INTERNATIONAL HEALTH PROGRAMS

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AN EVALUATION OF THE MALARIA CONTROL COMPONENT FOR ENDEMIC AND COMMUNICABLE DISEASE CONTROL IN THE REPUBLIC OF ZAIRE

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EXECUTIVE SUMMARY

Current Situation

The malaria control project in Zaire is moving to fulfill the purpose for which it was designed. The pilot control program is providing the experiential base and will become the model for eventual expansion to other areas. It is beginning to establish important baseline data for quantitative and qualitative measures for a future national program. Urban and rural areas were selected for study and geographical reconnaissance was conducted. A number of control villages in the rural area were selected recently for epidemiological measurements of malaria rates. Three rounds of DDT spraying in the urban area and one round of spraying in the rural area were completed (see Figures 1 and 2). Antimalaria drugs were distributed, but their impact could not be evaluated properly because of a lack of baseline data.

Program in Relation to Design

Goals were not reached within the periods specified in the project design. The receipt and transport of commodities were delayed approximately one year. Baseline data were not collected in the urban area at the time scheduled. Apparently, the Government of Zaire (GOZ) did not request the services of the World Health Organization (WHO), although, according to the project agreement, it had agreed to do so.

Prospects for Achieving Purposes and Goals

The achievement of goals cannot be guaranteed unless the project is extended approximately one year. With an extension, additional experience and capability in monitoring and controlling malaria in the areas selected for the pilot project can be acquired. Undoubtedly, the late assignment of an epidemiologist to the project and the lack on the team of an entomologist and a sanitary engineer will delay the fulfilment of the purposes of the project.

Major Problems

The consultant identified the following major problems:

Figure 1

THE URBAN ANTI-MALARIA PROJECT AREA IN THE EASTERN SECTION OF KINSHASA, ZAIRE

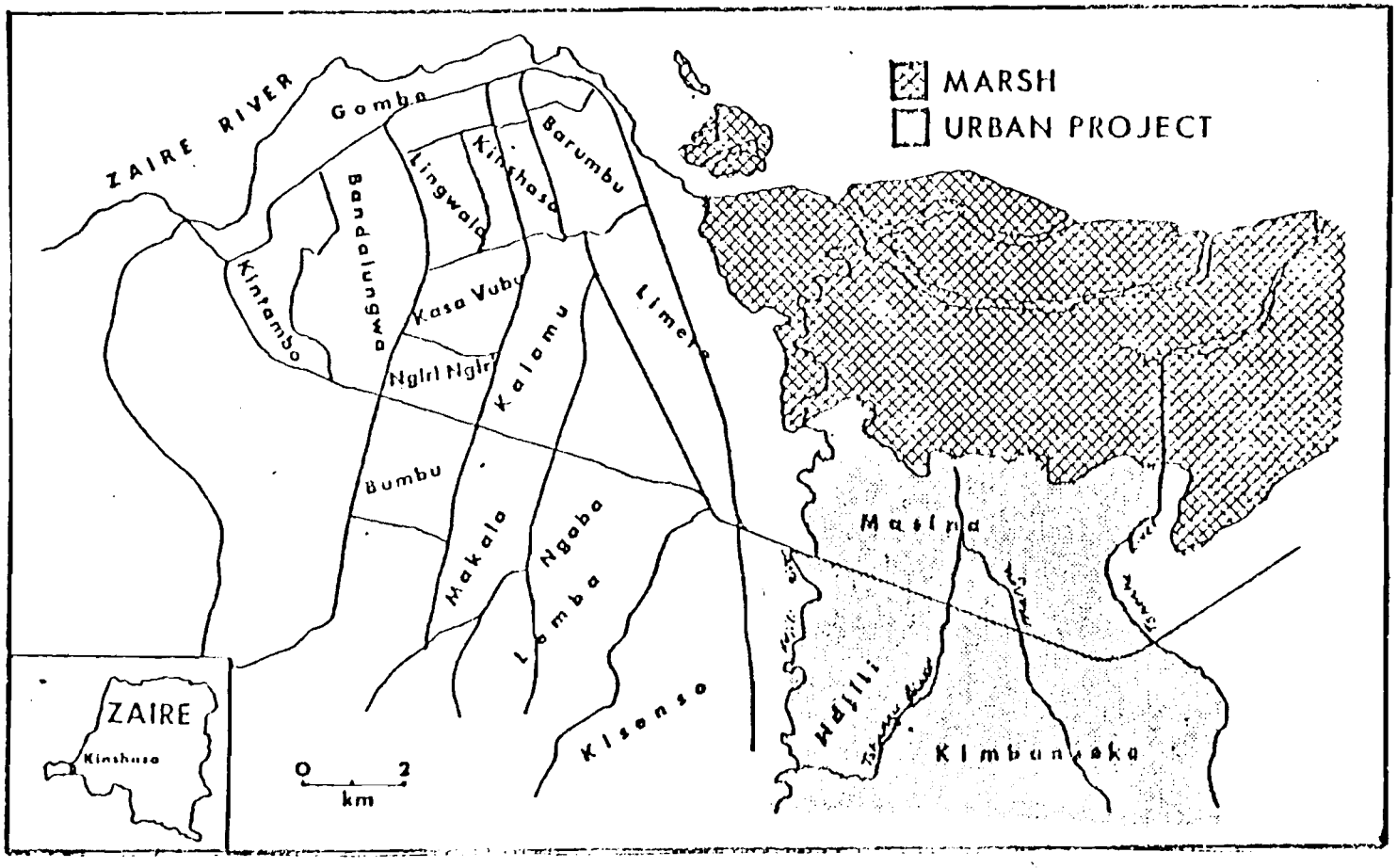

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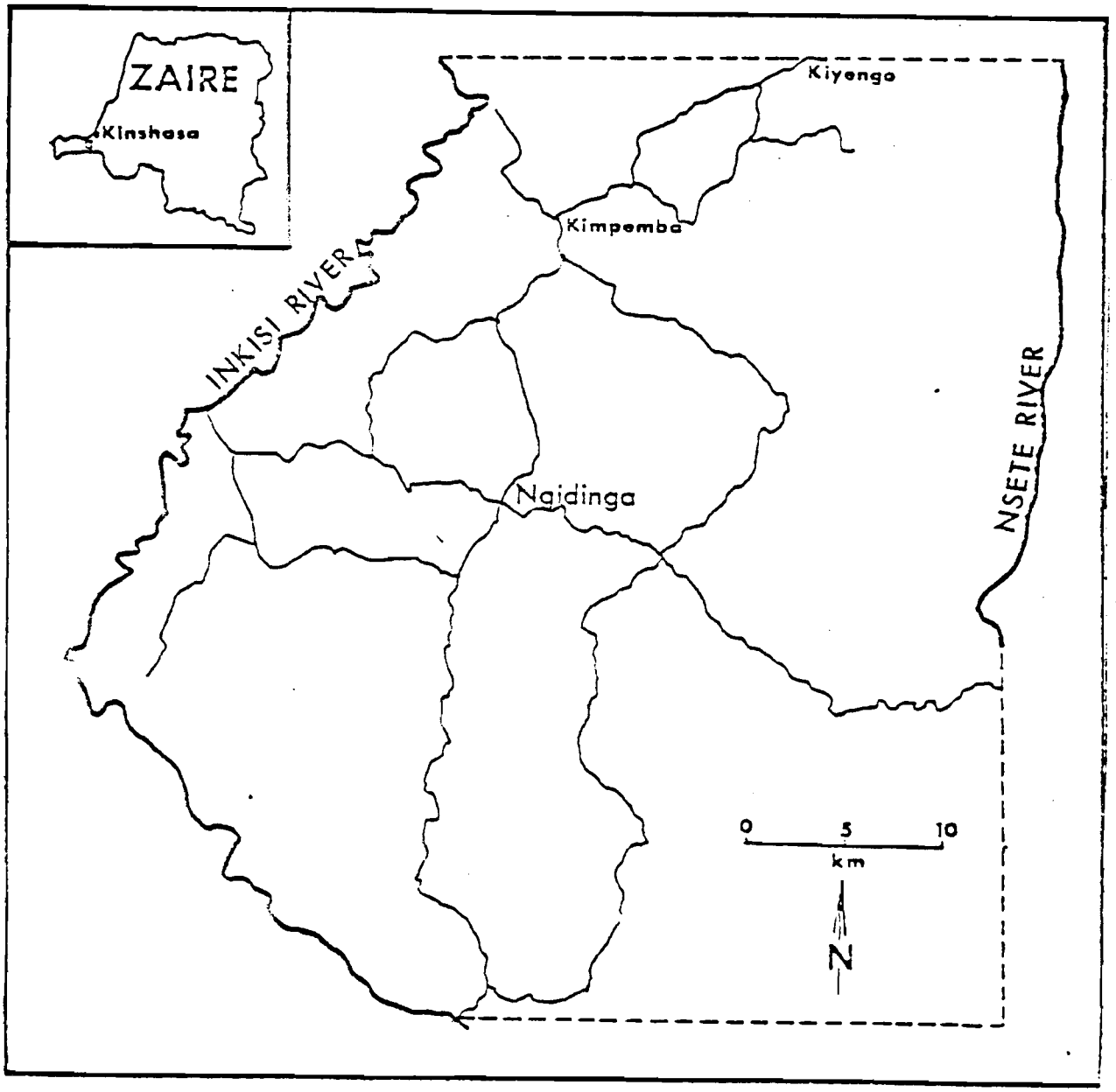
Figure 2

THE RURAL ANTI-MALARIA PROJECT AREA SOUTH OF KINSHASA, ZAIRE



1. Lack of adequate participation by WHO.

2. Failure of GOZ to assign to the project director a deputy.

3. Weakness of health education of the target population.

4. Inadequate emphasis on the importance of preoperational baseline data.

5. Lack of provisions for formal training of malaria personnel.

Special Comments and Recommendations

The malaria control pilot project requires further refinement, but, in general, it is a viable and reasonable effort to pave the way for an expanded national antimalaria program. The following recommendations should be considered.

