ET
614.532
A265

CAPITAL ASSISTANCE PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

ETHIOPIA - MALARIA ERADICATION - PHASE III

AID-DLC/P-570/A

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

UNCLASSIFIED

AID-DLC/P-570/4

April 22, 1971

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Ethiopia - Malaria Eradication - Phase III

Attached for your review are the recommendations for an amended loan authorization increasing by $4,900,000 loans amounting to $8,800,000 made to the Government of Ethiopia to provide additional funds to assist in financing the foreign exchange and local costs of a malaria eradicttion program in Ethiopia.

Please advise us as early as possible but in no event later than close of business on Thursday, April 29, 1971, if you have a basic policy issue arising out of this proposal.

Rachel R. Agee
Secretary
Development Loan Committee

Attachments:
Summary and Recommendations
Project Analysis
ANNEXES I-VIII

ETHIOPIA - MALARIA ERADICATION - PHASE III AMENDMENT

TABLE OF CONTENTS

		Page
SUMMARY AND RECOMMENDATIONS		i-iii
I. INTRODUCTION		
A.	Background	1
B.	Relationship of Project to U.S. Assistance Strategy in Ethiopia	3
C.	Borrower and Executing Agency	4
D.	Export-Import Bank Clearance	4
II. TECHNICAL PLAN		
A.	Present Malaria Eradication Service Activities and Accomplishments	5
B.	Plan of Operations for FY 1972-1977	8
C.	Technical Assistance	11
D.	Procurement Waiver	12
III. NATURE OF ECONOMIC BENEFITS		
A.	Introduction	12
B.	Nature of Economic Benefits in Area A	14
C.	Nature of Economic Benefits in Areas B, C and D	17
D.	Conclusion	18
IV. FINANCIAL ANALYSIS		
A.	Total Program Costs, FY 1972-1977	19
B.	Financial Requirements for Phase III	20
C.	Financial Plan for Phase III	21
D.	Prospects for Continued A.I.D. Participation	21
E.	IEG Ability to Provide Adequate Local Cost Financing	22
F.	Prospects for Repayment	23
G.	Other Sources of Financing	25

TABLE OF CONTENTS (CONTINUED)

		Page
V.	SOURCE OF PROCUREMENT	26
VI.	IMPLEMENTATION	26
VII.	IMPACT OF PROJECT ON THE ENVIRONMENT	26
VIII.	ISSUES	27

ANNEX I - Statutory Check List

ANNEX II - Map of Ethiopia

ANNEX III - Malaria Eradication Service Organization Chart

ANNEX IV - Recommendations of the Strategy Review Team

ANNEX V - Malaria Eradication Program Objectives

ANNEX VI - Commodity Requirements

ANNEX VII - 611 (e) Certification

ANNEX VIII - Draft Authorization

ETHIOPIA - MALARIA ERADICATION - PHASE III AMENDMENT

SUMMARY AND RECOMMENDATIONS

1. Applicant: Imperial Ethiopian Government (IEG)

2. Amount of Loan Amendment: $4,900,000*

3. Terms:

   A. Maturity: 40 years, including a 10 year grace period

   B. Interest: 2% per annum during the grace period; 3% per annum thereafter

   C. Currency: Interest and principal payable in U.S. dollars

4. Financial Plan for Phase III:

	Foreign Exchange Costs	Local Costs	Total
A.I.D. Loan	$1,450,000	$3,450,000	$4,900,000
A.I.D. Grant	90,000	-	90,000
IEG Contribution	-	4,100,000	4,100,000
	$1,540,000	$7,550,000	$9,090,000

5. Description of the Project: The Project consists of the fifth and sixth years (Phase III) of the Ethiopian Malaria Eradication Program (MEP). The Project will be carried out by the Ethiopian Malaria Eradication Service (MES) with the assistance of A.I.D. and the World Health Organization (WHO).

6. Purpose of the Loan: To finance a portion of the local costs of the Malaria Eradication Program for FY 1971 and the U.S. costs and a portion of the local costs for FY 1972 and FY 1973.

* All dollar amounts in this paper are expressed in U.S. dollars (U.S. $1.00 = Ethiopian $2.50).

7. Background of the Project: Following several malaria surveys carried out in Ethiopia in the early 1950's, four pilot malaria projects were begun in the period 1955-1959 with AID and WHO/UNICEF assistance. On the basis of these pilot projects the IEG established the Malaria Eradication Service (MES) in 1959. A reassessment of anti-malaria activities in 1965 led to the development of the MES/WHO Plan for a comprehensive program to eradicate malaria by 1980. The Malaria Eradication Program began in 1966 with AID grant financing but in 1967 AID authorized a $5.8 million Phase I loan to finance the foreign exchange and some local costs of the FY 1968-1969 tranche of the program; in 1969 a Phase II loan for $3.0 million was authorized. An IEG/WHO/AID Strategy Review Team (SRT) assessed the program in May 1970 and concluded that eradication was not feasible in present circumstances. The Team recommended that malaria eradication be retained as a long-range goal, but that the short-term strategy be based on malaria control to preserve the gains already achieved and to suppress malaria in additional high-priority development areas. The MES has completed a Plan of Operations for the period FY 1972-1977 which is based on the SRT recommendations and is acceptable to AID and WHO. AID technical assistance to MES is provided through a U.S. Public Health Service PASA. All positions except that of Chief Malaria Advisor are presently financed under the loan.

8. Export-Import Bank Clearance: Received on April 12, 1971

9. Statutory Criteria: Satisfied; see Annex I.

10. Country Team Views: The CT strongly endorses this project.

11. Issues: None.

12. Recommendation: Authorization of a loan amendment to the Imperial Ethiopian Government for an amount not to exceed $4,900,000 subject to the terms and conditions contained in the draft authorization attached as Annex VIII.

CAPITAL ASSISTANCE COMMITTEE:

USAID:

Loan Officer : J. Westley
Program Officer : D. Miller
Technical Advisor: J. Tabor

EARCDO:

Loan Officer: O. Cylke
Counsel : R. Meighan

AID/W:

Loan Officer: R. Moyers
Counsel : J. Phippard
Desk : N. Brashich
Engineer : J. Sloan

AID-DLC/P-570/4
April 22, 1971

UNCLASSIFIED

CAPITAL ASSISTANCE PAPER

ETHIOPIA - MALARIA ERADICATION - PHASE III AMENDMENT

I. INTRODUCTION

A. Background

The Imperial Ethiopian Government regards malaria as Ethiopia's leading public health problem, as well as a significant obstacle to agricultural development. It is estimated that 11-13 million of Ethiopia's population of 25 million are at risk, and that malaria is present in about 70% of the land area. The existence of malaria (which is generally not found at elevations above 5,000-6,000 feet) has been a major factor in the overcrowding of the highlands and the underpopulation and underutilization of the lowlands. Given the increasing population pressure in the highlands and the need for increased food production, it is important that malaria be suppressed in order to encourage migration from the highlands and increased exploitation of fertile lowland areas.

Scientific malaria investigations were undertaken in the late 1930's by Italians, and in the early 1950's by a British malariologist, Sir Gordon Covell. Subsequently, malaria pilot projects were started with WHO/UNICEF assistance in the Upper Awash Valley (1956), and U.S. assistance at Kobo Chercher (1955), the Dembian Plain (1957) and Gambella (1959). Although the results from these projects were not conclusive, they suggested that malaria eradication techniques, principally residual insecticidal house spraying, could be effective under rural Ethiopian conditions. The encouraging results from these projects, coupled with concern aroused by a massive malaria epidemic in 1958, led to the establishment of the Ethiopian Malaria Eradication Service (MES) in 1959. Over the next several years the MES, assisted by the U.S. and WHO, expanded the areas protected by the pilot projects and initiated anti-malaria activities in other parts of Ethiopia.

A reassessment of this program in 1965 resulted in a comprehensive MES/WHO plan for eradication of malaria in Ethiopia over the period 1966-1980. The MES/WHO Plan of Operations called for the division of the country into four parts (Areas A, B, C, and D) and the execution of a four-phase program (preparatory, attack, consolidation and maintenance) in each area. The whole country was to be covered in

successive stages by 1972 (see Map of Ethiopia and Areas A, B, C, and D, Annex II).

Although the U.S. had provided substantial grant funding for malaria activities in Ethiopia from 1955 on (about $4.8 million through FY 1967), the 1966-1980 Malaria Eradication Program (MEP) was too extensive for continued grant financing. Consequently, the IEG and AID agreed to shift the bulk of U.S. assistance for the MEP to loan financing. A Phase I loan of $5.8 million covering the U.S. costs and some of the local costs of the FY 1968-1969 tranche of the MEP was authorized in May, 1967. In 1969 it was agreed that the advisory services of all but the Chief Malaria Advisor would be loan-financed after December 31, 1969. A $3.0 million Phase II loan for commodity and advisory costs and 50% of the local costs was authorized in June, 1969. Due to financial and operational problems encountered from the beginning of the MEP in 1966, MES decided in 1969 to re-phase and lengthen the program, without modification of the basic eradication strategy. This resulted in lower expenditures, with the consequence that the Phase I and Phase II loan funds which were to carry the program through about June, 1970, have actually been sufficient to finance commodities and advisory services somewhat beyond the end of FY 1971 and local costs through about January, 1971.

In July, 1969, the Twenty-Second World Health Assembly met and considered the setbacks and slow progress reported in many malaria eradication programs. The Assembly "reaffirmed global eradication of malaria as a long-term goal" and recognized "malaria control as a valid and indispensable interim step where eradication is at present impracticable." The Assembly went on to recommend that governments cooperate with WHO and other assisting agencies to revise their malaria programs "with a view to adapting them to a strategy calculated to give the optimum results." Pursuant to this recommendation an IEG/WHO/AID/USPHS Strategy Review Team (SRT) was formed in early 1970 to review the Ethiopian Malaria Eradication Program. The SRT visited Ethiopia in May, 1970, and submitted its report and recommendations at that time. The report stated that eradication did not appear to be feasible under existing circumstances and recommended a strategy consisting of the following elements: (1) retention of malaria eradication as a long-term goal; (2) maintenance of the gains already achieved in Area A and extension of anti-malaria activities into high priority locations in Areas B, C, and D as "necessary and valid steps

toward this long term goal of eradication"; and (3) field research aimed at developing an improved methodology for malaria eradication.

