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8/28/67

FROM - ADDIS ABABA

SUBJECT - NONCAPITAL PROJECT PAPER (PROP)

REFERENCE -

NON CAPITAL PROJECT PAPER(PROP)

Country: Ethiopia Project No: 663-11-510-006

Submission Date: Aug. 25, 1967 Original: X Revision No.: ____

Project Title: Malaria Eradication

U. S. Obligation Span: FY 1960 through FY 1976

Physical Implementation Span: FY 1960 through FY 1980

Gross Life of Project Financial Requirements:

U.S. dollars: TC $ 6,417,000
DL $14,300,000

U.S.-owned local currency:

Cooperating country cash contribution: $47,282,800
($ Equiv.)

Other donor (WHO): $11,258,000

Totals: $79,057,800

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OTHER AGENCY

CDC

HEW

State

ACTION TO: AFR

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PAGES 1 OF 8

SEP 5 1967

DRAFTED BY:	OFFICE	PHONE NO.	DATE	APPROVED BY:
TWashburn:MALR:mb	MALR		8/25/67	C. W. Nelson, Acting Director

AID AND OTHER CLEARANCES

PH:JSPrince

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AID 5-39 (9-62) (Do not type below this line) PRINTED 6-64

Summary Description *

Since approximately 65% of Ethiopia's GNP is expected to come from agriculture for at least the next generation, one of USAID's objectives in Ethiopia is to improve this segment of the economy. One of the major requirements for reaching this objective is malaria eradication. In the lowlands, the constant threat of malaria prevents farmers from cultivating the rich river valleys; on the plateaus, occasional malaria epidemics, which may kill 20% of an affected population, severely curtail agricultural production.

The specific targets of the ME Program are to control the disease by 1976, that is to stop the occurrence of new cases, and to eliminate all residual cases by 1980. Progress towards these targets will be determined by a decrease in the prevalence of malaria as measured by the epidemiology division of the program.

In 1962, the Imperial Ethiopian Government created the Malaria Eradication Service, a semi-autonomous division of the Ministry of Public Health. During 1963 and 1964 pilot projects were continued and the organization began to train people in the techniques and skills of malaria eradication. In 1965 all residual spray activities were stopped and every effort was made during this year to complete the Geographical Reconnaissance activities preparatory to the beginning of the attack phase early in 1966. The plan of action will follow the guidelines established by WHO's Expert Committees on Malaria Eradication. The total costs of the program will be $62.4 million U.S. dollars, of which USAID has provided $4.3 million in grant funds to date. In addition in FY 1967 USAID authorized a Development Loan of $5.8 million and contingent on successful execution of the program will give sympathetic consideration to extending additional Development Loans in the future. Most of the USAID funds will be used to buy U.S. source commodities; the balance will be used to meet local currency requirements. The IEG will provide the major portion of local currency requirements up to the level required for successful implementation of the program. WHO and USAID have provided technicians to act as advisors for the program; in addition, Ethiopian technicians needed to run the program have been trained abroad through WHO and USAID scholarships and at the METC in Ethiopia.

* For further details and full elaboration of the program see:
1. Plan of Operations for Malaria Eradication of Ethiopia, 1967-1980.
2. The Malaria Eradication Development Loan Application and papers on file in AID/W and NCDC.
3. WHO Expert Committee Reports, Nos. 6, 7 and 8.

Setting of the Malaria Eradication Program

There are no accurate figures on the morbidity and mortality of malaria in Ethiopia. From 1957-1962, the average number of malaria cases per year seen in all the health facilities in the country was 116,000, or 2% of the most common diseases seen. A mobile health team traveling through Ethiopia detected malaria in 40% of the patients it examined in one year. Surveys by the MES in selected parts of Ethiopia have found up to 50% of the population infected at one time. On the basis of these latter surveys, the MES has estimated that 10 million people, or slightly under half the total population of Ethiopia, live in areas where malaria transmission occurs. However, "the malarious area" includes more than half the total land of Ethiopia since the people avoid the lowlands where malaria thrives.

In some of the inhabited lowland areas, where virtually everyone is infected with malaria during the year, the common sequelae of the disease, anemia, emaciation, physical weakness and mental disturbances, lower the effectiveness of the agricultural workers. Furthermore, high abortion and infant mortality rates, combined with low migration into these areas, make it impossible to increase the population. The low population density in the lowlands and the decreased effectiveness of the labor force in these areas are two major factors in the underdevelopment of agriculture in Ethiopia. For example, the Awash River Valley was sparsely inhabited and largely uncultivated until malaria control and eradication projects were started. Now the valley has many small farming communities and several large plantations. As malaria eradication progresses, the Government plans to develop more fully the rich farmland in this valley and others in the malarious area.

