages where demand is sufficient to justify the investment. Recent studies of women in Mali show that they consider pounding millet to be the worst chore--so the potential demand (and benefits) is large. In the Fifth Region, the following items are processed manually: (1) cooking oil extracted from peanuts, karité, fish, and millet; (2) milling of sorghum, millet, corn and rice; and (3) crushing peanuts into paste.

The extraction of cooking oil mechanically does not appear lucrative for several reasons. First, the diversity of primary products utilized would require at least three different types of extractors. Cooking oil is considered a luxury by low-income Malian families, and often meals are prepared without oil. Thus, the machines would have to be located in a rather densely populated area to ensure sufficient demand. Finally, preliminary inquiries with people knowledgeable in the machinery service industry indicated that no manufacturers currently produce power-driven extractors small enough to be economically feasible at the level of anticipated demand.

Rice is grown in only a small part of the project area; Operation Riz-Mopti is charged with responsibility for the rice production there. Providing rice milling services is not an alternative because this activity falls within the responsibility of Operation Riz-Mopti.

The remaining items mentioned (cereals and peanut paste) can all be processed by a dual purpose machine available in Mali. Private entrepreneurs in places like Mopti and Timbuctu charge a rate of about 4.5 cents/kg ($45/ton) for this service. A hypothetical income statement for an individual mill is as follows:

Fixed Costs	Life of Unit (years)	Total	Annual Amortization
Mill	10	$ 600	$ 60
Diesel Engine (7 CV)	5	1,450	290
Drive Belt	3	50	17
Installation	10	300	30
TOTAL		$ 2,400	$ 397
Variable Costs			
Fuel (1/2 liter/hr. at $0.50/liter x 660 hours)			165
Engine Repair (20% cost)			260
Mill Repairs (10% cost)			46.50
Manager Salary ($60/month)			720
			$1,588.50
Revenue (66 tons/year at $45/ton)			2,970.00
NET to OMM			$1,381.50

On-site observation in Mali of similar mills in operation suggests the following:

A mill in a small village can be estimated to operate on an average of 2-4 hours per day (7 days/week) for a total of 330 days per year (the remaining 35 days for repairs, etc.).(1) Milling capacity is 100 kg per hour. These estimates are considered conservative in order to avoid overstating income. Malians prefer cereals ground daily; individual orders at a typical mill average about 2-4 kilograms. Processing such small quantities reduces the potential milling capacity by about one-third. Thus, each daily operation will be about 3 hours. Experience suggests that due to seasonal availability of grains, the average daily operating time will vary substantially during the year.

With average per capita income consumption of millet/sorghum at 160 kg in the Fifth Region and an average family size of 8, each mill must service a minimum of about 50 families to obtain an annual output of 66 tons. This is quite realistic.

(1) Revenue estimated on average 2 hours milling/day x 330 days.

Operation Mils purchased some machines for 1979 and will locate them in the villages. A local citizen will be hired on a half-day basis to run each mill, collect money, and keep receipts. He will be under the supervision of the local extension agent. After these machines have proven successful, 20 more will be purchased in 1980 and 15 more in 1981 from project funds. All profits during the four-year life of project will be used to expand the number of mills, as shown below. By 1984, there will be at least 100 in place, generating an annual income of about $138,000.

	FY 80	FY 81	FY 82	FY 83	FY 84
Mills	21[1]	42[2]	60	89	100
Profits ($000)[3]	14.5[4]	43.5	70.5	101.5	138.2
New Mills	6	18	29	12	-
Remaining profits ($000)	0	0	0	72.7	138.2

1/ 20 from budget 1 from old project,
2/ 15 from budget
3/ Assumes mills generate only 1/2 anticipated revenues during first year of use.
4/ Includes replacement of one mill installed in 1979

4. Peanut Marketing (See also "Issues" Section and Economic Analysis)

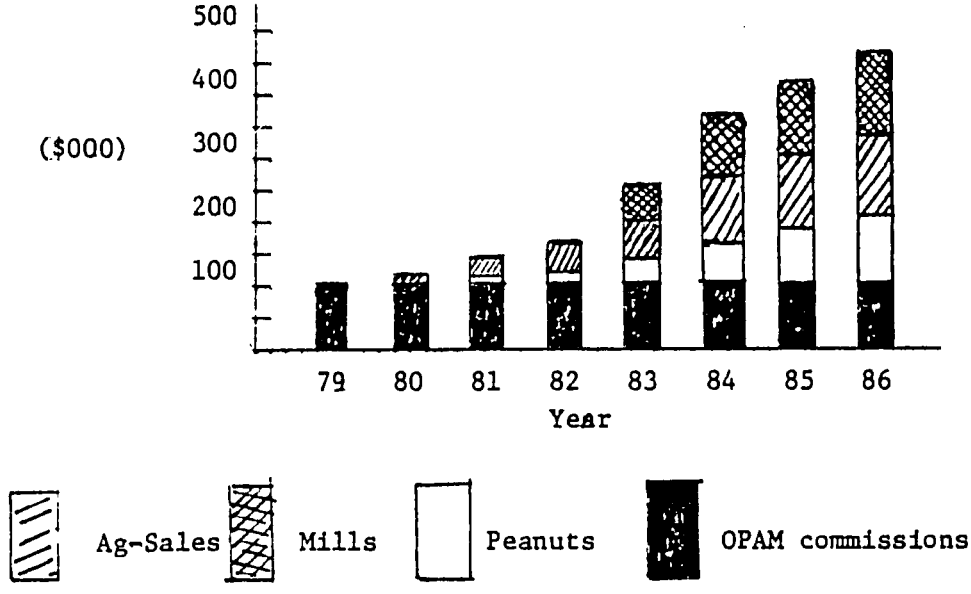
The remaining $108,000/year can be generated from marketing peanuts. The official price to the farmer is 60,000 MF ($144) per ton. Operations such as OACV and OHV receive from the GRM's peanut marketing organization, SEPOM, an amount to cover all storage/handling/transport costs of delivering such to SEPOM plus a 25% mark-up or $35/ton which is intended to help cover the costs of the Operations' extension agents, and its upkeep of rural roads. (SEPOM had difficulties in 1978/79 in advancing short-term loans to the Operations like OACV for the purchase of the peanuts. Even if these problems were to continue, OMM's $711,000 credit fund is clearly sufficiently large to cover OMM's short-term needs in this respect.) The Fifth Region already produces an estimated 4,000 tons of peanuts a year (a potential revenue of $144,000/year). The major constraint to increased peanut production is the absence of a market outlet. If OMM is given the authority to market peanuts, production will undoubtedly augment considerably. As for official marketing by OMM, the following conservative projections are made:

	1980	1981	1982	1983	1984	1985	1986
Total Production (1000 t)	4	4	5	6	8	10	12
Official Marketing (1000 tons)	-	.25	.5	1	1.55	2.22	3
Revenue to OMM ($000)[1]	-	9	18	36	56	80	108

1/ OMM's fee from "frais d'encadrement" and "subvention piste agricole".

5. Summary

The table below shows that by 1986, OMM should be generating self-sustaining revenues of $468,000 1/ as compared to $103,000 2/ in 1979:



1/ $108,000 - peanuts
138,000 - mills
103,000 - OPAM commissions ($11.50/ton x 9,150 tons in 1977/78)
119,000 - 5% commission on sale of agricultural supplies/equipment

2/ This represents the estimated OPAM commissions earned during the 1977/78 campaign ($11.50/ton).

ANNEX F

Engineering Analysis of Construction and Maintenance Activities

A. Infrastructure: Construction (Buildings, Roads, Wells)

1. Status

The original PP's only reference to building construction is a line item in the budget of $248,000 for "construction". OMM, in conjunction with the USAID Project Manager, decided to construct the following: (a) 18 warehouses, (b) headquarters - 3 house compounds, (c) a house for one Sector Chief, and (d) road brigade main camp, including offices, house, small store-room for spares, tools, sanitary facilities, and generator house. The total cost came to $356,000.

The Office/Housing compound was designed by the Public Works Station in Sevaré and constructed by a local jobber without AID approval. The design lacked details and was not approved by Genie Rural (GR) or USAID; as a result, some of the buildings are missing items, such as electrical wiring in the houses. Nonetheless, the tacherons were competent, and all buildings except the warehouses are structurally sound and have been accepted conditionally by OMM, GR, and USAID.

The Road Brigade Camp was well designed and constructed because there was on site the Chief Engineer for the brigade who used force account procedures. The part constructed was accomplished in a timely fashion. The buildings themselves are sound and complete though austere and provide a useful working environment for the brigade. The remaining construction has been funded, and construction in the same manner will commence after plans are complete and approved.

The construction of warehouses demonstrates the dangers of inadequately conceived, planned, supervised, and controlled construction projects. Eighteen warehouses were to be constructed by a tacherone based upon "undetailed" plans prepared again by the Public Work Division in Sevaré. Though 5 of the original 18 are standing, only two are useable. The warehouses should be considered a total loss, because the amount of work required to reinforce the ones which are partially complete or are even now standing would entail complete construction of a parallel structural system, including foundations, and even then the non-bearing walls could not be trusted in high winds.

The construction component being relatively small, was largely neglected until the present Director took over. Remedial actions have already been taken; construction may not begin without express written approval of GR. Future construction in this second phase will be as well conceived, designed, and constructed as possible.

2. Recommendations

A. Procedures : The Director has stopped further construction and demanded that USAID and GR be involved in all construction activities including those already begun. He has also agreed fully with the possibly more time-consuming procedures described below in order to assure a quality output.

B. Architectural and Engineering Services : The design division of GR is capable of doing A & E work; however, their staff is, at times, overloaded with work; therefore, the A & E work in the project's second phase will be accomplished either by GR or by private local A & E firms, depending upon GR's workload. GR or private A & E firm will provide construction management; the USAID engineer and GR will monitor the work.