The IEG has accepted the SRT recommendations and MES has developed a Plan of Operations for the period FY 1972-1977 based on these recommendations. A.I.D. has discussed the new malaria control strategy with the IEG and has reached tentative agreement with the IEG on a financing plan which envisages, subject to the availability of funds, 1) declining A.I.D. local cost financing for the MEP and the phase-out of A.I.D. local cost financing by the end of FY 1976; and 2) continued financing of all foreign exchange costs of the MEP through FY 1976, followed by declining foreign exchange cost financing and phase-out by the end of FY 1979. Also, in view of the A.I.D. decision to seek the multilateralization of technical and other assistance to malaria programs and the increasing capability of the MES, all loan-financed USPHS advisors to the MES will be phased out by the end of FY 1973. The Chief Malaria Advisor will be retained, however, as long as A.I.D. continues to assist the program. On the basis of the new Plan of Operations, and understandings reached with A.I.D. concerning financing, the IEG has submitted a request to A.I.D. for a Phase III loan to provide continued financing of 50% of the local costs of the program for FY 1971 and financing for the foreign exchange costs and a smaller percentage of the local costs of the program for FY 1972 and 1973. The application was received on April 14, 1971. A.I.D. proposes to amend the existing Loan Agreement for Phase I and Phase II financing to provide the required Phase III funding. It is expected that two further loans will be required to finance a declining portion of program costs for the period FY 1974-FY 1979. At the present time A.I.D. does not anticipate involvement in the MEP beyond FY 1979.

B. Relationship of Project to U.S. Assistance Strategy in Ethiopia

Steps are being taken to increase the effectiveness of U.S. assistance by adhering to a strategy of concentration. The Malaria Eradication Project fits such a strategy in Ethiopia by contributing to increased output in agriculture, the major sector of concentration. The malaria program contributes to increased agricultural output by increasing productivity in areas already under cultivation but exposed to endemic or epidemic malaria, and by opening up formerly malarious lowland areas to settlement and cultivation.

C. Borrower and Executing Agency

The Borrower remains the Imperial Ethiopian Government and the agency responsible for execution of the project remains the Malaria Eradication Service (MES), a semi-autonomous agency of the Ministry of Public Health. The responsibilities and functions of the MES are approximately as described in Section II and Annex III of the Capital Assistance Paper for Phase I (AID-DLC/P-570, dated May 22, 1967). Some minor organizational changes have been made in MES to improve administrative and management efficiency, but no basic changes have been made or are envisaged. (Compare MES Organization Chart, Annex III, with the MES Organization Chart in the Phase I Capital Assistance Paper, Annex III.) Although there will be shifts in the staffing of the various sections of MES as a result of the revision of the basic malaria strategy, it will not be possible to eliminate any of the major functions now performed by MES. There may also be an overall reduction in staffing although this will depend to a great degree on the extent to which MES can reduce the number of localities sprayed in Area A. The decision cannot be made immediately since further research and experience will be required to determine a "safe" rate of reduction of activities in Area A.

The MES, with the assistance of WHO advisors and A.I.D.-financed USPHS advisors, has continued as an effective organization. Although the MES has experienced some administrative and financial management problems, the MES General Manager has taken steps to improve discipline within the MES and to strengthen MES accounting and financial management operations. In this connection, a USAID review of the operation of the project has been undertaken and it is proposed that the loan agreement will not be executed until the USAID Director is satisfied that any substantive problems identified are being satisfactorily resolved. The USAID Director has certified to the capability of the IEG to carry out this phase of the project in accordance with Section 611(e) of the Foreign Assistance Act. A copy of the 611(e) certification is attached as Annex VI.

D. Export-Import Bank Clearance

The Export-Import Bank Board of Directors considered the proposed loan on April 12, 1971, and concluded that, in view of the need for local cost financing and concessional terms, the project was not appropriate for Export-Import Bank financing.

II. TECHNICAL ANALYSIS

A. Malaria Eradication Service Activities and Accomplishments

1. Background

For purposes of the Malaria Eradication Program, Ethiopia was divided into four areas (A, B, C, and D); each area was divided into 3 to 6 zones and each zone into 5 to 7 sectors covering 100,000-150,000 people each. Each geographic area was to go through a four-phase program consisting of a preparatory, attack, consolidation and maintenance phase. The original Plan of Operations envisaged a two-year preparatory phase for each area, followed by a four-year attack phase, a three-year consolidation phase, and a maintenance phase of indefinite duration (conducted through the Basic Health Services of the Ministry of Public Health). Area A was to go into attack in 1966, Area B in 1968, Area C in 1970 and Area D in 1972. The program was based on the eradication technique developed by WHO on the basis of its world-wide experience in malaria eradication programs. The two major aspects of this technique are 1) spraying all human dwellings with residual insecticides to interrupt the transmission of malaria parasites by mosquitoes and thus reduce the malaria parasite rate and 2) gradually eliminating the depleted reservoir of malaria parasites by finding and treating all people infected with malaria ("surveillance"). (For further information on the nature of MEP, see the Phase I Capital Assistance Paper, Section III.).

The Preparatory Phase in Area A, which had begun in 1964, was completed in early 1966, and in March 1966 the Attack Phase was initiated. By the end of 1969 the MES had carried out eight spray rounds in Area A in 38 sectors and had initiated surveillance activities in 26 sectors. In Area B the Preparatory Phase began in 1967, one year behind schedule; as of late 1969 the Attack Phase, which was to begin in 1968, had not been initiated. The major cause of the delay in Area B operations was the IEG's inability to provide its share of the local-cost financing, due to budget difficulties exacerbated by the closure of the Suez Canal in 1967. In conjunction with authorization of the Phase II loan, the IEG agreed to re-phase the program to reduce annual operations to a level within IEG financial capabilities, while maintaining the minimum essentials of an eradication program.

Based on this agreement the MES prepared an interim Plan of Action for the period March 1970 to June 1971, with the understanding that a revised long-term Plan of Operations for the period after FY 1971 would be prepared following evaluation of the MEP by the Strategy Review

Team. With respect to Area A, the interim Plan of Action called for the improvement of geographical reconnaissance operations, the continuation of two rounds of spraying per year with improved scheduling and the concentration of surveillance activities in 9 sectors. With respect to Areas B, C and D the interim Plan of Action recognized that full-scale eradication efforts could not go ahead outside of Area A and that area-wide preparatory phase activities in Area B should be halted, but proposed that malaria control activities be undertaken in development project areas in B, C, or D until such time as the eradication program could resume in those areas.

2. MES Operations Under the Interim Plan of Action

According to the decision to reschedule spray rounds to coordinate the spraying operations more closely with the two peak seasons of transmission, rounds IX and X were begun in Area A in May 1970 and January 1971, respectively. During spray round IX approximately 5,300,000 people were protected by the spraying of 1,670,000 structures in 10,800 localities.

An epidemiological evaluation has been made of Area A localities to determine the feasibility of discontinuing spraying of certain localities which have a minor malaria problem. As a result, only about 6,350 localities and 840,000 structures were sprayed in Round X (January-February 1971), or about half the number sprayed in Round IX. It is considered that this can be done safely during the relatively minor peaking of transmission early in the year. All localities in Area A will be sprayed during Round XI (June-July 1971) since this precedes the heaviest transmission period.

Throughout this period, additional data are being collected to more clearly delimit the malarious localities which will require continued spraying on a two round per year basis. This data will at the same time show which localities may be safely excluded from spray coverage for one round or completely. It is anticipated that spraying can be further reduced in subsequent spray rounds and still maintain past achievements in Area A.

During the summer months of 1970 the MES, in cooperation with other concerned IEG ministries and agencies, identified priority development areas outside of Area A for possible inclusion in malaria control operations. MES is now collecting further malariometric data

to permit actual selection of the areas. Pursuant to an agreement between the IBRD and IEG, the MES also began operations in the area of the IBRD-financed Wolamo Agricultural Development Project, which is headquartered at Soddu in Area C. The first spray round was initiated in June 1970 and the second got underway in January 1971. During the June 1970 round approximately 530,000 people were protected by spraying over 111,000 structures in 788 localities. Spraying of other locations in Area B, C, and D will probably not begin until round XII or XIII.

The number of sectors involved in surveillance was reduced from 26 to 9 in April, 1970. In order to maintain an evaluation capability in non-surveillance sectors of Area A, however, MES began a program of Fever and Infant Parasite Surveys (FIPS). The program involves a survey ten times per year in selected localities, with localities changed periodically to insure comprehensive coverage.

3. Accomplishments of the Malaria Eradication Program

Although the Malaria Eradication Program was not able to meet its original schedule and not succeeded as an "eradication" program, it has nonetheless been highly successful as a malaria control program. The program has effectively suppressed malaria in Area A, an area about the size of California with over 5 million people at risk both by reducing the level of endemicity (parasite rate) and by preventing epidemics.[1/] Prior to the initiation of the Malaria Eradication Program in 1966, Ethiopia experienced malaria epidemics involving tens of thousands of cases every few years. It is estimated for example, that the severe epidemic of 1958 affected an estimated 3,000,000 people and killed 150,000. Since the initiation of the program no serious epidemics have occurred in the areas under protection. Since these epidemics were effective deterrents to settlement of the lowland areas of Area A, the effectiveness of the program in suppressing epidemics has encouraged increasing numbers of people to move into the fertile lowland areas. Although no accurate data concerning migration to the lowlands in Area A is available, Mr. Charles A. Temple, a USAID agricultural advisor with long experience in Ethiopia, has estimated that the malaria program in Area A has

1/ The parasite rate is the percentage of persons in a defined age group on a given data having microscopically detectable parasites in the blood.

resulted in an expansion of the cultivated land area of Ethiopia by at least 5% over the last five years. This represents an increase of 2,000 square miles or an area approximately the size of Delaware. In addition, the program has created an effective organization and an impressive cadre of well-trained health technicians. The experience and expertise gained by MES employees will be a valuable resource as the Malaria Eradication Service gradually integrates its operations with those of the Basic Health Services.

B. Plan of Operations for FY 1972-1977

Pursuant to the recommendations of the Twenty-Second World Health Assembly (July, 1969), the IEG, the USPHS, AID and WHO provided the members for a multi-disciplinary Strategy Review Team (SRT) to study the MEP for the purpose of determining the future strategy of approaching the malaria problem in Ethiopia. The team visited Ethiopia from May 6 to May 27, 1970, and consisted of an Ethiopian leader, four malaria specialists (WHO, AID, and USPHS), a sanitary engineer (WHO) and a health economist (USPHS). The team reviewed the status of the Malaria Eradication Program and submitted its recommendations before leaving Ethiopia. AID reviewed and accepted the report's recommendations, with the exception of the recommendation for rapid integration of MES with the Basic Health Services. (For SRT Recommendations see Annex IV.)

