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PROJECT PAPER (PP)

MALARIA CONTROL - NEPAL

Kathmandu, Nepal

May 1975

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PROJECT PAPER

MALARIA CONTROL - NEPAL

Part I Summary and Recommendations

Project Development Team

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1. Grantee - His Majesty's Government of Nepal (HMG) represented by the Nepal Malaria Eradication Organization (NMEO)
2. Grantor - Agency for International Development (USAID)
3. Summary Cost Estimate and Financial Plan (US \$ 1,000)

1975

	AID		HMG		UNDP*		WHO**		Total
	FX***	LC	FX	LC	FX	LC	FX	LC	
Imported									
Commodities (I.C.)		1150'	420'		420'		100'		2090'
Technical Assistance (T.A.)							80'		80'
Consultants									
Training							8'		8'
Local Support (L.S)			2200'						2200'
Other Costs (O.C.)									
Sub-total		1150'	420'	2200'	420'		188'		
Total		1150	2620		420		188		4378'

1976

	AID		HMG		UNDP		WHO		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
I.C.		844'	420'		950'		106'		2320'
T.A.	56'						88'		144'
Consultants	10'								10'
Training	12'	6'					5'		23'
L.S.			2300'						2300'
O.C.	10'								10'
Sub-total	88'	850'	420'	2300'	950'		199'		
Total	938		2720		950		199		4807'

1977

	AID		HMG		NDP		WHO		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
I.C.		1020	430		1050		30		2530
T.A.	56						95		151
Consultants	15								15
Training	12	6					6		24
L.S.				2300					2300
O.C.	10								10
Sub-total	93	1026	430	2300	1050		131		
Total	1119		2730		1050		131		5030

1978

	AID		HMG		UNDP		WHO		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
I.C.		470	440		500		30		1440
T.A.	56						95		151
Consultants	10								10
Training	12	6							18
L.S.				2000					2000
O.C.	10								10
Sub-total	88	476	440	2000	500		125		
Total	564		2440		500		125		3629

1979

	AID		HMG		UNDP		WHO		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
I.C.		170	460		200		30		860
T.A.	56						95		151
Consultants	15								15
Training		6							6
L.S.				1500					1500
O.C.	10								10
Sub-total	81	176	460	1500	200		125		
Total	257		1960		200		125		2542

Total Project Cost Estimate

	AID		HMG		UNDP		WHO		Total
	FX	LC	FX	LC	FX	LC	FX	LC	
Imported									
Commodities		3654	2170		3120		296		9240
Technical Assistance	224						453		677
Consultants	50								50
Training	36	24					19		79
Local Support				10300					10300
Other Costs	40								40
Sub-total	350	3678	2170	10300			768		
Total	4026		12470		3120		768		20384

- Note:
1. Commodity estimates based on cost CIM Calcutta and as DDT the principle insecticide of choice.
  2. UNDP commitment of \$2.7 million over the four year period is represented by illustrative budget by year.
  3. HMG LC Contribution dependent-speed of integration/Five Year Plan approval.
- \* UNDP - United Nations Development Program  
 \*\* WHO - World Health Organization  
 \*\*\* FX - Foreign Exchange                      LC - Local Currency

4. Description and Justification of Project

The project will assist HMG to sustain and improve malaria control services to approximately 6.5 million people living in the malarious areas of Nepal. The NMEC program will carry out a large scale program of (1) spraying the interior of rural homes with residual insecticides; (2) continuous surveillance of the population at risk to malaria to detect cases of malaria; (3) treatment of cases detected; (4) participation and coordination in the establishment of an integrated health services; and (5) health education. The NMEC has a history of program success in delivering services at the village level since its establishment in 1958. Its policies and program methodologies are modern in concept and have proven practical under Nepal conditions. In 1958 the NMEC started its 17 year fight against

malaria under some of the most difficult logistical conditions in the world. The NMEC program which reached every corner of the malarious areas of the country to spray houses with residual insecticides and treated malaria cases had reduced the case loads from several hundred thousand annually to approximately 2,500 cases in 1972.

However, since 1972, there has been a alarming rise in malaria cases especially in the areas of the country undergoing rapid development such as the Inner Terai valleys and along the forest fringes in the Eastern portion of the country. The rising incidence of the disease leading to the present crisis is due to a number of factors such as mass population movements into the areas where malaria had been controlled which resulted in overloading the existing NMEC structure which was in place. In addition, some portions of the country had integrated the malaria program into the health service system and an adequate response mechanism to fight increasing focal outbreaks of malaria was not in place. In retrospect, HMG had optimistically projected the results of the NMEC program as attainment of an adequate standard of malaria control for large areas and did not allow adequate time for the stability of the malaria control effort to take place.

In March of 1975 HMG decided to halt further expansion of its health integration efforts for FY 1976 and has elected to place malaria control as a priority national public health program for the coming five years. The decision to emphasize malaria activities is based on the experience of other countries in the Asian Region who neglected to heed the danger in regards to a rising malaria incidence and who are now faced with epidemic malaria over wide areas of their country. Nepal wishes to avoid this situation by meeting the present malaria crisis at a time when it can be reasonably managed. The USAID has been asked to reconsider its position on malaria assistance and to provide time-limited support to the containment effort of HMG over the next Five Year Plan period when malaria levels are expected to be brought to the point where an integrated health structure can properly assume the majority of malaria responsibility in the country and HMG can reasonably be able to support the on-going activity. As a result of this HMG request and in consensus with USAID assistance directions in Nepal it was determined by the USAID that limited participation in Nepal's malaria control effort over a five-year period would be in the best interest of the U. S. and HMG. The major inputs of the USAID are to be in the first three years of the Project as this time frame is the period of highest operational activity for the program. The last two years of the Project are phase-out periods for USAID commodity inputs to allow the HMG to increase its contribution for imported commodities. This decision was coordinated with both the WHO and the UNDP plans to continue to assist HMG with its malaria activities and compliments their efforts in this health field.

The basic framework for the project is provided in: a) The Plan of Action for the period July 1975 - July 1976 and b) The Long Term Plan of Operations covering the period July 1976 - July 1980. The USAID will grant rupees for local currency needs such as imported commodities and training in India and dollars for limited technical services, U. S. training and other costs such as in-country air support. (See face sheets). In addition, the World Health Organization which has provided assistance to the malaria program since 1956 plans to continue this assistance to the NMEO over the life of the project. The UNDP has agreed to assist the malaria activities in Nepal and it is expected that this Organization will provide approximately \$2.7 million in commodity support.

The USAID project is one of four interrelated USAID health sector projects (integration of health services, health planning, family planning/MCH, paramedical training) which are aimed at assisting the Government of Nepal in reducing morbidity, mortality, and fertility on a national level so as to facilitate economic and social development in Nepal. The proposed project has as its central purpose the provision of assistance to the Government of Nepal in strengthening its institutional capabilities for monitoring and controlling malaria and, concurrently, to create the basis for an organization which has the administrative and operational capabilities to monitor and control other communicable diseases in Nepal as well as to provide basic health services. This project will concentrate on the control of malaria to a level which can be maintained by the host government and on providing service system approaches to combatting and controlling communicable disease and other health problems which affect the majority of the rural and urban poor in the country.

As a standard for its operation the HMG has accepted to use the annual parasite incidence (API) of 0.5 (or 500 cases per million population) based on the total detected malaria cases minus the cases imported from abroad as a base. An annual parasite rate (API) of 0.5 or 500 cases per million population is agreed by HMG/WHO to be an acceptable control level which can be managed by the integrated health services. When a District reaches this API level, the District may be considered for health phasing under the Integrated Health System. It can be expected that over the life of the project that the presently rising trend of malaria can be halted and reduced to manageable proportions and that the malaria organization will serve as the basic operational structure for controlling malaria on a country-wide basis.

In addition, the NMEO itself will provide the basic organizational elements for an integrated health matrix which will carry out the activities of a simple and effective domiciliary-based public health service including such tasks as family planning services, immunizations, vital events, recording and disease surveillance. In addition to health linkages, the problems of malaria and its control are directly related to rural agriculture production schemes,

road building projects, power and irrigation system construction, settlement and resettlement proposals, as well as to a variety of industrial operations in which workers live at the fringe of urban areas which are affected by malaria. It is, therefore, necessary that malaria be controlled in Nepal so that orderly economic development can take place in large areas of the country.

The five year project will cost an estimated \$20,384,000 of which foreign exchange for commodities will be \$9,240,000 (U.S.), local currency outlays \$10,300,000 and other costs will be \$846,000. USAID's assistance to the project will be comprised of a grant of U.S.-owned Indian rupees over a five year period of \$3,678,000 (equivalent) for imported commodities and third country training and \$350,000 in technical assistance, participant training and other cost support. The U. N. donors comprising of the World Health Organization (WHO) and the United Nations Development Program (UNDP) over the five-year period will provide on a grant basis \$3,888,000 (U.S.) toward the procurement of imported commodities (\$3,416,000) and technical assistance/other support (\$472,000) which will include 20 man years of technical advisory service. HMG will provide the balance of funds required - \$10,300,000 in local program support and \$2,170,000 for imported commodities or 61% of the total project costs. HMG L.C. level of support is dependent upon the speed of integration of the Districts into the health services and HMG approval of the Five Year Plan. However, it is planned that all local costs of the approved program be borne by HMG.

The assumptions in proposing this project are that HMG's commitments to the development of a basic health service delivery system and malaria control will remain strong, and that HMG's health planning, managerial skills and implementation capabilities can be further improved. It is also assumed that there will be no unforeseen technical problem developed such as parasite drug resistance or mosquito insecticide resistance which can not be over-come within the framework of the cost estimates. It is also assumed that India will continue its malaria activities in the states bordering Nepal and will coordinate its program efforts with Nepal. HMG has elected to place the control of malaria as a high priority in its health planning and has increased its 1974 funding for malaria by approximately 85% over its 1973 budget. The HMG has given assurances that this program will continue to receive adequate financial support and a high priority in its over-all health program. The USAID project addresses both the questions of improving health planning and providing better service capabilities by providing needed technical assistance and fiscal support to the NMEO during a critical transitional period when coordinated planning for health integration can be organized and put into action to provide maximum service benefits to the people of Nepal.

The provision of the technical services of an experienced malaria advisor with a sound background in public health is considered

an essential ingredient in the USAID project support strategy. This person will provide management and technical services to HMG in carrying out the approved activities of the Plan of Operations. The provision of these skills will compliment the present and planned WHO technical assistance services to the NMEO by providing skills in over-all management of the malaria program. These program management advisory skills are not considered available to NMEO.

The USAID advisor will also provide an important linkage element between the NMEO and the basic health services to motivate coordinated planning and field activities between the two health programs.

This person should have in-depth overseas experience at a senior level with AID-assisted malaria programs as well as an educational and work background in public health in developing areas.

HMG has agreed on the need for the services of this technician.

Part II Section 1. Project Background

A. History and Development of the Proposal

The Government of Nepal places malaria as one of Nepal's major health priorities in its Five Year Plan for the period 1976-1980 due to the impact of this disease on the social and economic well-being of the country. It is estimated that in 1975 approximately 6.5 million of Nepal's population of 13 million are at risk of malaria and that malaria is present in about 50% of the land area of the country. Prior to 1960 the existence of malaria (which is generally not transmitted at elevations above 4,000 feet) was a factor in the under-utilization of the inner terai (areas between the Chure Range and Mahabharat Range), the forested portions of the upper terai (plains) and the low-lying river valleys. In order to increase food production as well as to improve the health status of the country, it was important that malaria be suppressed in order to encourage settlement of the malarious areas and to exploit the fertile valleys and plains area. Development within the malarious areas was contingent on the control of malaria to a point where agriculture and settlement schemes could be started, roads and construction projects undertaken without experiencing excess labor costs due to illness, and families would be willing to settle permanently in the area and establish farms, businesses, and homes.

Although there were isolated malaria surveys in Nepal as early as 1925 and again after World War II, the first organized malaria control efforts were made through two limited Pilot Projects in 1955-1958 (USAID) and 1956-1958 (WHO). These two pilot projects indicated that malaria transmission in Nepal could be interrupted

through the use of residual insecticides. The encouraging results of the two Pilot Projects and the need to control malaria for economic and health reasons led HMG to establish the Nepal Malaria Eradication Organization (NMEO) in December, 1958. Over the next several years the NMEO, assisted by the U. S. and WHO, gradually expanded the operations of the NMEO over the nation, and by 1965 the work had progressed satisfactorily in a phased manner in all malarious portions of the country. The incidence of malaria had been reduced from several hundred thousand cases annually to approximately 2,500 cases by 1972. The program had opened up hundreds of square miles of land for agriculture production and it is estimated that no less than 1.5 million people have settled in the lands formerly plagued by malaria. New concepts of administration required for a national mass health program and the training of hundreds of paramedical workers were only two of the many additional benefits to come from the NMEO efforts.

In June 1972, the USAID elected to terminate its support to the malaria project and provided a terminal grant of U.S.-owned Indian rupees equivalent of one million dollars to HMG malaria project for purchase of commodities, local support, and other costs. The WHO continued to provide technical assistance, limited commodity support, and some fellowships during the period 1972-1975.

#### 1973 USAID Program Review

In the USAID Program Review of 1973 on the status of malaria in Nepal, it was reported that several Districts and Units in the consolidation phase areas\* were beginning to show signs of regression and that epidemiological attention needed to be given to these areas with the application of corrective operational measures if necessary.

#### 1974 Program Evaluation

By February of 1974, HMG recognized that portions of the program had indeed retrogressed from their former low level of malaria and asked a joint HMG/WHO/USAID team to undertake a program evaluation of the malaria situation and to provide recommendations to the Government on necessary steps to take to meet the challenge of rising malaria. The Review Team determined that the basic causes leading this retrogression were primarily administrative and operational. The major administrative aspects of the problem included (1) the transfer of large numbers of key NMEO staff to the basic health services which left the NMEO without key experienced staff; (2) the low allowances rates which deterred the staff from going to the field for supervision; and (3) lack of training facilities. The major operational problems included (1) the lack of adequate

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\* Malaria programs are normally carried out in a series of phased activities -- preparatory, attack, consolidation and maintenance - see Glossary - Annex 9.

amounts of insecticides and drugs to carry out the program; (2) the influx of thousands of people to the malarious areas to take land in formerly malarious areas which overwhelmed the existing spraying and drug treatment/distribution organization; and (3) the transfer of Districts to Integration status without proper establishment of the response mechanisms necessary to combat a rising malaria incidence.

The report also indicated that approximately 1.2 million people in the consolidation phase areas should again be provided insecticide protection as the rate of reported malaria indicated that the ongoing protection mechanism against malaria was inadequate and house-spraying should be resumed. The report provides a listing by locality\* of those localities in jeopardy and suggested three operational levels for HMG consideration. In March 1974 at the regular meeting of Nepal Malaria Board, it was decided to revert 1.2 million people living in consolidation phase areas to the Attack Phase beginning in July 1974 and make additional funds available to carry on the necessary additional operational work. However, the amount of insecticide required to cover the reverted area was not made available to cover the August/September spraying cycle.

#### 1975 Situation Analysis Review

In 1975, HMG called for a joint HMG/USAID/WHO situation analysis. This analysis indicated a further deterioration of the program through 1974. It was estimated that no less than 14,000 cases of malaria had been detected in 1974 whereas in 1973 approximately 8,000 cases had been detected. The 1975 report provided administrative, technical and operational reasons for the rise in malaria and made specific recommendations for the improvement of the program. The report signaled real dangers to the country from the rising malaria and suggested prompt action be taken by HMG while the problem was still manageable.