C. Physical Facilities Required: OMM is still hampered by the lack of certain facilities, and it has been shown frequently in Mali that at the high cost of renting, construction cost can be amortized in a very short time. The evaluation team and OMM's Director defined the following as priority needs.

(1) 2 Houses in H.Q.'s Compound: Only 3 of the 5 planned houses were built, due to insufficient funds, and the remaining two will be built as soon as possible. Houses will include approximately 140 square meters of living space of modest design but functionally adequate. The designer will base his design upon existing houses but will recommend any modifications he deems desirable.

(2) 4 Offices - Housing Complexes for Sector Chiefs in Bankass, Douentza, Bandiagara, and Mopti, and One Office in Koro : In all five Sectors, the work of the Chiefs has been hampered by inadequate office space, and only in Koro has adequate housing been provided for the Sector Chiefs. The offices will be of very simple design with approximately 95 square meters of office space. The Designer will determine layout and exact requirements in floor space to house the Sector Accountant and Credit Agent, secretary ZER Chief and Sector Chief. The houses proposed will be constructed in the same compound and will be similar to the existing Koro and Sevaré houses, though the A & E will review the plans and recommend to OMM and USAID any modifications he considers desirable.

(3) Garage in Sevaré : A workshop/garage facility near the OMM headquarters in Sevaré will help assure required maintenance of project vehicles. The garage is a typical but excellent design developed by a short-term technical advisor, including a small office, a tool room, a parts room, and 4 work bays, along with a caged-off area for certain mechanical equipment. There is also a large elevated ramp. Total square meters are approximately 200. The designer will only have to detail this plan and prepare bid documents.

(4) Housing for ZER Chiefs : Many of the 34 Chiefs of ZER's require housing. A number of them actually sleep in the same room where fertilizers are stores. The houses will have 5 rooms and be very simple. Total square meters is 80, which includes a small non-connecting kitchen. The houses will be similar in design to those of the cotton operation (CMDT). A & E will review plans and recommend any changes to OMM and USAID.

(5) Warehouses : The project will replace the warehouses built under the current project with 15 new ones. They will be of cement blocks, 180 square meters, and contain a 20 square meter office for the ZER Chiefs. USAID will review the designer's plans carefully.

3. Building Construction Cost Analysis

Construction cost estimating in Mali is more of an art than a science. In 1978, costs per square meter of construction based upon engineers estimates, bids , contracts, and completed construction costs varied from $\$200/m^2$ to $\$400/m^2$ for the same type of construction. The reasons for these variations are numerous but two factors stand out:

(a) Location : Work in Gao presents many more uncertainties than work in Bamako or Mopti and uncertain availability of construction materials, e.g. cement, reinforcing steel, roofing materials, and especially variation in the price of these materials when in short supply. This means that if a contractor happens to have materials in stock or a sure source at a reasonable price, he may bid very low on a job. On the other hand, if he must order materials from official or parallel merkets as he needs them, he will bid much higher on certain items. Equipment repair and availability uncertainties also enter into this factor. Also important, it is believed, is the lack of details in bid documents.

(b) Market Factor : This is due to the fact that construction investment in Mali has increased more rapidly than the construction industry's ability to absorb it. This can at time, however, cause low bids to come in, since local construction companies have increasing highly paid staffs to meet the demand, and an IFB may be advertised just when a growing construction company has need to put a highly paid engineer to work, even if they make less on a particular job.

In summary, the general result of these two uncontrollable factors is the ever-increasing cost of construction, but at a chaotic rate which is, at this time, impossible to accurately estimate. This having been said, cost estimates are based upon costs of recent similar construction as follows :

(a) Housing: Built of reinforced concrete frame and roof, concrete block masonry, without certain finishing elements (electricity, wiring, water and plumbing connections, screens, door locks) and done by a small local contractor with little overhead (tacheron), cost $175 per square meter. Similar type construction (slightly more modest) of offices and housing, but completely finished and done by Force Account, cost $225-285 per square meter.

(b) Offices: They were less than houses as they did not include plumbing, and their lay-out included less wall area. Unit costs ranged from $200-260 per square meter.

Therefore, reasonable budgetary figures are believed to be: warehouse ($200/sq. m.), garage ($250/sq. m.), simple concrete block offices ($275/sq. m.), and simple concrete block house with plumbing ($300/sq. m.); without plumbing/electricity ($200/sq. m.)

4. Building Construction in Concrete Block - Budgetary Cost Estimate:

a. Housing at Headquarters - 2 houses, 140 square meters each, at $300/sq. meter.....$84,000.

b. Offices and Housing for Sector Chiefs:
—5 Offices, 95 square meters, at $275/sq. m....130,625
—4 Houses, 140 square meters, at $300/sq. m....168,000

c. Garage in Sevaré - 200 square meters, at $250/sq. meter, plus $5,000 for ramp..... 55,000

d. Housing for ZER Chiefs - 17 houses, without plumbing and electricity, 80 square meters each, at $200/sq. m...272,000

e. Warehouses - 15, 180 square meters each, at $200/sq. meter 1,194,625

A & E services are estimated at approximately $25,000. This was based upon a percentage of construction cost estimates of only the actual design work to be done. (Most structures will be typical). A cost breakdown is being prepared by the USAID engineer to be used in negotiations.

B. Infrastructure - Roads

1. Background

The PP recommended the force account construction of 460 km. of low cost feeder roads by "Road Brigade". Before construction began, the schedule of construction was questioned by Travaux Publics (TP) and USAID. A transport economist was called in to examine these questions; the complete report still exists. Maps A and B show the road network as recom-

mended in the PP and as modified respectively; there are now plans for only 307 km. of roads. The eliminated routes did not show enough potential marketing value. The class of road recommended in the PP was class C, which is the lowest class road (improved trail) including only clearing and shaping and some minimal surfacing with laterite and no permanent drainage structures. This class of road is unmaintainable, and simply improves the situation for a year or two until the roadway is worn away by concentrated traffic and water erosion due to lack of adequate drainage. The transport economist recommended upgrading the roads to Class B1 (197 km.) and Class B (110 km.). These classes of road are still not normally engineered, but drainage is provided to a degree, and 10-15 cm. of laterite wearing course is specified. This report also judges that the Road Brigade was not sufficiently equipped to efficiently construct the higher standard roads and recommended an experienced civil engineer reexamine their equipment needs. It was finally recommended that OMM retain and fund both equipment and personnel from the Road Brigade to maintain the roads after construction. This is as opposed to the PP position of simply turning over equipment to TP.

Many of the recommendations of the above report have already been implemented. The priority and quantity of roads to be constructed were approved by USAID and the GRM. The design standards were increased, and design capability of the Road Brigade has been assisted by supplying them with much needed topographical and drafting equipment. After the report was analyzed, also, a list of additional equipment required was prepared; from this list, the most urgently needed equipment has already been ordered. The chief engineer for the Road Brigade has been very successful in "making-do" with what they have and has constructed approximately 50 km. of dirt-road in 7 months time. This includes more than 1 month of almost complete work stoppage due to lack of reimbursement of operating expenses by OMM. This equals 8 km/month of work. Also, many individual pieces of equipment were down for unusually long periods of time due to insufficient funds to purchase spare parts. It is estimated that approximately $43,000/month is needed for efficient operation of the Brigade (See Technical and Cost Analysis). They have been receiving an average of $24,000/month.

2. Evaluation

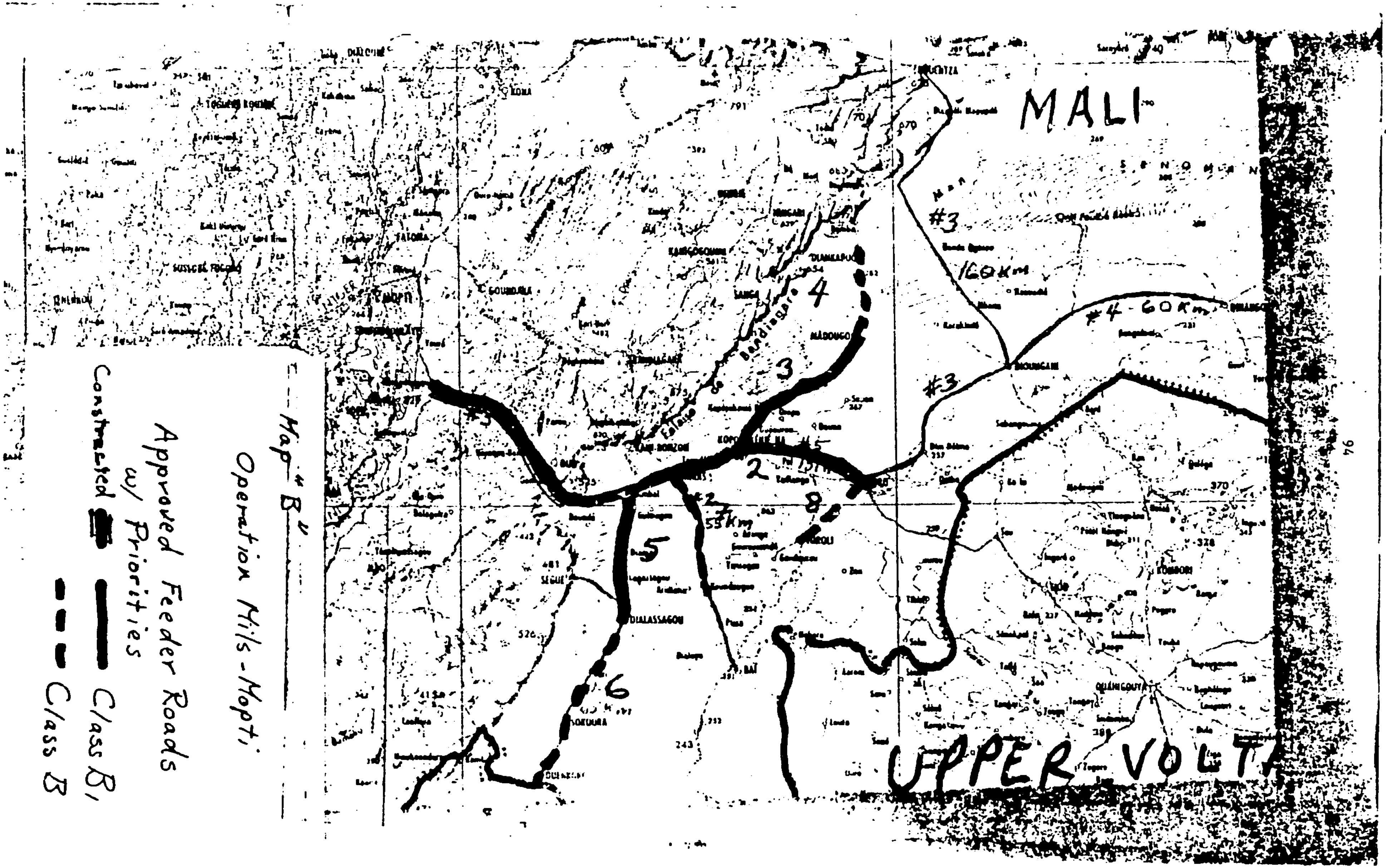
The road component, as discussed in the PP, seems to have been based upon certain false assumptions--(a) that a roadway design is based only upon volume of traffic, (b) that the less a road costs, the more economical it is, (c) that road maintenance will be done automatically even if funds are not available, (d) that making any improvement of a travelway is better than doing nothing at all, and (e) that the less equipment on the job, the less the road will cost.