Briefly, the SRT noted that malaria transmission had not been interrupted in Area A and concluded that malaria eradication was not feasible in Ethiopia under existing circumstances. Although the MEP had resulted in a significant decline in malaria prevalence as measured by the malaria parasite rate (from an Area A average of above 10% in 1964-1965 to below 1% in 1968), the reservoir of malaria parasites was still too high to permit the interruption or cessation of transmission. The Team pointed out that there was no evidence to suggest either that mosquitoes were developing resistance to DDT or that the malaria parasite was becoming resistant to malaria drugs; thus in a narrowly technical sense eradication remained feasible provided all supporting factors were functioning properly. They attributed the failure to interrupt transmission to operational and other problems such as incomplete spray coverage and suboptimal timing of spray rounds; and to social factors such as outdoor sleeping,

seasonal replastering and whitewashing of houses, and population movements. On the basis of their conclusions the SRT recommended that the best strategic approach to malaria suppression would be "(1) to retain malaria eradication as a long-term goal; (2) to maintain the gains already achieved and extend anti-malaria activities with the means available as necessary and valid steps toward this long term goal of eradication; and (3) to carry out field research aimed at improved methodology for malaria eradication, adapted to the socio-economic and operational conditions of Ethiopia." For the short term this implies a shift in the program goal from eradication to control, i.e., from an effort to rid Ethiopia of malaria by a given date to a more modest effort using the same techniques to 1) reduce malaria to a level low enough to permit activity in an area and 2) prevent periodic epidemics. A control program of course continues indefinitely; its success is measured not by the eradication of malaria but by its continued suppression.

The MES has revised the objectives of the Malaria Eradication Program and prepared a new Plan of Operations in accordance with the SRT recommendations (see MEP Objectives, Annex IV B). Yearly Plans of Action will be prepared based on these objectives, and will include the following activities:

1. Spraying

   a) Area A

      The amount of spray coverage necessary will be revised in the yearly Plans of Action as indicated by epidemiological findings. It is anticipated that the total coverage required may be further reduced substantially but it is difficult to predict how much until completed epidemiological data from FY 1971 are available for analysis.

   b) Areas B, C and D

      No areas other than the Wolamo agriculture development area will be sprayed in Areas B, C and D during FY 1971. Malaria surveys will be conducted in ongoing priority development areas, and those which are found to be malarious will probably be sprayed in round XII or XIII.

The areas presently being considered for control activities include Jimma, Agaro, the Anger and Didessa River areas (all Area B), Gambella (Area C), and Arba Minch and Kebre Mengist (Area D).

2. Geographical Reconnaissance

a) Area A

Geographical Reconnaissance will be updated between each spray round.

b) Areas B, C and D

Necessary Geographical Reconnaissance will be done in areas to be sprayed.

3. Epidemiology

a) Area A

MES will carry out Fever and Infant Parasite Surveys (FIPS) ten times per year in selected localities in order to evaluate the effectiveness of spraying and measure the prevalence of malaria. Localities will be changed periodically to insure evaluation of all localities. Entomological studies will continue. Three sectors and parts of two other sectors will remain in full surveillance operations in a continued effort to determine whether the interruption of malaria transmission is feasible in Ethiopia.

b) Areas B, C and D

Each priority development area will be surveyed to determine if it is a malarious area or not, and the seasonal prevalence if malarious. This will be supplemented by entomological studies. The most malarious development areas will be accorded priority attention within fund limitations.

4. Health Education

Health education measures will continue in all areas where malaria suppression work is being carried out as a necessary means of soliciting the support and cooperation of the population involved.

5. Integration with Basic Health Services

Two sites have been selected as ideal for beginning MES-BHS integration activities. The Malaria Eradication Training Center at Nazareth has been made available for the training of health personnel in reciprocal and diversified activities. This is considered an essential activity upon which positive integration moves could be based.

Full details of the planned activities for Phase III (FY 1972 and FY 1973) will be set forth in a detailed Plan of Action which is being prepared by MES in consultation with AID and WHO officials. A.I.D. will require approval of the Plan of Action for each year as a condition of the release of loan funds for the year's program.

The WHO and USPHS advisors to MES consider the new Plan of Operations a sound guide to future malaria operations based on the SRT report. It is expected that it will preserve the gains achieved in Area A, i.e., prevent the outbreak of epidemics and keep malaria at a low enough level to permit continued development of lowland areas in Area A. The program will also permit the elimination of epidemics and the suppression of the general level of malaria in previously unprotected priority development sites in Areas B, C and D.

C. Technical Assistance

A.I.D. has been providing technical assistance to the Malaria Eradication Program under a Participating Agency Services Agreement (PASA) with the U.S. Public Health Service (USPHS). The PASA was originally grant funded, but has been financed under the loan (with the exception of the Chief Malaria Advisor and a U.S. secretary) since January 1, 1970. All USPHS professional personnel are staff members of the National Communicable Disease Center of the USPHS. Technical assistance services to be provided during FY 1972 and 1973 include a

Chief Malaria Advisor for 24 months; a Malaria Advisor for 24 months; an Administrative Specialist for 12 months, and an Equipment Specialist for 12 months. As noted in Section I.A. above, all positions save that of Chief Malaria Advisor are scheduled to be phased out after FY 1973.

WHO is presently supplying three technicians to the project and two instructors to the Malaria Eradication Training Center (METC) at Nazareth. WHO plans to continue this assistance at least through FY 1973. The U.S. and Swedish Peace Corps may also provide a small number of volunteers to work with the project.

It is contemplated that there may be additional minimal participant training financed under AID grants.

D. Procurement Waiver.

On January 17, 1969, A.I.D. issued a proprietary procurement waiver (No. AFR/CS DEV 69-3) to permit the purchase of Kaiser jeeps based on the justification submitted by the MES. This proprietary procurement waiver will be applicable for procurement of Kaiser jeeps under this amendment.

III. NATURE OF ECONOMIC BENEFITS

A. Introduction

Several attempts have been made to evaluate the economic impact of the Ethiopian Malaria Eradication Program although the economic benefits of health programs are notoriously difficult to measure and difficult to define. In 1959 Dr. J. S. Prince, then Chief of the USICA Public Health Division in Ethiopia, and Dr. Haldor Larson, then WHO Public Health Advisor in Ethiopia, presented a paper in which they argued that malaria eradication was a prerequisite for successful development of the fertile lowland areas of Ethiopia; they also estimated the potential output which would result from investment in malaria eradication, irrigation facilities, land development, etc. in the Awash Valley.[1/] Subsequently, in 1965, Professor Athol Patterson, a Tulane University

1/ J. S. Prince and H. L. Larsen, "The Economic Impact of Malaria Eradication with Special Emphasis on the Awash Valley in Ethiopia," WHO, EMME-Tech.2/9, Oct. 14, 1959.

economist, prepared a proposal for the systematic study of the economic impact of malaria eradication in Ethiopia.[2/] Professor Patterson rejected, as too costly, a country-wide study of the economic impact of malaria eradication, but recommended a retrospective or prospective study of the Awash Valley, using data provided by the MES and the large agricultural concessions. Unfortunately, the study was not undertaken. Finally, in 1970, Mr. Norman Holly, health economist with the Office of International Health, HEW, was asked by AID to analyze the economic benefits of the Malaria Eradication Program and to participate as a member of the Strategy Review Team. His report provides the basis for the discussion below (Sections III B and III C) regarding the nature of economic benefits from malaria control in Area A and in Areas B, C and D.[3/]

The above three reports all attempt to measure the economic benefits of the MEP by estimating the increases in output and income attributable to elimination or control of malaria. This approach relates the MEP directly to the goals of increased agricultural output and income and is particularly germane to the analysis of malaria program benefits in Ethiopia, since the existence of malaria in areas below 5,000-6,000 feet has effectively prevented the development of thousands of square miles of fertile land at lower altitudes. Increases in output and income are fairly easy to measure in the case of corporate agricultural enterprises established in formerly malarious areas (e.g. the Awash Valley), but of course this is very difficult in the case of peasant production.

A conceptual problem which this approach entails is that of choosing appropriate benefit estimations for purposes of benefit-cost analysis. If malaria suppression is an absolute prerequisite to increasing agricultural output in a certain area, then it may be argued that all project benefits, net of other input costs, should be attributed to the malaria program. This would tend to result in very high internal rates of return to investments in malaria suppression. It could also be argued, however, that malaria suppression has the same status as any other project input, and that project benefits should be prorated over all project cost elements. This results in a rate of return for each input equal to the

---

2/ Athol Patterson, "Report on the Feasibility of Studying the Economic Consequences of Malaria Eradication in Ethiopia," mimeographed, October 1, 1965.

3/ Norman Holly, "Economic Benefits of Malaria Control in Ethiopia," mimeographed, July, 1970.

overall project rate of return. Both arguments have merit, and it is probably best to regard the "total net benefits" and "prorated benefits" criteria as establishing maximum and minimum estimates,respectively, of rates of return to malaria suppression. Another possibility deserving brief mention is the "cost-effectiveness" approach to evaluation of the project. This involves selecting the project design which will maximize project effectiveness or benefits at a given level of project costs, without any attempt to quantify the benefits or to relate them to the costs via an internal rate of return. Since this approach assumes from the beginning that the activity is worthwhile, and that funds will be available up to a given level, it is useful in determining the optimum program design, but not in determining whether there are economic grounds for continuing the program. It should be noted that the SRT, on the basis of the evidence available to them concerning the impact of the MEP on agricultural resettlement and output, concluded that the program was of great economic benefit to Ethiopia. They consequently viewed their task as definition of a strategy which would maximize program benefits over time at a constant or slightly rising program cost. Thus they used an implicit cost-effectiveness approach in arriving at their recommendations.

There are malaria program benefits which cannot be assessed in economic terms alone, of course. As noted above, the program has reduced the risk of malaria for over five million people and has delivered malaria medication to thousands (265,000 in 1969). By bringing health services and health education to many remote areas previously untouched by other central government or provincial government services, the program has created a reservoir of goodwill which can be drawn upon in expanding other programs and in increasing central government revenue collections. Moreover, the program has created a cadre of trained health workers who can be transferred to the Basic Health Services when malaria is no longer a major threat.

B. Nature of Economic Benefits in Area A.

When the Malaria Eradication Program was established, the boundaries of Area A were drawn so as to include many of the most promising areas for agricultural development, including the Rift Valley above Awassa, the Awash Valley and the Setit-Humera area, as well as extensive fertile lowland areas which could be settled by peasants from the adjacent overcrowded highlands. The IEG assumed, on the basis of its experience with the malaria pilot projects at Kobo-Chercher and in the Middle Awash Valley, hat the anti-malaria campaign in Area A would result in a significant

acceleration of agricultural development in these areas. From all available indications, this assumption appears to have been borne out. Unfortunately, however, there are no appropriate baseline data to use in deriving an estimate of the impact of the MEP on agricultural development in Area A, and thus all judgments as to overall impact can be based only on piecemeal data and impressions.