1. Extend the project for one year.

2. Request a WHO or joint USAID/WHO evaluation of the draft national antimalaria plan.

3. Explore the possibility of establishing a malaria training center with technical assistance or guidance from the WHO.

4. Request that the minister of health assign to the malaria program a full-time deputy director. Assist the GOZ in identifying and selecting two promising university graduates in the field of biology or general science for international training in public health in the U.S. The training should lead to a MSPH or MPH degree.

5. Select and add to the pilot project a rural control area for comparative studies. In this area, use only antimalaria drugs in a passive case detection program at a primary health care center.

6. Try to decentralize the operations in the various zones to conserve fuel and to develop local managerial talent.

7. Use available Peace Corps assistance in the decentralized program.

8. Use counterpart funds to the program to furnish adequate typing/clerical help and other support services, such as vehicle maintenance.

9. Maintain a master file on reports on progress and problems, including supporting documentation.

10. Recommend that the malaria adviser enroll in a course on scientific report writing while on home leave. Many U.S. Government agencies offer these courses. Enrollment in a course on management by objectives (or its equivalent) is also advised.

11. If the GOZ opts for a national antimalaria program, the mission should maintain on its staff an adviser with field experience in antimalaria campaigns. This person would assist in integrating the malaria program into the general health infrastructure and in monitoring AID input.

12. By the spring of 1981, enough malariometric data should have been collected and enough operational experience acquired to determine accurately the cost-effectiveness of malaria control in Zaire.

ABBREVIATIONS

AID	Agency for International Development
AID/W	Agency for International Development/Washington
APHA	American Public Health Association
CPI	Critical Performance Indicator
FONAMES	Fonds National Assistance Medico-Sanitaire
GOZ	Government of Zaire
MBO	Management by Objectives
MOH	Ministry of Health
PERT	Project Evaluation and Review Technique
SOP	Standard Operating Procedure
UNDP	United Nations Development Project
WHO	World Health Organization

I. INTRODUCTION

In recent years, the USAID program in Zaire has focused directly on the country's poor while simultaneously helping to effect constructive changes in the economic environment. Beginning in 1974, the fall in the price of copper and the increases in the prices of imports combined with poor fiscal management to create serious economic problems for Zaire. The USAID effort is therefore attempting to:

--encourage the Government of Zaire (GOZ) to formulate policies and programs that will increase the income of small farmers;

--improve the nutritional health status of the impoverished rural and urban populations;

--provide technical and financial support for training programs that address key manpower constraints to development; and

--continue and initiate new efforts in rural development and agricultural production and marketing.

A malaria control project in the Kinshasa Region and in a nearby rural area was begun in 1977. This USAID-supported pilot project is the only malaria project in Zaire at this time.

The stated purposes of this five-year project are:

--to strengthen the capability of the Government of Zaire to monitor and control malaria;

--to reduce the morbidity and mortality caused by malaria; and

--to provide an experiential base and develop operational cadres, an organizational infrastructure, and methodologies for the prevention and control of malaria.

This assignment to evaluate the malaria project in Zaire was made on behalf of the American Public Health Association (APHA), in conformance with an agreement with the U.S. Agency for International Development (USAID), AID/DSPE-C-0053.

II. PROFILE OF ZAIRE

Zaire is the third largest country in Africa (see Figures 3 and 4), with an estimated population of 26 million people. It has tremendous natural resources: 40 percent of Africa's forests, substantial water resources, approximately 13 percent of the world's total hydroelectric potential, and vast proven mineral deposits (13), including copper, zinc, diamonds, and cobalt (the world's principal source). However, although it has the potential to produce food for much of Africa, its lands remain underdeveloped.

Zaire, once known as the Democratic Republic of Congo, is bounded on the west and north by Cabinda (an Angolan enclave on the coast), the Peoples Republic of the Congo (Brazzaville), the Central African Empire, and Sudan; on the east by Uganda, Rwanda, Burundi, and Tanzania; and on the south by Zambia and Angola. It declared its independence from Belgium on June 30, 1960.

There are approximately 200 ethnic groups in the country. The Zairians speak more than 700 local languages and dialects, four of which, in addition to French, are lingua francas. Key data on Zaire's population are summarized in Table 1.