The first assumption fails to take into account existing subgrade capacity. Though a 15 cm. select surface course (laterite or other) may be adequate in some cases, it may be completely inadequate in other cases. In the case of the project roads, the extremely fine-grained non-cohesive sand subgrade existing over approximately 60% of the project roads is very unstable, especially in dry weather. This is due to the lack of cohesive

Map "A"

Operation Mils Mopti

Feeder Roads Recommended
in Project Paper
w/ Priorities


MALI
UPPER VOLTA
#3
160Km
#4 60Km
#3
4
3
2
8
5
6
55Km
Map "B"
Operation Mils-Mopti
Approved Feeder Roads
w/ Priorities
Constructed
Class B1
Class B

binder and its rounded particles. Lack of binder materials (e.g., clay deposits) nearby make road construction very problematic. This subgrade requires special attention and will require a different roadway design to provide the same roadway standard.

The second, third, and fourth assumptions are interconnected. Below a certain minimum standard of road, the maintenance cost becomes prohibitive; what this standard is must be determined upon the basis of a minimum amount of design. Adequate drainage, and adequate bearing capacity for expected traffic, plus a road section which can be "made-like-new" by minimum maintenance operations, are the parameters for the required design. This type of design is now being carried out by the Brigade's chief engineer. He was neither able to define all problems nor solve completely the ones he located because of (1) the lack of engineering tools and (2) the specifications and materials he had to work with. USAID and OMM have changed those specifications to the design parameters listed above, and OMM has provided him with tools he needs to follow those parameters.

Until now, the problem of maintenance had not been addressed seriously enough, but the problem is solveable. (Recommendations for maintenance are given in a separate section following.) The final assumption that less equipment means less expensive production has been proven wrong. Efficiency and, therefore, economical construction requires the "right mix" of equipment. To scientifically determine this "right" mix requires complete plans and material quantities, then time and motion studies, detailed network job planning (or equivalent), and usually the flexibility to change the mix several times during the construction work. For a low level road, the above amount of planning is more than required; a "near right" equipment mix which will increase production and reduce total unit cost has been developed, nonetheless.

3. Recommendations

That the Road Brigade be supplied with the means necessary to efficiently construct the remaining 257 km. of road to minimum design standards which will support traffic volume estimated by the transport economist. The following inputs are required to do so:

a. Equipment: Total Cost $334,800. An efficient mix of roadbuilding equipment, recognizing long hauls and difficult haul conditions (see the attached equipment list.); this includes 1 bulldozer D6Dw/ripper, 2 dump trucks (10-ton w/dual rear axles 4x6), and 2 water trucks (10,000 l w/dual rear axles 4x6 and pump) to be ordered. The additional bulldozer is required to clear and grub construct common fill where required (i.e., near drainage structures), rip and stockpile select material, and in the very sandy soil, can be used to accomplish the consolidation of the subgrade as required. The one bulldozer on hand cannot accomplish all these functions in an efficient fashion, as shown by time and motion analyses prepared by the Brigade Engineer. As a result, other equipment is left waiting for one or

another of these various operations while the dozer is elsewhere. The 2 additional dump trucks are not even enough to allow for efficient earth moving over distances which exceed 30 km. at times. However, the average haul distance is less, and the initial investment for more than eight dump trucks cannot be justified for a project of this total size. Two additional water trucks are also justified due to extremely long haul distances. The dual rear axles on all new trucks are specified due to the great amount of work to be done in sand and their improved traction. They should also cause less wear on road already constructed.

b. Operating Costs: Total Cost $1,911,000 (See Cost Analysis). The cost analysis gives a breakdown of the total cost of above by month, as the monthly cost increases with inflation and especially as additional equipment arrives. Production increases which are expected upon new equipment arrival are also shown.

c. Materials: Total Cost $440,000 (See Cost Analysis). The following amount of materials should be purchased to complete the roads: culvert pipe, cement, forming wood, gabions, and reinforcing steel. The timing of purchase is shown in the implementation plan.

C. Road Maintenance

1. General

The recurrent cost of road maintenance is a serious financial problem. The returns of the investment are not normally generated by the project road itself but by the overall development which it ennances. Road maintenance is also very costly. In L.D.C.'s, therefore, it cannot be surprising that all roads are not maintained in the optimum manner. Add to this the fact that the less often a road receives maintenance, the more expensive the maintenance it must receive becomes (approaching the point of reconstruction), and the road maintenance problem in LDC's is seen as critical indeed. The problem, however, must be solved.

The dilemma in Mali is similar but possibly greater than in other LDC's; greater due to the large distances involved and the sparsity of population. The GRM finds it difficult to generate funds for road maintenance because it is poor, and the funds required are great (estimated $5.5 million in operating cost alone in 1982, CILSS/Club du Sahel-Road Maintenance Program). In order to ascend from poverty, Mali must have well-maintained roads, but in order to have well-maintained roads, they must not be poor. Fortunately, the World Bank, through a series of IDA loans along with a small USAID loan being implemented in coordination with the Bank, has been working steadily with TP to improve their technical, organizational, administrative, capital, and financial capacities in road maintenance throughout Mali. This program is beginning to show results. However, the goal of minimum on-going self-sufficiency in road maintenance is not projected until 1985.

2. Opération Mils Mopti - Roads

By mid-1983, when all roads are complete, the TP brigade in Mopti should be equipped, staffed, and funded to be able to maintain all national and regional roads under their jurisdiction. By 1985, all improved earth/laterite roads in the region should be maintained by TP, thanks to the IDA/AID loans. This means that, by completion of road construction, the 130 km. of National Route 14 and Regional Route 12 should be adequately maintained. The maintenance of the remaining 177 km. will be financed by the project until 1985. The cost of maintenance is estimated at $100,000 per year (see Cost Analysis). This cost estimate includes owning and operating costs of equipment, but not administration costs, as it is recommended that the usable equipment be put at the disposal of TP to be used only on project roads and operating expenses be supplied to assure the required maintenance during the interim period.

D. Cost and Financial Analysis - Road Brigade

1. Operating Costs

The total monies spent for the road component (equipment, training, etc.) was $1,405,000 as of February 1, 1979, of which $185,000 ($26,000/month) was for the brigade's operating costs. TP had estimated their operating expenses at about $40,000, but assuming the list of equipment envisioned. TP has never had all this equipment. Due to lack of timely funding, TP was forced into false economies of, for example, waiting for spare parts rather than ordering them in advance, and ordering unexpected needs by other than the fastest means available. A discussion of the individual elements of the new budget estimate for operating costs is presented below:

a. Personnel--Estimated cost was 4.5 million MF. Personnel costs actually averaged 4.0 million/month, or approximately 26 million MF for 6.5 months (June 15 - Dec. 31). The estimate was made for a full brigade of equipment which never existed but with no drainage structure work crew. A salary raise of 5% and assuming a manpower increase of 10% for structural work to begin in June, the personnel budget immediately upon start-up of the second campaign should be 4.6 million MF. With the already ordered new equipment arriving, the additional cost of manpower for the second campaign is estimated at 500,000 MF/month, bringing the level to 5.1 million MF. Salary increases are expected at 10% per year, and another 5% increase is expected when the equipment recommended herein arrives.

b. Equipment Operation Costs--This (including repairs, POL, and tire replacement for the originally foreseen equipment) was estimated at 8 million MF/month. Actual expenditures averaged only 6 million MF during construction, due mainly to inadequate funding from the beginning and less than anticipated equipment. That is, in order

to keep the equipment running as much as possible, none of the funds provided could be used to stock spare parts, or repair equipment in a timely fashion. This, in turn, led to much down-time and still less spent on running costs. It is judged, therefore, that the operating cost estimate was accurate, and that much more road would have been constructed if 7.2 million MF had been provided (the estimated 8 million MF less 600,000 MF for missing equipment.). For the second campaign, it is estimated that the additional equipment will increase the monthly costs of efficient operation by 2.2 million MF. The increase in prices and the increased requirements for spare parts as the equipment with age add another 15% raising the monthly cost to 10.8 million MF. For the third campaign, when the final shipment of equipment arrives, the operating cost will increase by an estimated 700,000 MF and each year POL and parts price and quantity increases are anticipated at 15%.

c. Local Purchases--They were estimated at 1.25 million MF/month, but only about 200,000 MF was used due to the lack of local supplies. It is estimated now that 500,000 MF would have sufficed. For the second campaign, this figure is deemed adequate, plus a 10% escalation factor.

d. Maintenance of Facilities (camps, latrines, etc.)--This was also over-estimated; of 500,000 MF, only 50,000 MF were used. Due to lack of funds, not as many facilities as foreseen for efficient operation were in place. With the construction of additional facilities at the base camp, and the re-location and improvement of field camps as work progresses, 300,000 MF/month will suffice, plus 15% escalation factor due to increased maintenance requirements.

e. Contingencies--They were placed very high (4.05 million MF) due to various unknowns involved in the job. There was no money available until recently for the two major unforeseeable situations (vehicle accidents) which arrived during the first campaign. The lack of funds in these two cases meant that the normal contingency procedures (ordering parts air freighted and/or renting vital equipment for short periods of time) could not be practiced. Therefore, production efficiency and economy were lost. The correct amount is difficult to assess, though 10% of the rest of the operating costs is considered reasonable.