Holly, on the basis of extensive travels throughout Area A, reported as follows on the general economic benefits of the MEP:

> Vast areas previously vacant are now fully farmed and sizeable towns thrive where previously there were none. From Robi to Kembolcha, along the western escarpment of the Awash Valley, there are several new towns and few remaining tracts of uncultivated land. Ten years ago, this was empty country, hospitable only to a few farmers sturdy enough to walk daily from the surrounding mountains. Further north into the Alamata Plain, particularly around Kobo-Chercher, and in the Dembia Plain north of Bahar Dar there has been a notable change from acacia pasture land to intensive fixed-land cropping including some 285,000 acres. The city of Bahar Dar itself is largely a product of malaria control. Western Tigre province beyond the main road, formerly remote and uninhabited, now supports a population of 10,000 persons. East of Kembolcha, around Tendaho, some 250,000 acres of previously nomadic brushland is now being planned for cultivation. Nearly all of the development projects running the length of the Awash River depend on continued anti-malaria activity; together they have resettled tens of thousands of persons. ... Nazareth, in the upper Awash Valley, has blossomed from a rural town into a resort attraction. Nearby Nonji was formerly a malarious marsh serving 30 to 40 graziers; now it has a population of 30,000 and a sugar plantation. The HVA Estate at Metahara, in the middle Awash Valley, was founded with the commencement of spraying; it now contains 5,000 persons and will stabilize around 7,500 in the near future. In the Rift Valley south of Addis Ababa malaria control has turned Awassa into a prosperous resort.

Holly was able to gather some rough data on increases in peasant output and income in the Shire district of western Tigre. He

found that the combination of feeder roads and malaria suppression had transformed grazing land supporting 500 nomadic herders to farmland supporting 2,500 farm families on 40,000 acres. The area currently produces cash crops (sorghum and sesame) valued at about $800,000 annually; farmers who were formerly farming on a subsistence basis thus have an average annual cash crop income of $320. According to Holly,

> Personal observation and discussions with local inhabitants suggest comparable improvement in living standards resulting from malaria control in the Dembia Plain extending from Shira Awraja to Gondar, along the escarpment from Robi to Kembolcha, and in the valleys between Woldiya and Makele. Except for the early pilot projects in the Dembia Plain and Kobo-Chercher areas, these were unsettled lands ten years ago.

There are some other indications regarding the impact of the MEP on migration, resettlement and agricultural output. The Strategy Review Team, for example, noted that the number of localities reported by MES spray teams had increased from about 7,000 in early 1966 to about 10,500 in early 1970. Since "localities" average about 500 people each, this implies a substantial increase in the population of the lowland portions of Area A; even if half of the increase represents discovery of gaps in coverage rather than new settlement, the population increase is nearly one million. Likewise, the MES estimates that the population protected increased from 4.2 million in 1966 to 5.3 million in 1970, an increase of slightly over 1 million. Also, as noted in Section II A above, the AID-financed Ministry of Agriculture Plant Protection and Production advisor, Mr. Charles A. Temple, has estimated that the area of land under cultivation in Ethiopia has increased by 20% over the last five years, and that malaria suppression has been a critical factor in about one-half of this increase. If we assume conservatively that the MEP was a necessary but not sufficient condition for one-fourth of the total increase, then areas settled as a result of malaria suppression account for about 5% of the total land cultivated. If this 5% in turn accounts for 5% of total agricultural output, then the value of the output from areas freed for settlement by the MEP is approximately $42 million per annum. Revenues net of labor and other input costs are probably on the order of $5-$8 million annually. This compares with present malaria program costs of about $4 million annually. Thus if all net revenues (net benefits) are attributed to the MEP, the annual rate of return to the malaria program is in the 25-100% range.

All of the above estimates are based on very incomplete data and are thus not conclusive. It is possible to develop somewhat more conclusive estimates, however, if the investigation is limited to one specific section of Area A - the Awash Valley. Malaria is a particularly difficult problem on corporate farms in the Awash Valley, since the irrigation ditches provide an ideal year-round breeding place for mosquitoes, and the rapid turnover of workers facilitates the import or export of the disease to or from the concession area. Consequently, the number of concessions operating in the Awash Valley did not expand rapidly until after 1956, when anti-malaria operations began there under the WHO/UNICEF pilot project. (Whereas there were four active concessions in the Awash Valley in 1955, by 1965 there were 13; in 1970 there were 16 with 15 concession applications pending at the Awash Valley Authority.) Since that time the combined efforts of the concessionaires and MES have kept malaria quite well under control in the Valley.

It is not enough, of course, to argue that investment in malaria control was a prerequisite to development of the Awash Valley. It must also be shown that this investment will realize a return competitive with rates of return to other investments. Inasmuch as Holly was unable to survey all concessions to determine the overall rate of return to investment in the Awash Valley, he selected a sample of five concessions, including one large private concession and four concessions held by governmental or quasi-governmental agencies. Using data and projections for the period 1966-1980, and including malaria control as a cost, he found project rates of return ranging from under 10% on the smallest government concession to over 100% on the private concession and the largest of the government concessions. If benefits are prorated over costs, as discussed in Section III A above, the rate of return to investment in malaria control for each project is the same as the project rate of return. If all net revenues (benefits) were attributed to the malaria control, then the rates of return to malaria investment would be much higher. In any case, it appears that rates of return to concessionaires in the Awash Valley will be quite high on average, and that the rate of return to investment in malaria control there is correspondingly high.

C. Nature of Economic Benefits in Areas B, C and D

Malaria control operations will be undertaken in Areas B, C or D only in conjunction with development projects, and only after it

has been determined that the project is of high priority and depends for its success on suppression of malaria in the project area or a nearby population center. Since high-priority development projects should have relatively high estimated rates of return, it can be assumed that the rate of return to malaria control in Areas B, C and D will be high.

The prototype for MES operations outside Area A is the anti-malaria work undertaken in conjunction with the IBRD-financed Wolamo Agricultural Development Project near Sodo (Area C). The Wolamo project includes both assistance to existing highland farmers and resettlement of farmers into the adjacent lowland areas. Since the existence of endemic malaria and the threat of severe malaria epidemics has prevented full exploitation of the lowland areas in question, the IBRD considered malaria suppression essential and insisted prior to extending the project loan that the IEG commit itself to a malaria control program in the Wolamo area. As noted in Section II A above, MES began spraying operations in the Wolamo area in June 1970.

It is clear that the returns to malaria activity of this type are quite high. If investment in malaria control is treated as any other input, the return to malaria suppression is equal to the overall internal rate of return of the resettlement portion of the project, or 17%. If all net benefits from resettlement were attributed to the investment in malaria control, then the return is substantially higher, since annual net benefits by year 7 of the project are estimated at $360,000, as against the annual malaria control cost of $80,000.

D. Conclusion

It cannot be demonstrated conclusively that the investment represented by the Malaria Eradication Program realizes an acceptable rate of return (i.e., an internal rate of return on the order of 12-15%). Even if it were possible to precisely measure increases in agricultural output in the areas in which MES operates, there would still remain difficult questions concerning the importance of malaria suppression as an input and the extent to which benefits should be attributed to the malaria investment costs. Nevertheless, fragmentary data suggest that the return to investment in malaria control is quite high, both for specific development project areas and for Area A as a whole. In any case, it appears that the economic benefits from the program have been

sufficient to justify continuation of the program, even if they are not known with enough precision to firmly justify a particular program level.

Given the undertainties of the situation, the MES strategy is appropriate. What it proposes is that the program continue by 1) expanding into development project areas where the economic benefits from malaria control are almost certain to be high, and 2) gradually scaling down operations in Area A without sacrificing any major gains already achieved. This strategy will virtually assure a gradual increase in the program's rate of return or effectiveness over time. In the absence of conclusive data suggesting a reduction or increase in the program level, a strategy promising increased effectiveness at approximately the same cost level is the best course.

IV. FINANCIAL ANALYSIS

A. Total Program Costs, FY 1971-1977.

The estimated malaria program costs based on the FY 1971 MES budget and the Plan of Operations for the period FY 1972-1977 are as follows (US $ millions):

Fiscal Year	Foreign Exchange Costs		Local Costs	Total
	Commodities	Technical Assistance 1/		
1971	$1,040,000	$160,000	$3,400,000	$4,600,000
1972	740,000	120,000	3,100,000	3,960,000
1973	850,000	80,000	3,280,000	4,210,000
1974	1,000,000		3,600,000	4,600,000
1975	1,200,000	-	4,000,000	5,200,000
1976	1,000,000	-	4,000,000	5,000,000
1977	1,180,000	-	4,320,000	5,500,000

For a comparison of these cost estimates with the original MEP cost estimates, see Capital Assistance Papers AID-DLC/P-570, Section VI B, and AID-DLC/P-570/2, Section V. The present estimates are substantially

1/ Includes AID loan-financed technical assistance but excludes grant-financed assistance provided by AID, WHO and Peace Corps.

below the original estimates for FY 1972 and FY 1973. They are approximately equal to the original estimates for FY 1974 and 1975, and exceed the original estimates beginning in FY 1976, by which time the original Plan of Operations assumed that all areas would be in consolidation or maintenance.

It should be pointed out that the present estimates are maximum estimates based on the assumption that MES will be able to phase down the number of localities sprayed in Area A only very gradually. If, as some MES technicians predict, the number of localities sprayed in Area A can be reduced fairly rapidly to about half the present number without significantly sacrificing present gains, program costs will rise more slowly, may remain constant, or may even decline. MES will not be able to determine a "safe" rate of reduction in Area A until the new control program is underway, however.

The details of commodity costs for the FY 1972-1977 are shown in Annex V. For the assumptions underlying the technical assistance cost estimates see Section II C above.

B. Financial Requirements for Phase III

The financial requirements for Phase III are as follows:

Fiscal Year	Foreign Exchange Costs		Local Costs
	Commodities	Technical Assistance	
1971	-	-	$1,200,000
1972	$550,000	-	3,100,000
1973	850,000	$50,000	3,250,000

The Phase I and Phase II loans were to finance the foreign exchange costs and a portion of the local costs of the MEP through the end of FY 1970. Due to the phase-down in the program, however, Phase I and Phase II loan funds have been sufficient to cover commodity requirements somewhat beyond the end of FY 1971, to cover technical assistance requirements through the end of FY 1972, and to meet the agreed percentage of local costs through about January 1971. Consequently the financing needed under the Phase III loan includes the remaining commodity

requirements for FY 1972 ($580,000) and the commodity requirements for FY 1973; technical assistance requirements for FY 1973; and an estimated $1,200,000 in remaining FY 1971 local costs plus local costs for FY 1972 and FY 1973. It is proposed that the Phase III loan finance all the above foreign exchange costs (commodities and technical assistance), plus 50% of the local costs in FY 1971 and FY 1972, and 40% of the local costs in FY 1973. Thus the local costs financed under the loan would be $600,000 in FY 1971, $1,550,000 in FY 1972 and $1,300,000 in FY 1973.