Figure 3

MAP OF AFRICA

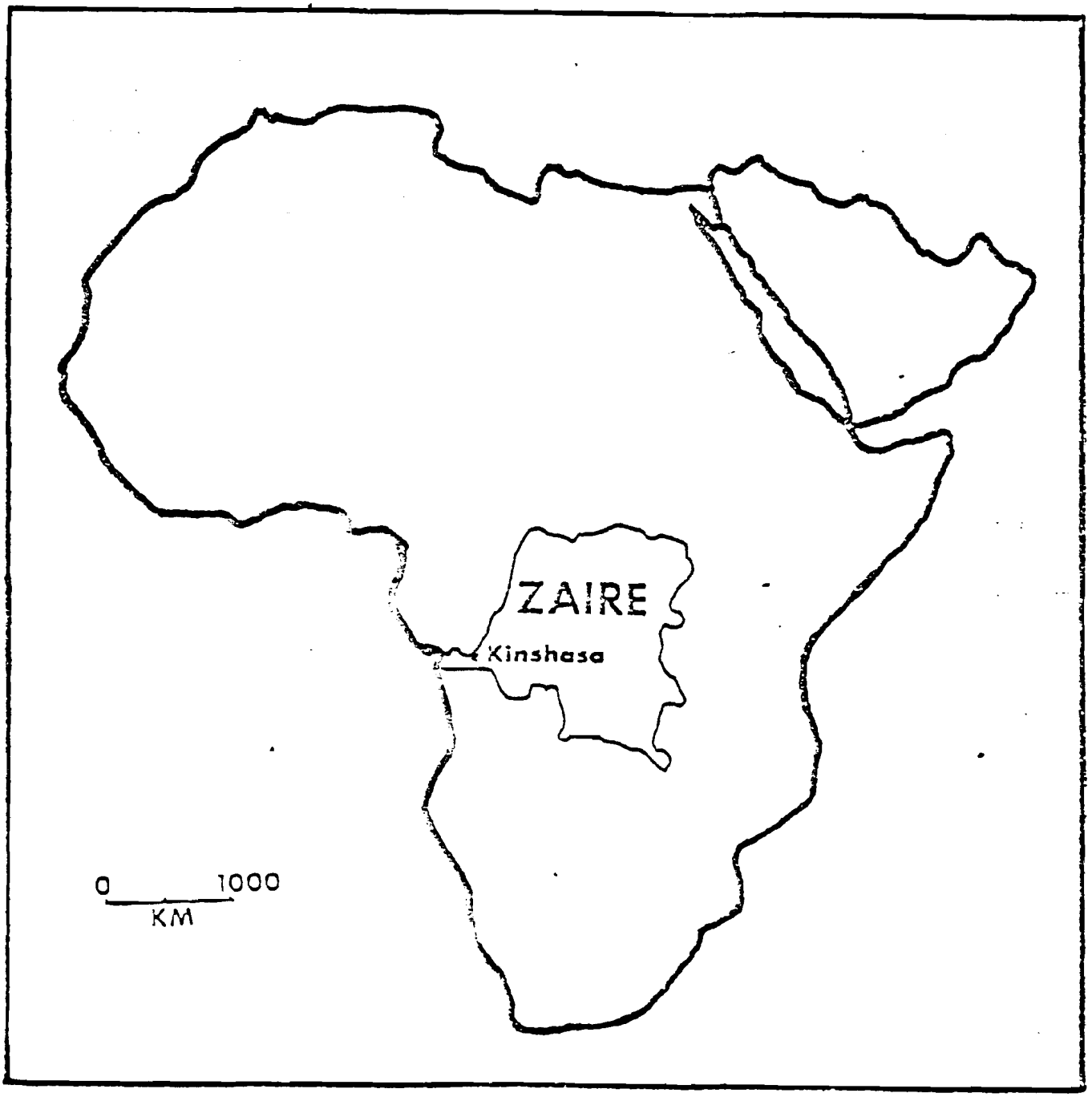


Figure 4

MALARIA ENDEMICITY IN ZAIRE

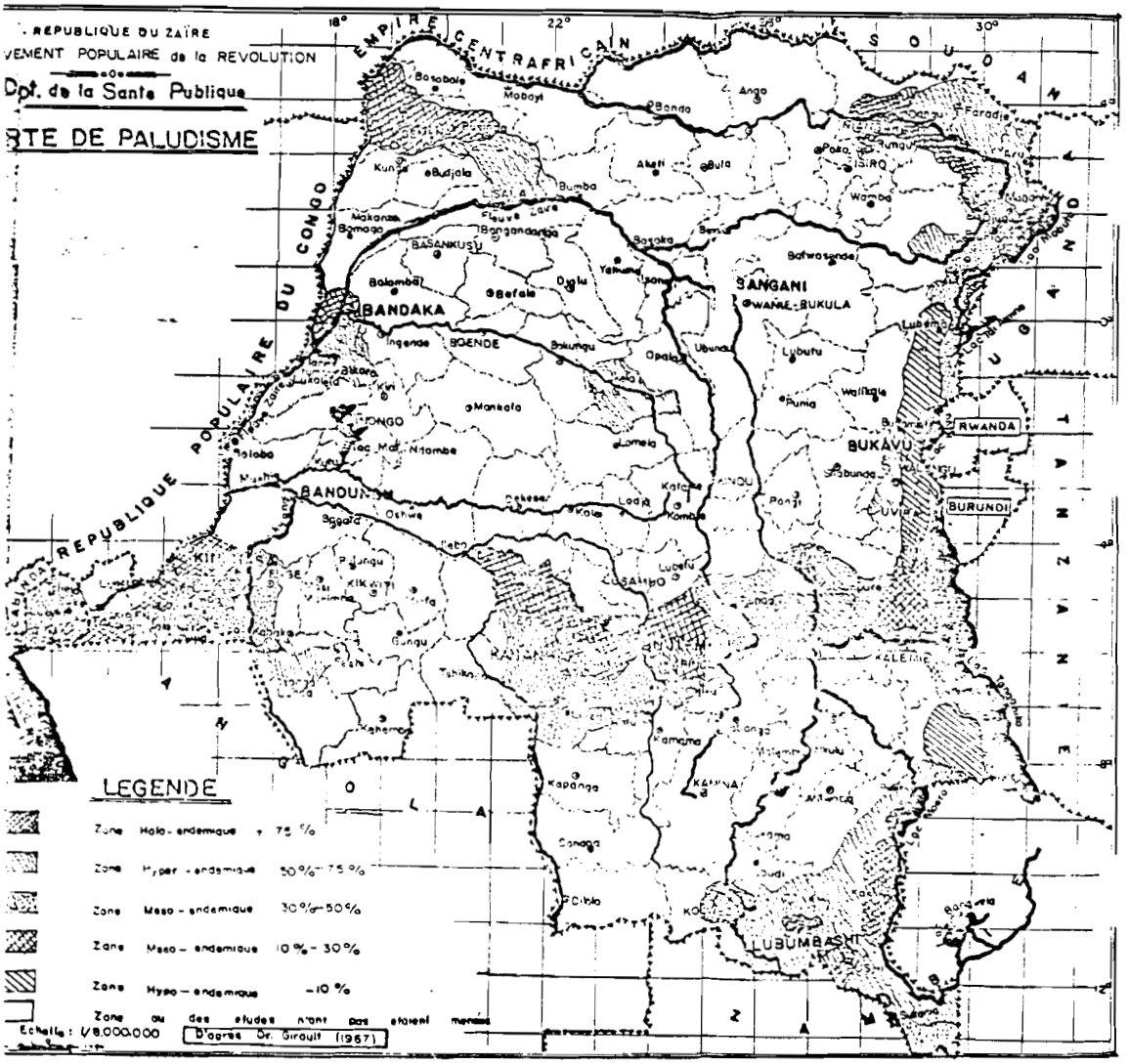


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Table I

KEY DATA

Population (millions - 1979)	25.5
Annual growth rate (percent - 1977)	2.7
Population in urban areas (percent - 1979)	32.9
Labor force in agriculture (percent - 1977)	77.0
Per capita GNP (dollars - 1977)	140
Life expectancy (years - 1977)	44
People per doctor (1975)	16,150
Infant mortality rate (1974)	160 per 1000 live births
Literacy rate (percent - 1976)	15.0
Students as percent of 5-19 age group (primary and secondary)	53.0
Major subsistence crop (cassava) (1977) (percent total arable land)	1.0
Major cash crop (palm oil) (1977) (percent total arable land)	0.2

III. METHODOLOGY FOR THE EVALUATION

The project implementation order for technical services provides for a 24-month joint evaluation by the WHO and AID/W. This evaluation, however, covers 36 months of operation because initiation of the program and preparations for implementing the plan of action were delayed. The WHO participant did not arrive to share in this evaluation. According to correspondence filed at the office of the WHO country representative for Zaire, the WHO evaluator was not scheduled to arrive in Kinshasa until December 1, 1980. There was a lack of coordination at the decision making level. The technical director of Fonds National Assistance Medico-Sanitaire (FONAMES), who was selected by the GOZ and was the third member of the evaluation team, participated in the evaluation of the pilot project in the urban area.

For this evaluation, the consultant:

- Reviewed the critical performance indicators (CPIs) of the project analysis schedules (Appendix B).
- Reviewed literature on the history of health delivery services, the status of malaria, and malaria control efforts in Zaire.
- Visited the rural and urban areas selected for the pilot control program.
- Visited the missionary and Ministry of Health clinics in the project area.
- Met with medical missionaries, Peace Corps volunteers, WHO and USAID personnel, and private citizens to discuss problems of and prospects for malaria control in Zaire.
- Conferred with MOH personnel involved in the malaria control project, the Hygiene Service, FONAMES, and the Secretary of State for Health.
- Inspected malaria control facilities (laboratory, warehouse, supply room, transport and administrative services) of the malaria control pilot project.
- Reviewed operational and epidemiological data with the two USAID advisers and the medical director, the associate director, and the field supervisor for the project.

In accordance with AID's requirements for project evaluation, this report follows the format set forth in AID 1330-15A(3-78), using the critical performance indicator of the project as a reference point.

I. BACKGROUND

At this time, the malaria control pilot project is the only organized effort in Zaire that is designed to: (1) develop an antimalaria service to be integrated with FONAMES and (2) to develop appropriate methods to control malaria prevalence in urban and rural areas. There is no question but that malaria is widespread and endemic in all regions of the country.

Although it has been difficult to obtain accurate data over any meaningful period, the available data do indicate that the caseload of malaria in Zaire ranges from 20 percent to 30 percent.

According to data from the Department of Planning of Zaire (Regional Demographic Perspectives, 1975-1985), malaria is the leading cause of morbidity (see Table II) and the third leading cause of mortality in the country (nutrition program data, 1979) (see Table III).

Preliminary baseline data that have been analyzed by the project since the USAID epidemiologist arrived in July 1980 support previous general findings on the transmission of malaria in Zaire. Table IV gives some of the results of malariometric studies in the rural area where the project is operating.

The first epidemiological data from the urban project area became available at the end of this assignment and are presented in Table V.

Although baseline data were not gathered before the spraying campaign was launched in this zone, the decline in the number of parasites indicates that the use of DDT and the administration of antimalaria drugs to suspected cases have been effective. It is unfortunate that the epidemiologist was not assigned to the project at the same time as the malaria adviser, who arrived in September 1977.

Table II

TEN LEADING CAUSES OF MORBIDITY*

RANK	CONDITION	NUMBER OF CASES
1	Malaria	1,015,853
2	Helminthic Infections	520,906
3	Bronchitis, Emphysema and Asthma	420,156
4	Acute Respiratory Infections	543,923
5	Influenza	342,957
6	Ankylostomiase	316,111
7	Enteritis and Severe Diarrheas	274,365
8	Anemias	281,990
9	Measles	175,757
10	Acute Joint Inflammation	128,436

* Cases seen in the Health Regions during 1975.

Source: Data are derived from the Department of Planning's "Regional Demographic Perspectives," 1975-1985, Zaire.

Table III

TEN LEADING CAUSES OF MORTALITY*

RANK	CONDITION	NUMBER OF CASES
1	Measles	5636
2	Enteritis and Other Severe Diarrheas	1711
3	Malaria	1652
4	Non-Viral Pneumonias	1400
5	Pulmonary Tuberculosis	851
6	Bacillary and Amebic Dysentery	705
7	Viral Pneumonias	631
8	Tetanus	491
9	Intestinal Occlusion and Hernia	388
10	Cirrhosis of the Liver	276

* Cases seen in the Health Regions during 1977.

MALARIAL THICK SMEARS FOR INFANTS & MOTHERS IN KINSHASA*

Category	Total Number of Smears Done	Total Number Smears Positive	Percentage of Smears Positive
Infants	612	184	30.1%
Mothers	280	45	16.1%
TOTAL	892	229	25.7%

* Data from Nutrition Program, 1979 Survey Data.

Table IV

SPLEEN INDICES CARRIED OUT IN BAS ZAIRE BY KISANTU HOSPITAL STAFF IN JULY 1980*

Health Center	Number of Villages	Population	Number of Houses	Number of Annexes	Spleen Index	
Kimayolo	10	1883	421	339	41%	
Sadi-Kisanga	28	2787	670	1356	30%	In our spray area
Kimpongo	9	1637	546	816	10%	
Nseki-Nkengi	14	1798	449	604	21%	
Malele	21	2682	692	1030	38%	In our spray area
Kinsiona	11	2083	442	1473	25%	
Ngidinga	14	2611	559	834	20%	In our spray area
Kindompolo	17	2078	513	893	5%	
Kinyengo	12	1515	494	696	24%	In our control area
Masikila	11	2786	529	760	23%	In our control area
Zomfi	15	1581	394	629	15%	
Nluka I	13	2022	445	747	23%	

In each Centre de Sante one village was selected. In the selected village 100 children between the ages of 2 and 10 were chosen, and the spleens of these children were palpated. In addition, 50 smears were taken from 50 of the 110 children. The only Centre de Sante missing from the list, and which we use in the control area, is Kimpemba. No work was done in that center.

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* Data Source: Files of USAID malaria epidemiologist.

Table V

A COMPARISON OF THE MALARIA CASES FOUND IN THE SAME SCHOOLS IN JUNE 1979 AND NOVEMBER 1980 IN THE ZONE OF NDJILI

	1979			1980		
School	Smears Examined	Smears Positive	Percent Positive	Smears Examined	Smears Positive	Percent Positive
EPI - Ndjili - Boys Q-7: Haut Zaire	100	12	12.0	100	5	5.0
EPI - Ndjili - Girls Q-7: Haut Zaire	99	21	21.2	99	7	7.1
EIP-III-Haut Zaire Q-7: Kingoyi (Mixed)	99	29	29.3	98	9	9.1
EPI-II: Makasi - Boys Kamina-Primaire II	147	34	23.1	100	8	8.0
EPI-I: Makasi - Boys Kamina	84	19	22.6	100	2	2.0
EPI-I: Makasi (Mixed) Kamina (Kuilu)	194	39	20.1	102	3	2.9
Primaire-Equateur Kimbanquiste (Mixed)	100	26	26.0	100	7	7.0
TOTALS	823	180	21.9	699	41	5.9

"The November smears were taken after three rounds of spraying had been completed in Ndjili. This is also the same period that the rainy season begins in earnest, while the June 1979 smears were taken just as the dry season began. We do not have sufficient data to map the yearly transmission cycle, but I do not anticipate we would notice much of a difference in malaria between June and November in an untreated area."*

* Courtesy of Dr. John Sexton.