If malaria eradication eliminates the devastating epidemics in the highlands and strengthens the labor force in the lowlands, a basic condition will be satisfied toward the exploitation of the full potential of agricultural production in Ethiopia. Since only 15% of the arable land is under cultivation at the present, this potential is enormous.

In the highlands of Ethiopia where malaria is less prevalent, occasional large epidemics may spread through an area, killing up to 20% of the population. Such epidemics have been reported in 1951, 1958 and 1964. Former malaria specialists in Ethiopia have reported in greater detail the epidemic in 1958 which affected 2-3 million people and caused an estimated 150,000 deaths. These epidemics usually occur during the harvest season when the demand for manpower is highest. Since according to a 1962 IEG survey, even during normal times, the people of Ethiopia are on the borderline of malnutrition, an epidemic may threaten the survivors with starvation during the following year.

In addition to the elimination of malaria, another of the major public health objectives of USAID is the eventual establishment by the IEG of health centers throughout the country. The MEP is a major stimulus to their development since they must take over the MES activities in the final stages of the malaria program. Furthermore, when the MES is dissolved, it will be able to provide many of the laboratory technicians, administrators, health educators, epidemiologists and surveillance workers needed to staff the health centers.

In common with MEP's in other countries, a goal of the Ethiopian MEP is the eradication of malaria from the world. Until this goal has been reached, no country where malaria has previously existed can be safe from the disease. Even in the U.S. there have been several well documented small epidemics of malaria which have arisen from the great influx of malaria cases in the past few years.

Although malaria experts in USAID and WHO agree that the goal of malaria eradication is feasible in Ethiopia, there are many technical and administrative problems to overcome. Perhaps the most important is the efficiency of the major vector of malaria in Ethiopia, Anopheles gambiae. This mosquito has a long life span, breeds rapidly, in high numbers and is considered to be one of the most efficient malaria vectors of the world. Thus, the ability of one infected mosquito to bite many humans before it dies and the high mosquito density favor persistant transmission of the disease. Fortunately, A. gambiae is vulnerable to the method of malaria eradication being used in Ethiopia. Since it prefers to take its blood meals from humans at night while they are sleeping indoors, the mosquito, following its meal, will rest on a wall. If the houses have been sprayed with DDT, the mosquito will receive a lethal dose of insecticide and die before it has a chance to carry the infection to another person.

In 1956-1959, WHO and USAID carried out four pilot projects to show the effectiveness of a residual insecticide campaign in eradicating malaria from Ethiopia. Although the disease was not completely eliminated, the pilot projects proved that this method could produce a decline in the prevalence of malaria. Administrative difficulties (i.e., not all the houses were sprayed with DDT), and the introduction of malaria cases from neighboring unsprayed areas, pointed to problems a MEP would encounter, but malaria experts from WHO and USAID agreed that these problems could be overcome and that ME through the use of a residual insecticide was technically feasible.

The administrative problems which the program must overcome are due partly to inadequate supervision of the work and partly to the difficulties in communication. Until recently, there has not been a good system of supervision to ensure that the spraying operations are properly done. Therefore, as in the pilot projects, many of the houses are not being sprayed with insecticide. Similarly, according to the NCDC Evaluation Report of Ethiopia, 1967, inadequate supervision in the laboratory and surveillance divisions has resulted in poor work. However, as the MES gains experience and hires more technically skilled people, these problems will be resolved. There has already been considerable improvement in the supervision of the spraying operations. For example, in one zone the percentage of unsprayed houses has dropped from 30% to 1%.

The difficulties in communication are due to the lack of good roads in many parts of the country, and the large number of small isolated communities. To overcome these difficulties, more manpower is needed than would be necessary in a country where there are better roads and a more consolidated population. Since there are not enough technicians to stage a MEP throughout the entire country at the same time, the country has been divided into four areas where the program will start at different times. Although this allows greater consolidation of manpower, there is the danger of malaria spreading from Area D, where the program is just beginning, to Area A where malaria has been eradicated. A similar problem exists along the borders of the

country, where no malaria eradication programs are underway. However, if a buffer zone around each area where malaria has been eradicated is sprayed with insecticide and if a good surveillance is established which can detect imported cases of malaria, the problem of reinfecting "clean" areas can be minimized.