2. Financial Problems

As of December 31, 1978, the Road Brigade had spent and justified 98% of the amount received from OMM. The Brigade was advanced about 18 million MF by OMM at the beginning of construction. The system of financial control by DOT is a time-consuming centralized process. Therefore, the justifications for reimbursement take up to two months to process. As a result, the Brigade was unable to request reimbursements in a timely enough fashion and, in combination with OMM's account problems, this led to a complete work stoppage for 1 1/2 months. Steps have already been taken to remedy this problem. OMM has begun to reimburse expenses of the

Brigade upon estimates by the Brigade's Director before the detailed justifications have been completed. The DOT has streamlined financial procedures. Nonetheless, there will remain a considerable time lag between expenditure and justification for reimbursement.

Solution: The solution is to assure that adequate operating funds are available to the Brigade by advancing funds to cover one full quarter of the estimated operating cost: 55,200,000 MF or approximately $131,000. OMM will advance the Brigade/DOT enough funds to bring the balance of the DOT's special project bank account up to 55,200,000 MF, less estimated outstanding reimburseable expenditures as of April 30, 1979. The amount advanced will be reimburseable to OMM by AID. The Brigade's expenditures will continue to be reimbursed by OMM as is now done in as timely a fashion as possible. The advance will not be recovered until the end of construction; it will be deducted from reimbursements during the last quarter of construction.

3. Materials Costs for Construction of Drainage Structures

These costs are estimated by per kilometer cost, based upon what has been calculated to be needed for the road from Somadougou to Koro. For this segment of road, the following was needed: 250 m of 100 cm CMP, 250 m of 80 cm CMP, 300 tons of cement, 3 m^3 of wood forming materials, 1,200 m^3 of gabion cages, and 500 kg. reinforcing bar. Total estimated cost: $205,000 for 130 km. of road, or about $1,575/km.

Only about 50 km. (or $80,000) worth of materials are to be purchased with remaining funds available in order to assure adequate operating funds until new funds are available. Therefore, the remaining drainage materials will be ordered as follows: (a) second lot ordered 11/1/79 for 119 km. at $1,575/km....$190,000; (b) third lot ordered 11/ 1/80 for 77 km. at $1,575/km x 110% (infl.)....$135,000; (c) last lot ordered 11/1/81 for 61 km. at $1,575/km x 121% (infl.)....$115,000. Total cost: $440,000.

4. Equipment Costs (See Annex O)

5. Maintenance Cost:

The following list of equipment has been able to accomplish punctual maintenance of 20 km. per month on the project road: 2 dump trucks, 1 water truck, 1 grader, and 1 loader. The addition of 1 water truck and a compactor is necessary for punctual maintenance of the entire road network. Owning and operating cost of all this equipment has been calculated at 3.5 million MF/month and labor at 500,000 MF/month. Cost of the maintenance brigade/year is, then, 4 million MF/month x 12 months, or 48 million MF ($114,000). At 20 km/month, it would theoretically require 15 months to maintain the entire network.

E. Implementation Action/Event - Roads

	Date (month/day/year)
1. First Campaign Ends (50 km. complete)	4/1/79
2. First Lot Drainage Structures Ordered	4/1/79
3. Equipment Mfr. Reps. to Mopti for tune-ups/repairs	4/7/79

		Date (month/day/year)
4.	Chief Engineer Road Brigade to U.S. for 1 mo. training	4/15/79
5.	OMM makes advances DOT 1/4 year operating unds	4/30/79
6.	All Original Equip. repaired, tuned/spare parts stocked/ Second lot new equip. received	5/25/79
7.	Second Campaign begins	6/15/79
8.	Construction of new facilities starts	7/30/79
9.	First lot drainage structure material received	8/1/79
10.	New Grant Agreement signed	10/15/79
11.	Final lot equipment ordered	11/ 1/79
12.	Second lot drainage structure material ordered	11/ 1/79
13.	Construction new facilities	12/79
14.	Second Campaign ends (94 km. of road and important drainage structures on Somadougou-Bankass segment complete)	4/1/80
15.	Final lots equip. & second lot drainage material arrives	5/15/80
16.	Third campaign begins	6/1/80
17.	Third lot drainage material ordered	11/1/80
18.	Third campaign ends - 169 km. complete	4/1/81
19.	Third lot drainage material arrives	5/25/81
20.	Fourth campaign begins	6/ 1/81
21.	Remaining drainage material ordered	11/1/81
22.	Fourth campaign ends - 246 km. complete	4/ 1/82
23.	Remaining drainage material arrives	5/25/82
24.	Fifth campaign begins	6/1/82
25.	Road construction complete - 307 km.	3/1/83
26.	Maintenance equipment to TP Sevaré	4/1/83
27.	Equipment other than for maintenance sold	5/1/83
28.	Complete maintenance responsibility to TP	1/1/85

F. Road Construction Timing Analysis : (10 month work/year)

The recommended economic priorities are not strictly followed due to logistics of construction. Estimated road network complete.... 3/83[1/].

1. Somadougou-Wo (Ouo) : 40 km. Class B; ECD[2/] : 12/78
   - 18 km. rehabilitation/6 weeks ... 3 km/week
   - 22 km. rocky (relatively easy)/15 weeks ... 1.5 km/week

2. Wo (Ouo)-Bankass : 34 km. B; ECD: 12/79
   - 14 km. deep sand (very difficult) at 0.75 km/week .... 18.7 weeks
   - 20 km. moderate sand (difficult) at 1 km/week ..... 20 weeks
   - Only about 10 km. expected to be complete by end of campaign as time was lost during presidential visit and leap frogging of most difficult segment in anticipation of arrival of new equipment.

3. Bankass-Koro : 50 km. B; ECD: 10/80
   - All moderate sand at 1.5 km/week at shorter haul distances and new equipment ... 33.3 weeks.

4. Koro-Taroli : 25 km. B; ECD: 12/80
   - All moderate sand at 2 km/week with final equipment arrival and lower design criteria ... 12.5 weeks.

1/ Because of budget constraints in FY80 - 81, actual operating funds available will be less than those shown in the table on the next page. The estimated completion dates may, therefore, be several months longer in 1980-81 than shown.
2/ Estimated completion date.

TAF ~ _____

AVERAGE MONTH' OPERATING COSTS

And Kilometres of Completed Road

(Millions of Malien Francs)

	Budget	Used	Needed	New Budget Campaign 2nd	3rd	4th	5th
				FY 79-80	FY 80-81	FY 81-82	FY 82-83
Personnel	4.5	4.0	4.0	5.1	5.9	6.5	7.1
Equipment Operation	8.0	6.0	7.2	10.8	13.1	15.1	17.4
Local Purchases	1.25	0.2	0.5	0.5	0.55	0.6	0.67
Maintenance Facilities	0.5	0.05	0.05	0.3	0.35	0.4	0.46
Contingencies	4.05	0	(Undeter-minable)	1.7	1.99	2.26	2.56
MONTHLY TOTAL	18.3	10.25	11.75+	18.4	21.89	24.86	28.19
YEARLY TOTAL (10 month total operation + 2 months salaries only)	192.0	110.5	125.5+	194.2	230.70	261.6	296.1

Assuming Funds Available by Dec. of each FY	FY 80 12/79-12/80	FY 81 12/80-12/81	FY 82 12/81-12/82	FY 83 12/82-12/83
	215.14 million MF	248.52 million MF	281.58 million MF	112.76 million MF
or about	$512,000	$592,000	$670,000	$268,000

(Less reimbursement of 55.2 million MF advance = 57.56 million MF or about $137,000)

5. Bankass-Koundougou 20 km B; ECD: 3/81
   --all moderate sand as 4; 2 km/week.....10 weeks

6. Dimball-Dialassagou 32 km B; ECD: 10/81
   --all moderate to deep sand - higher design criteria; 1.5 km/week... 21 weeks

7. Dialassagou-Ouenkoro 45 km B; ECD: 3/82
   --moderate sand/some clay loam lower design criteria; 2.0 km/week... 22.5 weeks

8. Koporokeniema-Madougou 45 km B; ECD: 11/82
   --all deep sand, some dunes higher class; 1.5 km/week....30 weeks

9. Madougou-Diankabou 20 km; ECD: 2/83
   --all deep sand, some dunes but lower design criteria; 2 km/week... 10 weeks

G. Implementation Plan - Buildings

The first implementation action will be local procurement of architecture and engineering (A & E) services which will lead to local procurement of construction services. Genie Rural (GR) is the building authority for all construction for the Ministry of Rural Development. However, its staff is at times overloaded with work; therefore, the A & E work will be accomplished by local A & E firms if G.R.'s workload is too great. Re construction management, if G.R. is not involved, the implementing agency will solicit proposals (based upon an RFP) from several A & E firms, as per Handbook 11. The amount being less than $50,000, advertising in the CBD is not required. A committee designated by the OMM directors, including GR representation, will make the selection, with USAID approval. The highest rated firm will negotiate the contract with the OMM. An independent cost breakdown being prepared by USAID and GR for A & E services will be used to judge the reasonableness of the A & E's cost breakdown. The A & E (or GR if A & E is used) and USAID for approval. The designer will do the same for final bid documents. After approval, the IFB will be advertised. The A & E and/or GR will assist OMM in assessing the offerers qualifications. No work will begin until and unless USAID approves the contractor. The A & E or GR will provide work supervision/inspection. USAID and GR will monitor the work.