II. GOALS AND ACCOMPLISHMENTS

External Factors

The targets specified in the implementation order for technological services were optimistic. The targets, for the first nine months of this five-year project, are as follows:

Targets	Findings
Baseline surveys completed.	Completed November 1980.
National malaria service established with director, assigned supervisors, and cadre staff.	Completed.
Malaria support laboratory established and equipped and basic staff recruited.	Partially completed.
Plan of operations for pilot malaria control program in Kinshasa, including tentative plan for training of workers and professionals, completed.	Completed. No long-term training done.

It would be premature to describe the impact this project has had on the priorities of the GOZ. The first-phase targets of the project were not met because of insufficient time. Both USAID malaria advisers should have arrived at the post at the same time to set up the multidisciplinary infrastructure (see Tables VI and VII). One, the epidemiologist, arrived in July; the other, the malaria adviser, arrived in September. For the past three years, the malaria adviser has been preoccupied with building a viable organization. One year elapsed between the time the epidemiologist's services were requested and the time he arrived at his post. This delayed the provision of the urgent assistance the program needed.

Except for delays in schedules, the assumptions about the project's accomplishments are valid.

The economic situation in Zaire is not good. The unemployment rate is estimated to be over 50 percent. Less than 4 percent of the national budget is spent on health. However, the intent to expand and to give priority to efforts to control malaria has been expressed. Zairian health officials assume that the pilot project will be a springboard for a national

Table VI

ENDEMIC AND COMMUNICABLE DISEASE CONTROL (MALARIA COMPONENT)
(Record of Key Decision Points)

Country	Project No.	Project Title - Endemic & Communicable Disease Control (Malaria Component)	Date	X Original / Revision #	Approved
Zaire	660-11-551-058		1/24/77		

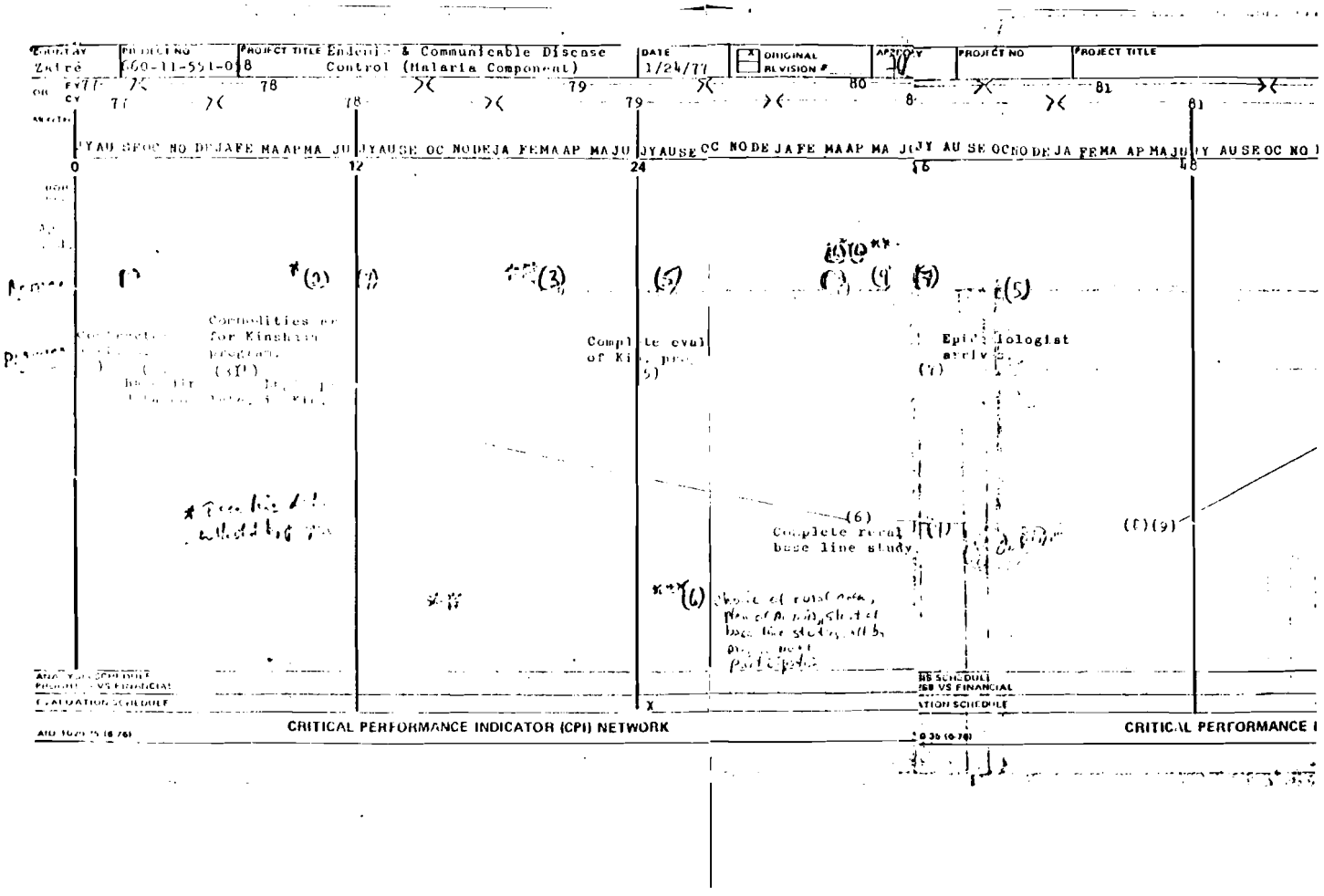
Project Purpose (From PRP Facesheet)
To strengthen the endemic disease control and monitoring capabilities of the GOZ.

	Planned	Actual	Remarks
Pro Ag signed.	6/29/76	6/29/76	
CPI Description			
1. USAID contract malaria technician arrives in Kinshasa. (AID/W)	July 77	Sept. 77	Project in need also Epidemiologist, Entomologist, Sanitary Engineer and Health Educator.
2. WHO team completes base line study in Kinshasa. (USAID)	Nov. 77	April 78	WHO was to have been requested. Instead data was collected by program.
3. Necessary malaria control commodities arrive in Kinshasa. (USAID)	Jan. 78	April 79	Less vehicles. First vehicle arrives April 1980.
4. Malaria control program begins in Kinshasa. (USAID)	Feb. 78	July 79	Spray teams recruited, trained and organized.
5. Complete evaluation of the Kinshasa program. (USAID)	July 79	Aug. 79	USAID Epidemiologist arrived at post July '80. Evaluation is incomplete due to absence of baseline data.
6. WHO completes base line study in a rural area adjacent to Kinshasa. (USAID)	Apr. 80	Nov. 80	Job done by USAID supported program No WHO participation
7. Epidemiologist arrives. Will work with both malaria and measles components. (AID/W)	July 79	July 80	Delay due to processing PASA
8. Commodities arrive for malaria control in rural area. (USAID)	Feb. 78	July 80	Commodities for urban and rural project areas arrived simultaneously.
9. Control program begins in rural area. (USAID)	July 79	July 80	Lack of transport and advisory personnel.
10. Evaluation (USAID)	Sept. 79	Nov. 80	Though planned after 24 months of project activity one year delay was necessary.
11. Project objectives are met (USAID)	April 1982	Pending	Recommend one-year extension

AID 1020-36 (6-76) CRITICAL PERFORMANCE INDICATOR (CPI) DESCRIPTION

Table VII

ENDEMIC AND COMMUNICABLE DISEASE CONTROL (MALARIA COMPONENT)
(Chart)



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malaria control program. A plan for such a program has been drafted. The GOZ is planning to request from outside sources financial support for the project.

Inputs

Formal training courses are needed for the various disciplines involved in antimalarial work. It is envisioned that the national health plan which is now being prepared will include provisions for integrated malarial control activities. The recommendation of Dr. Guy Houel, an AID training consultant who worked in Kinshasa from January 20 to February 20, 1980, should be reviewed for basic guidelines on training.

Because of delays in the receipt of commodities, the sequence of events appears to be disjointed. When he arrived in September 1977, the USAID malaria adviser found that he was unable to perform effectively because of these delays. Nonetheless, with his knowledge of malaria control in Africa, his experiences with the WHO, and his ability to establish excellent personal relationships with local and American staff, the malaria adviser was able to overcome initial logistical problems.

As the program begins to stabilize, advisory staff will have to face a different set of demands. Standard operating procedures (SOPs) must be established for every facet of the program. These SOPs will be a model for reference for a future, expanded national program, or for parallel pilot projects in other regions of the country. The payroll for the month of November 1980 is a good example of an applicable procedure (see Appendix C).

The security and safety of equipment and supplies seem to be problems. Consideration may be given to the employment of a "bonded" employee, who will be held responsible for property. If such a custodian cannot be recruited, other arrangements should be considered. The malaria adviser will be able to devote more of his energy to policy guidance, long-range planning, evaluation and training, and other aspects of management, and still be able to monitor daily performance, when this problem is solved.

USAID advisers and senior national staff are keenly aware of the need for an active health education program to ensure the success of the project. In the Masina Zone in the urban project area, for example, the recommendation for a third round of spraying has been rejected. When he visited the area, the consultant learned that the recommendation was rejected because of the presence of bedbugs and other vectors, which are not affected by DDT. The decrease in the number of fever cases has made people more aware of problems other than malaria.

Outputs

During the first three years of this five-year pilot project, the staff acquired many significant experiences in the management and operation of the program. With the employment of various outside consultants and an epidemiologist, and as a result of the Ministry of Health's awareness of necessary changes and follow-ups, the workload of the USAID adviser has been lightened.

The targets for the project were not reached on time (see Tables VI and VII). Progress was slower than anticipated for the following reasons:

- The arrival of the USAID malaria adviser was delayed.
- The PIO/T erred in projecting the arrival time of the epidemiologist.
- The WHO did not conduct the required baseline data surveys during the preparatory phase of the project (see project agreement with GOZ).
- Neither a proper motor pool nor a proper maintenance and storage facility was available.
- Communication between the GOZ and the WHO was inadequate.
- Commodities did not arrive on time.
- Initially, there was no adequate warehouse for the safe storage of equipment and supplies.
- The project needs an entomologist and a sanitary engineer.
- Malaria personnel were commandeered to fight an outbreak of cholera in 1979.
- The USAID adviser and senior national staff departed for a one-month training tour of Senegal and Nigeria. During their absence, no backup staff were available.