The additional problems which the Ethiopian MEP may encounter are the large number of nomads and the existence of vectors in certain parts of Ethiopia which prefer to bite humans outdoors. Because the nomads never build permanent homes, it is difficult to find and spray all their temporary homes 2 times per year. Furthermore, the nomads may carry the infection from one part of the country to another. However, if the MES periodically gives the nomads antimalarial drugs in addition to spraying their houses as often as possible, the transmission cycle can presumably be broken and the disease thus eradicated from this group. The second problem, that is of mosquitoes biting humans outdoors, is obviously not solved by spraying houses with insecticide since the infected mosquito would not land on house walls. However, by treating the population with drugs, in places where the problem of outdoor transmission exists, and spraying the mosquito breeding places with an insecticide, malaria can be eradicated in these areas.

Strategy

The strategy of a malaria eradication program is to break the cycle of transmission of the disease between man and mosquito and to eliminate all human reservoirs of the infection. A mosquito, after feeding on a human sleeping indoors, will rest on the walls of the room and receive a lethal dose of insecticide if the house has been sprayed with DDT. Thus, an infected mosquito will die before it is able to infect other humans. If 95-97% of the houses have been sprayed in an area, there should be no transmission of malaria at the end of three to four years of insecticide spraying. Since the infection cannot be passed from one generation of mosquitoes to the next, the only reservoir of infection will be the human host who in some instances may harbor the infection for many years. Therefore, success in eradicating malaria depends upon complete and simultaneous coverage with insecticide of all houses in a given area as well as the detection and treatment of all residual human infections to prevent the re-establishment of the transmission cycle. When the last indigenous cases of malaria have been eliminated, the basic health services will continue the surveillance work of the Malaria Eradication Service to make sure that no new cases of malaria are brought into the country.

To carry out this strategy a large output of resources and manpower is required over approximately 10 years, but if the program is successful very little input will be necessary to keep the country free of malaria after this time. An alternative strategy is a malaria control program. Though the input would be less per year, the program would continue indefinitely since ME would never be achieved. In addition to being ultimately expensive, a malaria control program does not prevent the danger of severe epidemics since many areas of the country are left unprotected. Furthermore, such an endless program introduces the serious risks of mosquito resistance to insecticide and of parasite resistance to chemotherapy. As a result of these two factors, the longer a control program continues the more difficult it becomes eventually to eradicate the disease.

Because malaria eradication is essential to the growth of the country as well as the health of half of the population, Ethiopians at all levels have supported the program. Certainly the most enthusiastic supporters of the program, usually and at least initially, are the rural people who have heard that DDT drives out not only malaria out also bedbugs and fleas from their homes. Unfortunately, their enthusiasm often diminishes as the bedbugs and fleas become resistant to the insecticide, but with very few exceptions they continue to cooperate with the malaria workers. The Government has given its full support to the program not only by passing all the necessary legislation to implement the program out also by alloting increasing amounts of money to support local costs. Since 1963, the government has paid all of the local costs, which amounted to US$1,200,000 in 1966. However, with the full implementation of malaria eradication it became evident that the MES was not in a financial position to carry the full load of costs without external assistance both financial and technical. In the past USAID has provided considerable assistance in the procurement of commodities and of technical assistance and has authorized a Development Loan for two years and will in the future consider making additional loans. The technical assistance since FY 1967 has been provided by the U.S. Public Health Service under a PASA arrangement with AID/W financed with grant funds. WHO also contributes to the technical assistance with a limited amount of commodities and fellowships. In addition, the Program has come more and more under Ethiopian leadership. In 1963, the Program had only 376 employees, under the direction of an international staff. However, today there are 1500 employees, under the administrative and technical direction of Ethiopians.

Course of Action and Planned Targets

In accordance with guidelines established by WHO, a detailed Plan of Operations for the Malaria Eradication Program in Ethiopia has been drawn up by MES, WHO and USAID. For a more detailed description of the plan, the reader should consult this document: "Plan of Operations for the National Malaria Eradication Service of the Ministry of Public Health, Imperial Ethiopian Government 1967-1980".

The country has been divided into four geographical areas (A, B, C and D) to minimize the logistic problems presented by Ethiopia's large size and difficult terrain. The eradication program will be started at different times in each area out phased in such a way that the danger of one area re-infecting another will be minimized. The plan of action is the same in each area; two years of preparatory work (Preparatory Phase), four years of spraying with a residual insecticide (Attack Phase), four years of malaria case detection (Consolidation Phase) and an undefined period (Maintenance Phase) during which time the MES is merged with the basic health services.