C. Financial Plan for Phase III

The financial plan for Phase III is as follows:

	Foreign Exchange Costs	Local Costs	Total
A.I.D. Loan	$1,450,000	$3,450,000	$4,900,000
A.I.D. Grant	90,000	-	90,000
I.E.G. Contribution	-	4,100,000	4,100,000
	$1,540,000	$7,550,000	$9,090,000

As noted above, it is proposed that the AID loan finance all remaining foreign exchange costs of the project for FY 1972 and FY 1973, plus 50% of remaining local costs in FY 1971, 50% of local costs in FY 1972, and 40% of local costs in FY 1973. An AID grant would finance the services of the Chief Malaria Advisor for FY 1972 and FY 1973. The proposed Development Loan terms are: repayment over 40 years including a 10-year grace period, with interest at two percent (2%) during the grace period and three percent (3%) thereafter.

Commodities to be financed under the loan will include DDT, vehicles and spare parts, spray pumps, laboratory supplies, anti-malaria drugs and office equipment. For a detailed breakdown of commodity requirements by year, see Annex V.

D. Prospects for Continued A.I.D. Participation

The Capital Assistance Paper for Malaria Eradication - Phase I stated that A.I.D. "can expect to be called upon for continued support, and will doubtless wish to render such support as long as the program is being properly carried out subject to the availability of funds."

This position was taken on the assumption that malaria could be eradicated by 1980 and that A.I.D. assistance would not be required beyond 1976. Inasmuch as the present MES malaria control program will continue indefinitely, it is no longer possible to consider continued assistance "as long as the program is being properly carried out" since this would be inconsistent with the concept of capital assistance. Consequently A.I.D. and the IEG have agreed, as noted in Section I A above, that A.I.D. will provide gradually declining assistance to the program through about FY 1978 subject to the availability of funds and the continued effective implementation of the program. This will probably require two A.I.D. loans after the proposed Phase III loan.

E. IEG Ability to Provide Adequate Local Cost Financing

The IEG and A.I.D. have agreed in principle that loan-financed A.I.D. technical assistance will be phased out at the end of FY 1978, A.I.D. local cost financing phased out at the end of FY 1975 or FY 1976, and all remaining A.I.D. assistance phased out at the end of FY 1978 or FY 1979. The implications of this phase-out for the IEG budget are set forth in approximate terms in the following table:

Table 1: IEG AND A.I.D. FINANCING OF MES PROGRAM, FY 1971-FY 1979
(US $ millions)

	1971	1972	1973	1974	1975	1976	1977	1978	1979
Total	4.6	4.0	4.2	4.7	5.2	5.3	5.8	5.8	5.8
(A.I.D)	(2.9)	(2.4)	(2.2)	(2.2)	(2.0)	(1.3)	(0.7)	(0.3)	(-)
(I.E.G.)	(1.7)	(1.6)	(2.0)	(2.5)	(3.2)	(4.0)	(5.1)	(5.5)	(5.8)

As a result of the phase-out of A.I.D. assistance, the IEG contribution of the MES program will increase by about 20-25% per year, from $1.6 million in FY 1972 to $5.8 million in FY 1979. While this is a rapid rate of increase, the cost to the IEG of the MES program as a percentage of the total IEG budget will increase only from 1% in 1971 to 1.6% in 1978 (assuming an increase in the IEG budget of 10% per year). Also, the $5.8 million level reached in FY 1979 is still below the peak level of local cost financing ($6 million in FY 1974) that the IEG was committed to providing under the arrangements envisioned for the original Malaria Eradication Program. As a condition precedent

to disbursements under the loan amendment A.I.D. will require that the IEG provide appropriate assurances concerning the availability of funds to meet the IEG local cost commitment for FY 1972 and FY 1973.

For a recent review of Ethiopia's budget and financial position and prospects, see the recent IBRD Report (IBRD: "Economic Growth and Prospects in Ethiopia," September 22, 1970, Vols. I and V.)

F. Prospects for Repayment

The IEG's outstanding foreign debt (including private loans guaranteed by IEG financial institutions) increased to US $182 million by the end of FY 1970. Despite an increase in external debt outstanding during the past four years of approximately 11 percent per annum, Ethiopia's debt service ratio of 16% (interest and principal payments divided by merchandise export earnings) is probably still somewhat less than that of most LDCs.

The outstanding external debt as of the end of CY 1968 was distributed by creditors as follows:

Table 2: OUTSTANDING IEG EXTERNAL DEBT, JUNE 30, 1970

	US $ (Millions)
IBRD/IDA	66.6
United States	62.0
Italy	21.7
USSR	13.6
Netherlands	5.0
Yugoslavia	4.4
West Germany	3.9
Czechoslovakia	2.6
Sweden	2.1
United Kingdom	0.1
Total	182.0

It may be noted that loans to the IEG from the U.S. and IBRD/IDA comprised approximately 70 percent of the total external debt outstanding.

External debt servicing outlays (principal and interest) during the past five years and projected through 1978 are shown below in relation to actual or projected export earnings:

Table 3: DEBT SERVICE AND MERCHANDISE EXPORTS
(US $ Millions)

	Debt Service: Principal and Interest (FY) (A)	Merchandise Exports (CY a/) (B)	Ratio A:B %
1965	9.8	117	8.4
1966	10.9	112	9.7
1967	15.6	103	15.1
1968	16.7	110	15.2
1969	20.9	119	17.6
1970	20.4	130 (est.)	15.7 (est.)

Projections b/

	Low	High	Low	High
1971	27	27	135	20	20
1972	27	28	141	19	20
1973	27	28	146	18	19
1974	28	31	152	18	20
1975	30	34	160	19	21
1976	32	37	168	19	22
1977	33	40	176	19	23
1978	35	43	185	19	23

a/ Total exports by value will increase at an average rate of 4% yearly in 1971-74 and at 5% in 1975-78.

b/ Total assumed new borrowing each year on which projections are in part based are as follows:

FY 71 US $35-60 million
FY 72 US $35-50 million
FY 73 US $40-60 million
FY 74 US $40-60 million
FY 75 US$40-60 million
FY 76 US$40-60 million
FY 77 US$40-60 million
FY 78 US$40-60 million

Ethiopia could and would if necessary make debt service payments of the range projected above. (Ethiopia has never defaulted on an external loan, has never requested a rescheduling of its external debt, and has an excellent international credit rating.) However, it would clearly be a heavy burden on Ethiopia, which will be dependent to an exceptional degree for development on external capital and know-how for the foreseeable future.

Ethiopia's net gold and foreign exchange holdings declined during CY 1970, due principally to the fall in world coffee price, but were still equivalent at the end of CY 1970 to 3.4 months merchandise imports at the estimated 1970 level of imports. Ethiopia's IMF quota and gold tranche position were increased during CY 1970. The IEG will need to obtain future loans only for economically high priority projects and on as favorable terms as possible if the debt service burden is not to reach a maximum feasible level before domestic savings and capital supplemented by foreign private direct investment are sufficient to permit an acceptable rate of growth. Thus, there are reasonable prospects for repayment.

G. Other Sources of Financing

The Malaria Eradication Program in Ethiopia was initiated and has received its external support from A.I.D. and WHO. WHO continues to provide support for the program through providing the six technicians mentioned in Section II C above, $5,000 worth of specialized commodities per year to the program, and two to six training fellowships. WHO also supports the METC through provision of commodities. Other donors are not expected to initiate contributions to the program since it was developed and is being assisted by A.I.D. and WHO. However, other donors, especially the IBRD, are providing substantial assistance to the IEG in other fields. The IBRD and IDA have provided about $132 million for assistance to Ethiopia, primarily in the areas of roads, power and telecommunications and agriculture, and have not expressed an interest in the Malaria Eradication Program. The Swedish Government is now involved in a major agriculture development project at Chilalo, and in educational and transport assistance. The FRG is providing major assistance for construction of the Dilla-Moyale segment of the road connection Addis Ababa to Nairobi, and has assisted the Development Bank and the Addis Ababa Water Supply.

V. SOURCE OF PROCUREMENT

The foreign exchange component of the loan of $1.5 million will be used to purchase goods and services from the countries included in Code 941 of the A.I.D. Geographic Code Book, i.e., from the U.S. and eligible lower income countries.

VI. IMPLEMENTATION

It is very important that loan authorization andnegotiation of the loan proceed rapidly, since the Loan Agreement Amendment must be cleared by the Council of Ministers and presented to Parliament for ratification by early June if the loan funds are to be available in early FY 1972 for reimbursement of FY 1972 and some FY 1971 local costs. If the loan is authorized and negotiated on a timely basis it will be possible to meet the following schedule:

Excution of Agreement	May 1971
Ratification by Parliament	June, 1971
Satisfaction of Loan CPs	July, 1971
First Disbursement	August, 1971
Last Disbursement	June, 1973

VII. IMPACT OF PROJECT ON THE ENVIRONMENT

From the inception of A.I.D.'s loan assistance to the Malaria Eradication Program (MEP), the environmental impact of using DDT in Ethiopia's Program has been thoroughly considered by the Ethiopian Government, A.I.D., and the World Health Organization (WHO). It has been decided that DDT is the world's safest and most effective insecticide for use in malaria control when it is applied by the method used in Ethiopia. For several reasons the MEP's use of DDT does not threaten the environment:

1) The DDT is sprayed only on surfaces where it will not wash away, i.e. on the inside of walls of houses and on sheltered areas of adjacent buildings. Thus, it is unlikely that any appreciable amounts of DDT can escape into the soil and subsequently into groundwater or streams.

2) DDT is characterized by low volatility and none of it escapes into the atmosphere.

3) WHO and U.S. Public Health Service advisors are provided to insure proper spraying and storing of the DDT.

Besides the health benefits and increased agricultural production as discussed earlier in the paper, using DDT offers another great advantage to Ethiopia. That advantage is its low price. The Malaria Eradication Service (MES) presently uses about 1,000 tons of DDT per year for residual spraying of dwellings. The major world source for this insecticide is the United States, where it is cheaply mass-produced. Ethiopia, like many other malarious underdeveloped countries, can only economically afford DDT in its control program. Although alternative techniques are becoming available, they are too expensive. The HEW Report on "Pesticides and Their Relationship to Environmental Health" concludes that it is likely that malaria programs in underdeveloped countries will "gradually be discontinued if they are forced to use substitutes for DDT", and a recent WHO release states that "for malaria eradication DDT is irreplacable at present". Thus, the continued use of DDT in the Ethiopia MEP is a sound decision from both a public health and economic viewpoint.

VIII. ISSUES

None

CHECKLIST OF STATUTORY CRITERIA
DEVELOPMENT LOAN FUND

Many of the questions require only yes or no answers. Others, however, must be answered more fully. In those cases, a specific reference to explicit discussion of the matter in the loan paper will suffice. But where the loan paper does not deal explicitly with a matter that clearly requires more than a yes or no response, sufficient response must be made to indicate that the matter has been appropriately considered.

The following abbreviations are used in the checklist:

FAA - Foreign Assistance Act of 1961, as amended, incorporating amendments effected by the Foreign Assistance Act of 1968.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1969.