#### B. U.S.A.I.D. Assistance in Related Areas

USAID shares the concern of HMG over the growing incidence of malaria in Nepal and the economic and developmental implications of a return of endemic malaria to areas once freed from the disease. U. S. assistance to Nepal is being increased in the health area through projects aimed at improving basic health delivery systems, health planning and health manpower training. The USAID program in Nepal also emphasizes in its assistance program the support and improvement of food production which will lead to raising nutritional levels and farm incomes. By assisting the farmer to produce and earn

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\* Smallest operational area in the NMEC, usually contains 5,000-10,000 population, covered by one NMEC House Visitor. Four or five localities make up one NMEC Unit.

more from his agriculture efforts, his standard of living and that of his family will be improved. The malaria control project has immediate humanitarian and development impact in both the agriculture and health sectors. (See Economic Section).

C. Other Donor Assistance

1. World Health Organization (WHO)

Since 1956 the World Health Organization has been engaged in assisting and advising the malaria efforts in Nepal. Starting with Pilot Projects in 1956 in the inner terai of Central Nepal, the WHO has provided technical assistance, limited commodities and training fellowships to the malaria activity as a part of its general health assistance to Nepal. The pattern of WHO assistance to the country malaria program follows a general pattern which was adopted for other country malaria programs. The following table<sup>1/</sup> summarizes WHO inputs over the life of the project:

WHO CONTRIBUTIONS TO MALARIA ACTIVITIES IN NEPAL

<u>AMOUNT IN DOLLARS U.S.</u>					
<u>Year</u>	<u>Activity</u>	<u>Total</u>	<u>Tech. Asst.</u>	<u>Training</u>	<u>Commodities</u>
1955-58	Pilct Project	156,155	NA	NA	NA
1959-66	Mal. Erad.	1,410,913	"	"	"
1967-1972	"	1,040,405	"	"	"
1973	"	208,061	67,078	2559	138,424*
1974	"	453,142	8,723	720	443,699**
<u>Total</u>		<u>3,268,676</u>	<u>-</u>	<u>-</u>	<u>-</u>
1975 (est.) Control		212,720	79,920	7800	125,000

\* \$120,000 for DDI

\*\* \$420,000 for DDT from UNDP

NA not available

<sup>1/</sup> Data as received from SEARO/WHO Delhi - April, 1975.

Technical advisory assistance is provided in accord with a joint WHO/HMG agreement known as the Plan of Operations (PlanOps). In 1975, the WHO professional Advisory Team for malaria consists of four technicians including one malariologist (Senior Malaria Advisor and Team Leader), one sanitarian, one epidemiologist (under recruitment) and one transport advisor. Additional technical advisory support is available periodically from the Regional WHO Office in New Delhi. All WHO personnel on the malaria advisory team in Nepal are stationed in Kathmandu. The WHO Senior Malaria Advisor is counterpart to the Chief Officer of NMEO and is involved in the technical aspects of the program. However, it should be pointed out that WHO does not provide the over-all managerial assistance to the NMEO which inter-locks the administrative, operational and technical aspects of the malaria control efforts.

During the period 1972-74, the WHO made arrangements with HMG to jointly support limited commodity procurement for the NMEO which totalled approximately \$180,000 for each of the three years, i.e. 1972 - \$120,000 (WHO) + \$60,000 (HMG), 1973 - \$100,000 (WHO) + \$80,000 (HMG); 1974 - \$80,000 (WHO) + \$100,000 (HMG). This amount of money was far below the actual amount required for imported insecticide due to (1) rising malaria rates, and (2) the rising costs of the insecticide worldwide.

The WHO plans to continue to provide technical assistance to the NMEO at the present level over the life of this Project. There is no plan to increase the WHO staff beyond its present size over the next few years. It is planned that WHO will also provide money for limited fellowships in India or elsewhere in Asia. The CY 1975-77 planned budget for WHO Malaria Team in Nepal for this period is as follows:

<u>Year</u>	<u>Amount Planned in \$ U. S.*</u>		
	<u>1975</u>	<u>1976</u>	<u>1977</u>
Technical Assistance	79,920	88,150	94,120
Commodities	125,000***	105,600**	30,600
Fellowships	<u>7,800</u>	<u>5,000</u>	<u>5,200</u>
Total	212,720	198,750	129,920

\* Data from SEARO/RC-27/3 - Proposed program and budget estimates for 1976/77.

\*\* Plans to include \$80,000 for DDT.

\*\*\* Includes \$100,000 for DDT (1975) as covered by 10th addendum to PlanOps.

## 2. United Nations Development Program (UNDP)

The UNDP has recently taken a more active interest in support of health projects in Nepal and specifically in the activities concerning malaria control. The UNDP in FY 1975 granted \$420,000 through the WHO which was budgeted for the procurement of needed insecticides (approximately 600,000 pounds of DDT, 75% wdp.). Under this project the UNDP will be a major foreign donor to the malaria effort in Nepal. The cost of the imported commodities over from FY 1975-FY 1979 will total \$9.24 million and the UNDP has allotted \$2.7 million for the period FY 1976-1979 to assist in this procurement. (See cost sharing breakouts on face sheets).

## 3. Other Donors

There have been no other major donors to the NMEC over the life of the project although UNICEF did contribute some commodities in the Pilot Project period (1954-1959). There has recently been HMG discussions with the British Embassy on possible grant assistance to the malaria control effort for limited commodity input, but no definite agreements have been reached.

## D. Host Country Activity and Justification in Malaria Control

The design of the malaria program is based primarily on the broad based national health objective of reducing morbidity and mortality so as to facilitate the economic and social development of Nepal. This objective has its origin in both national and health sector priority planning areas.

The basic foundations of the HMG Fifth Development Plan (FY 1976 - FY 1980) outline three basic principles to follow in developing this national development plan. These principle can be articulated as:

1. To maximize national output for the general welfare;
2. To maximize utilization of the labor force; and
3. To create regional balance and greater inter-regional exchanges, thereby encouraging national unity.

The planned malaria activities meet all three of the over-all national development objectives by: (1) increasing conditions for agriculture development in formerly malarious areas; (2) by maintaining a healthy work force to produce the crops and materials required by the nation; and (3) by allowing the malarious regions of the country to take their rightful part in the Regional development schemes of the country.

In reviewing the priority concerns of the Ministry of Health for the Fifth Development Plan there emerges four principle areas:

1. Control or eradication of malaria, smallpox, tuberculosis and leprosy.
2. Family Planning, nutrition and related matters.
3. Environmental Health and water supply.
4. General Health Service.

Malaria control relates directly to an expressed priority area of the Ministry of Health and its support is essential to meeting their objectives.

Over the years malaria has been considered by HMG as its major disease problem. HMG has been actively engaged in the work since the mid-1950's. The NMEO has been considered among the best organized and most effective government operations in the country and is the only large scale domiciliary based service in Nepal. The lowering of the case rates from several hundred thousand cases annually to approximately 2,500 cases in 1972 is substantive evidence of NMEO's ability to successfully plan, carry out and evaluate a national malaria effort in some of the most difficult land areas of the world. The past accomplishments of the program are a credit to the personnel of the NMEO and have been a significant factor in the rapid development of large areas of the country. In fact, it could be said that the NMEO from 1972 to 1975 has been a victim of its own success. The lands cleared from malaria have created resettlement opportunities for more than a million people and the dimensions of this resettlement activity have been beyond the NMEO field staff capability to protect against focal malaria outbreaks.

In addition, HMG which was encouraged by the success of the malaria program, began to integrate key portions of the NMEO personnel into the general health services and asked the field operations staff to assume greater health service responsibilities. With the large influx of settlers into the formerly malarious areas, the transfer of well-trained and experienced staff to other duties and the central focus on organizing integrated public health services, the malaria problem began to increase and in 1973 the country experienced 8,000 cases. In 1974, the caseload of cases rose to 13,500 and the actual case level is probably in the range of 15-16,000. The major rise of case rates of malaria is presently confined to the inner terai areas and to the forest fringe areas of Lumbini Zone. However, there is every possibility the disease will not only spread throughout the country, but that the case rates will rise dramatically unless action is taken promptly.

The HMG has taken positive steps to halt the rise of malaria and has almost doubled the budget for the NMEO from Rs. 120 million in 1974 to Rs. 222 million in 1975. The program's consolidation areas which were identified as regressing have been officially reverted back to attack phase activities by the Nepal Malaria Board in an effort to halt the advance of the disease. A new Plan of Operations is being prepared to cover the activities of the national malaria effort over the next five years. Discussions have been held with donor agencies to determine whether assistance will be provided to procure insecticides and supplies to carry out spraying operations in limited areas in order to contain malaria and to protect the large scale gains of the past.

#### E. Studies Done

The major studies in regard to the malaria incidence have been carried out by joint HMG/WHO/USAID Teams in 1974 and 1975. The problems in the technical, operational, administrative areas have been identified and recommendations suggested for their correction in the reports from these Teams. The methodology to correct the rising malaria problem is known and has been proven to work in Nepal. There are no known technical problems which will seriously impede the planned program.\* No additional studies are considered necessary as the program is an ongoing effort and the methodology for operations are known.

#### F. Views of the Country Team

The Country Team believes that Nepal has both the financial capability and the human resource capability to effectively utilize the grant funds projected for this project and to maintain the planned program after withdrawal of USAID assistance.

This judgement is based on past performance of the NMEO and its past accomplishments in the control of malaria by the successful utilization of USAID and other grant assistance.

#### G. Opinion of Other Donors

The two other major donors to the support of the malaria activities in Nepal are the UNDP and the WHO. The WHO has over the years provide technical assistance, limited commodities, and fellowships for the program. WHO has participated fully in the planning of the project and has indicated that the Organization will continue strong support for the ongoing malaria effort. The UNDP has agreed to allocate up to 2.7 million dollars (US) to the program over the period FY 1976 to FY 1979 to assist the HMG in the procurement of imported insecticides. The UNDP and WHO has agreed with the program plans of this project.

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\* Although the possible development of technical problems over time can not be absolutely ruled out.

Section 2. Project Analysis

A. Analysis of Objectives

The objectives of the Nepal malaria program and this project are to control malaria to a level where it is no longer a public health problem and to facilitate the orderly development of basic health services in Nepal.

In quantified technical terms the objectives call for the interruption of the rising endemicity of malaria and the reduction of its incidence to 0.5 Annual Parasite Incidence (API) based on an API calculated from all reported cases minus the imported cases from abroad. For Nepal country-wide, the 0.5 API standard translates to an incidence level where the annual number of detected cases under a stabilized surveillance mechanism should not exceed 3,000 cases, and with an adequate response mechanism in place to effectively handle this level of incidence. From the present estimated quantity of malaria in Nepal, the proposed program will reduce the present level of malaria by approximately 80% in the 6.5 million people who are living in the program area covered by the NMEO (roughly 50% of the area of Nepal is considered malarious).

The technology for reducing malaria in Nepal is known and can be expected to be successful if carried out properly. The NMEO in the past has been able to meet its schedules and has successfully implemented its operational plans and evaluation procedures when provided the necessary resources. The present objectives of the program mean that support of malaria control must be a continuing commitment for Nepal as malaria will be present for some years even in the areas which have passed into the integrated health service programs. The project is designed so that all local operating costs of the NMEO are borne entirely by HMG from their own budget sources and the recurrent costs at the end of the project are within the capability of HMG to support. In addition, HMG annual funding level for foreign source commodities has been planned so that the amount provided by HMG through the high cost periods of the program in FY 76-78 when other donor assistance is available will be sufficient to carry the ongoing commodity needs at the termination of this project when other donor assistance is not available.

It is assumed that by 1979-80 if program targets are met and the project purposes achieved including those problems identified by the 1975 Situation Analysis Team, the cost of the malaria control program (both for local costs and for foreign source commodities) can be provided entirely by HMG.

B. Economic Analysis

1. Parameters

The approach in this section is to use available data on financial returns to individual agricultural labor and an average farm's family labor to estimate potential losses in non-commercial agricultural production precluded by implementation of the proposed project. (Very rough estimates are used of the pattern over time of malaria case incidence in the project's absence.) In addition, public health direct costs averted by project implementation are estimated.

The potential losses in non-commercial agriculture are derived from two different hypotheses. First, output per farm would be affected adversely by sickness in the labor force, but such losses would be for brief periods and would be experienced by a different farm population from day to day. Second, output would be lost due to land not being cultivated, either because farms (or parts of farms) would be abandoned or because settlers would delay opening new farms when malaria reached very high levels. Abandonment of viable farms would have long-term, very high costs, while delayed migration would have a once-for-all impact.

There is no double - counting of "production losses averted" between these calculations (the two flows are non-additive) because one loss occurs on farms in continuing production while the other occurs due to lands either ceasing to be tilled or

to postponement of initial cultivation. Project benefits are calculated for a 20-year period. Project costs, given in Part I (3), are increased at an annual rate of four percent from the "maintenance" base of 1980.

The analysis deals only with primary, non-commercial agriculture because of: i. Wage differentials which enable industries at the low level of technology characterizing Nepal to hire replacement labor away from agriculture at will, ii. Lack of data on returns to labor in the service industries, and iii. The overwhelming preponderance of agricultural labor in the active labor force in malarious areas.

Production of Different Crops - 1972-73

(Regional Breakdown)

Approximate % of Total Country Production

Originating in Primary Malarious Areas

<u>Area</u>	<u>Paddy</u>	<u>Maize</u>	<u>Wheat</u>	<u>Oil Seed</u>	<u>Sugar cane</u>
Eastern Terai	47	8	34	26	51
Western Terai	23	11	23	28	30
Inner Terai	<u>7</u>	<u>14</u>	<u>6</u>	<u>35</u>	<u>2</u>
Total	77	33	63	89	83

Percentages for paddy, maize and wheat can be significantly increased to account for production in (formerly) malarious hill river valleys.

There would be deaths primarily associated with epidemic malaria in the project's absence (above the few occurring under the

project) and malaria would be the secondary cause of approximately an equal number of deaths from other primary causes. It can be estimated that between 1%-2% of the cases would die or approximately 4,000 deaths per year from direct effects of malaria and 4,000 deaths per year from malaria as a secondary cause. No cost analysis has been made for deaths averted due to many variations of the nature of such calculations.

An estimate has been made regarding the number of malaria cases avoided by the program. It has been the experience in other countries in this part of Asia for malaria to double in incidence each year until a stable level of malaria has been reached. In Nepal, malaria cases since 1971 - 1974 have roughly followed this pattern.

<u>Total</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
<u>cases</u>	2778	2320	8397	15,500

A projection of the cases occurring if no extensive malaria control is carried out over the next five years, cases assumed to occur with successful project implementation, and cases prevented, is given below:

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
1. Est. total cases with no program	25,000	50,000	100,000	200,000	300,000	400,000
2. Est. total cases under Plan Ops.	25,000	25,000	15,000	7,000	5,000	3,000
3. Est. total cases prevented	0	25,000	85,000	193,000	295,000	397,000
4. Total cases prevented over project - approximately	1,000,000					

Obviously, the massive impact of the 1978 and 1979 projections would be unacceptable and action would be taken on an emergency basis. It is assumed that cases would stabilize at 400,000 per year. (To the above figures would be added approximately 2500 imported cases of malaria from outside the country each year or 12,500 over the Plan Ops. period.)

The estimate of approximately 55,000 cases over the period 1976-1980 with the proposed program, subtracted from the estimate of 1,050,000 cases which would occur with no program, gives a balance of 995,000 cases of malaria averted by project implementation. The geometric growth characteristics of the disease of malaria clearly results in a dramatic public health impact and provides high returns to early control measures.

The ~~flow~~ of net project benefits is calculated according to the conditions specified above, and the project's internal rate of return is found. Additional, potential, project benefits are discussed but not quantified.