During the Preparatory Phase, the area is carefully mapped, the houses numbered and administrative units established. Baseline parasitological and entomological data are gathered in order to measure the effect of the spraying operations.

In the Attack Phase all the houses in the area are sprayed 2 times a year with water dispersable DDT, a residual insecticide, at a dosage of 2 gr. technical grade DDT per square meter usually for 4 years. Entomological and parasitological data

gathered continuously throughout this phase not only give an index of the progress of the spraying operations but also point to areas where efforts need to be increased to halt the transmission of malaria. During the last two years of the Attack Phase, a surveillance system is established to detect all the cases of malaria which have not disappeared during the Attack Phase. The surveillance system is based upon monthly house visits by malaria workers who take blood slides from anyone who has had symptoms of malaria in the previous month.

When the parasitological and entomological data indicate that the chain of transmission has been broken (this usually occurs after 4 years of the Attack Phase), spraying operations are stopped but the search for residual malaria cases continues. Not only is each person with malaria given medical treatment to completely eliminate the infection but also an intensive search is made for possible asymptomatic cases around the "index case". In addition, all the houses in the community are sprayed with DDT if there is any evidence that transmission of malaria is still occuring. These activities continue for 2 to 4 years until no more cases of malaria are detected.

During the last phase of the MEP, all MES work can be taken over by the basic health services, provided the latter are well distributed over the country. The health services establish a modified surveillance system and continue to look for malaria cases which may have been imported or which may have been missed in the Consolidation Phase. When no indigenous cases have occurred in 3 consecutive years, the country is declared free of malaria.

Disruptions in the orderly progression of the program from one phase to the next are anticipated. The problems alluded to above will certainly make it difficult to break the cycle of transmission in many parts of the country within the 4 years allotted to the Attack Phase. However, the program is flexible enough to allow for these disruptions without affecting the goal of malaria eradication. "Problem areas" where transmission is still occurring may be kept in the Attack Phase for an additional few years while the rest of the area moves into the next phase. Special teams of malaria experts from WHO and NCDC in Atlanta, Georgia who visit the program periodically not only evaluate the progress of the program but also assist in solving problems.

Throughout the entire program, health educators play an important role. Traveling through the country, they contact important local officials and give lectures on malaria eradication. Their most important function in gaining the cooperation of the people is to find out how MES's public image can be improved. Already the health educators have made changes in MES practices which previously offended certain communities in the country.

MES operates its transport service, consisting of 246 vehicles, in cooperation with the Ministry of Public Health. Vehicles are serviced in the main garage in Addis Ababa and in zone garages or by mobile repair units which travel throughout the country. In addition, drivers are trained in a special driver education course given at MES headquarters.

Finally, except for a few top technicians and administrators, all the MES

personnel are trained in a METC run by MES. This Center gives courses, which last approximately 3 months, in laboratory techniques, spraying operations, surveillance, entomology and administration. Since it opened in 1959, the Center has trained 444 MES workers.

Since the beginning of the MES, considerable progress has been made towards the goal of malaria eradication. Some of the most important dates in the history of the program are as follows:

1956-1959: Three USAID and 1 WHO pilot projects carried out.
1959: METC established by WHO.
1960-1962: Expansion of spraying operations around the pilot projects.
1962: MES firmly established by Ethiopian Legislature, Preparatory Phase in Area A begun.
1966: (March) The Emperor officially started Attack Phase in Area A.
1967: Spraying operations continued and surveillance activities in Area A were begun.

The program will continue in each of the four areas according to the outline given above. By 1971, Area A will be expected to have completed the Attack Phase and the last Area, "D", will have started spraying operations barring unforeseen problems. Five years later, transmission should have been halted in the entire country as Area D moves into the Consolidation Phase. During the next 4 years, the basic health services will gradually assume responsibility for the entire program.

The maximum yearly budget for the MEP occurs in 1973 when all the areas are either in the Attack or Consolidation Phases, but during the next few years the yearly cost decreases to approximately U.S.$1.5 million. The largest external input, mostly in the form of loans, would be required in 1969 when there is the greatest demand for vehicles, equipment and insecticide. After 1969, the yearly external input decreases to approximately U.S.$.5 million until 1980 when the Ethiopian Government finances the program alone.