Space for answers is provided in the margin to the right of each question. This form must be made a part of the Capital Assistance Paper.

I. COUNTRY PERFORMANCE

A. Progress Towards Country Goals

1. FAA §§201 (b)(5), 201 (b)(7), 201 (b)(8), 208. Discuss the extent to which the country is:

   (a) Making appropriate efforts to increase food production and improve means for food storage and distribution.

   The Third Five Year Plan (1968-1973) puts major stress on increased food production and improved marketing of agricultural products, and allocates a considerably higher level of projected expenditures for agriculture than in the past.

   (b) Creating a favorable climate for foreign and domestic private enterprise and investment.

   Ethiopia provides tax holidays and duty-free entry privileges to foreigners investing in needed development projects. The government plans to establish a trade and investment center to assist businessmen and to improve further the Investment Proclamation.

   (c) Increasing the people's role in the developmental process.

   Villagers in certain parts of Ethiopia are building schools, water systems and farm-to-market roads and are modernizing farms with the help of U.S., Sweden, etal. This is on a modest scale so far but is an appreciable start.

(d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs.	See I.D, 2 below
(e) Willing to contribute funds to the project or program.	The IEG will contribute $4,800,000 to Malaria Eradication - Phase III.
(f) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements; and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.	The traditional monarchial system in Ethiopia is gradually broadening. The IEG is allowing greater freedom of expression, although the press is still largely government-controlled. There is a 12-year old Parliament with some, if limited, effective powers. Entrepreneurs operate fairly freely, and trade unions are beginning to have an independent voice. The government is seeking Western advice in legal matters, taxation, finance, private enterprise, and information services. The Ministry of Land Reform and Administration has conducted land tenure surveys and prepared land reform legislation which is presently under consideration by the Parliament and may be promulgated this year.
(g) Responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.	The IEG has strengthened its commitment to development in recent years, and has shown a new willingness to take meaningful self-help measures in order to carry out the Third Five-Year Plan (1968-1973).

B. Relations with the United States

1. FAA §620(c). Is the government indebted to any U.S. citizen for goods or services furnished or ordered where: (a) such citizen has exhausted available legal remedies, including arbitration, or (b) the debt is not denied or contested by the government, or (c) the indebtedness arises under such government's, or a predecessor's unconditional guarantee?	No such indebtedness is known to exist.
2. FAA §620(d). If the loan is intended for construction or operation of any productive enterprise that will compete with U.S. enterprise, has the country agreed that it will establish appropriate procedures to prevent export to the U.S. of more than 20% of its enterprise's annual production druing the life of the loan?	Not applicable.

3. FAA §620(e)(1). Has the country's government, or any agency or subdivision thereof, (a) nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens, (b) taken steps to repudiate or nullify existing contracts or agreements with such citizens or entity, or (c) imposes or enforced discriminatory taxes or other exactions, or restrictive maintenance or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or subdivision thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?	No to first question. Second question not applicable.
4. FAA §620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction by mob action of U.S. property, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?	No.

5. FAA §620(l). Has the government instituted an investment guaranty program under FAA 211(b)(1) for the specific risks of inconvertibility and expropriation or confiscation?	Yes.
6. FAA §620(o): Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing vessel on account of its fishing activities in international waters? If, as a result of a seizure, the USG has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished.	No.
7. FAA §620(q). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan?	No.
8. FAA §620(t). Have diplomatic relations between the country and the U.S. been severed? If so, have they been renewed?	No, to first question. Second question not applicable.
9. App. §106. Describe any attempt made by the country to create distinction because of race or religion in granting personal or commercial access or other rights otherwise available to U.S. citizens generally.	None.

C. Relations with Other Nations and the U.N.

1. FAA §620(i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection or subversion directed against the U.S. or countries receiving U.S. assistance?

No, as far as known.

2. FAA §§620(a), 620(n); App. §§107)a), 107(b), 116. Has the country sold, furnished, or permitted ships or aircraft under its registry to carry to Cuba or North Viet-Nam items of economic, military, or other assistance?

No, as far as known.

3. FAA §620(u); App. §114. What is the status of the country's U.N. dues, assessments, or other obligations? Does the loan agreement bar any use of funds to pay U.N. assessments, dues or arrearages?

Ethiopia is not in arrears in its obligations to the UN. The loan agreement will restrict the loan funds to the project.

D. Military Situation

1. FAA §620(i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or countries receiving U.S. assistance?

No, as far as known.

2. FAA §620(s). What is (a) the percentage of the country's budget devoted to military purposes, and (b) the amount of the country's foreign exchange resources used to acquire military equipment? Is the country diverting U.S. development assistance or P.L. 480 sales to military expenditures? Is the country diverting its military expenditures? (Findings on each question are to be made for each country at least once each fiscal year and, in addition, as often as may be required by a material change in relevant circumstances.)

Less than 30% of the country's budget is devoted to external defense and security purposes. Little foreign exchange is used to acquire military equipment, most of which is grant financed under U.S. MAP. The November 1968 Report of the Ethiopian Study Team (Bell report) concluded that "Ethiopia is not diverting United States economic assistance nor its own resources to unnecessary military expenditures." The findings of the Bell Report were reconfirmed in October 1970.

II. CONDITION OF THE LOAN

A. General Soundness

-- Interest and Repayment

1. FAA §§201(d). 201(b)(2). Is the rate of interest excessive or unreasonable for the borrower? Are there reasonable prospects for repayment? What is the grace period interest rate; the following period interest rate? Is the rate of interest higher than the country's applicable legal rate of interest?	The loan terms are low and reasonable. There are reasonable prospects for repayment. The grace period interest rate is 2%, followed by an interest rate of 3% for the duration of the loan. The answer to the last question is no.

-- Financing

1. FAA§201(b)(1). To what extent can financing on reasonable terms be obtained from other free-world sources, including private sources within the U.S.?	Concessional financing not believed available for purposes of this loan from other free world sources. Need for lenient terms, size and purpose of loan exclude consideration of other private or official U.S. sources. See Section IV-F of Capital Assistance Paper.

-- Economic and Technical Soundness

1. FAA §§201(b)(2), 201(e). The activity's economic and technical soundness to undertake loan; does the loan application, together with information and assurances, indicate that funds will be used in an economically and technically sound manner?	Yes, See Sections II and III of Capital Assistance Paper.

2. FAA §611(a)(1). Have engineering, financial, and other plans necessary to carry out assistance, and a reasonably firm estimate of the cost of assistance to the U.S., been completed?	The necessary planning for the project has been completed. (See Sections II and IV, Capital Assistance Paper) and reasonably firm cost estimates have been obtained (See Section IV.A).
3. FAA§611(b); App. §101. If the loan or grant is for a water or related land-resource construction project or program, do plans include a cost-benefit computation? Does the project or program meet the relevant U.S. construction standards and criteria used in determining feasibility?	Not applicable.
4. FAA §611(e). If this is a Capital Assistance Project with U.S. financing in excess of $1 million, has the principal A.I.D. officer in the country certified as to the country's capability effectively to maintain and utilize the project?	Yes, the Mission Director has so certified. See Annex VI.

B. Relation to Achievement of Country and Regional Goals

-- Country Goals

1. FAA §§207, 281(a), Describe this loan's relation to:	
a. Institutions needed for a democratic society and to assure maximum participation on the part of the people in the task of economic development.	The project does not relate directly to institutions. It does, however, focus on invigorating the rural population and opening up new farming areas to them thereby widening their participation in development.

b. Enabling the country to meet its food needs, both from its own resources and through development, with U.S. help, of infrastructure to support increased agricultural productivity.	This project will open to agricultural development many fertile areas formerly little used because they were malarial.
c. Meeting increasing need for trained manpower.	The project includes training of local personnel and advisory assistance.
d. Developing programs to meet public health needs.	This is the express purpose of the project.
e. Assisting other important economic, political, and social development activities, including industrial development; growth of free labor unions; cooperatives and voluntary agencies; improvement of transportation and communication systems; capabilities for planning and public administration; urban development and modernization of existing laws.	By invigorating and increasing the mobility of Ethiopians, this project will contribute appreciably to economic, political, and social development.
2. FAA §201(b)(4). Describe the activity's consistency with and relationship to other development activities, and its contribution to realizable long-range objectives.	The health improvement resulting from this project is essential to expanding and broadening production.

3. FAA §201(b)(9). How will the activity to be financed contribute to the achievement of self-sustaining growth?	The project's economic benefits will assist the economy (see Section III). The MES through an effective training program now bears a major share of project responsibility and will assume more in the future.
4. FAA §201(f). If this is a project loan, describe how such project will promote the country's economic development, taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.	Section III covers much of this ground. In addition the project is essential to development of broad-based Ethiopian agricultural development.
5. FAA §201(b)(3). In what ways does the activity give reasonable promise of contributing to development of economic resources, capacities?	See Section III.
6. FAA §281(b). How does the program under which assistance is provided recognize the particular needs, desires, and capacities of the country's people; utilize the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in political processes.	See comment for items II-B-1 (a through e) of this checklist.

7. FAA §601(a). How will this loan encourage the country's efforts 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?	By opening up new land the project will promote private farming in areas of high potential productivity. Some of the new production will be for export. (b), (c), (d), and (f) are inapplicable.
8. FAA §202(a). Indicate the amount of money under the loan which is: going directly to private enterprise; going to intermediate credit institutions or other borrowers for use by private enterprise; being used to finance imports from private sources; or otherwise being used to finance procurements from private sources.	The procurement of commodities under the loan will be directly from private enterprise. The loan will finance a public service benefitting individuals directly and the economy indirectly.
9. FAA §611(a)(2). What legislative action is required within the recipient country? What is the basis for a reasonable anticipation that such action will be completed in time to permit orderly accomplishment of purposes of loan?	None. The project is administered by a Malaria Eradication Service already operating in the Ministry of Public Health.

-- Regional Goals

1. FAA §619. If this loan is assisting a newly independent country, to what extent do the circumstances permit such assistance to be furnished through multilateral organizations or plans?	Not applicable.
2. FAA §209. If this loan is directed at a problem or an opportunity that is regional in nature, how does assistance under this loan encourage a regional development program? What multilateral assistance is presently being furnished to the country?	Although the loan is directed at disease which does not recognize national borders, it is not practicable to establish a regional malaria eradication program. The World Bank Group is providing substantial assistance to Ethiopia and the UN is providing technical assistance.

C. Relation to U.S. Economy

-- Employment, Balance of Payments, Private Enterprise

1. FAA §§201(b)(6); 102, Fifth. What are the possible effects of this loan on U.S. economy, with special reference to areas of substantial labor surplus? Describe the extent to which assistance is constituted of U.S. commodities and services, furnished in a manner consistent with improving the U.S. balance of payments position.	See Section V. The project will not have special reference to U.S. areas of labor surplus.