## 2. Economic Impact Assessment

### a. Impact on Labor Productivity

During 1976-1980 it is assumed that 53% of the population will be in the labor force (54.3% in 1971) and that 92% of this labor force will be employed in agriculture (93% in 1971). Thus, of the 995,000 cases of malaria precluded by the proposed project's control activities, 48.76% or 485,650 are assumed to be in the agricultural labor force.

Section C provides a yearly estimate of the total population to be covered by this project. If 48.76% of the population in each year is estimated to be in the agricultural labor force, and malaria is assumed to occur at random (48.76% of malaria victims are in the agricultural labor force), then the following proportion of the calculated agricultural labor force in malarious areas would contract malaria each year in the project's absence (fiscal years and percentages):

<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
0.7	1.5	2.9	4.2	5.5

On the average, a worker loses five days of employment outright and is severely weakened for an additional month per attack of malaria. It is reasonable to assume that this means a loss in potential employment per worker of 18 days (five full days and 26 half-days) per attack of malaria. It is assumed that each agricultural worker would have a 4-in-5 chance of being employed during the entire time he is instead out sick, due to the coincidence between planting and harvesting seasons (peak labor periods) for major terai crops (paddy and wheat) and malaria transmission (May-June and September-November). The average daily return to agricultural labor in six malarious districts sampled in 1968/69 was Rs 8.04. In an attempt to equate average wage and marginal productivity of agricultural labor in the malarious areas, this base is reduced 10% (only, due to the coincidence between peak labor requirements for paddy and wheat and peak periods of malaria

transmission), The wage/productivity rate is increased by 2% a year to account for increases in average labor productivity.

Eighty percent of the 485,650 presumed malaria cases prevented by the proposed project are thus assumed to be both in the active labor force and employed (388,520 persons). The proposed project means that an average potential loss of approximately Rs 158 in product per infected worker will not occur during the life of the project. The potential loss in production averted by implementation of the project would be some Rs 61.4 million during 1976-80, Rs 314.6 in the subsequent ten years and Rs 469.2 in the following ten-year period.

b. Impact on Agricultural Wealth

The incidence of malaria is not randomly distributed in space but is clustered in limited, albeit shifting, areas. The IBRD "Agricultural Sector Survey in Nepal" notes that some 67,000 families moved into formerly malarious areas in 1961-71. Projecting a linear trend, this implies that by 1979 roughly 144,000 families would have settled in areas that used to be so malarious that few people inhabited them. It is in such areas that a sharp recurrence of malaria almost certainly would be concentrated.

We arbitrarily assume that 90% of these families open one average farm each; that an annual malaria case incidence of over 300,000 would induce one-third of these families to abandon their farms (in 1979) and join the ranks of the underemployed (average productivity assumed at one half the pre-move level):

and that the abandoned lands would remain unutilized due to very high, continuing localized malaria incidence. A loss to national income of nearly Rs 41 million per year would result. (Instead of farms abandoned outright, portions of many farms could be underutilized, i.e., in fodder, due to a resurgence of malaria). 1/

To this should be added the national income foregone due to decisions of potential migrants from the hills to the terai to delay departure from their home villages rather than move to virgin lands in the terai when malaria reached a level of 300,000 cases per year. Some 24,700 farm families (linear trend of IBRD data) are assumed to choose not to migrate in 1979 and 1980. 2/ Using the assumption that average income

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1/ Using data developed by the Nepal Rastra Bank, the average net income per medium-sized terai farm in 1969/70 was Rs 1589. This figure, increased by two percent (assumed productivity increase) per year to 1979, is halved (to account only for income assumed foregone by moving) and multiplied by 90% of one-third of assumed "maximum risk" families.

2/ Calculated as a two-year phenomena only through the following scenario: as the case load rises towards 400,000 and stabilizes, potential migrants become accustomed to the high level of malaria and decide to move in any case, due to land pressure in the hills.

per migrant family is equal in the two-year period of delay to average income foregone, the two-year delay in reaching full productivity (direct cost) for these families is equivalent in national income foregone to Rs 24.6 million.

c. Impact on Public Health Costs

The materials cost of treating one malaria outpatient was estimated in Indonesia in 1974 at roughly \$0.32. Inflated by 15% (to \$0.368), this per patient cost applied to Nepal yields a direct value to drugs saved by the project's successful operation of Rs 3.8 million. To this must be added hospital outlays saved for the seven-in-one-thousand patients requiring hospitalization (at Rs 265 each), or Rs 1.8 million, plus the value of extra caloric intake required to maintain a malaria victim at a subsistence level (one kilogram of rice over a ten-day period is considered the minimum), or Rs 4.0 million at Rs 4/kilo parboiled rice (present average terai price is Rs 3.3/kilo). Total directly - derived savings in public health costs during 1976-80 are calculated at Rs 9.6 million, Rs 39.4 million in the following ten years and Rs 42.8 in the next ten years.

3. Other Economic Aspects

Commercial crops in the terai (mustard, jute, sugarcane and tobacco) together account for some five percent of agricultural GDP (excluding livestock, forest and fish products). While both their cultivation and processing require substantial labor inputs, these activities are not so uniquely clustered with periods of malaria transmission as are paddy and wheat sowing/harvesting.

They also enjoy much higher per unit returns than food grain cultivation, so that workers can be hired from the seasonal surplus (including underemployed) labor force in the terai. Therefore, the cost impact of a malaria resurgence upon the commercial crop sector is not considered.

Very little GON revenue is received directly from taxes on land. Little of either customs or sales taxes is collected on the paddy and wheat production which would suffer the most from a resurgence in malaria (although the GON is attempting to "institutionalize" rice exports to India). Most of the nominal collection of direct personal taxes is based upon income generated in the Kathmandu Valley. The direct effects on government revenues of a resurgence in malaria probably would be slight, although indirect effects over several years could be considerable.\*

Similarly, although one-fifth of Nepal's exchange receipts in FY 1974 was from tourist expenditures, little of this source of exchange would be affected by a malaria resurgence. Most tourists visit only areas above 4,000 feet (non-malarious) except for the Pokhara Valley (where, perhaps, the highest payoffs to a very limited malaria control effort might accrue), and, in any case, the bulk of tourist travel to Nepal occurs in seasons of low malaria transmission.

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\*Principally, a decline in the marginal propensity to import, resulting in a decline in customs receipts. Secondly, some decline in monetization (reduced excise collections) and increased velocity of circulation (some inflationary impact).

As is well known, the preponderant impact of malaria is upon long-term patterns of land use and investment. Left unchecked, malaria can make large areas unsuitable for permanent cultivation and render impossible otherwise very attractive investments. However, malaria control is cheap (on a per capita basis), well understood, safe and effective, so an analysis cannot reasonably assume that malaria will be "left unchecked".

There are malaria program benefits which cannot be assessed directly in economic terms. The NMEC program has reduced the risk of malaria to upwards of 6.5 million people and has delivered direct services including spraying of houses and medication for treatment and cure of malaria to this group. The very process of bringing direct services and health education to many remote areas which previously had not received such service from any government agency has created a positive environment for other government actions in the population. This environment facilitates efforts by the government to expand other development programs and in establishing a base for increased central government revenue collections. The NMEC program has also created a large cadre of trained health workers who are now taking on other health activities and responsibilities. The NMEC has also introduced a number of administrative mechanisms into government thinking which are now being absorbed into the procedural mechanisms of a number of Government agencies. For example, the NMEC was the first major developmental organization to decentralize its operation and give operational authority and planning to its

regional offices. Also, the distribution of incoming insecticides to field units was organized using a new administrative pattern and represented a new approach to supply logistics for Nepal.

#### 4. Conclusion

Within the parameters outlined in section (1) above, the flow of project benefits was calculated according to the methodology sketched in section (2). The project's internal rate of return over fifteen years was then found to be 21.4% (over a twenty year period: 22.8%). This respectable rate of return could be increased somewhat by imputing values to some or all of the factors discussed in section (3) above. However, even the very tenuous type of data on which the detailed analysis is based is not available to enable marginal additional benefits to be calculated.

The results are quite sensitive to assumptions about the degree of peak-season unemployment in malarious areas, and to the extent of land assumed abandoned/underutilized due to a "massive resurgence" of malaria. Returns are lower in Nepal, with its very high cif costs and low levels of labor productivity, than in more developed countries.

### C. Technical Analysis

The technical problems now facing the program are manageable in size and have been recognized by the program. The two primary technical problems concern: (1) insecticide resistance in A. annularis, a secondary mosquito vector, in limited areas of the outer terai of the country; and (2) chloroquine resistance/tolerance in the malaria parasite, P. falciparum, in the eastern portion of the country which is associated with Nepalese returning from the Indian areas of Assam and NEFA. NMEO programs have been initiated to overcome both of these problems.

The insecticide resistance problem is presently confined to the Rupandehi District, although other districts in the outer terai may be affected. Entomological work is being increased in those areas where this problem exists or may exist to determine what actions are necessary. One immediate change in operational procedures that is being effected in the Beltari Unit and Assanena Unit is to change from the chlorinated hydrocarbon insecticides (DDT, BHC) to the organophosphorus group (malathion) since operational failure has been ruled out as a factor in the continued difficulties in the control activities. It is expected that the change in the insecticide and careful operational management at the time of spraying will result in a dramatic lowering of the malaria incidence in these areas. Care is being taken to give careful study to any area where the malaria incidence is high and not to change to malathion unless absolutely necessary as this insecticide is approximately four times more expensive to produce and apply than is DDT.

The second technical problem is the emergence of cases of malaria over the last two to three years in the eastern portion of Nepal with a P. falciparum strain of malaria which has a decreased sensitivity to 4-aminoquinolines. Limited studies on this strain of P. falciparum and the related epidemiological studies indicate that the major source of infection is to be found in Nepalese returning from work activities in Assam and NEFA. The majority of the cases which produce recrudescence after routine radical treatment (1,500 mg. of chloroquine plus 75 mg. of Primaquine) appear to be R<sub>1</sub> level of resistance and have been successfully treated with increased dosages of chloroquine (2,400 mg.). If the malaria parasite persists, a single dose of 1,000 mg. of sulfadoxine plus 45 mg. of Primaquine has been recommended. In-depth studies of the problem have been recommended to the NMEO by the Review Teams of 1974 and 1975 and limited work has already been completed. However, the present capacity of the NMEO for in-depth parasite studies is severely limited by the lack of trained medical officers. This capability for in-depth studies will be greatly improved when the additional medical officers requested by the NMEO are actually assigned. In order to better understand the parasite resistance/tolerance problem it is necessary for the patients to be hospitalized for some days and have close clinical observations during their treatment. The laboratory facilities necessary to carry out this

activity are often not available at hospitals in Nepal. There must be more coordination between the India NMEP and the NMEO on problem of parasite resistance as it affects both countries. The NMEO has developed a list of locations in India at which the Nepalese patients apparently contracted the disease. This list was given to the Indian delegates at the last India-Nepal Malaria Border Coordination Conference held in April 1974. It was agreed at this Conference that more exact information on locations were necessary and the NMEO is attempting to obtain this data through its epidemiological work. There is good reason to believe that the India NMEP officials will take the necessary actions to strengthen their own program. However, this particular problem could develop on a wider scale and cause increasing difficulties in the program. There are suitable anti-malaria drugs to overcome this difficulty, but these drugs are also more expensive than those presently used. The problem will require the close attention of the NMEO, increased epidemiological investigations by both the India and Nepal malaria programs, correct drug treatment and improved evaluation methodology in the field operation, and the development of better screening mechanisms at border crossing points as well as additional information on the basic problem.

The NMEO can successfully meet this particular problem as it is presently quite manageable. It is also probable that some, if not many, of the reported cases of drug resistance may be due to operational failure, e.g., drugs not taken, inadequate drugs given, reinfection of the patient with a new case of malaria but classified as relapse of an old case. The NMEO operational machinery needs to be studied and strengthened where necessary to assure that this possibility is eliminated as a factor in the drug resistance problem.

The technology to carry out the proposed program is known, but certainly training and/or refresher training is necessary. For example, if focal larviciding is to be done, there must be training provided to the supervisors and crews to carry out this work as larviciding has not been a normal procedure in past NMEO operations. The field techniques of larviciding are not difficult to learn and manpower is available that could perform the work successfully.

The major operational procedures which are to be carried out by the NMEO are the same procedures they have been able to carry out successfully in the past.

The technical program and operational schedule for the period from July 1975 to June 1976 is outlined in the NMEO Plan of Action which is attached as Annex 2 to this document. The Revised Plan of Operation for the period FY 1976 - FY 1980 is under preparation and will be based on the recommendations presented in the 1975 Situation Analysis Team. It is a condition of future USAID assistance that the Revised Plan of Operation must receive approval by HMG and WHO as well as a favorable review by USAID prior to granting support in FY 1976.

Due to the lack of insecticide in the country at present and over the next 12 months, an operational program has been developed which will hopefully contain the present rise of malaria at its 1974 level. In April 1975 the four Regional Officers and the 13 Anchal Malaria Officers met with the Chief Officer of NMEQ and WHO/USAID Advisors to develop a strategy using the known availabilities of insecticide. The results of these discussions provided a baseline for the Table in Annex 6 which indicates both requirements and required times for supply order inputs.

As the use of residual insecticides has implications on the quality of the environment, a statement has been prepared as Annex 5 on the Impact of the Project on the Environment.

The Revised Plan of Operation will follow the funding pattern provided in Part I of this document.

The following tables provides base costs and population phasing over the life of the project and beyond.

A. Estimated Value of Imported Commodities  
to be Used in Fiscal Year in U.S. \$ (1,000)

For the Period FY 1976-FY 1981\*

<u>Fiscal Year</u>	<u>Insecticide</u>	<u>Other Costs</u>
1976	1,890	200
1977	2,140	180
1978	2,370	160
1979	1,330	110
1980	750	110
1981	425	90
	<u>8,905</u>	<u>850</u>

B. Estimated Population Phasing of Malaria Program  
FY 1976-FY 1981\*

<u>Year</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
1. Estimated Total Population in Program (1,000's)	6,691	6,827	6,964	7,103	7,253	7,400
2. Phase of Population in Program (1,000's)						
a. Under Spray	3,271	3,336	3,405	1,700	950	450
b. Surveillance; Vigilance (Integration)	3,420	3,491	3,554	5,403	6,303	6,950

\*Source - 1975 HMG/USAID/WHO Situation Analysis Report.

Note: Table A represents the value of commodities used in that fiscal year. There is approximately a one year supply pipeline between order and receipt of materials.

#### D. Social Analysis

From the beginning of the malaria control operations in Nepal care has been given to help recipients understand the services to be provided by the effort. Before any malaria control activity is carried out in a given area, contact is made with key government, village, religious and business leaders to explain the program and to obtain advice from these people as to how best to schedule operations.

The malaria program has had a heavy social impact in Nepal as commercial growth, increased agriculture activities, population movements, rise in land values accompanied by other social demands, e.g., schools, health services, roads, buildings has followed the control of malaria in endemic areas. The NMEO has had to adapt to these rapid changes in providing its services. The NMEO has adapted its work program to meet these changes, e.g., increased surveillance visits and more frequent spraying in areas undergoing rapid growth.

The NMEO developed a health education section within its organization and capable and well-trained leadership was developed for health education activities and its program activity was given strong support. From this health education section a number of socio-cultural patterns were observed which were taken into account when planning the field operations, e.g., mud-washing of the house walls is done widely at Desain and Holi holidays and these dates guide the start of the spraying operation. The planting or harvesting of rice often leaves areas short of available labor, and attention is given to these peak employment periods in operations. Surveillance house visitors are recruited from their home areas so that language and cultural barriers are reduced. The NMEO has been very adaptable in blending its program into existing social patterns and is sensitive to this need.