It is anticipated that during the life of the project that NCDC malaria advisors in various disciplines will be needed to assist the MES in achieving its goal. Besides the Chief Malaria Advisor there are in FY 1968 specialists in Field Operations, Epidemiology, Entomology, Supply management, and Equipment maintenance. These various disciplines will be changed from time to time as the needs of the program change, and WHO will provide technical advisors in differing disciplines as the need arises.

DONAHUE

Proj. 663-0006
GVL

AGENCY FOR INTERNATIONAL DEVELOPMENT (A

PROJECT AUTHORIZATION

2. PROJECT NUMBER	3. COUNTRY	
663-51-513-006	ETHIOPIA	0103

4. PROJECT TITLE

MALARIA ERADICATION

5. AUTHORIZATION DATE: July 3, 1970

6. PROP DATED: August 28, 1967

7. LIFE OF PROJECT

a. Number of Years of Funding: 17
Starting FY 1960 Terminal FY 1976

b. Estimated Duration of Physical Work After Last Year of Funding (in Months): 48

8. FUNDING BY FISCAL YEAR (in U.S. $000 or $ equivalent)

	DOLLARS		P.L. 480	LOCAL CURRENCY Exchange Rate: $1 = Eth $2.50			
				U.S. OWNED		HOST COUNTRY	
	GRANT	LOAN	CCC + FREIGHT	GRANT	LOAN	JOINTLY PROGRAMMED	OTHER
Prior through Actual FY 1969	4,510	8,800				2,621	
Operational FY 1970	146	-				1,600	
Budget FY 1971	54	4,500				1,600	
B + 1 FY 1972	75	-				1,600	
B + 2 FY 1973	75	4,500				1,600	
B + 3 FY 1974	75	-				1,600	
All Subsequent FY's	150	4,500				3,200	
TOTAL	5,085	22,300				13,821	

9. DESCRIBE SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF ANY P.L. 480 COMMODITIES

None

10. CONDITIONS OF APPROVAL OF PROJECT

Project Authorization is for the period of FY 1971 only. Future year approval dependent upon receipt of revised PROP early in FY 1971.

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached hereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
Samuel C. Adams, Jr.	AFR/ESA: JKnoll OK	7/2/70
SIGNATURE	AFR/DP: DShear	7/7
Assistant Administrator for Africa	DAA/AFR: PBirnbaum	7/8/70
DATE	A/CONT	

AID 1020-24 (10-69)

AGENCY FOR INTERNATIONAL DEVELOPMENT (A.I.D.)

PROJECT AUTHORIZATION

1. PROJECT NUMBER	3. COUNTRY	4. AUTHORIZATION NUMBER
663-51-511-006	Ethiopia	0103-R-1

2. PROJECT TITLE

MALARIA CONTROL
(Formerly Malaria Eradication)

5. AUTHORIZATION DATE: 10/15/71

6. PROP DATED: August 28, 1967

7. LIFE OF PROJECT

a. Number of Years of Funding: 20
Starting FY 1960; Terminal FY 19 79

b. Estimated Duration of Physical Work After Last Year of Funding (in Months): 6

8. FUNDING BY FISCAL YEAR (in U.S. $ or $ equivalent)	DOLLARS		P.L. 480	LOCAL CURRENCY Exchange Rate: $1 =			
				U.S. OWNED		HOST COUNTRY	
	GRANT	LOAN	CCC + FREIGHT	GRANT	LOAN	JOINTLY PROGRAMMED	OTHER
Prior through Actual FY 71	4,692	13,700				5,140	
Operational FY 72	50					1,550	
Budget FY 73	50	3,000				1,950	
B + 1 FY 74	50					2,500	
B + 2 FY 75	50					3,200	
B + 3 FY 76	50	3,000				4,000	
All Subsequent FY's	150					16,400	
TOTAL	5,092	19,700				34,740	

9. DESCRIBE SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF ANY P.L. 480 COMMODITIES

Technical assistance under this Project Authorization will be provided in conjunction with development loans for commodities and equipment.

10. CONDITIONS OF APPROVAL OF PROJECT

Project approval beyond FY 1973 is subject to the approval and authorization of two proposed additional development loans in FY 1973 and FY 1976.

(Use continuotion sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
for Samuel C. Adams, Jr. (SIGNATURE)	AFR/EAF:EDConroy Ed Conroy	10/4/71
	AFR/DP :EHogan	10/13/71
Assistant Administrator for Africa (TITLE) 10/15/71 (DATE)	DAA/AFR:PBirnbaum PB	10/15/71
	A/CONT	