The A & E work will begin when funds become available, and should be completed by the time the Grant Agreement is signed so that a contract can be signed immediately. Therefore, an approximate schedule of the building design and construct is as follows:

	Implementation Action	Date (Month/Year)
1.	A & E and Construction Management contract signed.	8/79
2.	Site work complete.	9/79

	Implementation Action	Date (Month/Year)
3.	Layout/site plans finished and approved	9/79
4.	Draft plans, specs and bid documents finished	11/79
5.	Final bid package complete	12/79
6.	Grant Agreement signed/ PIO/C furnishings issued	12/79
7.	IFB advertised; IFB to contractors	1/80
8.	Closing Date bids in, contract(s) signed	2/80
9.	Construction begins	3/80
10.	Construction complete/approved GR/OMM/USAID	6/80 - 9/80
11.	Furnishing of buildings complete	7/80 - 10/80

The USAID engineer will be responsible to assure that all approvals or observations are made in writing in a collaborative timely fashion to promote timely completion.

H. Financial Plan - Construction (See ANNEX O)

ANNEX G

Women in Development

In the Fifth Region of Mali, inhabited mainly by the Dogon and Peul peoples, agriculture is an activity in which women are considerably involved. (The same is not true of some other ethnic groups, for example.) While men perform tasks requiring greater strength such as plowing and harvesting, it is the women who are responsible for weeding, hauling water, hauling firewood, in addition to food preparation. Very long hours are spent on food preparation alone - 2 to 3 hours every day are spent pounding the family's millet and sorghum. A survey of rural women in Gao indicates that they consider the three or so hours per day spent pounding the family's millet and sorghum their worst chore. These women were emphatic in stating that anything that can reduce those hours would be greatly appreciated. The project entails 5 activities that both can reduce some of the time and drudgery of day-to-day duties--without impairing positive social patterns--and provides for the involvement of women in the development process itself.

First, the well component of the project will allow easier access to daily water needs for women, thus reducing their workload. Second, the donkey carts sold through the credit program serve to make hauling water and firewood less the arduous task it is, the net effect being to reduce the workload and provide more of an opportunity to contribute to the economic wealth of the family by having more time for a kitchen garden or producing items for market, such as woven mats. Perhaps for this reason, the carts are presently the most popular item sold by OMM. Third, the provision of 100 cereal mills will contribute toward the same end. The mills will accomplish in seconds a task that now takes hours. Fourth, the agricultural credit fund is being broadened and will be open to a variety of groups and purposes--projects by women's groups will be encouraged. Finally, functional literacy classes are designed to impact on women, and provisions have been made to provide some women-only classes in addition to mixed classes. (Traditional-minded husbands don't like their wives attending mixed classes.) So the project attacks some of the root problems of women in Mali and will clearly benefit the rural women significantly.

ANNEX H

Conditions Precedent and Special Covenants

1. Conditions Precedent

A. Prior to the first disbursement of funds under the Grant for the services of a construction contractor of housing, offices, research station, warehouses, and garage, the Cooperating Country shall furnish to USAID, in form and substance satisfactory to USAID, detailed plans, specifications and bid documents and an executed contract with a firm acceptable to USAID for such services.

B. Prior to the first disbursement of funds for the credit fund, the Cooperating Country shall establish procedures, acceptable to USAID, for ensuring (1) that a minimum 5% service charge or commission is charged by OMM on the sale of all agricultural inputs from whatever source, (2) that this money is used exclusively for covering OMM's recurring operating expenses, and (3) that terms of credit and rates of interest will permit the credit fund to be financially viable.

2. Special Covenants

A. The Cooperating Country agrees that OMM will not be allocated an annual quota to market more millet/sorghum/corn than the largest amount which it has marketed in any year since the project began, namely 9,150 tons.

B. OMM will conduct a study of peanut production and marketing in the Fifth Region prior to 1980 with a view towards determining (1) what effect, if any, increased peanut production would have on farmers' net revenue, soil fertility, and millet production and (2) whether the marketing of peanuts would increase OMM's financial viability and by how much. The study will be done by a private contractor. If the study recommends that OMM should market peanuts, the Cooperating Country agrees to give OMM the authority to market peanuts prior to the disbursement of funds for the second project year.

C. The Cooperating Country agrees that prior to 1980, a short survey-study shall be conducted of OMM's extension system, and that prior to the commencement of the 1980/81 campaign, a new and more comprehensive training program satisfactory to USAID shall be implemented and measures taken satisfactory to USAID to ensure that OMM's extension program reaches a larger number of farmers.

D. The Cooperating Country agrees that OMM should experiment with village associations similar to those formed by the Malian Company for Textile Development (CMDT).

E. The Cooperating Country agrees that all commissions paid by OPAM to OMM for marketing grain shall continue to be placed in a special account and that OMM may use this fund for replacing the nine 10-ton trucks previously purchased by the project and for this purpose only.

F. The Cooperating Country agrees that all payments for Mobylettes shall continue to be placed in a special account and that OMM may use this fund to replace Mobylettes purchased by the project and for this purpose only.

G. The Cooperating Country shall (1) increase the number of "moniteurs" assigned to OMM at the average rate of twenty per year during each year of the project and (2) decrease the number of "encadreurs" paid by the project at a corresponding rate until their number reaches zero.

H. The Cooperating Country shall provide OMM, prior to the second year of the project, with two qualified blacksmith trainers and two technicians for OMM's division of planning and statistics.

I. For the purpose of identifying sources of income to help defray OMM's recurrent operating expenses, the Cooperating Country agrees to experiment with millet processing machines in at least 5 villages in the project area, and if profitable, to use all initial profits to purchase additional mills.

J. The Cooperating Country agrees to establish two retail stores in 1980 on an experimental basis, and not to establish any additional stores with project funds without proof of viability satisfactory to USAID.

K. Each contract of the Cooperating Country financed under the Grant, other than those between or among agencies of the Cooperating Country, shall be in accordance with A.I.D. Handbook 11 on Country Contracting.

ANNEX I

Procurement Plan

1. Responsible Agency:

All procurement of project goods and services will be the responsibility of and conducted by OMM. If OMM declines to accept responsibility for procurement implementation, it must do so in wirting to the Director, USAID/Mali. The Director of USAID/Mali can then be authorized by OMM to act on its behalf in procurement matters which will range from commodity procurement through contracts for technical assistance. It is expected that the procurement of U.S. source commodities will be undertaken by a qualified American procurement services agency, such as the Afro-American Purchasing Center (AAPC) in New York or similar purchasing agencies.

2. Equipment/Commodity List

The items listed under this heading are those that represent the general needs of the project over its four (4) year, Phase II, life span. More exact details and specifications will be furnished in the Project Implementation Orders/Commodities (PIO/C's) or other procurement documents that will be issued to enact procurement.

Item No.	Quantity	Description	Estimated Cost
1	1	Bulldozer (CAT D-6D or equal) plus 20% spare parts	$136,000
2	2	Dump trucks, 5 cu. yd. capacity, diesel, 30,000 GVW, plus 20% for spare parts	98,400
3	2	Water trucks, 45 cu. meter capacity with pumps (1,200 gallons), diesel, 30,000 GVW, plus 20% spare parts	100,800
4	19	Utility vehicles, plus 20% spare parts	296,400
5	32	Mobylettes, plus 15% spare parts	20,800
6	1 lot	Soil testing equipment	7,000
7	1	Duplicator	500
8	1 lot	Surveying equipment	4,000
9	2	Electronic calculators	180
10		Animal traction equipment (plow, seeders, yokes, multiple cultivators)	9,000
11	5	Sets of office furniture for Credit Off.	10,000
12	1	Generator for Seno Station (18KVA)	11,000

Item No.	Quantity	Description	Estimated Cost
13	2	Extension Training Materials	$ 10,000
14	2	Sets of blacksmith materials/tools (for trainers)	2,700
15	2	Sets of acetylene/oxygen units (for trainers)	1,700
16		Garage equipment (battery charger, compressor, pumps, jacks, press, bench grinder, wrenches, drills, cutters, vises, welding sets, engine hoist, etc.	70,000
17	15	Sets of office furniture for warehouse/ZER offices	15,000
18	35	Diesel millet mills	65,000
19	7	2-way radios	44,000
T O T A L			$ 902,480

3. Source of Procurement:

The source and origin of commodities being procured for this project will be Code 941 countries and Mali except for motor vehicles (including mobylettes) and as authorized under waivers or exempted shelf-items purchased under sanctioned local currency procurement.

4. Dates of Procurement:

Procurement action will be taken subsequent to meeting the normal conditions. However, efforts will be made to have the speediest delivery of the following high-priority commodities: 5 millet mills.

5. Shelf Items Procurement:

As specified in Sections II, B3 and II, B4 of HB 15 and Sections 18 A2, 18 A3, and 18 A4 of HB 1, Supplement B, items to be purchased as shelf items procurement shall be those imported into Mali and kept in stock in the form in which imported for sale to the general public. Imported shelf items having their origin in Code 941 countries can be purchased without restriction, except for the limitation on the total amount available for local procurement. Shelf items having their origin in the Geographic Code 899 countries are eligible for financing if the unit cost does not exceed the equivalent of $2,500 and the total of such financing does not exceed 10% of the total local costs financed by AID or $10,000, whichever is higher.