There is reason to believe that the projected targets will be met if the project is extended for another year.

The medical director of the malaria project submitted a draft proposal for a national malaria control program to the GOZ in November 1980 (see Appendix E). If the plan is approved, it will be submitted to international donor agencies for economic and technical support. This plan was not analyzed by the consultant, but it is assumed to be a modified version of the malaria control plan for 1979-2000 that FONAMES submitted earlier. Higher levels did not support FONAMES's plan when it was submitted.

The Secretary of State for Health, Dr. Falaki Moloma-Mo-Bamwa, revealed that there is a strong desire at the highest level for a national malaria service that is part of FONAMES and an integral part of a national health plan. Reportedly, the Ministry of Health is preparing a national health plan.

Recognizing that trained personnel are needed to expand the malaria control program, the secretary of state expects that personnel from tuberculosis, nutrition, and EPI programs will be asked to participate in antimalaria activities. The use of these personnel would be feasible in an integrated health service.

The pilot project will last approximately one and one-half more years. If officials at the national level do not express, clearly and formally, their desire for this program, its extension cannot be considered.

The problem of malaria control is particularly onerous in Zaire because of several socioeconomic factors. Unless it can be shown concretely that an expanded program would be feasible, expansion should not be undertaken because administrative costs would be prohibitive. In the remaining one and one-half years, the USAID advisers' most important contribution to the project would be the delegation of more responsibility to local staff to expand the pool of middle managers which the program urgently needs. Each adviser should consider sharing an office (or even the same desk) with his counterpart to maximize the benefits of partnership and cooperation.

The medical director of the project now works part-time, although he spends more than 80 percent of his time on project business. He is dedicated and competent. Nonetheless, this priority program deserves at least the services of another medical officer who could serve as a deputy program director.

Staff at the WHO regional office in Brazzaville should be consulted immediately to determine the feasibility of reactivating a regional malaria training center or establishing a national training center.

III. THE ENDEMIC AND COMMUNICABLE DISEASE CONTROL PROJECT

Purposes

The agreement for the Endemic and Communicable Disease Control Project was signed in June 1976. This project, of which malaria control is a component, has the following purposes:

- To strengthen the capability of the Government of Zaire to monitor and control infectious diseases.
- To reduce the morbidity and mortality caused by pandemic diseases by focusing on selected diseases that cause death in young children.
- To provide an experiential base and develop operational cadres, an organizational infrastructure, and methodologies for the prevention and control of selected communicable diseases.

Despite the constraints of the socioeconomic conditions in Zaire, progress towards the above objectives is being made. More rapid progress could be made if the emphasis is shifted and if the project is extended an additional year to make up for lost time. The project agreement states that the GOZ agreed to:

- Request the assistance of a WHO malaria team to conduct a malaria baseline survey in the Kinshasa Region.
- Request the assistance of the United Nations Development Project (UNDP) to provide commodities for an extended malaria control program.
- Request that WHO continue to provide technical assistance (i.e., a full-time malariologist and entomologist.)*

Unfortunately, the GOZ has not fulfilled the mandate. The matter was discussed with the WHO country representative, Dr. Ramamonjy-Ratrimol, and the Secretary of State for Health, Dr. Falaki Maloma-Mo-Bamwa. Following the discussion, the GOZ decided that the fulfillment of these obligations should be a priority.

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* PRO-AG 76-5, June 29, 1976.

Program staff did collect some baseline data, including data on the sensitivity of Anopheles Gambiae to DDT (see Appendix D). Since the arrival of the USAID epidemiologist, the collection of malariometric data has been intensified to make up for missed opportunities. As Tables IX, X, and XI show, blood surveys were taken in the urban spray area, but because of a lack of baseline data, meaningful interpretation is impossible. The area was sprayed at least twice. Results from a control area have not been verified.

The epidemiologist arrived too late to complete an analysis of the data for this evaluation. Nevertheless, if one compares the results with the data for the nutrition program (collected in 1979; see Table XII), it is possible to conclude that spraying has been effective.

The situation in the rural project area is, fortunately, different. Here, malariometric surveys were taken either before spraying or during the first spray cycle. Tables XIII, XIV, and XV show a baseline positivity rate of 32.2 percent, 23.2 percent, and 12.7 percent. More complete data will be available soon, because there is a full-time epidemiologist working in the laboratory and on passive case detection activities. Of the 308 slides collected in September and October 1980 from the dispensaries in Ngidinga, Malele, and Sadi-Kisanga, 35 (27.3 percent) were positive for malaria. These baseline figures will be of value when the results are evaluated again.

Goals and Subgoals

In 1975, the GOZ stated in its Manifesto of Health and Welfare (an official policy paper of the National Health Council) that priority would be given to the improvement of the health and well-being of infants and preschool-age children, and specifically to the reduction in the prevalence of serious endemic diseases. In Zaire's current five-year health plan, malaria and measles are singled out as the most important infectious diseases susceptible to control.

The infant mortality rate is 150+ per 1,000 live births. The death rate among preschool children is estimated to be 350 per 1,000. (See Appendix D, Annex 5A, Pro Ag 76-5, June 29, 1976.) The malaria control pilot project was designed to assist in the achievement of the goals described above. The cyclical spraying of DDT was a team effort; logistics were handled well. The effort demonstrated that local talent and resources can be properly mobilized (see Tables XVI and XVII).

Given the lack of malariometric indicators, scientific evidence that purposes have been fulfilled cannot be given. However, preliminary project indicators, presumptive malaria diagnoses in clinics, and verifications

Table IX

SUMMARY OF THE BLOOD SMEAR EXAMINATIONS OF THE URBAN PILOT PROJECT, BY ZONE, 1980 (SPRAY AREA)

Zone	Population	Smears Examined	Positives	Percent Positive	% Population Examines
Masina	78,825	1639	154	9.4	2.1
Kimbanseke	68,632	1356	219	16.2	2.0
Ndjili	109,785	2132	129	6.1	1.9
TOTALS	257,242	5127	502	9.9	2.0

SUMMARY OF THE BLOOD SMEAR EXAMINATIONS OF THE URBAN PILOT PROJECT, BY MONTH, 1980 (SPRAY AREA)

Month	Total Smears Examined	Smears Positive	Percent Positive	Percent population Examined
January	-	-	-	-
February	-	-	-	-
March	-	-	-	-
April	670	108	16.1	0.3
May	650	47	7.2	0.3
June	955	103	10.8	0.4
July	556	77	13.9	0.2
August	996	74	7.4	0.4
September	461	33	7.2	0.2
October	839	60	7.2	0.3
November	-	-	-	-
December	-	-	-	-
TOTALS	5127	502	9.8	2.0

Table X

SUMMARY OF THE BLOOD SMEAR EXAMINATIONS OF THE URBAN SPRAY AND CONTROL AREA, BY MONTH, 1980

Month	(Control Area) Limete	Masina I	Masina II	Masina III	Ndjili	Kimbanseke
January	-	-	-	-	-	-
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	-	225/20	-	-	-	445/88
May	-	197/11	263/20	190/16	-	-
June	-	372/48	-	392/39	-	191/16
July	410/36	-	-	-	139/7	417/70
August	-	-	-	-	906/63	90/11
September	-	-	-	-	461/33	-
October	-	-	-	-	626/26	213/34
November	-	-	-	-	-	-
December	-	-	-	-	-	-
TOTALS	410/36	794/79	263/20	582/55	2132/129	1356/219
% Positive	8.8	10.0	7.6	9.5	6.1	16.2

220/10 = Slides examined/positives

GRAND TOTAL: Slides Examined: 5537
Slides Positive: 538
Slide Positivity rate: 9.7%

The blood smear examination rate for the three spray zones are:

Ndjili: Population of 109,785 with 2132 smears examined = 1.9% rate

Masina: Population of 78,825 with 1639 smears examined = 2.1% rate

Kimbanseke: Population of 68,632 with 1356 smears examined = 2.0% rate

Table XI

SUMMARY OF THE BLOOD SMEAR EXAMINATIONS OF THE URBAN SPRAY AREA, BY AGE GROUP, 1980

Age Group	Total Population	Smears Examined	Smears Positive	Percent Positive	% of Population Examined
0-11 months	12346	249	17	7.0	2.0
1-4 years	40902	1794	160	9.0	4.4
5-9 years	44246	1760	183	10.0	4.0
10-14 years	33956	934	111	12.0	2.8
15 +	125790	390	31	5.0	0.3
TOTALS	257242	5127	502	9.8	2.0

SUMMARY OF THE BLOOD SMEAR EXAMINATIONS OF THE URBAN SPRAY AREA, BY ZONE AND AGE GROUP, 1980

Zone	0-11 mois	1 - 4	5 - 9	10 - 14	15 +
Masina	107/7	730/65	578/61	208/20	16/1
Ndjili	94/5	691/39	761/51	338/21	248/13
Kimbamseke	48/5	373/56	421/71	338/70	126/17
TOTALS	249/17	1794/160	1760/183	934/111	390/31
Percent Positive	6.8	8.9	10.4	11.9	8.0

Table XII

MALARIA THICK SMEARS FOR INFANTS IN KINSHASA, BY AGE*

Age (months)	Total Number of Smears Done	Total Number of Smears Positive	Percentage of Smears Positive
0 - 11	70	20	28.6%
12 - 23	125	32	25.6%
24 - 35	136	34	25.0%
36 - 47	125	38	30.4%
48 - 59	98	38	38.8%
60	21	11	52.4%
Age Not Specified	37	11	29.7%
TOTALS	612	184	30.1%

* Data from Nutritional Program, 1979 Survey Data.