This Project is designed to provide services and assistance to rural poor of Nepal to improve the quality of their lives by providing health protection against a major disease problem and to allow them to work more productively in their daily activities. As over 90% of the population of Nepal engage in agriculture activities, the malaria control program will have its greatest impact in the population in this economic level.

Perhaps one of the most important aspects of the program is the demonstration to the people of rural Nepal that one can control, to some extent, the diseases of nature and carry out activities which improve the general well being of the community. This realization provides a basis for increasing acceptance of modern technology not only in health but in other sectors.

The NMEO was among the first government organizations in the country to recruit, train and employ women for work in the NMEO. Approximately 2% of the NMEO staff are women and the percentage is increasing. While this figure of 2% is small at the present time it represents a break through in the employment pattern of Nepal and is a higher per cent figure than many other similar organizations in Nepal. It is expected that continued efforts will be made by the NMEO as well as HMG in general to utilize women in a higher positions in the technical and administrative field. The present State Minister of Health for HMG is a woman and the newly appointed administrative head of the Division of Community Health and Integration is a women medical officer. Women serve mainly as laboratory microscopists and house visitors, but they are also represented in the health education and administrative areas. There are fewer barriers to women to work in the government in Nepal than in many areas of Asia.

The impact of the malaria project on women in general is very great as the burden of caring for sick family members usually falls on the women of the house and increases their work load. In endemic malarious areas malaria affects on both male and female and debilitates their health. In the younger children and infants, a sick male child does for cultural reasons receive better care than a sick female child and malaria can result in premature death in these groups.

There is clear evidence to the effect that woman having malaria do have higher abortion rates and the probable complications resulting from the abortions adds to the burden of a family. The secondary effects of malaria are also severe. It is estimated that for all death caused primarily by malaria, there is an equal number of deaths where malaria is a secondary factor. A person weakened by malaria falls victim more easily to a wide variety of respiratory and intestinal diseases.

#### E. Administration

HMG agency for the execution of the project, including the procurement of project commodities, is the Nepal Malaria Eradication Organization (NMEO) of the Ministry of Health.

The NMEO is assigned by the Ministry of Health through the Nepal Malaria Eradication Board (NMEB) as the executive instrument to carry out national malaria activities in Nepal. The NMEB was established by HMG Order 2015, dated December 4, 1958. The NMEO activities are guided by a long term Plan of Operations which has been approved by the World Health Organization and the Government of Nepal. Annual Plans of Action are prepared by the NMEO and approved by the NMEB and describe the specific activities to be carried on during that particular year. There is an approved Table of Organization which structures the NMEO from the National Headquarters (Kathmandu) to four Regional Offices (Biratnagar, Birgunj, Bhairawa, Nepalgunj) which control 13 zones, 36 districts, 153 units and 909 localities. There is a staff of approximately 3,440 personnel

assigned to the NMEO. In addition, there are 6 districts (Bara, Rautahat, Saptari, Parsa, Siraha and Kaski) which were formerly under the NMEO program but are now in the integrated health service system of the Ministry of Health. It is envisioned that as the malaria program is integrated into the national basic health service that the present NMEO District Malaria Officer and his staff are to be absorbed into other public health operations in the District. The Central and District malaria services now have the experience and capabilities required to carry out an effective malaria control operation. The Chief Officer is a malariologist and has graduate training not only in malaria but in public health and health planning. The basic field structure is in place with offices, storage areas, defined work boundaries, and work schedules. With the addition of limited numbers of temporary employed staff to carry out the revised spray operations during the next five years, no major operational or technical difficulty is foreseen that would prevent the NMEO from meeting its operational objectives. However, at the mid-management and top management levels there are personnel and administrative difficulties at the present time which hinder the NMEO in meeting the malaria challenge and scheduling integration activities.

#### Personnel

During 1974 the general administrative capabilities of the NMEO have weakened due to the transfer of personnel and/or abolishment of key NMEO administrative posts. Over the last two years many administrative and supply posts have had to be filled by technical staff who are untrained in administrative and supply procedures. The posts of Senior Administrator and Fiscal Officer have been abolished to the detriment of the program. A large number of these former NMEO employees have transferred to the regular service of the government as the operations of the DHS have been increased. The NMEO has experienced major difficulties in the recruitment and promotions of personnel due to the lengthy HMG formalities in the Public Service Commission. The NMEO require adequate and trained administrative staff to operate properly. The posts of Senior Administrator and Fiscal Officer have been reestablished in the FY 1976 NMEO Plan of Action and efforts are being made to recruit qualified administrative personnel to these positions. There are seven of the thirteen Zonal Officer's posts vacant due to the transfer of trained personnel to HMG Ministry of Health and these key people must be reassigned or replaced to the NMEO if the field work is to be performed as expected and proper evaluation carried out.

#### Fiscal Management

In the area of fiscal management of the NMEO, HMG has substantially increased the NMEO budget over the last two years as the following table will indicate:

SUMMARY FISCAL DATA FOR NMEC - 1971/72 to 1974/75

Source of Funds (in Rs. N.C.)

<u>Year</u>	<u>Budget Expended</u>	<u>HMG</u>	<u>WHO</u>	<u>AID</u>
1971/72	14,001,076.50	4,899,352.00	-	9,101,724.70
1972/73	12,784,252.20	5,981,252.00	-	6,803,000.00
1973/74	15,900,021.92	12,323,317.00	(\$ 120,000)	3,576,704.00
1974/75*	27,097,000.00	22,645,000.00	(\$ 100,000)	-

- Remarks:
1. 1971/74 - AID Contribution - terminal grant
  2. 1973/74 - WHO (\$120,000) - insecticide purchase
  3. 1974/75 - WHO (\$100,000) - insecticide purchase
  4. 1974/75 - UNDP provided \$420,000 for commodities

\*1974/75 - is approved budget

It can be seen that the budget of the NMEC has increased substantially in the last two years. However, during 1974 the allocated funds were not released on a timely basis which seriously affected the prompt procurement of supplies and equipment. For example, the NMEC funds for the first quarter of 1974/75 were released on August 7 and September 17 instead of July 16, 1974. It is imperative that funds be received on time due to the exactness of schedule required for the spraying operation. The HMG has assured the USAID of adequate funding and personnel support to the project and to continue their malaria control efforts after the completion of USAID support. The project aims at increasing HMG support of imported commodities over the life of the project, so that HMG can continue the necessary work effort at the close of the project.

Training

It has been recognized during 1974 that more training of personnel is required at all levels due to the reassignment of large numbers of NMEC employees to the regular service of HMG and the upgrading of others to the vacant positions. The training availabilities for malaria personnel have been limited due to the closing of the international training center for malaria located in Manila (METC) and the lack of training space at the National Institute of Communicable Disease (NICD) in Delhi. In 1974 the USAID did arrange for 25 training grants at the NICD but the needs are very great. There is an urgent need to provide additional training for

District Officers, Zonal Officers and Unit Officers. The USAID project has provided for three long term participant grants (statistics, entomologist, parasitology) over the life of the Project at a total cost of \$36,000 and for ten to twenty short term training experiences in India annually to meet these needs. (See Annex 8). In addition, plans are underway to provide large scale in-country refresher training for all Unit Officers and house visitors during 1976 and 1977. It is planned that by the end of the project some 3,200 workers will have received additional training or retraining in their work responsibilities.

Schedule of International Training for NMEQ

<u>Year/No. of personnel</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>FY 1980</u>
U.S. - Source (12 mm. each)*					
1. Parasitologist	1				
2. Statistics		1			
3. Entomologist			1		
*Cost per participant year is \$12,000					
<u>India Source**</u>					
1. District Medical Officer for Basic Malaria Course	5	5	5	5	5
2. Anchal/District Malaria Officer for Basic Malaria Course	10	10	10	-	-
3. Anchal/District Malaria Officers for Maintenance Course	6	5	5	5	5

\*\*Cost per participant is \$600 (equiv. in LC)

Other Costs

The other cost elements of the project include provision of funds for in-country travel support, necessary field and office equipment and supplies.

### Transport

The transport strength in the NMEO has deteriorated and at present there are only two properly running load carrying vehicles and twelve land rovers in operation. There is a general lack of necessary spare parts and tires which are not readily available in Nepal. The present transport position is as follows:

#### 1974 NMEO TRANSPORT AVAILABLE AND REQUIRED

	<u>Total</u>	<u>Good Running Condition</u>	<u>Running but needs over-haul</u>	<u>Unserviceable</u>
Passenger Jeep	13	None	8	5
Land Rover	27	12	5	10
Pick-up	1	-	-	1
Dodge Truck	2	-	-	2
Ummog	6	2	-	4

The HMG plans are to procure three to six replacement vehicles per year to replace the current vehicles and to intensify the activities at the existing vehicle repair facilities. The NMEO vehicle fleet has not been following an established vehicle replacement schedule and as a result the fleet quality has deteriorated. The establishment and support of vehicle repair facilities at the four regional offices has been underway in 1974 to insure better maintenance at the field level. Operational funds are provided by the NMEO budget for support and staffing of these facilities. The NMEO plans to insure that the four vehicle repair facilities are in place, staffed and operating by the end of two years. The provision of vehicle transport facilities for key Regional and Zonal Officers is necessary for field supervision as well as supply transport. However, maximum use of the improving public transport system will be urged for lower supervisory staff and couriers. Where practicable, bicycles are planned for house visitors and unit inspectors. A plan for HMG to purchase bicycles for house visitors on a reimbursable basis is already underway.

### Integrated Services

The USAID support of HMG's goal of creating an integrated health service is an important element in this project as it will not be possible to move ahead realistically with health integration planning and activities unless malaria is controlled. The NMEO will form a basic part of the

integrated health service in Nepal both in personnel and in providing the environment in which the integrated service can be created, developed and expanded.

The difficult administrative task of actually melding the malaria service into the integrated health service is one this project will squarely face and accomplish in those areas ready for integration by helping to coordinate planning efforts, continuing training programs and exchanges of reports. In order for orderly and realistic health integration to occur, there are to be developed by HMG clear guidelines as to when a district is ready for transfer from vertical malaria activities to an integrated service matrix. The project is designed to provide assistance to HMG Ministry of Health. In addition, the Plan of Operation for malaria work must be coordinated with the yearly Plans of the Integrated Health Services, in order that Districts being planned for integration are evaluated as being administratively and operationally prepared for integration. The project will assist in this coordinated planning. It is proposed that the joint Integration Working Group, consisting of MOH personnel and representatives of the various vertical programs, be strengthened by additional operational staff and be the forum of creative and working policy for integrating the services provided by the Ministry of Health.

In summary, the NMEO retains both in organization and basic personnel the capability to carry out the malaria control effort which is planned. The shortcomings which limit its effectiveness are basically in the training and supply areas. These shortcomings can be met and firm plans are being made to correct those areas which hinder the program's progress. Through an expanded budget for the program HMG has demonstrated its commitment to move ahead with the task of malaria control and to provide those elements of administration necessary to accomplish the projected task.

In the area of integrating the activities of the malaria organization into the general health services, there is much work to be done in administrative fields. The proposed USAID malaria project interrelates with the other Mission health projects and supports HMG stated national objective of delivering integrated health services by providing assistance to the NMEO over a critical period to control malaria to a point where the phasing of an area to the integrated service can be achieved in an orderly manner. It is absolutely essential to the orderly development of the health services in Nepal that malaria be controlled and that clear procedures be established to integrate the talents and facilities of the existing NMEO structure into the integrated health services. The project objectives are directed exactly at those two goals. The proposed support provided at this time by USAID and other donors is required if the work on integrated health services is to progress in a satisfactory manner.

### Section 3 Project Implementation

#### A. Implementing Plan

##### 1. General

The project is to be implemented in accord with FY 1976-FY 1980 Plan of Operations and with the yearly Plan of Action approved by the Malaria Eradication Board. The Plan of Operations is to be approved by the HMG and WHO with a favorable review by the USAID. The yearly Plans of Action is to be prepared by the NMEO with assistance of WHO and the USAID. In order to meet the implementation schedules in the AID Project Paper must be approved not later than June 30, 1975.

##### 2. Technical Implementation Schedule

- |    |  |                     |
|----|--|---------------------|
| a. | Selective spray operations begin for 1,000,000 population (modified schedule due to lack of insecticides). | August 1975         |
| b. | Surveillance operations in progress organized by weekly, fortnightly or monthly rounds.                    | July 1975-June 1976 |
| c. | Regional Officers Evaluation Conference.   | December 1975       |
| d. | External Assessment of Program.  | Jan/Feb 1976        |
| e. | Selective Spraying Operations for 900,000 population.  | Feb/March 1976      |
| f. | Full spray operations for 3,300,000 population.  | May/June 1976       |
| g. | Focal Spraying   | March/Oct. 1976     |
| h. | Full spraying operations for 3,300,000 population  | Aug/Sept 1976       |
| i. | Regional Officers Evaluation Conference  | December 1976       |

- j. Spray Operations based on protection of 3.3 million population Feb/March & May/June 1977
- k. Surveillance /Vigilance operations based on 3.5 million population July 1976 to June 1977
- l. External Assessment of NMEC Program Jan/Feb 1977
- m. Spray operations based on 3.4 million population in three rounds July 1977-June 1978
- n. Surveillance/Vigilance operation based on 3.56 million population July 1977-June 1978
- o. External Assessment of NMEC Program Jan/Feb 1978
- p. Spray Operations based on 1.7 million population in three rounds July 1978-June 1979
- q. Surveillance/Vigilance operations based on 5.4 million population July 1978- June 1979
- r. External Assessment of the NMEC program Jan/Feb 1979

3. Administrative Implementation Schedule

- a. HMG order for 1.3 million pounds of DDT and 200,000 pounds of Malathion plus sprayers, drugs, vehicles July 1975
- b. USAID Technician arrives Sept/Oct 1975
- c. Plan of Operation - FY 1976-1980 completed and approved by WHO/HMG August 1975
- d. Processing of 10 participants - Delhi NICD Aug/Sept '75 for Oct. Course

- e. Selection of U.S. participant - Parasitologist for fall of 1976 December 1975
- f. HMG order for 2.0 million pounds of DDT and 300,000 pounds of malathion plus other commodities. March 1976
- g. Plan of Action for FY 1977 completed and approved May 1976
- h. HMG insecticide, other commodity orders for Aug/Sept cycle, 1977 August 1976
- i. Processing of Participants for October, 1976 NICD course in Delhi Aug/Sept 1976
- j. Selection of U.S. participant - Statistical for Fall of 1977 December 1976
- k. Imported Commodity order of Feb/March & May/June cycle 1978 February 1977
- l. Plan of Action for FY 1978 completed and approved May 1977
- m. HMG Imported Commodity order for Aug/Sept 1978 July 1977
- n. Processing of participants for October 1977 NICD Course, Delhi August 1977
- o. Selection of U.S. participant - Entomologist for Fall, 1978 December 1977
- p. HMG Imported Commodity Order for Feb/March, May/June, and Aug/Sept 1979 February 1978
- q. Plan of Action for FY 1979 approved May 1978

- r. Selection and processing of participants for the October, 1978 NICD Course, New Delhi Aug/Sept 1978
- s. HMG Imported Commodity order for CY 1980 February 1979
- t. Plan of Action for FY 1980 completed and approved May 1979
- u. USAID Technician departs December 1979

4. Procurement Management

Procurement orders for both imported and locally available commodities are to be centrally managed by the Nepal Malaria Eradication Organization and procurement of commodities are to be done in accord with HMG regulation and policy with full control of the procedures through both internal and external audits. All records and transactions of procurement of commodities using U.S. funds are to be made available to the USAID upon written request to the NMEO.