Commodities mined, produced, or assembled in Mali are eligible for financing without restriction, except for the limitation on the total amount available for local procurement. However, the statutory restrictions on certain commodities are also applicable to locally produced commodities; e.g., pharmaceuticals, fertilizers, motor vehicles (including mobylettes), etc. Imported shelf items produced in or imported from countries not included in Geographic Code 899 are not eligible for AID financing. Procurement of shelf items shall conform to good commercial practices, shall be at reasonable prices, and shall be consistent with local laws and practices. A supplier furnishing shelf items for the project must provide a statement attesting to the source and origin of the commodity sold.

6. Local Currency:

Local currency authorization is required to purchase the following:

32 Mobylettes and 15% spare parts (waiver requested below)	$20,800
Spare parts for 23 vehicles and 1 bulldozer	107,300
Office furniture (20 sets)	25,000
5 Millet mills	9,000
Animal traction equipment/training materials	19,000
Shelf items	19,210
T O T A L.....	$200,310

7. Waivers:

A. A source/origin waiver is requested to permit procurement of 32 mopeds (mobylette type) and spare parts from AID Geographic Code 935 countries.

Justification: This waiver is needed to permit the purchase of Mobylettes of France, a very common means of public conveyance and required in almost every segment of this project as transportation for project personnel. The moped pertinent to this waiver is the 49 cc displacement model. Over 100 Mobylettes have already been purchased under the project Phase I operations. Other mopeds, in particular those from Taiwan, have been found not to have interchangeable parts. There is no American or other Code 941 country distributor of mopeds in Mali. However, Mobylettes are assembled in Mali. Their maintenance is easy, and spare parts are readily available area-wide. For the reasons stated above, the waiver to permit Code 935 procurement of 32 Mobylettes and 15% spare parts is considered to be justified. Mobylettes are classified as vehicles; therefore, it is found that special circumstances exist to waive the requirements of Section

636(i) of the Act. Estimated total waiver dollar cost of 32 Mobylettes and spare parts is $20,800.

B. A waiver is requested to permit proprietary procurement of one (1) CAT D-6D bulldozer from Caterpillar Tractor Company, Peoria, Illinois.

Justification: The GRM has adopted a policy of standardizing with Caterpillar equipment for road construction. Procurement of Caterpillar equipment would also help project standardize on equipment on hand. In 1976, SER/COM/CPS granted proprietary procurement waiver for the purchase of one CAT D-6D bulldozer and two CAT 120G motorgraders. Caterpillar has an excellent support network in West Africa, and a well-stocked and capable repair facility in Mali. It would be in the project's interest to permit the proprietary procurement of this additional CAT D-6D bulldozer. Estimated dollar cost including spare parts is $136,000.

C. A source/origin and a proprietary procurement waiver is requested to permit procurement of 13,000 light donkey-drawn plows from AID Geographic Code 935 countries.

Justification: A light plow is the only type of plow suitable for the cultivation of the sandy oils of the project area. As this type of plow has already been imported by OMM (made by the Bourgignon Company of France), to import a different plow would greatly complicate repair work by local blacksmiths. Most important, the GRM has a long-established policy that it must test and approve the type of plow to be imported, and the only type of plow thus far tested and allowed has been the Bourgignon. If the project desired to procure a U.S. plow, the GRM would have to follow the standard procedure of testing the plow for 2-3 years before deciding whether or not it is appropriate for Mali. For these reasons, a Code 935 source/origin and proprietary procurement waiver is considered justified. Estimated dollar value of the plows to be purchased under the project's revolving credit fund is $1,200,000.

8. Payment

Limited U.S. procurement is anticipated. However, it is expected that all such procurement will be undertaken by the Afro-American Purchasing Center (AAPC) in New York. Payment for services rendered by AAPC will be made by Direct Letter of Commitment which will be issued by SER/FM, AID/W. For local procurement payments, documentation will be presented to USAID/Bamako Controller; Mission payment policies will be followed.

9. Delivery

All project commodities imported into Mali will be shipped on the basis of CIF Bamako. Suppliers will provide all risk marine insurance in the amount of 120% of the CIF cost of the commodities and similar insurance for inland freight. AID's marking requirements for overseas shipments will be enforced by AAPC.

10. Receipt and Utilization

The GRM is reponsible for the proper reception and clearances of incoming project commodities, with the assistance of the USAID/Bamako staff. Inspections with comments on evident damages/losses will be made. Reports of damages/losses must be made promptly; if incoming cargo has been procured in the United States, AAPC must be notified by telegram of the extent of the damages/losses so that AAPC can file a "notice to file a claim" against the ocean carrier or freight forwarder(s) involved. Once AAPC has filed its notice, the carrier must await the filing and adjudication of the claim; this permits the GRM and USAID/Bamako personnel to acquire more information and particulars about this claim. In most cases where damages or losses are noted, a picture of the broken box or damaged crate or crushed vehicle roof is the best possible evidence that can be presented. Receiving documents properly annoted, are valuable; if damages or losses are not noted on the documents, however, there would be little or no possibility of having a claim settled. The GRM is required to put into project use all commodities procured for the project within one (1) year of receipt; USAID/Bamako will inspect the GRM utilization reports as a matter of course.

ANNEX J

PERT CHART INDEX

June - July	- ICRISAT technician assigned by GRM to head Seno Research Station. - Second baseline study by local contractor commenced under old project financing. - First experimental millet mills ordered. - Vegetable specialist selected.
August-September	- Approval of PP - OMM submits detailed proposal for substantial 3-4 year training program for its extension agents. - PIO/C's prepared for most commodities, including remaining road construction equipment, millet mills, vehicles, etc. - Request GRM/Genie Rural to prepare construction drawings of new garage, Seno station facilities, 2 Division Chief houses and several warehouses, 2 of which will include small retail stores therein. - First experimental millet processing machines installed. - OMM prepares budget for new ProAg. - ProAg signed and PIO/C's issued.
October-December	- First 30 extension agents selected for training. - 4 PIO/P's prepared for 3-4 months training in U.S. of (a) credit program director, (b) one CTA in ag. extension, and (c) OMM's data management director and his deputy. - Financial management supervisor and field trials advisor selected and PIO/T prepared. - Commencement of vegetable program (Oct-May) by horticulturalist. - Study conducted of peanut production/marketing in Fifth Region. - Study conducted of OMM's extension system, with recommendations for changes. - Award contract for construction of various OMM structures. - Financial management specialist arrives for 1-year assignment as advisor to OMM Director.
January - March	- 1,800 light plows ordered by OMM from abroad. - "En cascade" vulgarization program replaced by new system following recommendation of study. - Four OMM officers/agents leave for 3-4 months training in the U.S. - Second base line study completed and report issued. - Director of OMM requests authority to market peanuts, following recommendation of study. - Commencement of blacksmith program.

- Field trials advisor arrives for 3-year assignment.
- OMM issues end-of-year reports (road program, financial, etc.)
- OMM/USAID prepare next year's workplan.

April - June

- Four OMM officers/agents return from U.S. following short-term training.
- Field trial officer commences locational trials in conjunction with OMM counterpart.
- 20 additional millet processing mills installed and in operation.
- Third base line study by local contractor and OMM data management office begins.
- OMM granted authority to market peanuts.
- PIO/T issued for short-term data management/statistical survey advisor and short-term credit specialist.

July - September

- Arrival of short term data management/statistical survey advisor to assist in supervision of base line study.
- Construction completed of garage, warehouse/retail store combination, and additions to Seno research station.
- Credit specialist/agricultural supply advisor arrives for short-term assignment to help set-up first experimental retail store.
- First group of 20 blacksmiths finish first-level training course.
- PIO/T prepared for short-term irrigation specialist to arrive in October.

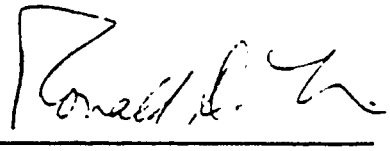
ANNEx K

PROJECT: OPERATION MILS

Certification Pursuant to Sec. 611(a) of the Foreign Assistance Act of 1961, as Amended.

The project analyses demonstrate planning and design incorporated into all components of the Operation Mils Project. The financial plan resulted from these analyses. Furthermore, the USAID engineer has reviewed and approved the planning and financial analyses for all engineering components in this projects and recommends 611(a) certification.

Therefore, I, Ronald D. Levin, Mission Director of the Agency for International Development in Mali, based upon the project analyses and the recommendation of the USAID engineer, do certify that in my judgment adequate planning necessary to carry out project assistance and a reasonably firm estimate of all costs to the U.S. Government have been completed and, therefore, Section 611(a) of the Foreign Assistance Act has been satisfied.



Ronald D. Levin
Director

ANNEX K

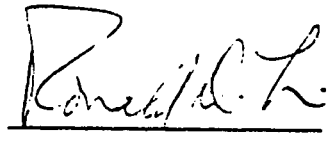
PROJECT: OPERATION MILS

Certification Pursuant to Sec. 611(e) of the Foreign Assistance Act of 1961, as Amended.

The purpose of the Operation Mils Project is to develop a viable service system approach to small farm development in Mali's Fifth Region that will increase crop production and small-farmer income. This will be accomplished through a series of carefully planned activities on behalf of small producers within selected areas chosen in accordance with the geographic pattern of production and for maximum impact and spread effect on the some 60 - 65,000 farm family production units in the region.

It appears that adequate financial and human resources will exist in the project to maintain facilities and implement planned activities. The maintenance and utilization by the people of Mali in previous projects financed and assisted by A.I.D. has been satisfactory.

I, Ronald D. Levin, Mission Director of the Agency for International Development in Mali, do certify that in my judgement, based upon experience with donor assistance program in Mali and the level of technology being introduced in this project, Mali will have the financial and human resource capability to effectively maintain and utilize the inputs provided in the Operation Mils Project.