2. FAA §§612(b), 636(h). What steps have been taken to assure that, to the maximum extent possible, foreign currencies owned by the U.S. and local currencies contributed by the country are utilized to meet the cost of contractual and other services, and that U.S. foreign-owned currencies are utilized in lieu of dollars?	It is deemed inappropriate to attempt to use U.S.-owned foreign currency in lieu of dollars to pay costs of U.S. goods and services. U.S.-owned local currencies are not available. The IEG will contribute about $4.8 million in local currency to the project during Phase III.
3. FAA §601(d); App. §115. If this loan is for a capital project, to what extent has the Agency encouraged utilization of engineering and professional services of U.S. firms and their affiliates? If the loan is to be used to finance direct costs for construction, will any of the contractors be persons other than qualified nations of the country or qualified citizens of the U.S.? If so, has the required waiver been obtained.	Malaria Eradication is a program developed and administered by public health officials. It is not appropriate to use private U.S. firms for this work. Second question is not applicable.
4. FAA §608(a). Provide information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.	Excess property is not deemed appropriate for the project.
5. FAA §602. What efforts have been made to assist U.S. small business to participate equitably in the furnishing of commodities and services financed by this loan?	The agency advertising requirements will be complied with.

6. FAA §621. If the loan provides technical assistance, how is private enterprise on a contract basis utilized? If the facilities of other Federal agencies will be utilized, in what ways are they particularly suitable; are they competitive with private enterprise (if so, explain); and how can they be made available without undue interference with domestic programs?	The U.S. Public Health Service is providing technical assistance as explained in Section IIC. It is suitable because of past experience in malaria eradication on a world-wide basis. US PHS is not competitive with private enterprise, and work on their program does not interfere with domestic programs.
7. FAA §611(c). If this loan involves a contract for construction that obligates in excess of $100,000, will it be on a competitive basis? If not, are there factors which make it impracticable?	Not applicable.
-- Procurement	
1. FAA §602(a). Will commodity procurement be restricted to U.S. except as otherwise determined by the President.	Yes.
2. FAA §604(b). Will any part of this loan be used for bulk commodity procurement at adjusted prices higher than the market price prevailing in the U.S. at time of purchase?	No.

3. FAA §604(e). Will any part of this loan be used for procurement of any agricultural commodity or product thereof outside the U.S. when the domestic price of such commodity is less than parity?	No.

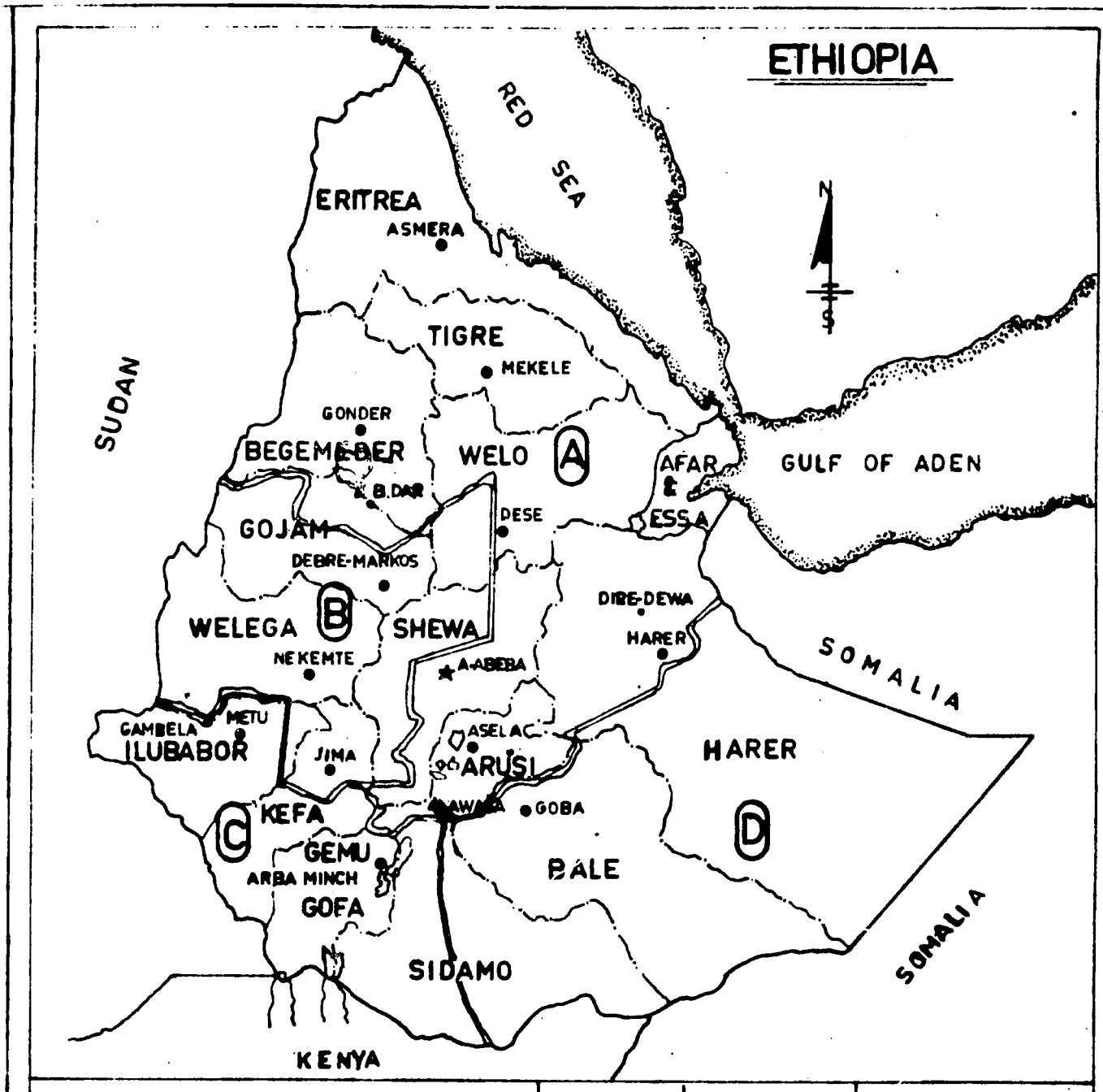
D. Other Requirements

1. FAA §201(b). Is the country among the 20 countries in which development loan funds may be used to make loans in this fiscal year?	Yes.
2. App. §112. Does the loan agreement provide, with respect to capital projects, for U.S. approval of contract terms and firms?	Not applicable.
3. FAA §620(k). If the loan is for construction of a productive enterprise, with respect to which the aggregate value of assistance to be furnished will exceed $100 million, what preparation has been made to obtain the express approval of the Congress?	Not applicable.

4. FAA §§620(b), 620(f); App. §109(b). Has the President determined that the country is not dominated or controlled by the international Communist movement? If the country is a Communist country (including, but not limited to, the countries listed in FAA §620(f)) and the loan is intended for economic assistance, have the findings required by FAA §620(f) and App. §109(b) been made and reported to the Congress?	Ethiopia is not a communist or communist-dominated country.
5. App. §109(a). Will any military assistance, or items of military or strategic significance, be furnished to a Communist nation?	No.
6. FAA §620(h). What steps have been taken to insure that the loan will not be used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects of the Communist-bloc countries?	The loan agreement restricts use of the loan funds to the project.
7. App. §118. Will any funds be used to finance procurement of iron and steel products for use in Viet Nam other than as contemplated by §118?	No.
8. FAA §636(i) Will any part of this loan be used in financing non-U.S.-manufactured automobiles? If so, has the required waiver been obtained?	No.

9. FAA §§620(a)(1) and (2), 620(p); App. §117. Will any assistance be furnished or funds made available to the government of Cuba or the United Arab Republic?	No.
10. FAA §620(g). Will any part of this loan be used to compensate owners for expropriated or nationalized property? If any assistance has been used for such purpose in the past, has appropriate reimbursement been made to the U.S. for sums diverted?	No.
11. FAA §201(f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise?	The loan is being implemented by the Ethiopian Government which is proper for a public health project.
12. App. §104. Does the loan agreement bar any use of funds to pay pensions, etc., for persons who are serving or who have served in the recipient country's armed forces?	The loan agreement will restrict the ban funds to this project.

ETHIOPIA: MALARIA PROGRAM AREAS



LEGED

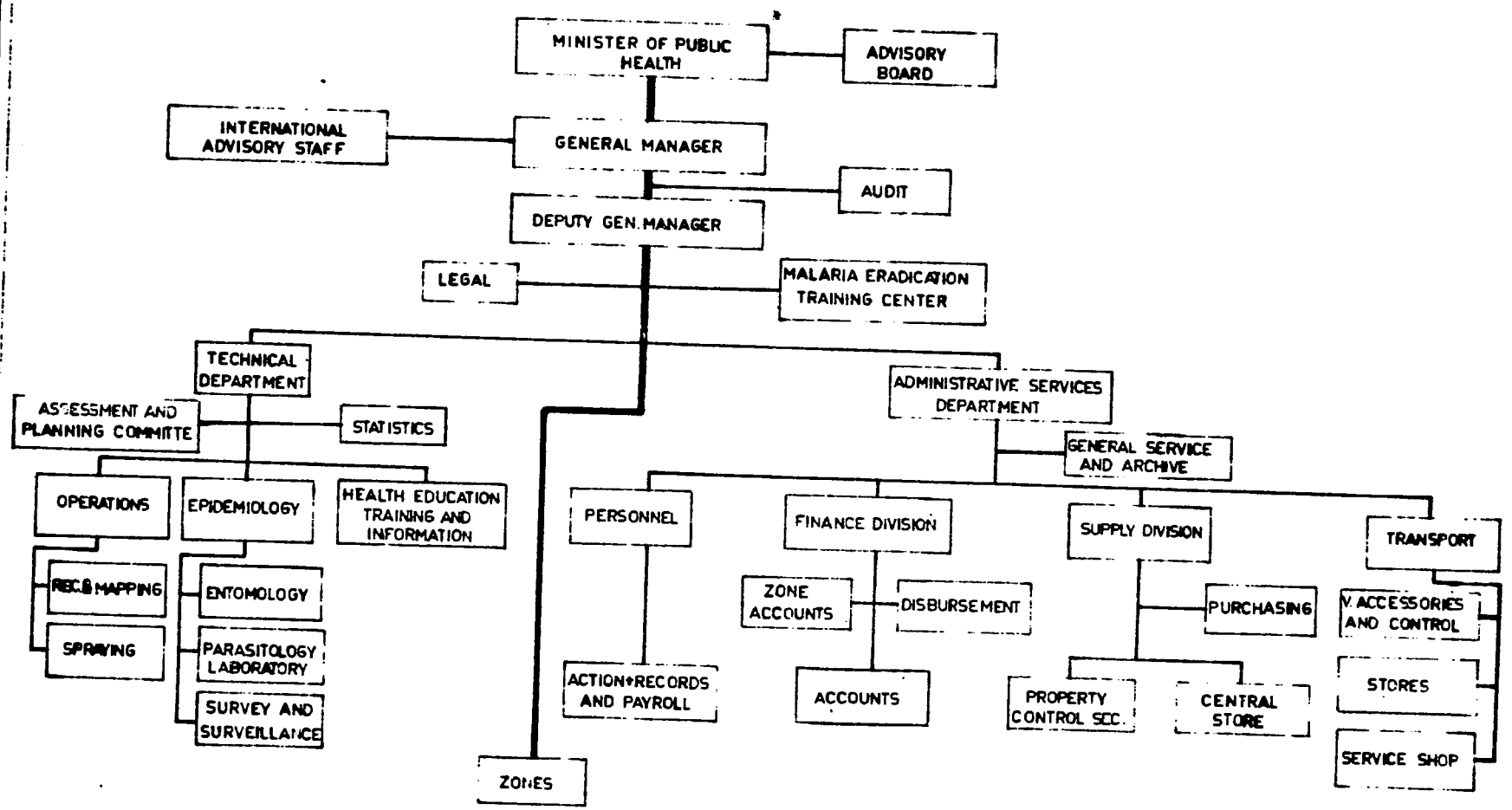
- NATIONAL BOUNDARY
- PROVINCE BOUNDARY
- AREA BOUNDARY
- ★ CAPITAL CITY
- ● PROVINCE CAPITAL