Timing of orders is crucial and very careful attention to scheduling of imported commodity orders is to be done.

Availability of U.S. AID funds for this project are subject to the satisfactory compliance and adherence of the NMEO with the Plan of Operations and the Yearly Plan of Action as judged by yearly External Assessment Reports and by the USAID officer responsible for the malaria control project.

B. Evaluation Plan

Over the years the NMEO has developed a systematic and workable evaluation framework within its organizational structure. It was this very evaluation system that was used to identify in exact terms what level of malaria incidence is being detected at the locality level. The methods being used are sensitive and have been adapted to the Nepal situation. It is planned that extra efforts will be made to increase the usefulness of the present system and to insure that rapid and effective response mechanisms are in place. In addition, the present day-to-day monitoring will be broadened to be more alert to program requirements or slow responses to needs in the area of administration, logistics, communications, supervision, staff turnovers, training and procurement of supplies and equipment through monthly, quarterly, annual and periodic reviews. The four newly established Regional Offices at Biratnagar, Birgunj, Bhairawa, and Nepalgunj which are staffed by four senior NMEO

officers will take the lead in maintaining close evaluation of activities in their respective regions. The 13 Zonal Officers of NMEO are also charged with evaluation as a primary area of responsibility and these officers will be instructed and retrained as necessary to see that the field operations are carried out according to plan and to provide field evaluations of the results. The data gathered by these two primary sources of evaluation intelligence will be fed back through the established reporting system to the National Headquarters in Kathmandu for action and planning purposes.

Evaluation is considered an essential element for progress in the malaria control program and an evaluation schedule has been developed or is already part of the ongoing program to carry out these responsibilities.

1. An NMEO program committee consisting of the NMEO Chief Officer, WHO Sr. Malaria Advisor and the USAID Malaria Officer will be established to provide day-by-day evaluation to the ongoing program and to work together on future planning.
2. Quarterly meetings with national field staff at each regional office will be scheduled.
3. An annual regional officers meeting will be held in Kathmandu to review work accomplished and to prepare for the work ahead.
4. More emphasis on providing program evaluation data to the Nepal Malaria Eradication Board will be given by the Chief Officer at the regular sessions of this board.
5. There will be an annual external evaluation of the project undertaken by HMG, WHO and USAID. This will be a technical evaluation on the status of malaria in terms of reduction of the incidence of the disease by application of the techniques called for in the yearly Plan of Action. The annual external evaluation will concern technical, administrative and operational aspects of the program. There will be a greater emphasis on management performance than in the past assessments. These annual external assessments will also be involved in phasing program activities of selected units or localities from one level of activity to another provided the selected units or localities have been screened by an internal assessment team prior to the arrival of the external team. Progress towards the integration of malaria services into the basic health service system will be included in the Terms of Reference for each external assessment team.
6. There will be a follow-up by the NMEO Program Committee on all recommendations made by the annual Regional Officer's meeting, the Internal Review Teams and the External Review Teams. The findings of the Program Committee will be presented as an agenda item to the Nepal Malaria Eradication Board at one of its regular meetings.

7. All reports from the External Review Teams as well as special reports will be transmitted to USAID along with the annual Project Appraisal Report.

Section 4 Conditions and Covenants

1. The release of USAID funds in FY 1975 will be contingent upon providing evidence satisfactory to USAID that:
  - a) HMG and WHO approval and favorable review by USAID of a Plan of Action for the period covering July 16, 1975 - June 30, 1976.
  - b) Active recruitment is underway for the positions of Senior Administrative Officer and Fiscal Officer in the NMEO FY 1976 staffing pattern.
  - c) The assignment of one additional medical officer to the NMEO program to carry out technical duties and one qualified Chief of Operations to provide leadership to the National Operations Section has been authorized by the NME Board.
  
2. The release of USAID funds for the FY 1976 period will be contingent upon providing evidence satisfactory to USAID that:
  - a) There is HMG and WHO approval and USAID favorable review of a Revised Plan of Operations for the period covering FY 1976 - FY 1980.
  - b) There is a annual Plan of Action for FY 1976 approved by HMG and WHO and a favorable review by USAID.
  - c) Demonstration of adequate HMG fiscal support for FY 1976 based on the approved budget for local cost support and HMG's share of the imported commodities.
  - d) Evidence is available of UNDP participation in the procurement of imported commodities for the NMEO program during the Fifth Five Year Plan.
  - e) An external assessment of the program has been planned or carried out with participation from HMG, WHO and USAID.
  - f) Evidence of coordinated Integrated Health Service - NMEO activity in the Integrated Districts which is satisfactorily meeting the malaria problem.

3. The release of USAID funds for the FY 1977, FY 1978 and FY 1979 period will be contingent upon providing evidence satisfactory to USAID that:
- a) There is HMG/WHO/USAID approved annual Plans of Action.
  - b) There is satisfactory HMG support for the NMEC effort in the past fiscal year including timely release of funds.
  - c) Annual external assessments of the NMEC program by representatives of HMG, WHO and USAID have been completed which indicates satisfactory program progress.
  - d) Satisfactory malaria control activities in the Integrated Health Districts based on an adequate case detection, lab., response mechanisms and a valid reporting system has taken place.

Section 5 Issues and Discussion

There are a number of issues in which USAID has concerns regarding the effective execution of the program. These issues have received in-depth study and discussions with HMG, the WHO and UNDP during the preparation of the proposed project paper. The issues, the means to resolve the issues and unresolved issues are listed below:

A. Issue: The resurgence of malaria in Nepal over the last two years has been the result of a number of defects in the operational execution and administrative management of the Nepal Malaria Eradication Organization (NMEC). The joint report of HMG/WHO/USAID Situation Analysis Team of January-February, 1974 specifically listed the problems and the means to resolve them. USAID is concerned that HMG take proper corrective action to overcome the operational, technical and administrative problems which were identified in this report and project paper.

Discussion: The responsible HMG officials are aware of the problems which face the NMEC and are taking corrective action to overcome them. In the technical field, there are already two plans in motion to check the insecticide resistance problem of A. annularis by using focal larviciding with the larvicide, Abate, during the period just prior to the monsoon in 1975 and changing the residual insecticide in 1976. In the case of the rising chloroquin-resistant parasite problem, the Malaria Board has authorized funds to permit the establishment of more check points on the border areas, improve the existing checkpoint system and facilities, and do more intense follow-up procedures in the

case of detected resistance cases. It is considered that their actions are appropriate and will help solve the major technical problems of the program. In the administrative field, HMG has reestablished two of the key administrative posts in the NMEO which had been cancelled. Experienced personnel are being assigned to these posts and are expected to be in place early FY 1976. Additional administrative personnel in the accounting and supply fields are now recruited and the technical personnel are being assigned to the duties for which they were trained. A number of middle-management personnel who had been transferred to the Ministry of Health have now been deputed back to the NMEO and are in place at field stations. One additional medical officer has been assigned to the NMEO and active recruitment is underway. Training schedules for personnel have been organized for approximately 200 persons over the next year using both in-country and international training sites. Fiscal procedures have been reviewed and agreements have been reached by the various Ministries of HMG to continue adequate support for the program in order that malaria control can be carried on in a timely and effective fashion.

The operational defects have been identified and it is believed that with the corrective action taken to strengthen the administrative support the operational areas of supervision, transport and laboratory services will improve and lead to the expected impact on the malaria problem.

The USAID believes that the actual and planned actions of the NMEO to meet its current problems through the administrative improvements, the technical changes now underway, and the strengthening of operations will result in a viable and effective service. Program progress in all areas will be closely monitored by day-to-day contact with the program, the reestablishment of the Program Committee of the NMEO, reviews with the regional officers and annual internal as well as external reviews.

B. Issue: The development of an integrated basic health service throughout Nepal depends to a large extent upon the control of malaria and the efficient use of the existing NMEO structure and personnel in the integrated health service. The USAID is concerned that the proper mechanisms for planning and coordinating this integration be established and be made functional in order that this integration can be carried out in a timely and systematic manner.

Discussion: HMG has recognized that an integrated health service in large areas of the country will utilize the structure and personnel of the NMEO. HMG also has recognized that the disease of malaria requires maintenance inputs even after a district or a zone has been phased to the integrated service. The 1974 experiences of the rising case rates of malaria in Bara District has shown that there must be one organization ultimately responsible for carrying out malaria epidemiology, ordering and control of supplies for malaria control and having primary responsibility for malaria control policy. It has been decided that the

NMEO will be the organization within the HMG which is ultimately responsible for malaria activities in the country. A joint Integration Working Group of the Ministry of Health (chaired by the Chief Officer, NMEO and comprised of members from the various vertical programs of tuberculosis, leprosy, smallpox, family planning and the MOH) is now organized to deal with the basic issues of health integration and to see that action programming is carried out to coordinate the NMEO and HMG activity schedules. The MOH/HMG is considering the preparation of a long term, detailed Plan of Operation for health integration and to link the NMEO's Plan of Operation into this Plan Ops.

The USAID believes that the changes made recently both in attitude and work responsibilities within the MOH and NMEO will lead to accomplishing a workable, service-oriented health structure for Nepal.

C. Issue: Since malaria control is now considered as a long term health activity for HMG, the USAID is concerned that HMG be prepared to provide long term fiscal commitments to the program in order to maintain the program after the withdrawal of the foreign donors.

Discussions: HMG has reviewed carefully the proposals of the 1974 and 1975 Review Teams and has obtained recommendations for the control of malaria from various Ministries. The Fifth Development Plan which is under preparation provides adequate local support to the NMEO and does provide yearly inputs for imported commodities and local support. The project is designed so the foreign assistance inputs for imported commodities are provided at the period of expected peak activity and then phased out. The level of support received from HMG for imported commodities is based on the expected cost requirements at the termination of outside assistance. Thus, HMG will have prepared itself budget-wise for the total cost of the malaria activities at the end of the project.

**PART III - ANNEXES**

CHECKLIST OF STATUTORY CRITERIAI. COUNTRY PERFORMANCEA. Progress Towards Country Goals

1. FAA <sup>ss</sup> 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 Fifth Development Plan (1976-1980) puts major stress on increased food production and improved marketing of agricultural products. Nepal provides tax benefits to foreigners investing in needed development projects.
- (b) Creating a favorable climate for foreign and domestic private enterprise and investment. Villagers in parts of Nepal are building schools, water systems and farm-to-market roads. This is on a modest scale so far but is an appreciable start.
- (c) Increasing the people's role in the developmental process. The HMG will contribute \$12,990,000 to Malaria Eradication.
- (d) Allocating expenditures to development rather than to unnecessary military purposes or intervention in other free countries' affairs. The monarchical system in Nepal is gradually broadening. The HMG is allowing greater freedom of expression, although the press is still largely government-controlled. There is a Parliament with some, if limited, effective powers. Entrepreneurs operate fairly freely. The government is seeking Western advice in legal matters, taxation, finance, private enterprise, and information services.
- (e) Willing to contribute funds to the project or program.
- (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.

- (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 HMG 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 Fifth Five Year Plan.

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:

No such indebtedness is known to exist.

- (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?

2. FAA § 620 (e) (1). Has the country's government, or any agency or subdivision thereof:

No to first question. Second question not applicable.

- (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 sub-division 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?

3. 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.
  
4. FAA § 620 (1). Has the government instituted an investment guaranty program under FAA 211 (b)(1) for the specific risks or inconvertibility and expropriation or confiscation? No.
  
5. 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.

6. 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.
7. 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.
8. 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? Nepal is not in arrears in its obligations to the U.N.

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 9% of the country's budget is devoted to external defense and security purposes. Little foreign exchange is used to acquire military equipment.

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PLAN OF ACTION 1975/76

1. Introduction

This Plan summarizes the proposed programme for the fiscal year 1975/76 within the framework of the Basic Programme Agreements concluded bilaterally between HMG and WHO and HMG and USAID/Nepal. This Plan of Action was approved by the Nepal Malaria Eradication Board on May 7, 1975.

2. General

- 2.1 Antimalaria operations will be carried out by the NMEO in areas with 5.02 million population which cover the entire malarious areas with the exception of the Western Hills and the six districts of Kaski, Bara, Parsa, Rautahat, Siraha and Saptari with a population of 1.48 million which are under the authority of the Integrated Health Services.
- 2.2 The Malaria Eradication Board will convene regularly. The meeting will be attended by the designated members and the advisors of the WHO and USAID as in the previous years. Representatives of various HMG Departments and other Agencies may attend on special invitation of the Chairman.
- 2.3 The budget estimates have been based on the assumption that activities detailed in this Plan of Action will be implemented. The budget estimates do not allow for further expansion of activities which may prove justified during the period. In case of unforeseen emergency situations a request will be made for provision of additional funds when needed.
- 2.4 The planning of anti-malaria activities for the Nepal Malaria Eradication Organization is the responsibility of the Chief Officer in consultation with the Advisors of the assisting agencies.
- 2.5 National Headquarters will evaluate the progress of the programme made by the Regions, Anchals, Districts and Units.
- 2.6 An external evaluation of the programme will be carried out in January/February 1976 based on Terms of Reference jointly agreed between HMG, WHO and USAID.
- 2.7 This Plan of Action will remain in force from 16th July 1975 to 15th July 1976 and may be modified by the Malaria Eradication Board as required.

3. Objectives

- 3.1 To prevent to the extent possible further deterioration of the malaria situation in the country.

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- 3.2 To develop and implement antimalaria operations according to the resources presently available to the programme.
- 3.3 To develop a flexible spraying programme based on controlling malaria in known and potential foci.
- 3.4 To strengthen and adapt the NMEO administrative mechanisms to meet the increasing activity demands of the programme.
- 3.5 To develop a Plan of Operations for the period 1976-80.

#### 4. Methods

- 4.1 In order to achieve these objectives the following methods will continue to be employed.
  - 4.1.1 Spraying with residual insecticides;
  - 4.1.2 Surveillance operations; and
  - 4.1.3 Evaluation of the programme activities including the managerial and organizational procedures.
- 4.2 In the areas where the vector A. annularis has developed resistance to DDT and HCH antilarval operations using Abate 50% EC will be conducted during the pre-monsoon season of 1976 (April-May). Provision is made to protect these areas with the residual spraying of Malathion in June 1976.

#### 5. Operations

- 5.1 Spraying Operations
  - 5.1.1 The areas which require protection by residual spraying in 1975 were identified by the Situation Analysis Team in January-February 1975. Various alternatives were suggested by the Team based on the levels of malaria incidence and the receptivity of the areas. The HMG has accepted the Situation Analysis Team's first alternative - protection by residual insecticide spraying of all the areas with the incidence (API) of malaria 0.5 case per 1000 population (based on all detected malaria cases minus cases imported from abroad). By using this criteria 3.27 million people were determined to require protection in 1975.
  - 5.1.2 Due to insufficient insecticides to protect the population identified 5.1.1 it is apparent that in 1975 and 1976 the spraying operations will have to be conducted on a highly selective basis.

5.1.3 Spraying operations in 1975/76 will protect the following population:

Regular Rounds		Focal Spraying		
Period	'Population to be protected	'Amount of insecticides to be used (1,000 lbs.)	'Period	'Amount of insecticides to be used (1,000 lbs.)
<u>1975</u>			<u>1975</u>	
May-June	'1,000,000	' 350 DDT	'Apr-Oct.	' 150
Aug-Sept.	'1,000,000	' 350 DDT		
<u>1976</u>			<u>1976</u>	
Feb-March	' 900,000	' 300 DDT	'Mar-July	' 150
		' 1,000 DDT		
May-June	'3,300,000	' 300 Mala-		
		' thion		

5.1.4 While planning spraying operations the following factors were taken into account.

- 5.1.4.1 Receptivity of areas which is pronounced in the formerly hyperendemic areas.
- 5.1.4.2 Vulnerability of certain areas related to the aggregation of labour and areas subjected to resettlement and/or other types of the population movement.
- 5.1.4.3 Incidence of malaria in 1973 and 1974.