Table XIII

RESUME DE L'ETUDE DE BASE SUR LA GOUTTE EPAISSE PAR LE PROJET PILOTE RURAL DE LA MALARIA - PAR CENTRE DE SANTE ET VILLAGE - AOUT - SEPTEMBRE 1980

Centre de Sante	Village	Population	No. de Gouttes Examinees	No. Positive	Lames Pos.%	% Gouttes/ Population
Sadi-Kisanga	Sau-Luanika II		7	2	28.6	
	Sadi-Dikimu		20	7	35.0	
	Ndunga		10	0	0.0	
	Kibinga		5	2	40.0	
	Sau-Luanika I		18	10	55.6	
	Kimbua		6	2	33.3	
	Kindona		8	1	12.5	
	Kitala		13	4	30.8	
	Kinkoto		9	3	33.3	
	Sadi-Kisanga		34	15	44.1	
	Zulu		56	18	32.1	
	Kinsuka		30	8	26.7	
	Nsangi II		45	12	26.7	
	TOTALS		261	84	32.2	
Ngidinga	Ngidinga		109	22	20.1	
	Kimasa II		23	7	30.4	
	Kilombo		90	22	24.4	
	Lenga		50	8	16.0	
	U.T. Nsanga		12	1	8.3	
	Kiyanika		12	0	0.0	
	Kinzambi		11	2	18.2	
	Kivua		22	3	13.6	
	Zunzu		30	8	26.7	
	Kikanga		39	15	38.5	
	Kinsipanga		18	5	27.8	
	Kinduiku		26	11	42.3	
	Kinzinga		10	2	20.0	
	Kimasa		36	7	19.4	
	TOTALS		488	113	23.2	

Table XIII (cont)

RESUME DE L'ETUDE DE BASE SUR LA GOUTTE EPAISSE PAR LE PROJET PILOTE RURAL DE LA MALARIA - PAR CENTRE DE SANTE ET VILLAGE - AOUT - SEPTEMBRE 1980

Centre de Sante	Village	Population	No. de Gouttes Examinees	No. Positive	Lames Pos.%	% Gouttes/ Population
MALELE	Mbanza					
	Kinkondongo		16	6	37.5	
	Kibula		13	2	15.4	
	Kumbi		21	0	0.0	
	Ngombi		33	8	24.2	
	Kitala		11	3	27.3	
	Kingala		29	7	24.1	
	Mbemba I		14	2	14.3	
	Mbemba II		13	2	15.4	
	Vinda		18	2	11.1	
	Malele Village		10	1	10.0	
	Malele Cite		156	10	6.4	
	Malele Poste		26	5	19.2	
	Mpati		18	2	11.1	
	Kilembika		16	0	0.0	
	Kinkosi		13	0	0.0	
	Mbongi		13	1	7.7	
	Kinkondongo		26	7	26.9	
	Kikaka		17	0	0.0	
	Kivala I		17	0	0.0	
	Kivala II		3	0	0.0	
	Kitaba		13	2	15.4	
	Kisukika		33	7	21.2	
	TOTALS		529	67	12.7	

Table XIV

RESUME DE L'ETUDE DE BASE SUR LA GOUTTE EPAISSE PAR LE PROJET PILOTE RURAL DE LA MALARIA - PAR CENTRE DE SANTE ET GROUPE D'AGE - AOUT - SEPTEMBRE 1980

Centre de Sante - Sadi-Kisanga

Groupe D'Age	Population Exigee	Gouttes Examinees	Gouttes Positives	Percentage Positives	Percentage de la Population Examinee
0 - 11 mois		25	8	32.0	
1 - 4 ans		91	35	38.5	
5 - 9		82	27	32.9	
10 - 14		49	13	26.5	
15 - 19		12	1	8.3	
20 - 24		-	-	-	
25 - 29		2	0	0.0	
30 - 34		-	-	-	
35 - 39		-	-	-	
40 - 44		-	-	-	
45 - 49		-	-	-	
50 - 54		-	-	-	
55 - 59		-	-	-	
60 - 64		-	-	-	
65+		-	-	-	
	TOTALS	261	84	32.2	

Table XIV (cont)

RESUME DE L'ETUDE DE BASE SUR LA GOUTTE EPAISSE PAR LE PROJET PILOTE RURAL DE LA MALARIA -PAR CENTRE DE SANTE ET GROUPE D'AGE - AOUT - SEPTEMBRE 1980

Centre de Sante De Malele

Group D'Age	Population Exigee	Gouttes Examinees	Gouttes Positives	Percentage Positives	Percentage de la Population Examinee
0 - 11 mois		33	4	12.1	
1 - 4 ans		112	23	20.5	
5 - 9		105	15	14.3	
10 - 14		76	6	7.9	
15 - 19		19	2	10.5	
20 - 24		20	0	0.0	
25 - 29		23	3	13.0	
30 - 34		35	3	8.6	
35 - 39		23	1	4.4	
40 - 44		30	6	20.0	
45 - 49		12	1	8.3	
50 - 54		20	1	5.0	
55 - 59		7	1	14.3	
60 - 64		7	1	14.3	
65+		7	0	0.0	
	TOTALS	529	67	12.7	

Table XIV (cont)

RESUME DE L'ETUDE DE BASE SUR LA GOUTTE EPAISSE PAR LE PROJET PILOTE RURAL DE LA MALARIA - PAR CENTRE DE SANTE ET GROUPE D'AGE - AOUT - SEPTEMBRE 1980

Centre de Sante - Ngidinga

Group D'Age	Population Exigee	Gouttes Examinees	Gouttes Positives	Percentage Positives	Percentage de la Population Examinee
0 - 11 mois		30	9	30.0	
1 - 4 ans		117	31	26.5	
5 - 9		109	26	23.9	
10 - 14		56	11	19.6	
15 - 19		32	6	18.8	
20 - 24		14	2	14.3	
25 - 29		16	3	18.8	
30 - 34		25	6	24.0	
35 - 39		14	1	7.1	
40 - 44		27	7	25.9	
45 - 49		11	3	27.3	
50 - 54		17	6	35.3	
55 - 59		6	2	33.3	
50 - 64		9	0	0.0	
65+		5	0	0.0	
	TOTALS	488	113	23.2	

Table XV

RESUME DE L'ETUDE DE BASE DE LA GOUTTE EPAISSE PAR LE PROJET RURAL PILOTE DE LA MALARIA - PAR GROUPE D'AGE - AOUT -SEPTEMBRE 1980

Group D'Age	Population Exigee	Gouttes Examinees	Gouttes Positives	Percentage Positives	Percentage de la Population Examinee
0 - 11 mois		88	21	23.9	
1 - 4 ans		320	89	27.8	
5 - 9		296	68	23.0	
10 - 14		181	30	16.6	
15 - 19		63	9	14.3	
20 - 24		34	2	5.9	
25 - 29		41	6	14.6	
30 - 34		60	9	15.0	
35 - 39		37	2	5.4	
40 - 44		57	13	22.8	
45 - 49		23	4	17.4	
50 - 54		37	7	18.9	
55 - 59		13	3	23.1	
60 - 64		16	1	6.3	
65+		12	0	0.0	
	TOTALS	1278	264	20.7	

Table XV (cont)

RESUME DE L'ETUDE DE BASE DE LA GOUTTE EPAISSE PAR LE PROJET RURAL PILOTE DE LA MALARIA - PAR GROUPE D'AGE ET DE SEXE - AOUT - SEPTEMBRE 1980

Group D'Age	Population Exigee		Gouttes Examinees		Gouttes Positives		Percentage Positives		Percentage de la Population Examinee	
	M	F	M	F	M	F	M	F	M	F
0 - 11 mois			39	49	6	15	15.4	30.6		
1 - 4 ans			161	159	37	12	23.0	32.7		
5 - 9			153	143	34	34	22.2	23.8		
10 - 14			76	105	14	16	18.4	15.2		
15 - 19			31	32	6	3	19.4	9.4		
20 - 24			7	27	2	0	28.6	0.0		
25 - 29			9	32	1	5	11.1	15.6		
30 - 34			14	45	2	7	14.3	15.6		
35 - 39			5	33	0	2	0.0	6.1		
40 - 44			11	46	2	11	18.2	23.9		
45 - 49			5	18	1	3	20.0	16.7		
50 - 54			18	19	4	3	22.2	15.8		
55 - 59			7	6	1	2	14.3	33.3		
60 - 64			12	4	1	0	8.3	0.0		
65+			9	3	0	0	0.0	0.0		
TOTALS			557	721	111	153	19.9	21.2		

Table XVI

RAPPORT FINAL DE LA PULVERISATION DANS LES ZONES
NDJILI, MASINA ET KIMBAMSEKE
(DU 4 JUIN AU 19 JUILLET 1980 (RESULTAT PAR ZONE))

REPUBLIQUE DU ZAIRE
DEPARTEMENT DE LA SANTE PUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

ZONES			NDJILI		MASINA		KIMBANSEKE		TOTAL	
			Nbre	%	Nbre	%	Nbre	%	Nbre	%
Nombre Parcelles			13011	-	11434	-	11293	-	35738	-
MAISONS D'HABITATION	TRAITEES	Entièrement	9372	59,08	5611	44,98	9200	82,20	24183	61,18
		Partiellement	3381	21,32	1239	9,93	1158	10,35	5778	14,62
		Sous-Total 1	12753	80,40	6850	54,21	10358	92,55	29961	75,79
	NON TRAITEES	Fermées	1606	10,12	911	7,30	574	5,13	3091	7,82
		POUR REFUS: Volontaires	1295	8,16	4696	37,64	222	1,98	6213	15,72
		POUR REFUS: Naissances	154	0,97	15	0,12	30	0,27	199	0,50
		POUR REFUS: Causes inconnues	54	0,34	3	0,02	8	0,07	65	0,16
		POUR REFUS: Total "Refus"	1503	9,48	4714	37,79	260	2,32	6477	16,39
		Sous-Total 2	3109	19,60	5625	45,09	834	7,45	9568	24,21
		Total maison d'habitat	15862	100,00	12475	100,00	11192	100,00	39529	100,00
Nombre d'habitants protégés			2009	-	2439	-	2919	-	7367	-
Nombre de dépendances		Traitées	359	97,03	420	99,76	420	99,76	1199	98,93
		Non traitées	11	2,97	1	0,24	1	0,24	13	1,07
		Total	370	100,00	421	100,00	421	100,00	1212	100,00
Insecticide	Nbre sachets DDT utilisés		405		607		661		1673	
	Nbre Kg DDT 75 % WDP		270,540 Kg		405,476 Kg		441,548 Kg		1117,564 Kg	
Personnel	Nbre de jours/équipe		10		15		20		45	
	Nbre de jours/Aspergeur		40		60		92		192	
Période	Dates limites		25 au 26/8/80		27 au 29/8/80		30 au 3/9/80		-	
	Nbre de jours ouvrables		2		3		4		9	