Ronald D. Levin
Director

PROJECT DESIGN

ANNEX L

SUMMARY LOGICAL FRAMEWORK

Narrative:	Objectively Verifiable Indicators:	Means of Verification:	Assumptions:
Goal: Increase income and improve well-being of farm families on rainfed land in the 5th Region.	Goal: 1. Increased long-term rate of return to farmer for his investment in new technology. 2. Better village water resources contributing to more healthy living conditions. 3. Higher rates of literacy and rural employment. 4. Less back-breaking fatigue in farm work and marketing.	Goal: - End of project evaluation. - GRM statistics - OMM production statistics. - Surveys/interviews of farmers. - Economic analyses.	Goal: 1. Related projects in rural health operating in the project area will continue on schedule. 2. Related project in functional literacy will continue. 3. Official and/or parallel market price will be high enough to raise farmer income after all costs are covered.
Purpose: Increase the production and productivity of rainfed food crops in the 5th Region.	Purpose: (EOPS) 1. 20,000 tillage units/carts sold to farmers. 2. Extension agents reaching 10,000 farm families annually. 3. 100% increases in yields on demonstration plots and increased net return resulting therefrom. 4. 50% increase in yields with 20,000 farmers using plows, fertilizer, etc.	Purpose: - Evaluations - OMM and USAID records - Base line agro-economic surveys. - ICRISAT and SAFGRAD reports. - Interviews with farmers.	Purpose: 1. Attempts to encourage expanded production of peanuts will be successful. 2. OMM agents will become much more effective in their roles. 3. Price received by farmers for crops will be sufficiently high to generate more cash for employing improved technology. 4. Farmers make use of functional literacy classes. 5. OMM will generate funds to maintain roads. 6. OMM will assume part of cost of statistical verification.

Outputs:

1. Well-trained & equipped blacksmiths able to repair farm implements.
2. Feeder roads/trails constructed, rehabilitated and improved.
3. Two-way radio system installed connecting each sector and the road brigades with the OMM headquarters.
4. An expanded functional literacy program in place operating with material germane to the project goals.
5. Community development projects established and centers constructed.
6. Demonstration plots in farmer's fields carried out.
7. Moniteurs receive post-graduate in-country training and acting more effectively in their roles as extension agents.
8. Encadreurs trained and acting more effectively in their roles as extension agents.
9. SDR chiefs trained in the U.S. and Guatemala and acting more effectively in their roles as extension division heads.
10. Offices and housing built for Sector/Division chiefs.
11. Houses constructed at OMM headquarters for sector chiefs.
12. Garage/workshop facilities constructed and equipped.
13. Housing built for ZER chiefs.
14. Field trials conducted by OMM.

Outputs:

1. 40 trained and equipped blacksmiths functioning
2. 307 km of roads completed
3. 75 functional literacy centers operational.
4. 3 community development projects in 3 arrondissements and 2 centers built.
5. Koropo Keniépé research station renovated and operating with expanded research program.
6. 160 encadreurs/moniteurs trained/retrained.
7. 5 sector chiefs with overseas training.
8. Housing completed for 2 sector chiefs and 17 ZER chiefs.
9. 1 garage/workshop facility built and in operation
10. 100-200 field trials done starting 1980.
11. Social and agro-economic surveys completed.
12. $1.4 million revolving credit fund in operation, or rural banking system in operation.
13. 10-15 warehouses built.
14. 2-6 retail stores in operation.
15. 100 millet processing mills in operation and generating revenue to OMM.

Outputs:

1. AID records, reports.
2. Surveys, site visits.
3. OMM records, reports.
4. Project evaluations.
5. ICRISAT and SAFGRAD reports.
6. BARA reports.

Outputs:

Narrative (Outputs) - Cont.

15. Social and agro-economic surveys conducted, representing in an improved capacity of OMM to collect and evaluate data.
16. Credit fund expanded (and effectively used) if rural banking system not in operation.
17. Development of effective agriculture and rural development planning process and capability in OMM.
18. Retail stores in operation.
19. Millet processing mills in operation.
20. Koropo Keniépé research station rehabilitated and operating with expanded research program into animal traction, intercropping, etc.

Inputs:

1. Technical assistance
2. Commodities.
3. Training.
4. Construction.
5. Maintenance/Salaries/ Primes.
6. Contingencies (15%).
7. Credit capital
8. Studies

Inputs:

1. 6-10 short-term technicians provided (37 months).
2. 9 OMM technicians trained in U.S. (30 months).
3. $687,000 added to credit fund if rural banking system doesn't come into operation.
4. 160 extension agents trained in-country (1200 mo.)
5. 5 credit agents trained in-country (5 months).
6. $70,000 garage equipment.
7. $1.4 million operating expenses for OMM.
8. $776,000 road construction equipment/materials.
9. $296,000 utility vehicles
10. $200,000 in two-way radios, office equipment, animal traction equipment, mobylettes, and miscellaneous equipment.
11. 15 warehouses ($540,000)
12. Housing for 23 extension agents/ supervisors ($524,000)
13. Garage/office/research station construction ($253,000)
14. $160,000 in studies
15. $200,000 road maintenance

Inputs:

1. PIO/Ts, PIO/Cs, PIO/Ps.
2. Contracts.
3. OMM reimbursement claims.

Inputs:

5C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

   (a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than $1 million over that figure plus 10%)?

   (a) Through annual Congressional presentation.

   (b) Yes

2. FAA Sec. 611(a)(1). Prior to obligation in excess of $100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

   (a) Yes

   (b) Yes

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

   No further legislative action or approval is deemed necessary at this time.

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

   Yes

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed $1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

   Yes, see Annex K

A.

6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multilateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multilateral organizations or plans to the maximum extent appropriate?	This project is not considered regional but is in concert with general objectives of the Sahel regional drought effort.
7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.	The project will encourage and foster the organization of farmer service associations and improve the agricultural technology in Mali.
8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).	Most of project related purcases will be from the U.S. and most of the expatriates contracted for technical assistance.
9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.	The GRM will contribute the local currency equivalent of $2,784,000 in goods and services.
10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?	N/A
B. FUNDING CRITERIA FOR PROJECT	
1. Development Assistance Project Criteria	This project is directed to the rural poor. It will only take place in the rural underdeveloped area of Mali's Fifth Region. It is designed to involve the target group in sel-help and participation in project activity.
a. FAA Sec. 102(c); Sec. 111; Sec. 281a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?	

B1

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.] N/A

(1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;

(2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;

(3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;

(4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:

(a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;

(b) to help alleviate energy problem;

(c) research into, and evaluation of, economic development processes and techniques;

(d) reconstruction after natural or manmade disaster;

(e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;

(f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

B1

(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.	N/A
c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?	N/A
d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?	N/A
e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.	This project is designed to raise the incomes of the poorest economic strata and improve the quality of life of rural farm families. Many approaches to development cease to have meaning here. Rural Malian society is poor by any standard. An important key to development is to bring the traditional subsistance farmer into the economy of the country. Where he has something to barter or sell. Women will benefit from this project and be involved in income producing activity.
f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.	Appropriate measures are being taken to assure coordination of talents, agencies' special interests, and resources to the fullest extent possible, the target group of rural people will be involved in the decision process.

B1

g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness?

Yes, the PP provides more detail on this subject.

h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position.

There is no forseeable adverse effect to U.S. economic interests.

2. Development Assistance Project Criteria (Loans only)

N/A

a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S.

b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan.

N/A

c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds $100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner?

N/A

d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development?

N/A

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?	N/A
f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?	N/A
3. Project Criteria Solely for Security Supporting Assistance FAA Sec. 531. How will this assistance support promote economic or political stability?	N/A
4. Additional Criteria for Alliance for Progress [Note: Alliance for Progress projects should add the following two items to a project checklist.]	N/A
a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?	N/A
b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIES," the Permanent Executive Committee of the OAS) in its annual review of national development activities?	N/A
5. Additional criteria for Sahel Development Project; how will this assistance contribute to the long-term development of the Sahel region in accordance with a long-term, multi-donor development plan?	Food self sufficiency is one of the basic goals of the SDP. This project is in full accordance with CILSS plans for the development of the Sahel region and will expand food supply and farmer services in a food deficit area with a growing population.

5C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed?	Yes, standard procedures will be followed.
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him?	Yes
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed?	Yes
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity?	N/A
5. FAA Sec. 608(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items?	Yes, if available
6. MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates.	Compliance will be required
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of	Grant financed technical assistance will be furnished primarily by private sources contracts.

are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available? — Yes

B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest? — Yes

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable? — Yes

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed $100 million? — Yes

C. Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter? — N/A

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights? — N/A

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.? — Yes, this will be a part of Project Agreement and GRM so informed.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction? — Yes

C.

5. Will arrangements preclude use of financing: Yes

a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions?

b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property?

c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs?

d. FAA Sec. 662. for CIA activities?

e. App. Sec. 103. to pay pensions, etc., for military personnel?

f. App. Sec. 106. to pay U.N. assessments?

g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending).

h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress?

ANNEX N

Waivers

Notwithstanding the justification set forth in Annex I of the Project Paper, I hereby:

(1) approve a source/origin waiver to Code 935 to permit the purchase of thirty-two 49 cc mopeds and spare parts; and

(2) approve the proprietary procurement waiver to permit the purchase of 13,000 light donkey-drawn plows from Code 935 countries; and

(3) approve the proprietary procurement of one bulldozer (and spare parts) from Caterpillar Tractor Company, as identified in Annex I of the Project Paper; and,

(4) certify that the exclusion of procurement of such mopeds from the requested countries included in Code 935 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program; and

(5) find that special circumstances exist to waive, and do hereby waive the requirements of Section 636(i) of the Act with respect to such mopeds.

_____

The Administrator

_____

Date

A.K./R.K.