5.1.5 All project areas (road, irrigation, etc.) located in malarious areas will be included for spray protection for the following reasons:

- 5.1.5.1 Aggregation of labourers coming from various areas including those areas where the malaria incidence is high.
- 5.1.5.2 Poor housing conditions resulting in high degree of man-vector contact.
- 5.1.5.3 Location of the labour camps in the vicinity of water sources where the vector's breeding occurs, and

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- 5.1.5.4 Absence of cattle, therefore, forcing the vector to feed exclusively on man.
- 5.1.6 In the areas South of Mahabharat Range the selection will be made on the basis of malaria incidence keeping in mind the following priorities:
- 5.1.6.1 Project areas in originally hyperendemic and hypoendemic areas.
- 5.1.6.2 Intensive agriculture, vulnerable and P. falciparum areas situated in the hyperendemic belt; and
- 5.1.6.3 Areas in hypoendemic belt taken with the same sequence as in 2.
- 5.1.7 In formerly hyperendemic areas preference will be given to a protection of entire localities whereas in hypoendemic areas the emphasis will be on a limited spraying in known foci.
- 5.1.8 As a rule, 1.0 g/m<sup>2</sup> of DDT is to be applied during each round. However, several localities in hyperendemic areas where the postmonsoon peak is pronounced and where in the past the August-September round of spraying was hampered for operational reasons, 2.0 g/m<sup>2</sup> of DDT (tech.) will be supplied.
- 5.1.9 Taking into consideration the malariogenic potential and the inadequate incoming supplies of insecticide, spray operations in the hill areas, North of Mahabharat Range, will be carried out on a village basis and only known refractory foci with indigenous incidence will be taken up for spraying.
- 5.1.10 Focal spraying during June-August period will be done in the foci not protected by May-June round of spraying with the following guidelines:
- 5.1.10.1 In the Hills-in foci with 2 or more indigenous cases.
- 5.1.10.2 In hypoendemic Terai areas - against one or more indigenous cases covering about 50 houses around a positive house; and
- 5.1.10.3 In hyperendemic areas-on detection of any malaria case (barring the recrudescence of P. falciparum), the entire village or any houses falling within 0.5 mile radius from the positive house.

5.1.11 The selection of areas for the August-September round of spraying will be carried out during the second half of July using basically the criteria applied for selection of May-June round.

5.1.12 No focal spraying will be carried out in the:

5.1.12.1 Hyperendemic areas from November 1975 to February 1976,

5.1.12.2 Hypoendemic Terai areas from November 1975 to May 1976, and in

5.1.12.3 Hypoendemic hill areas from October 1975 to May 1976.

Unless approved by the respective FMO.

5.1.13 The selection of areas for residual spraying in August-September 1975 which is planned to cover 1,000,000 population will be carried out by the Regional Malaria Officers with the respective Anchal Malaria Officers and submitted to the NHQs by 15th July 1975.

5.1.14 In December 1975 the Regional Malaria Officers will carry out an assessment of the epidemiological situation in every anchal. The results of this assessment will be submitted to the annual conference of the programme. The recommendations in regards to the areas to be protected by residual spraying in February-March 1976 and May-June 1976 will be finalized in accordance with the population projected in 5.1.3.

5.1.15 Considering the population projections in 5.1.3, the District-in-Charge should prepare and submit a detailed advance programme (SFR-1) for each unit to be sprayed, under the specific guidance of the AMO concerned. The District-in-Charge should submit a copy each to Regional Office and NHQs directly.

## 5.2 Surveillance Operations

5.2.1 The frequency of house visiting will continue to be:

5.2.1.1 Weekly in all project areas and selected hypoendemic areas of Lumbini Anchal.

5.2.1.2 Fortnightly in all hyperendemic areas and selected hypoendemic areas in Lumbini Anchal.

- 5.2.1.3 Monthly in all hypoendemic areas with exception of those mentioned under 5.2.1.1 and 5.2.1.2 above.
- 5.2.2 Blood slides will be collected from all persons with fever or a history of fever after last visit of House Visitor. In addition, in hyperendemic areas, blood slides will be collected from all persons who have recently come from the N. E. States of India irregardless of presence or absence of fever.
- 5.2.3 The quality of thick blood films should be such that each microscopic field has 15-20 WBC.
- 5.2.4 Special efforts should be continued to extend the system of voluntary collaboration in every village Panchayat in all the malarious areas of the country for Passive Case Detection (P.C.D.) of malaria in accordance with the directives already issued.
- 5.2.5 The presumptive treatment will continue to be 600 mg. of chloroquine/camoquine for adult with the appropriate dosage for children. In special circumstances, upon the decision of the Chief, NMEO, presumptive treatment will be supplemented by 25 mg. of Daraprim.
- 5.2.6 The epidemiological investigation of detected malaria cases will continue to be carried out in all areas.
- 5.2.7 The course of the Radical Treatment of confirmed malaria cases will continue to be 1500 mg. of chloroquine/camoquine plus 75 mg. of primaquine for adult with the appropriate dosage for children. All cases of P. falciparum classified as Imported A from the North-Eastern States of India will receive initially 5 days Radical Treatment consisting of 2400 mg. of Chloroquine plus 75 mg. of Primaquine. In the case of recrudescence, the persons will receive a single dose treatment consisting of 1000 mg. Sulfadoxine plus 45 mg. of Primaquine (adult dose).
- 5.2.8 In special cases, upon the decision of the Chief, NMEO mass chemotherapeutic measures will be applied.
- 5.2.9 The follow-up of malaria cases will continue for a period of 12 months irrespective of the type of the area of residence. All-out efforts will be made to collect the follow-up slides regularly and unfailingly so during the pre-transmission period. In hyperendemic areas all treated P. falciparum cases will be screened during each fortnightly round of house visiting.

- 5.2.10 The epidemiological investigations of the positive cases will be followed up by the contact survey. The second and final mass blood survey will be conducted in each focus around 45 days after the first survey.
- 5.2.11 The detection of imported malaria cases through the existing check posts will be intensified. Their staff will be strengthened and performance checked regularly by the respective Regional and Anchal Malaria Officers. The NMEO will carry out an epidemiological study on the malaria cases imported from India.
- 5.2.12 The laboratories are to give priority to the examination of the slides collected from different sources as per the following order - slides collected from people coming from outside the country, P.C.D., A.P.C.D., A.C.D. Recording of parasite density and stages will be rigidly followed. During the year each microscope in the NMEO programme is to be individually checked for defective optics, stage and focus mechanism.
- 5.2.13 The activated passive case detection activities will be further strengthened by provision of the additional personnel to the existing medical institutions. The recommendations to that effect will be made by the Regional Malaria Officers to the Chief, NMEO.
- 5.2.14 All efforts will be made to improve the blood slide collections by the existing medical institutions.
- 5.2.15 The National NMEO cross-checking laboratory will be decentralized to the Regional offices to reduce the time required for the work.
- 5.3 The entomological activities will continue as per enclosed plan with activities in both the NMEO and integrated areas. They will, however, be supplemented by the monitoring A. annularis density and its susceptibility status in the areas taken up for antilarval operations in April-May 1975. It is planned to provide one additional entomological team to the present staff.
- 5.4 Health Education
- 5.4.1 In addition to the production of health education materials and programme publicity, the Health Education Section, in collaboration with other NMEO field and Headquarters personnel, will give special attention to the implementation and improvement of the PCD mechanism, and in training of NMEO staff.

## 5.5 Training

- 5.5.1 Appropriate refresher training courses and seminars for NMEO personnel will be conducted as per annex
- 5.5.2 Successful completion of the required training courses at the level appropriate to the position, will be a prerequisite for the promotion of field personnel.
- 5.5.3 Efforts will be made to obtain the types of International fellowships which are necessary to meet the training need of the programme.

## 5.6 Statistics

- 5.6.1 Apart from the normal surveillance reporting procedure, all copies of reports meant for NHQ will be submitted by the district offices directly to the National Headquarters or through AMO whichever is quicker.
- 5.6.2 The qualitative quarterly reporting system will be continued and the Anchal Malaria Officers will be responsible for submitting the report to RMO and NHQ on time. In case of late reporting without reason approved by the RMO, the defaulter AMO will be subject to administrative actions.
- 5.6.3 The unit and the district offices will maintain the "Village Malaria Register" as per proforma issued by the NHQ.

## 5.7 Peripheral structure

- 5.7.1 NMEO will continue to coordinate and cooperate with the Department of Health in the development of further health posts and services for Nepal.
- 5.7.2 The annual malaria census could hereafter include information on family and vital data whenever requested by the concerning project and approved by the Chief Officer.
- 5.7.3 While carrying out domiciliary malaria surveillance the peripheral staff would also furnish information regarding incidence of smallpox and other communicable diseases, if possible.

5.8 Co-ordination with IHS

- 5.8.1 Antimalaria operations in six districts as mentioned in 2.1 will be conducted by the Integrated Health Services.
- 5.8.2 NMEO will assist IHS in planning and evaluation of the antimalaria activities and also will provide insecticides, sprayers and antimalarials.
- 5.8.3 Requirements of insecticides, sprayers and antimalaria drugs will be worked out jointly by the respective Regional Malaria Offices and the District Integration Offices.
- 5.8.4 The request for supplies will then be submitted to the Chief, NMEO for consideration and final approval prior to the submission of the budget for the fiscal year concerned.

5.9 Co-ordination with other Departments of HMG

- 5.9.1 The Chairman, ME Board, will invite the representatives of the various departments of HMG and other agencies to attend the ME Board meetings whenever subjects of common interest are discussed.

5.10 Administration

- 5.10.1 The Administrative Section will continue to carry its function as stated in the Manual of Policy Directives and Administrative Procedures.
- 5.10.2 Personnel evaluation will be strictly carried out regarding staff work efficiency.  
  
Every six month, the officer-in-charge will send a confidential work report concerning his subordinate to his immediate higher authority in the proforma prescribed by His Majesty's Government. Action will be taken against responsible officers who fail to submit these reports on the scheduled basis.
- 5.10.3 During this Fiscal Year, a Senior Administrative Officer is to be added to the NMEO Staffing Pattern.
- 5.10.4 The NMEO Personnel Committee will be reestablished during the year.
- 5.10.5 The NMEO will recommend to the ME Board twice a year the names of outstanding and deserving employees for recognition.

**5.11 Fiscal Section**

- 5.11.1 The Fiscal Section will continue to discharge its functions according to the Manual of Policy Directives and Administrative Procedures and subsequent NHQ instructions.
- 5.11.2 The Fiscal Section at NHQ and the district will ensure that no employee is allowed advance funds except on the basis of approved fiscal rules and regulations and that all such advances will be recovered at the time of disbursement of salary every month.
- 5.11.3 All claims for TA/DA from field personnel will be submitted within 3 days after return from approved field travel.
- 5.11.4 During this Fiscal Year, a Fiscal Officer is to be added to the NMEO Staffing Pattern.
- 5.11.5 Strict action will be instituted by the Anchals and NHQs on defaulting employees.

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Budget Submitted for FY 2032/33

1.	Salary	----	----	----	1,24,70,000/-
2.	Allowance	----	----	----	4,00,000/-
3.	D.A. & T.A.	----	----	----	53,00,000/-
4.	Service including DDT transportation by porter, bullock cart	----	----	----	4,55,000/-
5.	House rent	----	----	----	3,80,000/-
6.	Repairs and maintenance	----	----	----	9,59,000/-
7.1	Office goods	----	----	----	1,60,000/-
7.2	Newspapers & magazines	----	----	----	5,000/-
7.3.1	Fuel for transportation	----	----	----	1,75,000/-
7.3.2	Fuel for other purposes including DDT transportation by office vehicle	----	----	----	2,05,000/-
7.4	Clothes and food grains	----	----	----	5,000/-
7.5	Other goods including insecticides and drugs	----	----	----	2,49,14,000/..
8.	Encouragement prizes	----	----	----	15,000/-
9.	Contingencies	----	----	----	15,000/-
10.1	Furniture	----	----	----	10,000/-
10.2	Vehicles including custom duty	----	----	----	4,55,000/-
10.3	Machinery goods	----	----	----	5,47,000/-
12.1.1	Wages for building construction	----	----	----	5,000/-
12.1.2	Materials for building construction	----	----	----	10,000/-
<hr/>					
Total:					
4,64,85,000/-					
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UNCLASSIFIED

Annex 3

DEPARTMENT OF STATE

TELEGRAM

UNCLASSIFIED 23 MARCH 75

INCOMING

R 271943Z MAR 75  
FM SECSTATE WASHDC  
TO AMEMBASSY KATHMANDU 5914  
BT  
UNCLAS STATE 069549

AIDAC

E.O. 11652: N/A

TAGS:

SUBJECT: MALARIA CONTROL PRP

REF : KATHMANDU 1280

1. MALARIA CONTROL PRP APPROVED MARCH 17. REQUEST USAID PROCEED DRAFTING PP. IN PRP REVIEW, IT WAS SUGGESTED THAT USAID ADDRESS FOLLOWING POINTS IN PP, IN ADDITION PLANNED ANALYSIS IDENTIFIED IN PRP.

A. REPORT OF JOINT HMG/WHO/AID SITUATION ANALYSIS TEAM DESCRIBES NUMBER OF ADMINISTRATIVE/OPERATIONAL PROBLEMS BEHIND RESURGENCE OF MALARIA. PP SHOULD ANALYZE THESE PROBLEMS IN DETAIL, DISCUSS POSSIBLE SOLUTIONS, AND GIVE INDICATIONS OF TIME TABLE FOR/MANNER BY WHICH HMG RESOLVING THESE PROBLEMS.

B. WE WOULD LIKE TO SEE MORE DISCUSSION OF MECHANISMS FOR COORDINATING NMEO/INTEGRATED HEALTH SERVICES PLANNING IN PP.

C. SINCE MALARIA LONG-TERM PROBLEM, REQUEST DETAILED ANALYSIS IN PP OF HMG LONG-TERM COMMITMENT TO PROGRAM AND

ANALYSIS OF TOTAL FINANCIAL SUPPORT NEEDED DURING PROJECT AND AFTER TERMINATION OF FOREIGN DONOR SUPPORT. WE BELIEVE IT ESSENTIAL THAT PP DISCUSS IN DETAIL QUESTION OF HMG READINESS AND CAPABILITIES TO TAKE OVER TOTAL PROGRAM, BOTH FINANCIALLY AND IN TERMS OF PERSONNEL AFTER EXTERNAL ASSISTANCE HAS CEASED, AND THAT PRIOR TO END OF PROJECT HMG BE AWARE OF COST IMPLICATIONS OF CONTINUED MALARIA CONTROL.