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Table XVII

RAPPORT FINAL DE LA PULVERISATION
DANS LES CENTRES DE SANTE SADIKISANGA, MALELE ET NGIDINGA
DANS UNE ZONE RURALE
COLLECTIVITE DE MALELE / REGION DU BAS - ZAIRE
DU 25 AOUT AU 3 SEPTEMBRE 1980
RESULTATS / CENTRE

PROGRAMME DE LUTTEE ANTIPALUDIQUE
VILLE DE KINSHASA

CENTRES DE SANTE			SADIKISANGA		MALELE		NGIDINGA		TOTAL	
			Nbre	%	Nbre	%	Nbre	%	Nbre	%
Nombre propriétaires			449	-	521	-	501	-	1471	-
Maison d'Habitation	traitées	Entièrement	660	95,10	707	95,41	707	91,11	2074	93,80
		Partiellement	-	-	6	0,81	15	1,93	21	0,95
		Sous-Total 1	660	95,10	713	96,22	722	93,04	2095	94,75
	Non traitées	Formées	29	4,18	27	3,64	52	6,70	108	4,88
	Pour refus	Volontaires	1	0,14	-	-	1	0,13	2	0,09
		Naissances	2	0,28	1	0,13	1	0,13	4	0,18
		Causes inconnues	2	0,28	-	-	-	-	2	0,09
		Total "Refus"	5	0,72	1	0,13	2	0,26	8	0,36
	Sous total 2		34	4,90	28	3,78	54	6,96	116	5,25
	Total maison d'Hab.		694	100,00	741	100,00	776	100,00	2211	100,00
Nombre d'habitants protégés			65893	-	45615	-	68632	-	200140	
NOMBRE DE DEPENDANCES	Traitées		3402	33,28	772	48,58	2407	44,90	6581	38,33
	Non traitées		6819	66,72	817	51,42	2954	55,10	10590	61,67
	T O T A L		10221	100,00	1589	100,00	5361	100,00	17171	100,00
INSECTICIDE	Nombre sachets DDT utilisés		7025		3.823		6.884		17.732	
	Nombre de Kg DDT 75 % WDP		4.692,700Kg		2.553,76 Kg		4.598,512 Kg		11.844,976 Kg	
	Quantité de Nuvan		59,570 l		52,425 l		57,750 l		169,745 l	
PERSONNEL	Nombre de jours/équipe		315		252		231		798	
	Nombre de jours/Aspergeur		1.260		1.008		924		3.192	
PERIODE	Dates limites		4/6au20/6/80		7/7au17/7/80		21/6au5/7/80		4/6au19/7/80	
	Nombre de Semaines		2 et 3 jours		2		1 et 5 jours		5 et 2 jours	
	Nombre de jours ouvrables		15 jours		12 jours		11 jours		38 jours	

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from inhabitants in the pilot projects suggest that, with the distribution of antimalaria drugs and an effective DDT spraying campaign, the goals will be met. The provision of health education and trained cadres would speed up progress.

Available baseline data from other contributing projects (e.g., nutrition and immunization projects) are useful criteria for measuring progress while structuring and intensifying the epidemiological activities of the malaria control project. (See epidemiological data for urban area and rural spray area, and dispensary records and results of baseline survey in rural control area.) The USAID epidemiologist is to be commended for producing these data in so short a time (four and one-half months). The value of these data will become evident as comparative data become available and the success of the project is measured. Similarly, the USAID adviser's dedication and concern have made the difference between success and failure. One must be aware of the demands of such a difficult assignment. The sacrifices that must be made while working under the present conditions can only be appreciated when they are personally observed.

The immediate need for additional clerical staff and typists cannot be overemphasized. The need for good records that are completed properly is increasing daily. There is also a dire need for a good-quality duplicating machine.

If local citizens are employed, the USAID advisers would have more time to devote to their specific duties.

The GOZ's attitude toward malaria control is encouraging, indicating a keen awareness of the need and popular demand for such a program in Zaire.

Beneficiaries

The direct and indirect beneficiaries of this project are the population and the economy of Zaire. In consonance with its mission to help correct the disparity in the quality of life of poor people in the world's underdeveloped nations, AID has given priority to agriculture, health, education, and population. These areas are interrelated. In Zaire, malaria is a major factor in poor health. Given a properly planned and well-executed antimalaria program, Zaire can meet each of the suggested prerequisites for AID assistance. These are:

- Priority sectors (agriculture, health, education, and population).

- The poorer countries (per capita incomes of $300 or less).
- Projects and activities that directly reach the poor majority.
- Projects that can use the technological, scientific, and material resources of the United States.
- Projects and activities where the ratio between overall costs and benefits to the target group are balanced. (See Strategy Advisory Group's report on the antimalaria support strategy for tropical Africa.)

Malaria control in Zaire meets each of these five criteria. Studies in Ethiopia, India, Ceylon, and other countries on the economic benefits of antimalaria activities and their cost-effectiveness are matters of record and should be available both in AID/W and the Office of International Health, United States Public Health Service. (Note Turner's evaluation of the Ethiopian program, 1978.)

Despite the favorable indices of cost-effectiveness, the qualitative aspects of AID's involvement in a health program need to be the priority consideration. The "global village" concept demands a solution to health problems, regardless of local socioeconomic or administrative constraints.

It is estimated that a national control program would cost approximately U.S. $0.60 per person per year. (See Makengo's draft proposal for a national malaria control program, Appendix E.)

The experience in Zaire would be applicable to other LCDs on the continent because Zaire has the only USAID-supported malaria control project in equatorial Africa.

Unplanned Effects

Unemployment is dangerously high and the economy is in a slump. An effort to build a foundation for an expanded malaria control program should not be postponed. With a reduction in morbidity and mortality (the rates are beginning to decline as a result of the pilot project), the country's health sector will undoubtedly be pressured to provide similar services to other regions of the country.

There is no solid evidence of changes in Zaire's social structure or environmental and economic situation. In the urban spray area, the suggestion that another cycle of spray be initiated has been rejected because of

the presence of bedbugs. This problem could be solved by intensifying health education and by designing and implementing a program with the assistance and cooperation of the Hygiene Service of the Ministry of Health.

As experience in other countries shows, antimalaria programs are unique, with high visibility and impact. They help establish confidence in the governmental institutions and attract enterprising capital investment in areas where malaria control has been effective. It is an a priori assumption that a healthy person is more productive and makes a better citizen.

Malaria control projects have always played an important role in efforts to encourage interministerial coordination, establish policy-making commissions, and appoint multidisciplinary boards of directors. Although the unplanned effects of these projects are not visible in Zaire at this time, it is expected that, with the help of an advisory board of executives, they will become evident.

Lessons Learned

During the three years that this project has been operating, various lessons have been learned. It would be useful to study these lessons before initiating another similar project.

1. Collect the baseline data before initiating any operational activity.

2. Devote at least one year to the recruitment and training of national staff.

3. Study the project agreement to be fully aware of its special provisions, the background of the project, and the purposes of the project. Take preventive measures or make necessary adjustments when a schedule cannot be met.

4. Study and review the commitments of AID and the host government, and any obligations of third parties. Assist the host government in understanding these commitments.

5. Chart and review continually planned and actual accomplishments.

6. Maintain a chronological file of all communications and reports for historical purposes and as a reference for advisory and AID staff.

7. Establish standard operating procedures and prepare manuals (if none exist) for personnel. The manuals should contain information on job descriptions, performance evaluations, wage scales, incentive pay, tenure status, provisions and timetables for training, etc.

8. Plan program needs using indicator methods for offices, laboratories, warehouse facilities, supplies and equipment, field operations, trips, and technical support. These needs should be listed on a critical performance indicator (CPI) chart. Use such information for the Project Evaluation and Review Technique (PERT) to facilitate management by objectives (MBO).

9. Delegate responsibility, with authority, to develop managerial cadres for the program and free time for overall advisory services or supervision.

10. Do not postpone corrective actions, and maintain a dynamic linkage among all components of the workplan.

11. Create an employee-suggestion program, offering rewards for suggestions on cost-cutting and the improvement of work.

12. Have the senior national staff practice the art of management analysis, program planning and evaluation, and the delegation of authority and responsibility through normal daily contact.

13. Review programs in countries that have undertaken similar activities to avoid a repetition of mistakes.

14. Avoid the temptation to institute locally accepted methods of operation at the expense of U.S. methods and minimum accepted standards that have proven to be the most effective in the long run.

15. Consider purchasing smaller and more efficient vehicles to cut the cost of gasoline and to adapt to road conditions in the country.

Observations

The current project will terminate in April 1982. In the remaining period, the greatest emphasis must be on the identification and recruitment of additional supervisory personnel who can be trained on the job to man similar projects in other regions of the country. Although the GOZ is preparing a national plan for antimalaria control, it may be years before the necessary conditions, negotiations, and commitments for such an enterprise become final.

Consultations with the WHO regional office should be initiated to determine the feasibility of reactivating the regional malaria training center or establishing a national center attached to the university. The training needs of entomology and parasitology technicians, sanitarians, health educators, mechanics, purchasing agents, etc., would make such a center cost-effective.

There is now a nucleus of trained nationals--advisory staff--who have demonstrated their ability to organize and train others. With an official commitment of will and resources, this group could become a viable cadre for an expanding program. This, however, cannot happen until the national health plan is formalized and approved.