Annex 0

1019 /MDR-CAB

16 JUIL. 1979

onsieur LE DIRECTEUR GENERAL DE L'US-AID

— B A M A K O —

S/C de Monsieur LE MINISTRE DES AFFAIRES ETRANGERES ET DE LA COOPERATION INTERNATIONALE

— KOULOUBA —

Objet: Deuxième phase de financement du projet Opération Mils Mopti.

Référence: Votre lettre du 13 Juin 1979.

Monsieur le Directeur,

Par votre lettre en référence, vous m'avez fait parvenir le dossier portant sur la description détaillée et le sommaire de l'enveloppe financière du projet cité en objet.

Aussi, j'ai l'honneur de vous faire tenir mon accord quant à la prolongation du financement du projet considéré.

Dans l'espoir que vous prendrez les dispositions nécessaires auprès des autorités compétentes de l'AID/Washington, je vous prie d'agréer, Monsieur le Directeur Général, l'expression de ma haute considération./.-

Ampliation :
D.N.A. P/information.

P/LE MINISTRE ET P.O.
LE DIRECTEUR DE CABINET,

Ministère du Développement Rural — Le Directeur de Cabinet

Dr. Boubacar Sada SY

ANNEX P - TABLE 1

Opération Mils-Mopti
Summary for Four-Year Funding ($000s)

	Road Construction		Agricultural Credit/Supply		Ag. Research/ Extension		Admin. Support		Totals		
	AID	GRM	AID	GRM	AID	GRM	AID	GRM	AID	GRM	GRAND
Technical Assistance	-0-	-0-	120	-0-	370	27	240	-0-	730	27	757
Commodities	335	-0-	3	-0-	55	-0-	509	-0-	902	-0-	902
Training	-0-	-0-	10	-0-	60	-0-	20	-0-	90	-0-	90
Construction	2,351(1)	-0-	540	-0-	82	-0-	695	-0-	3,668	-0-	3,668
Credit Capital/ Insurance Fund	-0-	-0-	697	-0-	-0-	-0-	-0-	-0-	697	-0-	697
Studies/Evaluations	-0-	-0-	-0-	-0-	-0-	-0-	260	-0-	260	-0-	260
Maintenance/Salaries/ Primes/In-Country Training	200	-0-	219	-0-	-0-	-0-	1,465	2,089	1,884	2,089	3,973
Contingencies	78	-0-	244	-0-	85	-0-	480	313	887	317	1,204
Compounded Inflation at 8% (8-17-27-36-47%)	61	-0-	311	-0-	45	-0-	427	347	844	351	1,195
TOTALS	3,025	-0-	2,144	-0-	697	35	4,096	2,749	9,926	2,784	12,746

(1) Includes inflation and contingencies

BUDGET: ROAD CONSTRUCTION ($'000)

Annex P - Table 2

CATEGORY	PY1 AID	PY1 GRM	FY2 AID	FY2 GRM	FY3 AID	FY3 GRM	FY4 AID	FY4 GRM	TOTALS AID	TOTALS GRM	TOTALS GRAND
Commodities:											
1 Buldozer	113								113	0	113
Spare parts	11				6		6		23	0	23
2 Water trucks	84								84	0	84
2 Dump trucks	82								82	0	82
Spare parts	8		8		8		9		33	0	33
Construction:[1/]											
Materials	190		135		115				440	0	440
Operating Costs	360		455		631		465		1911	0	1911
Maintenance					67		133		200		200
Contingencies	43		1		12		22		78		78
Inflation	0		1		16		44		61		61
TOTALS	891		600		855		679		3025	0	3025

1/ Includes contingencies and inflation.

Budget; Agricultural Credit/Supply ($'000)

Category	PY1 AID	PY1 GRM	PY2 AID	PY2 GRM	PY3 AID	PY3 GRM	PY4 AID	PY4 GRM	TOTALS AID	TOTALS GRM	GRAND
Technical Assistance											
Short-term											
Consultants on call	10		50		30		30		120	-0-	120
Training											
Short-term	10								10	-0-	10
Commodities											
Mobylettes (5)			3						3	-0-	3
Construction											
15 Warehouses	135		135		135		135		540	-0-	540
Credit Capital					307		380		687	-0-	687
Insurance Fund	10								10	-0-	10
Maintenance, etc.											
In-country training	33		62		55		55		205	-0-	205
Store operating expenses			2		3		3		8	-0-	8
Store Manager			2		2		2		6	-0-	6
Contingencies (15%)	30		43		80		91		244	-0-	244
Inflation (8% compounded)	-0-		26		104		181		311	-0-	311
TOTAL	228		323		716		1,877		2,144	-0-	2,144

BUDGET: AGRICULTURAL/RESEARCH/EXTENSION ($'000)

CATEGORY	PY1 AID	PY1 GRM	PY2 AID	PY2 GRM	PY3 AID	PY3 GRM	PY4 AID	PY4 GRM	TOTALS AID	TOTALS GRM	TOTALS GRAND
Technical Assistance											
Long Term:											
ICRISAT Tech (2)		5		5		5				15	15
Field Trials Tech.	60	3	60	3	60	3		3	180	12	192
Horticulturalist	30		30						60	-	60
Short Term:											
Vegetable spec.			30		20				50	-	50
Extension spec.	20		20		20		20		80	-	80
Training/Short-term:	20		20		20				60	-	60
Construction (Seno Stat.)											
2 houses	30								30		30
1 research building	45								45		45
1 stable	2								2		2
1 well	5								5		5
Commodities:											
Extension training materials	3		7						10	-	10
Utility vehicle/spare parts	13		2						15	-	15
Soil test equip.	7								7	-	7
Animal Trac. equip.	9								9	-	9
Mobylettes (5)			3						3	-	3
Generator (18 KVA)	11								11	-	11
Contingencies (15%)	38	1	26	1	18	1	3	1	85	4	86
Inflation (8% compounded)	0	0	16	1	23	2	6	1	45	4	46
TOTAL	293	9	214	10	161	11	29	5	697	35	732

Budget: Administrative Support ($'000)

ANNEX P - TABLE 5

Category	PY1 AID	PY1 GRM	PY2 AID	PY2 GRM	PY3 AID	PY3 GRM	PY4 AID	PY4 GRM	TOTALS AID	TOTALS GRM	GRAND
Technical Assistance:											
Financial Manage.Sp.	100								100	-0	100
Data Manage.Sp.	20		20		20				60	-0-	60
Village Organ.Sp.			40		40				80	-0-	80
Training:											
Short-term											
Data Collection/ management	20								20	-0-	20
Commodities:											
3 new project vehicles	26		13						39	-0-	39
15 replacement vehicles			65		65		65		195	-0-	195
spare parts(20%)	3		8		15		21		47	-0-	47
22 mobylettes and spare parts(15%)					7		8		15	-0-	15
Surveying equipment	4								4	-0-	4
2 calculators/ duplicator	1								1	-0-	1
20 sets office furn.			5		10		10		25	-0-	25
2 sets blacksmith tools	2								2	-0-	2
2 sets blacksmith mat.	1								1	-0-	1
2 sets acetylene/oxygen units	1								1	-0-	1
Garage equipment	70								70	-0-	70
35 diesel millet mills	37		28						65	-0-	65
7 2-way radios	44								44	-0-	44

cont.

ANNEX P - TABLE 5 (cont.)

CATEGORY	PY1 AID	PY1 GRM	PY2 AID	PY2 GRM	PY3 AID	PY3 GRM	PY4 AID	PY4 GRM	TOTALS AID	TOTALS GRM	GRAND
Construction:											
Garage	55								55	-0-	55
6 div/sector houses			84		168				252	-0-	252
17 ZER-level houses					272				272	-0-	272
4 sector-level offices					116				116	-0-	116
Studies/Evaluations:											
Project evaluations			50				50		100	-0-	100
Base-line studies	30		40		40		40		150	-0-	150
Peanut marketing study	10								10	-0-	10
Maintenance/Salaries/Primes:											
Salaries	79	301	57	323	34	346	11	369	181	1,339	1,520
Primes	85		85		85		85		340	-0-	340
Maintenance	261	19	243	37	223	57	117	163	844	270	1,120
--Mills								(73)	-0-	(73)	(73)
--Ag. Sales		(19)		(28)		(39)		(54)	-0-	(140)	(140)
--Peanut Marketing				(9)		(18)		(36)	-0-	(63)	(63)
Vehicle amortization		103		103		103		103	-0-	412	412
Functional Literacy					50	31	50	31	100	62	162
Contingencies (15%):	128	63	111	19	172	81	69	100	480	313	793
Inflation:	-0-	-0-	68	43	223	105	136	199	427	347	774
TOTALS	977	486	917	575	1,540	723	662	965	4,096	2,749	6,845

Opération Mils-Mopti
Summary by Project Year ($000s)

ANNEX P - TABLE 6

	PY 1		PY 2		PY 3		PY 4	
	AID	GRM	AID	GRM	AID	GRM	AID	GRM
Technical Assistance:								
Long-term	240	8	250	8	190	8	50	(8)
Short-term	(90)	(8)	(90)	(8)	(60)	(8)		
	(150)		(160)		(130)		(50)	
Training: (Short-term)	50	-0-	20	-0-	20	-0-	-0-	-0-
Commodities:	522	-0-	150	-0-	111	-0-	119	-0-
Construction:	822	-0-	809	-0-	1,437	-0-	600	-0-
Credit Capital/Insurance Fund:	10	-0-	-0-	-0-	307	-0-	380	-0-
Studies/Evaluations:	40	-0-	90	-0-	40	-0-	90	-0-
Maintenance/Salaries/Primes/ In-Country Training:	458	423	451	463	519	537	456	666
Contingencies:	239	64	181	70	282	82	185	91
Inflation:	-0-	-0-	111	44	366	107	367	200
T O T A L S:	2,381	495	2,062	585	3,272	734	2,247	970