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PAGE 2 STATE 069549

- D. BELIEVE PROJECT SHOULD SHOW A RELATIVE DECREASE IN USAID CONTRIBUTIONS VIS A VIS HMG CONTRIBUTIONS OVER PLANNED LIFE OF PROJECT.
  - E. INCLUDE IN PP COST/BENEFIT ANALYSIS OF PROPOSED MALARIA PROGRAM.
  - F. PP SHOULD CONTAIN ENVIRONMENTAL IMPACT STATEMENT IN VIEW OF PROPOSED INSECTICIDE USE.
  - G. PP SHOULD CONTAIN EVALUATION PLAN PROVIDING FOR JOINT PERIODIC ASSESSMENTS OF PROGRAM SUCH AS ONE RECENTLY CONCLUDED BY HMG/WHO/AID AS WELL AS CONTINUING INTERNAL EVALUATION OF ONGOING PROGRAMS AS APPROPRIATE.
2. COWPER ETA O/A APRIL 2. DETAILS WILL FOLLOW. KISSINGER  
BT  
HSB/0830

UNCLASSIFIED

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Project Title & Number: Malaria Control

Life of Project:  
From FY 75 to FY 79  
Total U.S. Funding \$4,026,000  
Date Prepared: March 7, 1975

NARRATIVE SUMMARY	'OBJECTIVELY VERIFIABLE INDICATORS'	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes:	Measures of Goal Achievement:		Assumptions for achieving goal targets:
To reduce morbidity, mortality and fertility at the national level so as to facilitate economic and social development in Nepal.	<ol style="list-style-type: none"> <li>1. Development on a national scale of an equitable, efficiently administered and technically sound health services delivery system which is within Nepal's human and financial resources.</li> <li>2. Development of a health planning capability that will allow HMG to efficiently allocate scarce health resources.</li> <li>3. Development of a capacity within HMG for the control of communicable diseases.</li> <li>4. Measurable significant reductions in morbidity, mortality and fertility directly attributable to the health services.</li> </ol>	<ol style="list-style-type: none"> <li>1. Progress evaluations of the IHS Project</li> <li>2. Progress evaluations of the Health Planning Cell for all health activities.</li> <li>3. Progress evaluations of the Malaria Control Project through internal and external reviews.</li> <li>4. Statistics being compiled by MDH.</li> </ol>	<ol style="list-style-type: none"> <li>1. A stable political situation.</li> <li>2. Continued government commitment to health services delivery, family planning and malaria control.</li> <li>3. That significant further improvements in HMG planning, organization and implementation capabilities can and will be made.</li> </ol>

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PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 75 to FY 79  
Total U.S. Funding \$4,026,000  
Date Prepared: March 7, 1975

Project Title & Number: Malaria Control

PAGE 2

NARRATIVE SUMMARY	'OBJECTIVELY VERIFIABLE INDICATORS'	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose:</p> <p>To assist the Government of Nepal in strengthening their institutional capability for monitoring and controlling malaria and concurrently to create the basis for an institution which has the administrative and operational capabilities to monitor and control communicable diseases in Nepal as well as provide other basic health services.</p>	<p>Conditions that will indicate purpose has been achieved: End of project status.</p> <ol style="list-style-type: none"> <li>1. The reduction of malaria to the level of 0.5 Annual Parasite Incidence (API) at which level malaria is no longer a major public health problem (for 3.5 million people by FY 78 and 6.3 million people by FY 80).</li> <li>2. The existence of an active case detection (ACD) program covering the malarious areas which will provide an accurate epidemiological assessment of the rate of malaria.</li> <li>3. The existence of a response mechanism to combat focal malaria in those areas which are integrated into the general health services and that passive case detection (PCD) is in place and operating.</li> <li>4. A capacity to train and retrain personnel in light of changing needs within NMEO.</li> <li>5. The formation of a long range policy and plan by the Government of Nepal to contain malaria after the assistance of USAID has been terminated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Monthly, semi-annual, and annual review of incoming records together with field evaluation by national and assisting agency technical personnel. Case records review in hospitals, health centers, health posts.</li> <li>2. The field evaluation of incoming operational and technical reports to ensure that Annual Blood Examination Rates (ABER) are sufficient, meet proper time/space criteria.</li> <li>3. a. Plan of Operations prepared for integrated areas which provides budget and staff for response actions to focal outbreaks and provision for adequate infrastructure facilities.</li> <li>3. b. Focal outbreaks that do occur are controlled within a reasonable time period.</li> <li>4. To be assessed during annual evaluations.</li> <li>5. Long range Plan of Operations for Malaria Control approved by WHO and HMG.</li> </ol>	<p>Assumptions for achieving purpose:</p> <ol style="list-style-type: none"> <li>1. The Government of India will make determined efforts to control malaria in areas of India adjacent to Nepal and in Assam.</li> <li>2. Timely Government of Nepal approval of funding of the yearly program of malaria control so that authorized budgets are received on time.</li> <li>3. Individuals and Communities understand the objectives of the Program and their responsibilities to it and participate actively in the Passive Case Detection (PCD) program.</li> <li>4. Facilities for Passive Case Detection (PCD) are in place and operating.</li> <li>5. Technical problems can be overcome as expected in the field on entomology and parasitology.</li> </ol>

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PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 75 to FY 79  
Total U.S. Funding \$4,026,000  
Date Prepared: March 7, 1975

Project Title & Number: Malaria Control

PAGE 3

NARRATIVE SUMMARY	'OBJECTIVELY VERIFIABLE INDICATORS'	MEANS OF VERIFICATION	'IMPORTANT ASSUMPTIONS'
Outputs:	Magnitude of Outputs:		Assumptions for achieving outputs:
<ol style="list-style-type: none"> <li>1. NMEO staff trained and experienced in mass public health delivery services working in rural areas.</li> <li>2. Laboratories are properly staffed, equipped, and functioning with trained competent personnel.</li> <li>3. Operational supplies, equipment and drugs are ordered on a timely basis and received in time for planned use.</li> <li>4. Trained participants.</li> <li>5. Joint coordinated NMEO and IHS plans are developed. Phase over from NMEO control areas to integrated health services is smooth.</li> </ol>	<ol style="list-style-type: none"> <li>1. Approximately 3400 national staff will be trained or retrained in malaria control program techniques by FY 1979.</li> <li>2. Annual Blood Examination Rate (ABER) are sufficient, meet proper time/space criteria.</li> <li>3. Requirements outlined in plans are being met.</li> <li>4. Persons selected and departed for third country training.</li> <li>5. Functioning PCD in place and case rates indicate satisfactory level of malaria control obtained.</li> </ol>	<ol style="list-style-type: none"> <li>1. The annual external evaluation of program activities carried on by GON/WHO/AID will consider this aspect.</li> <li>2. a. The field evaluation of incoming operational and technical reports.</li> <li>2. b. Semi-Annual internal and Annual external assessments.</li> <li>3. MOH/NMEO procurement records.</li> <li>4. USAID records.</li> <li>5. NMEO records and Internal and External Assessment, supervisory visits, monthly reports, laboratory analysis.</li> </ol>	<ol style="list-style-type: none"> <li>1. The Government of Nepal supports the project as agreed with adequate manpower, money and materials.</li> <li>2. Training facilities for the Nepalese can be made available both in-country and internationally.</li> <li>3. The cost of operation does not rise to point where standard methodology for modern malaria control cannot be used.</li> <li>4. The technical difficulties of parasite drug resistance and mosquito insecticide resistance can be overcome.</li> <li>5. A massive health education campaign is instituted not only for malaria but for other public health aspects.</li> <li>6. The Ministry of Health provides leadership and direction towards an integrated health service through an adequate planning and evaluation unit.</li> <li>7. Availability of needed commodities on the world market at reasonable prices.</li> <li>8. Access to third country training facilities for participants.</li> <li>9. Support of health services in the field at all levels especially in those areas which are in integrated services. Provision of adequate case detection, treatment, follow-up, remedial measures and epidemiological investigation are essential.</li> </ol>

PROJECT DESIGN SUMMARY  
LOGICAL FRAMEWORK

Life of Project:  
From FY 75 to FY 79  
Total U.S. Funding \$4,026,000  
Date Prepared: March 7, 1975

Project Title & Number: Malaria Control

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NARRATIVE SUMMARY	'OBJECTIVELY VERIFIABLE INDICATORS'	MEANS OF VERIFICATION	'IMPORTANT ASSUMPTIONS
Inputs:	Implementation Target (Type and Quantity)		Assumptions for providing inputs:
<u>Government of Nepal</u>	<u>GON</u>		
a. Provision of yearly budget of approximately \$2.5 million through FY 1979 for malaria activity and reduced support to contain malaria beyond this date.	a. \$10,300,000 for local budget \$ 2,170,000 for imported commodities	a. Yearly MOH budgets.	a. Government of Nepal has increased inputs into malaria and will need to sustain such fiscal interest:
b. Assignment of key personnel required for the project including two additional medical officers, one senior fiscal officer, two health educators, one additional parasitologist.	b. FY 1976 & FY 1977 staffing pattern in the NMEC Plans of Action.	b. Approved Fifth Development Plan for Health.	expended budget 1973 - Rs. 12,784,252. 1974 - Rs. 15,900,021
c. MOH assistance for integrated health planning and operation.	c. Planning Unit of MOH preparing plan for phasing.	c. Staff level authorizations of the Nepal Malaria Eradication Organization (NMEC) on annual Plans of Action.	approved budget 1975 - Rs. 27,097,000
d. Provisions for training and re-training malaria staff.	d. (1) 3-US-trained-parasitologist entomologist statistician  (2) Yearly 8-10 in India	d. WHO yearly and bi-annual budget submissions.	b. Willingness of GON to reassign trained malaria staff to project and to assigned qualified new personnel to the key position areas.
<u>WHO</u>	<u>WHO</u>	e. Yearly Mission program documents.	c. WHO will retain interest in malaria support in Nepal. There is no reason to believe otherwise given the past record of WHO.
a. Provision of a Team of four malaria specialists from FY 75-79.	a. \$ 453,000	f. Planning documents of UNDP.	d. Provision of direct-hire USAID malaria advisor.
b. Yearly participant grants.	b. \$ 19,000		e. UNDP is willing to support \$2.7 million commodity costs of the project in order that the development of the health services can take place and malaria can be controlled.
c. Commodity support.	c. \$ 296,000		
<u>UNDP</u>	<u>UNDP</u>		
a. Provision of commodity support for the period FY 75-79.	a. \$2,700,000.		
<u>USAID</u>	<u>USAID</u>		
a. Provision of one senior malaria control officer on direct-hire and short-term consultants.	a. \$ 274,000		
b. Participant training.	b. \$ 60,000		
c. Other costs	c. \$ 40,000		
d. Local currency financing for procurement of commodities.	d. \$3,654,000		

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### Impact of the Project on the Environment

The method of application of DDT in malaria programs, as a residual spray, almost entirely confines the compound to the surfaces of the structures on which it is applied, making the environmental impact exceedingly small.

The environmental impact of using DDT in malaria control programs has been thoroughly considered by the NMEC, USAID and WHO. These agencies are in agreement that DDT is the safest and most effective insecticide for general application in malaria control in Nepal and does not threaten the environment when it is applied by the standardized methods recommended by the NMEC.

WHO and the U. S. Public Health Service both have responsibilities in the broad field of human health and have available to them the worlds leading experts in the field of pesticide use, toxicology of pesticides and safe handling and proper use of pesticides. These organizations consider that DDT is one of the safest chemical compounds in large scale use in malaria programs today.

The experience of the NMEC over more than fifteen years in using DDT has shown there is little risk to the general population and that the application of the insecticide to the interior surfaces of structures poses little danger to fish and wild life. In spite of the use of DDT over the period of fifteen years in Nepal by several thousand locally recruited and trained spraymen there has not been one reported incident of toxic reaction to this insecticide by the spraymen themselves or by the general population. This same safety record is repeated in other countries in Asia using essentially the same techniques of spraying and the same insecticide.

The other two insecticides which are being used in the Nepal malaria program are BHC and Malathion. BHC, although it is also a compound similar to DDT, is not as persistent as DDT in the environment and is considered unlikely to produce any environmental problems. Malathion, an organophosphorus compound, is more biodegradable than DDT and is considered a safe insecticide for mass spraying campaigns if normal procedures are used.

There will be attempts to carry out source reduction of mosquito breeding sites and limited larviciding in the period covered by the project. These methods present few, if any, environmental hazards and should, in fact, improve the environment by reducing the number of nuisance as well as malarial mosquitos.

The net effect of the proposed Nepal Malaria Control Project on human health and the environment is positive. Any possible risks are greatly outweighed by the benefits arising from the properly controlled use of insecticides in the program. Alternate control methodologies such as use of biological agents (fungi, bacteria, nematodes), use of carnivorous fish, genetic control of vector mosquitoes, and immunization are not considered suitable or adequately developed at the present time for use in this project.

There is considerable environmental impact on the ecological condition of an area when a successful national malaria program is carried out in a developing nation. When the threat of malaria is removed from formerly malarious and under-utilized agricultural lands there normally occur large scale population movements to these areas to settle and develop the lands for use. Unless active official control of this resettlement pattern is done serious damage to the environment can occur. The past and continuing unofficial resettlement of hundreds of acres of land in the terai, forest fringe and inner terai of Nepal has caused environmental damage to the country and has, in many respects, lead to the present rise in malaria. In one sense, the country has been a victim of its own success as people have realized the economic benefits of carrying out agriculture and related activities in the areas where malaria has now been controlled. Literally, hundreds of thousands of people have come into the formerly malarious areas and, prior to the establishment of a permanent house, have build temporary shelters which cannot be adequately sprayed. Focal transmission of malaria has occurred. The influx of large numbers of people also increases the work load of the NMEO house visitor in covering the locality, and work schedules often cannot be maintained which allows focal epidemics to spread.

As people move into an area, forest areas are often used in a manner which is not condusive to good forestry practices or in regard to the environment. "Slash and burn" agriculture has been practiced in areas of Nepal which should be carefully managed for permanent, long term farming. Wildlife is harmed and often eliminated in those areas where it is in competition with man. Water resources may be used in such a manner as to create mosquito breeding areas or contaminated with waste products.

The NMEO has recognized this situation and its role as an agent of change, and has attempted to coordinate its activity plans with the civil authorities in the District Offices and with the specialized agencies of Forestry and Agriculture at the national and zone levels. Large scale unauthorized settlement is normally reported by the NMEO to the concerned government offices. Meetings at the District and Zonal levels have been repeatedly organized to review this problem and improvement of the environment has occurred due to this coordination. However, more efforts are required to continue and extend the cooperative efforts.

HMG has taken active steps to control resettlement and to preserve the environment as much as possible by providing controlled settlement areas and setting aside forest reserves for wildlife. Agriculture agents are educating the farmer to better agriculture practices and irrigation methods. Particular efforts are being jointly made between the NMEO and several HMG agencies in regards to irrigation schemes to prevent the establishment of conditions which would be detrimental to the environment.

TABLE ON ESTIMATED INSECTICIDE AVAILABILITIES, PLANNED  
USAGE BY CYCLE, INCOMING SUPPLIES, AND BALANCE BY MONTH (1,000's lbs.)  
 CY 1975-1976

Time Period	Spray Cycle	Amt. Required	Amt. Planned	In-country Availabilities	Insecticide In-coming	Balance (1,000's lbs.)
<u>1975</u>						
Jan	-	-	-	900	-	900
	Feb/Mar	825	100	900	-	800
	April	Focal	150	800	-	650
April	-	-	-	-	200(WHO)	850
	<u>May/June</u>	685	500	850	-	350
June/July	-	-	-	-	772(UNDP) (CALCUTTA)	350 + 772
	Aug/Sept	697	300	350	-	(50 + 772)
New Order for 1,300,000 lbs. DDT and 200,000 lbs. of Malathion, 50% Required before this point* or Aug/Sept cycle of 1976 will not proceed as shown below.						862
Sept/Oct	-	-	-	862	250(HMG)	1,112
Nov/Dec	-	-	-	1,112	170(HMG) 100(HMG-MAL)	1,282 + (100 MALA)
<u>1976</u>						
	Feb/Mar	850+Int Areas	300	1,282	-	982
New Order for 2.0 million lbs. DDT and 300,000 lbs. of Malathion, 50% by March 1976 for Feb/May, 1977						
	April	Focal	150	982	(1,300?*)	832
	May/June	1,000	1,000(+100MAL)	832	-	163
	Aug/Sept	1,100	1,100(+ New	- 163	-	- 1,263* (0)

Note: 1. Malathion 50%, WDP - sprayed at 2 gm/sq. mt. - Baluhawa, Beltari, Asshuorewa, Lumbini Units. Calculation based on 90T per round - not all sprayed therefore 1 1/2 round.