REGION	AREA Km²	POPL at RISK
A	470,000	5,545,600
B*	185,000	3,375,070
C	175000	2,080,300
D	392,000	1,670,000
TOTAL	1,222,000	12,670,970

IMPERIAL ETHIOPIAN GOVERNMENT
MINISTRY OF PUBLIC HEALTH

MALARIA ERADICATION SERVICE

ORGANIZATION CHART



RECOMMENDATIONS - STRATEGY REVIEW TEAM REPORT (MAY, 1970)

A. The gains already achieved by anti-malaria activities in Area A should be maintained by continuing DDT spraying operations in a more discriminating manner. One annual round of spraying is recommended for the areas where transmission is minimal or absent during the dry season. In the areas where the transmission has two peaks annually or is perennial two rounds of spraying should be carried out.

B. Intensive anti-malaria activities should be conducted in agricultural or other development areas in all parts of the country. Existing regulations should be consistently enforced. According to the epidemiological requirements of the individual areas the anti-malaria measures may include two spraying rounds per year, follow-up spraying of new structures or disturbed surfaces, mass chemo-prophylaxis during peak transmission periods, water management and source reduction.

C. The timing of DDT spraying should be more carefully determined on epidemiological considerations. In particular, DDT should be applied immediately prior to the rise of vector densities associated with the heavy rains.

D. Case finding should be used in areas under anti-malaria activities as the most sensitive means of evaluating trends in malaria incidence and detecting epidemics. Other components of surveillance should be continued only in limited areas. The present procedures of case detection should be utilized in a broader range of communicable disease surveillance activities, as described in recommendation E.

E. The integration of the MES and the basic health service should be done as soon as possible. A special committee should be appointed by the Minister of Public Health to plan the phasing and steps for carrying out this integration. As a preparatory step for the full integration the health station personnel and MES field staff should be immediately re-trained and charged with additional duties for surveillance of tuberculosis, smallpox and other fevers and epidemics.

F. The Team recommends that a definitive study be undertaken to determine whether malaria transmission can be interrupted in Ethiopia.

An ecologically heterogeneous area should be selected in which may be studied as many as possible of the epidemiological and sociological factors affecting malaria transmission. All measures now known to be of use against malaria should be applied as indicated by careful studies. New methods developed and proven practicable in malaria research elsewhere should be employed as they become available.

G. The Team recommends that collection of baseline data designed for future evaluation of economic benefits from anti-malaria activity should commence immediately in areas where attack operations are contemplated.

MALARIA ERADICATION PROGRAM
PLAN OF OPERATIONS, FY 1972-1977: OBJECTIVES

1. Long Range Objectives

1.1 The eradication of malaria from the entire country.

1.2 The prevention of re-establishment of malaria in the country.

1.3 To encourage the establishment of a network of basic health services in the country by the Ministry of Public Health, to sustain achieved eradication of malaria.

2. Short Range Objectives

2.1 The continuation of anti-malaria operations in Area A with the aim of maintaining and improving the gains achieved in the suppression of the malaria incidence.

2.2 Within the scope of activities and resource limitations, efforts will be made to (a) improve geographical reconnaissance (GR), spraying, epidemiological, administrative and other activities, and (b) continue to improve surveillance activities in three (3) selected sectors, in order to demonstrate in Ethiopia the feasibility of interrupting malaria transmission.

2.3 Conduct country-wide anti-malaria activities in development projects, selected populous centers and tourist centers which are in malarious areas, on the basis of (a) availability of resources after satisfying the requirements for the continuation of anti-malaria work in Area A and (b) epidemiological, economic and other justifications.

2.4 Retraining as necessary of MES staff in multi-purpose malaria activities.

2.5 Conduct and improve the health education malaria campaign, to obtain acceptance of anti-malaria measures and active participation of the population in the country.

2.6 Refinement of epidemiological and entomological activities necessary for the assessment of spray operations, and also to delimit the malarious areas which need anti-malaria measures.

2.7 Conduct spray operations in malarious localities of Area A, and in the development projects,population centers and selected tourist centers, in malarious areas, in accordance with the epidemiological findings. The number of rounds of spraying of localities may be increased, reduced or discontinued on basis of epidemiology findings.

2.8 Continued improvement of geographical reconnaissance in Area A, especially sector key maps, and carry out required GR in the program areas.,

2.9 To detect malaria epidemics and take remedial action as soon as possible, and to determine the cyclic trends of malaria epidemics.

2.10 Solicit active participation of all types of general health services, voluntary collaborators, teachers, community leaders, government and private agency employees, etc., in the development of a sound Passive Case Detection (PCD) system in program area.

2.11 Collection of baseline data for the evaluation of the economic impacts of anti-malaria activities in collaboration with other Agencies.

2.12 Seeking ways and means of cooperation and collaboration with Basic Health Services to develop a system for future integration.

ESTIMATED REQUIREMENT OF IMPORTED SUPPLIES, EQUIPMENT AND VEHICLES FOR THE MALARIA ERADICATION SERVICE, ETHIOPIA FY 1972 to FY 1977

	Items Required		1972[1/]	1973	1974	1975	1976	1977
	Insecticide	Amount Tons (metric)	1,200	1,000	1,000	1,000	1,000	1,000
1.	(DDT, 75% W.D.P.)	US $	592,000	542,000	569,000	596,000	623,000	650,000
	Spare parts for pumps including							
2.	nozzle tips	US $	20,000	21,000	22,000	23,000	24,000	25,000
		Amount each	0	400	400	400	400	400
3.	Spray pumps	US $	0	12,800	13,440	14,100	14,700	15,360
		Amount each	0	34	60	100	40	80
4.	Vehicles	US $	0	136,000	240,000	400,000	160,000	320,000
	Spare parts for							
5.	Vehicles	US $	10,000	12,000	25,000	35,000	40,000	43,000
	Microscopes							
6.	(parts only)	US $	1,000	1,050	1,100	1,150	1,200	1,250
	Lab Equipment							
7.	and Supplies	US $	15,000	15,750	16,500	17,250	18,000	18,750
		Amount						
8.	Anti-Malaria Drugs	(in thousands)	0	0	0	500	500	500
		US $	0	0	0	2,250	2,360	2,470
	Operations							
9.	Equipment	US $	60,000	63,000	66,000	69,000	72,000	75,000
	Office Supplies							
10.	and Equipment	US $	5,000	5,150	5,500	5,750	6,000	6,250
	Tires, Tubes and							
11.	Batteries	US$	40,000	38,000	37,000	35,000	33,000	20,000
	Tools and Workshop							
12.	Equipment	US $	1,000	1,050	1,100	1,150	1,200	1,250
	TOTAL	US $	744,000	847,800	996,640	1,199,650	995,460	1,178,330

1/ 400 Tons of DDT ($195,000) for FY 1972 financed under Phase II loan; amount to be financed under Phase III loan is $550,000.

AID-DLC/P-570/4

ANNEX VII

Certification Pursuant to Section 611(e) of the

Foreign Assistance Act of 1961, as amended

I, Roger Ernst, the Principal Officer of the Agency for International Development in Ethiopia, having taken into account, among other things, the maintenance and utilization of projects in Ethiopia previously financed or assisted by the United States, do hereby certify that in my judgment Ethiopia has both the financial capability and the human resources capability to effectively maintain and utilize the capital assistance project, Malaria Eradication - Phase III.

This judgment is based in part upon (i) the satisfactory utilization of funds under A.I.D. Loans 663-H-013 and 013A, Malaria Eradication - Phase I and Phase II, and (ii) the past performance of the Imperial Ethiopian Government in maintaining and utilizing successfully capital assistance provided under other related A.I.D. projects.

Roger Ernst
Director, US A.I.D. to Ethiopia

3/29/71
Date

A.I.D. LOAN No. 663-H-013
(CAP. ASST. PAPER No. AID-DLC/P-570)
PROJECT No.

CAPITAL ASSISTANCE LOAN AUTHORIZATION AMENDMENT

Provided from: Development Loan Funds

Ethiopia - Malaria Eradication - Phase III

Pursuant to the authority vested in the Administrator of the Agency for International Development ("A.I.D.") by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize an amendment to increase the above-captioned loan to the Imperial Ethiopian Government by an amount not to exceed four million nine hundred thousand ($4,900,000) to provide additional funds to assist in financing the foreign exchange and local costs of a malaria eradication program in Ethiopia, subject to the following terms and conditions:

1. Interest and Terms of Repayment. The interest on the increased amount of this loan shall be three percent (3%) per annum on the disbursed balance of such increased amount, except during the grace period when the interest shall be two percent (2%) per annum. The loan, as amended, shall be repaid within forty (40) years from the date of the first disbursement under the loan, as amended, including a grace period of not to exceed ten (10) years.

2. Currency of Repayment. Payments of principal and interest with respect to the increased amount of the loan shall be made in United States dollars.

3. Other Terms and Conditions:

   (a) Equipment, material, and services financed under the loan, as amended, shall be procured from

Ethiopia and countries included in Code 941 of the A.I.D. Geographic Code Book.

(b) The loan, as amended, shall be subject to such other terms and conditions as A.I.D. may deem advisable.

4. The loan will not be executed until the A.I.D. Mission Director in Ethiopia has examined the results of the A.I.D. review of the operation of the project and is satisfied that any substantive problems identified are being satisfactorily resolved.

_____
Assistant Administrator for Africa

_____
Date