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ESTIMATED IMPORTED COMMODITIES COSTS FOR NEPAL MALARIA ERADICATION ORGANIZATION (\$ 1,000)  
FY 1975 - 1979

Commodity	1975	1976	1977	1978	1979	1980
	\$ Cost					
A. <u>Insecticide</u> DDT, 75%, wdp Malathion, 50%	1,890	2,140	2,370	1,330	750	425
B. <u>Spraying eqt.</u> Sprayers Parts	120	50	50	50	28	10
C. <u>Anti-malaria Drugs</u> Chloroquine Primaquine Other	46	60	50	55	60	60
D. <u>Transport</u> Vehicle Parts	27 3	60 6	54 6	9	12	10
E. <u>Lab. Supplies</u>	7	10	6	6	10	10
Est.req.\$ (CIF CALCUTTA)	2,090	2,320	2,530	1,440	860	515

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NEPAL MALARIA ERADICATION ORGANIZATION (NMEO)  
TABLE OF NMEO TRAINING REQUIREMENTS  
1975-76

ANNEX 8

Category of Staff	To be conducted by	Action to be taken by	Time Table	Est. Number of Participants	Remarks
Spraymen	Dist/Anchal	Recruitment to be completed last week of June 1975	1st week of July for 7 working days	2230	Requirement to be decided on sprayable area
AMO/ District Incharges	WHO/NICD, Delhi USAID/NICD, Delhi	Nomination of candidates for fellowships	Oct. 1975 (8 weeks)	6-8 - WHO 10 - USAID	Number of candidates will depend on fellowships available.
Malaria Inspectors	Region/Anchal	Selection and recruitment if required by a fortnight prior to the starting of the course	Oct/Nov 1975 for 3 weeks (21 working days)	50	
Malaria Assistant	NHQ	Selection of candidates	Sept. 1975 (2 weeks)	20	
RMO/AMO	WHO/NHQ	Information to the candidates	Nov/Dec 1975	20	It is expected to be of 7-10 days duration.
Spraymen	Dist/Anchal	Recruitment to be completed 1st week of February 1976	2nd week of February 1976	2000	As per requirement to be decided on sprayable areas.
Ent. Tech.	WHO/NHQ	Inform participants	Dec/Jan 1976	10	WHO Seminar
Lab. Technician (Refresher Course) for Existing Technicians	NHQ	Selection of candidates	Nov. 1975 (10 weeks) Mar/April, 76 (2 weeks)	10-15 15-20	WHO Assistance required
Spraymen	Dist/Anchal	To be recruited by 1st week of May 1976	2nd week of May 1976 for 7 working days	6000	As on required basis to be decided on sprayable area.
Spraymen	Dist/Anchal	To be recruited by 1st week of June 1976	1st week of July 1976 (7 working days)	6000	As per requirement to be decided on sprayable area.
Parasitology	U. S.	To be nominated by HMG by october, 1975	One year course (Tulane)		Staff course in Sept. 1976

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- Attack:** 1. Period of acute (overt) illness consisting of a single paroxysm or of several separate paroxysms. The first attack following the incubation period is called the "primary attack".  
2. In malaria terminology, the phase during which antimalarial measures applicable on a large scale and aiming at the interruption of transmission are applied on a total-coverage basis in an operational area. This phase is sometimes called the period of total-coverage spraying.
- Consolidation:** The phase that follows the attack phase; it is characterized by active, intense and complete surveillance with the object of eliminating any remaining infections and proving the eradication of malaria.
- DDT:** Abbreviation and common name of dichlorodiphenyl trichloroethane, a chlorinated hydrocarbon insecticide comprising essentially 1,1,1-trichloro-2,2-di-(p-chlorophenyl) ethane in the form of white or cream-coloured granules, flakes or powder. Technical DDT should contain a minimum of 70% by weight of p,p'-isomer having a minimum melting point of 104°C.
- DDVP:** Abbreviation for dimethyldichlorovinyl phosphate (dichlorvos).
- Dosage:** 1. Amount of a drug to be given for the treatment of a particular condition; usually graded in accordance with the age and weight of the recipient. 2. Average amount of insecticide discharged per unit of surface sprayed, expressed in grams of technical product (gamma-isomer, for BHC) per square metre (nozzle dosage). Since some proportion of spray does not reach or does not remain on the target, this dosage is always higher than the actual amount deposited.
- Endemic:** Term applied to malaria when there is a constant measurable incidence both of cases and of natural transmission in an area over a succession of years. For the degrees of malaria endemicity (endemic prevalence) based on the spleen rate of children and adults see also hypoendemic, mesoendemic, hyperendemic, and holoendemic malaria.
- Epidemic:** Term applied to malaria when the incidence of cases (other than seasonal rises) in an area rises rapidly and markedly above its usual level or when the infection occurs in an area where it was not present previously.
- Geographical Reconnaissance:** In malaria eradication terminology, the operation which provides the basis for the choice of field centres and depots, for detailed schedules and itineraries, of spraying and surveillance personnel, for the final deployment of transport, and for numerical control of the completeness of work accomplished. It includes collection of information on the number, type, location and means of access of all houses and field shelters, as well as on communications, health units, vehicle-repair facilities, population movements and other relevant factors.

- House:** In malaria eradication terminology, any structure other than a tent or mobile shelter which serves as a dwelling. For purposes of measuring the progress of spraying operations, houses are continuously reported as sprayed or as pending and the numbers of these compared with the number originally designated for spraying ("sprayable houses").
- Incidence:** Number of cases of disease occurring during a given time period in relation to the unit of population in which they occur (a dynamic measurement). Not to be confused with prevalence.
- Incidence, annual parasite:** Number (per thousand of a population) of microscopically confirmed malaria cases detected during one year. The epidemiological value of the annual parasite incidence depends entirely on whether the population to which this figure relates was covered by an adequate system of case detection.
- Insecticide:** Product that kills insects either in their immature stages ("ovicide", "larvicide") or in their adult stage ("immediate imagicide" or "residual imagicide").
- Larvicide:** Substance used to kill aquatic larvae by ingestion, contact, respiratory blockage, etc. Modern larvicides are applied in the form of oils or emulsions, or as small pellets or granules of inert material such as bentonite, impregnated with insecticide, which is released gradually when they are placed in water.
- Maintenance:** In malaria terminology, period which begins when the criteria of malaria eradication have been met in an operational area and which will continue until world-wide eradication has been achieved. During this period vigilance is exercised by the public health services to prevent the spread of malaria imported from across the borders of the area concerned.
- Malaria, hyperendemic:** Degree of malaria endemicity in an area characterized by a spleen rate in children (2-9 years) constantly over 50% and also a high adult spleen rate. In areas of hyperendemicity the parasite rates are usually high not only in children but also in adults.
- Malaria, hypoendemic:** Degree of malaria endemicity in an area with a spleen rate in children (2-9 years) of 10% or less.
- Malaria, refractory.** Term used by some authors to describe persistence of slow and gradual reduction of the amount of malaria despite total-coverage spraying.
- Malaria case, imported:** Case in which the infection was acquired outside the area in which it is found, implying that its origin can be traced to a known malarious area.

**Malaria case, indigenous:** Case that is natural to an area or country, i.e., not introduced. The term is applied to cases whose origin from local transmission cannot be disproved. In malaria eradication terminology relapsing cases are not classified as indigenous.

**Malaria case, relapsing:** In malaria eradication terminology, the classification used for a case shown by the history of the subject to be a probable relapse if careful epidemiological investigation shows that the infection was contracted before the interruption of transmission was claimed in the locality and if there are no epidemiologically related malaria cases in the neighbourhood.

**Malaria control:** Operations aimed at reducing the prevalence of malaria to a level at which it is not a major public health problem.

**Malariometric survey:** Investigation conducted in selected age-group samples of a population in randomly selected localities in order to assess the degree of malarial endemicity. Such a survey is concerned with the measurement of the prevalence of malaria as indicated by spleen and/or parasite rates in random samples of the population. It is used in pre-eradication operations and in the preparatory and early attack phases of malaria eradication programmes. Later, when the amount of malaria has been considerably reduced, the indices furnished by malariometric surveys are no longer sensitive enough to measure further progress.

**Malathion:** An organophosphorus insecticide. Technical malathion should contain O,O-dimethyl S-(1,2-di-(ethoxycarbonyl)ethyl) phosphorodithioate in a proportion by weight of not less than 95%.

**Preparatory Phase:** In malaria eradication terminology, time devoted to preparation for the attack operations. It ends when the epidemiological and geographical reconnaissance in the operational area are completed, the central and peripheral stations and essential services established, the staff recruited and trained, and the logistic and reporting systems organized.

**Prevalence:** Number of cases of disease or infection existing at any given time in relation to the unit of population in which they occur (a static measure). Malaria prevalence can be established on a single malariometric survey, whereas malaria incidence, which is a dynamic measure, requires a method of repetitive or continuous search.

**Prophylaxis:** Any method of protection from or prevention of disease; when applied to chemotherapy it is commonly designated "drug prophylaxis" or "chemoprophylaxis".

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- Rate, annual blood examination:** The number of blood slides examined during a year in relation to the population covered by case detection. The annual blood examination rate refers to the number of blood slides and not to the number of persons examined (the latter figure may be smaller, as some persons are examined more than once during the year). It is not a fever rate, since it also includes slides collected in non-febrile cases during mass blood examinations and in epidemiological investigation.
- Rate, slide positivity:** Percentage of slides found positive, usually computed for a stated period of case-detection activities.
- Recrudescence:** Renewed manifestation of infection (short-term relapse) believed due to survival of erythrocytic forms. Not to be confused with recurrence.
- Residual deposit:** Deposit of a residual insecticide, i.e., one remaining on sprayed surfaces after the solvent, emulsifier or carrying fluid has evaporated.
- Resistance:** 1. Ability of a parasite strain to multiply or to survive in the presence of concentrations of a drug that normally destroy parasites of the same species or prevent their multiplication. Such resistance may be relative (yielding to increased doses of the drug tolerated by the host) or complete (withstanding maximum doses tolerated by the host). 2. Ability in a population of insects to tolerate doses of an insecticide which would prove lethal to the majority of individuals in a normal population of the same species; developed as a result of selection pressure by the insecticide. Simultaneous resistance to one or more insecticides of two different groups is known as double insecticide resistance (not to be confused with insecticide cross-resistance).
- Sprayer:** Apparatus used for applying liquid insecticides, herbicides and fungicides, in solution, emulsion or suspension, to sprayable surfaces (also called "spray pump"). The three types usually used in malaria programmes are the compression sprayer, the stirrup-pump sprayer and (rarely) the knapsack sprayer.
- Spraying, focal:** House-spraying carried out in strictly localized areas such as one house or a group of dwellings; or in localities classified as either residual or new foci of malaria. During the consolidative phase focal spraying is an activity of surveillance operations.
- Surveillance:** That part of the programme aimed at the discovery, investigation and elimination of continuing transmission, the prevention and cure of infections, and the final substantiation of claimed eradication. The individual functions of surveillance are case detection, parasitological examination, antimalarial drug treatment, epidemiological investigation, entomological investigation, elimination of foci by either residual spraying or mass drug administration, case follow-up and community follow-up.
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**Transmission season:** Period of the year during which natural transmission of malaria infection can normally take place.

**Treatment, presumptive:** Administration of an antimalarial drug or drugs, usually in a single dose, in suspected malaria cases before the results of blood examinations are available. Its principal objectives are relief of clinical symptoms and prevention of transmission.

**Treatment, radical:** Treatment adequate to achieve radical cure. In vivax, malariae and ovale infections, this implies the use of drugs which destroy the secondary tissue stages of the parasite.

**Treatment, suppressive:** Treatment aimed at preventing or eliminating clinical symptoms and/or parasitaemia by early destruction of erythrocytic parasites. It does not necessarily prevent or eliminate the infection, and overt malaria may develop after drug withdrawal.

**Vector:** In malaria, any species of mosquito in which the plasmodium completes its sexual cycle in nature and which is thus able to transmit the disease.

**Vigilance:** A function of the public health service during the maintenance period, consisting in alert watchfulness for any occurrence of malaria in an area in which it had not existed or from which it had been eradicated, and the application of the necessary measures against it.

**Voluntary collaborator:** Person belonging to and permanently present in the community who is not a paid staff member of the malaria eradication service but who co-operates voluntarily in surveillance activities such as case detection, notification and treatment. For operational purposes voluntary collaborators are regarded as malaria detection posts.

**Water-dispersible powder:** Insecticidal formulation consisting of the insecticide, together with suitable carrier(s) and surface-active agent(s), designed for suspension in water.

Project AgreementProject DescriptionA. Background

Since 1972 there has been a dramatic rise in the number of malaria cases occurring in Nepal. These cases have been concentrated in areas of the country undergoing rapid economic development. While attributable to many technical, demographic and administrative factors, the sharp increase in malaria incidence can be traced in large part to cumulative operational and administrative measures taken within or affecting the Nepal Malaria Eradication Organization (NMEO). It is now clear that substantial, immediate requirements exist for large quantities of commodities (principally insecticides) in order to forestall a further sharp increase in the number of malaria cases. His Majesty's Government of Nepal has requested assistance from WHO and the UNDP as well as from AID in meeting this serious public health threat.

B. Statement of Purpose

The purposes of this Project Agreement are to enable the Government of Nepal (together with the WHO and the UNDP) to:

1. Strengthen the institutional capability for monitoring and controlling malaria, and;
2. Strengthen the institutional basis for monitoring and controlling communicable diseases in Nepal.

It is a sine qua non of malaria control operations that the disease be brought under manageable levels of incidence before phasing of the malaria control administration for broader public health needs can be systematically pursued. The program for returning malaria case incidence to an annual level of 0.5 Annual Parasite Incidence is contained in the Plan of Action of NMEO for 1976, and in the Five Year Plan of Operations (1976-80), as jointly agreed to by HMG, AID and the WHO.

The secondary project purpose of strengthening Nepal's capability to monitor and control communicable disease not only implies the merging of large aspects of the NMEO into the basic integrated health system as and when indicated by standard evaluation criteria, but also refers to the conceptual and practical linkages between malaria control and other projects in integrated health, health planning and paramedical manpower training.

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C. Project Inputs

During 1976-1980, the USAID, in coordination with HMG/N, the WHO and the UNDP, will make available on a grant basis rupees in support of HMG's program for importation of commodities such as insecticides, sprayers and anti-malaria drugs. In addition, due to changes in the program operational activities from a time-limited malaria eradication program to a program of malaria control, USAID will make available on a grant basis limited assistance in training (three training opportunities in the U.S. plus training in India) and program management (one advisor and short-term consultants over the project period). The WHO is understood to be prepared to provide up to four malaria technicians and limited commodity and participant training grants. The UNDP is understood to be prepared to support a portion of the imported commodity requirement for the period 1976-1979.

HMG/N is to provide:

- a. Provision of yearly budgets of approximately \$2.5 million through FY 1979 for malaria activity and self-sustaining support to control malaria beyond this date.
- b. Assignment of key personnel required for the project including one additional medical officer, one senior administrative officer, one senior fiscal officer, two health educators, and one additional parasitologist/epidemiologist.
- c. MOH assistance for integrated health planning and operation.
- d. Provisions for training and retraining malaria staff.