The USAID malaria adviser is the project's co-manager and troubleshooter. He is involved necessarily in the daily details and myriad problems of the project. His duties range from arrangements for personnel to transport, repairs, purchasing, training, disbursement, security, liaison, etc. His primary function is to ensure the successful operation of the project, but one of his objectives is to develop an organizational capability to execute similar programs in Zaire.

One of the three objectives of the project is to extend and integrate the principles and practices of vector-borne disease control into the permanent health delivery system that would operate in five development zones and cover approximately one million more people. Progress toward this objective cannot be made until the national health plan is completed.

The Malaria Commission (see organizational chart, Appendix G) appointed by the Ministry of Health to oversee the pilot project lacks specific terms of reference. The commission is confused about its policy guidance and review functions, and this situation has led to interference in daily operations.

There is in Zaire a wealth of basic and technical information on malaria which can be used for planning. The information will have to be gathered and sifted. It may not meet the standards for a research program, but it should be adequate to meet the needs of a control program. Information available from missionary stations and other facilities is derived from decades of experience, as well as patient and hospital records.

Given the enormity of the socioeconomic and logistical problems in Zaire, it will be difficult to create an effective nationwide antimalaria program. Because the national health delivery system is inadequate, the best alternative would be to replicate the current pilot program in other regions of the country and to expand other existing programs as additional trained manpower and other resources become available. In this approach, preferential treatment would not be given to one region at the expense of another, and a regional infrastructure for a full-scale malaria control program would be established. Regions with the will and ability to expand their pilot programs would be given priority consideration by the director of the malaria program.

AID should keep open its options for expanding or creating a national program if it decides to extend the malaria project an additional year. Extension of the program would not require additional funding. Another outside evaluation should be made two years from now. The main purpose of that evaluation should be to give to USAID/Zaire advice on acceptable options.

Special Comments and Recommendations

The malaria control pilot project requires further refinement, but, in general, it is a viable and reasonable effort to pave the way for an expanded national antimalaria program. The following recommendations should be considered.

1. Extend the project for one year.

2. Request a WHO or joint USAID/WHO evaluation of the draft national antimalaria plan.

3. Explore the possibility of establishing a malaria training center with technical assistance or guidance from the WHO.

4. Request that the minister of health assign to the malaria program a full-time deputy director. Assist the GOZ in identifying and selecting two promising university graduates in the field of biology or general science for international training in public health in the U.S. The training should lead to a MSPH or MPH degree.

5. Select and add to the pilot project a rural control area for comparative studies. In this area, use only

antimalaria drugs in a passive case detection program at a primary health care center.

6. Try to decentralize the operations in the various zones to conserve fuel and to develop local managerial talent.

7. Use available Peace Corps assistance in the decentralized program.

8. Use counterpart funds to the program to furnish adequate typing/clerical help and other support services, such as vehicle maintenance.

9. Maintain a master file on reports on progress and problems, including supporting documentation.

10. Recommend that the malaria adviser enroll in a course on scientific report writing while on home leave. Many U.S. Government agencies offer these courses. Enrollment in a course on management by objectives (or its equivalent) is also advised.

11. If the GOZ opts for a national antimalaria program, the mission should maintain on its staff an adviser with field experience in antimalaria campaigns. This person would assist in integrating the malaria program into the general health infrastructure and in monitoring AID input.

12. By the spring of 1981, enough malariometric data should have been collected and enough operational experience acquired to determine accurately the cost-effectiveness of malaria control in Zaire.

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* AID consultant.

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Zaire Post Report, U.S. Department of State, April 1980.

Appendix A

LIST OF CONTACTS IN ZAIRE

USAID

Norman L. Sweet, Mission Director

Robert L. Turner, Malaria Adviser

John Sexton, Malaria Epidemiologist

Clifford Belcher, Chief, Public Health

Joseph W. Jacobs, Public Health Adviser

Walter Boehm, Program Officer

Sam Perry, Immunization Adviser

Richard Thornton, Population Officer

Mohamad Tanamly, Budget and Fiscal Officer

William Bertrand, Nutrition Project Adviser

James McCabe, Administrative Officer

Peace Corps

Baudouin de Marcken, Director

Timothy Manchester, Associate Director for Health

Bruce Strassburger, Volunteer, Kongolo Region

Republic of Zaire Officials

Falaki Moloma-Mo-Bamwa, Secretary of Health

Makengo Bigonsa, Medical Director, Malaria Project

Mandiango Mo Mpila, Technical Director, FONAMES*

Citoyen Tschipangu, Supervisor, Malaria Project

Citoyenere Ndudi Ndudi, Secretary and Interpreter, Malaria Project

Citoyen Mplumba, Supervisor, Field Operations

Others

Sister Emilie, Director, Health Program, Ngidinga Catholic Mission

Staff, Ngidinga Catholic Mission

Director, Malele Dispensary

Ramamonjy-Ratrimol, Country Representative, WHO

Private Citizens, Rural and Urban Project Areas

* Fonds Nationale Assistance Medico-Sanitaire

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REPUBLIQUE DU ZAIRE
DEPARTEMENT DE LA SANTE PUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

Feuille DE PAIE DU MOIS DE NOVEMBRE 1980.-

II. PERSONNEL D'EXECUTION.-

N° D'ORDRE	NOMS	ET PRENOMS	FONCTION	BASE	LOGEMENT	PRIME	RETENUE	NET A PAYER	POUR ACQUIT
	I. ADMINISTRATION.-								
1.-	KUMBWANGI	MABANZA	Caissière	458,75	50,00	-	-	508,75	
2.-	NDUDI	NDIDI	Productrice	326,60	70,00	-	-	396,60	
3.-	PANZU	PANZU	Cartographe	305,00	25,00	-	-	330,00	✓
4.-	MANGUMBU	LUKOKI	Chauffeur	206,40			7,93	198,47	✓
5.-	MUKOKO	DICKA	" "	182,40			14,02	168,38	✓
6.-	MATAMBA	NGOMBI	" "	182,40				182,40	✓
7.-	MUKEBA	MBELUALUPU	" "	182,40				182,40	✓
8.-	MUTAMBA	KATAMBWE	Sentinelle	180,00			12,00	168,00	✓
9.-	MAKUMBI	BERNARD	" "	180,00				180,00	✓
10.-	MAKAYA	MALUKU	" "	180,00				180,00	✓
11.-	MASUEKA	LUFUMA	" "	180,00				180,00	✓
12.-	MULOMBE	WUSINGA	" "	180,00				180,00	✓
13.-	MANSUEKA	KANDA	" "	180,00				180,00	✓
14.-	MASAPU	MASUKU	Chef pos[illegible]			143,00		143,00	
15.-	KUBA	BAMENGA	Huissier			130,00		130,00	✓
16.-	MAFUALA	MASAWU	Réparateur			156,00		156,00	
	II. LABORATOIRE.								
17.-	SALA	BIAKU	Chef de grou[illegible]			156,00		156,00	✓
18.-	FUNDI		" "			156,00	24,00	132,00	✓
19.-	NZEKELE	KIBAZOLA	" "			156,00		156,00	✓
20.-	NSIMBA	KITADI	Chef d'équipe			143,00		143,00	✓
21.-	MATEZO	WAY	Microscopiste			130,00	20,00	110,00	✓
22.-	NSINGI	DIASONAMA	" "	204,20	25,00			229,20	✓
23.-	KUMBU	MAYIMONA	" "	204,20	25,00		26,43	202,77	✓
24.-	MUAMBA	MUTATAY	" "	204,20	25,00			229,20	✓
25.-	MIANDABO		" "	204,20	25,00		8,81	220,39	✓
26.-	BAMBULA		" "	204,20	25,00			229,20	✓
27.-	MPEMBA NSI	MASONGO	" "	204,20	25,00		123,48	105,72	✓
28.-	SIALA	WABANU	" "	204,20	25,00		123,48	105,72	✓
29.-	MASOLBO	LIKUKA	" "	204,20	25,00		141,10	88,10	✓
30.-	ISHANGU	LONBI	" "	204,20	25,00		141,10	88,10	✓
31.-	NDUDI	MBIMBI	" "	204,20	25,00		185,15	44,05	✓
	III. OPERATIONS/ENTRAIN.-								
32.-	LUNTADILA	MBELOLO	Assistant			175,00		175,00	✓
33.-	NBISI	NSOIE	Chef de groupe			156,00		156,00	
34.-	NTEBA	KAFUNGA	" "			156,00		156,00	✓
35.-	TSHIBAMBA	MUTOMBO	" "			156,00	6,00	150,00	✓
36.-	TSHIEPELA	LUFULUADO	" "			156,00		156,00	✓
37.-	KAMBAYI	BABUNDA	" "	184,00		288,00	77,77	134,23	✓
								6.631,18 Z.	

RECAPITULATIF.-

1. CADRE DIRIGEANT ..... Z. 2.454,70
2. PERSONNEL D'EXECUTION ..... Z. 6.631,18

TOTAL : Z. 9.085,88

Nous disons : ZAIRES NEUF MILLE QUATRE VINGT CINQ, MAKUTA QUATRE VINGT HUIT.-

Fait à Kinshasa, le 20 novembre 1980.-

LE MEDECIN DIRECTEUR DU PROGRAMME DE LUTTE ANTIPALUDIQUE,

Dr. SAKENJO BIGONSA .-

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Appendix D

TEST DE SENSIBILITE A L'INSECTICIDE D.D.T.

après midi à l'observation
de 1 h du temps = 10 h - 11 h

T° Labo = 26°
Humidité = 76 % (avant midi)

Tableau III.

Humidide maximum - 26° C
maximum - 24

Test de sensibilité à l'insecticide D.D.T à 4 %

Exposition à 11 h 30 ' jusqu'à 24 heures

I er Test : DDT à 4 % de papier impregné par OMS contact 18 moustiques dont tous sont des anophèles.

- dans 2 heures du temps = 10 mortalité
- 24 heures nous donnent à 100 % de mortalité

II test DDT à 4 % contre 18 moustiques dont il y a 10 anophèles et 8 culex
- dans 2 heures du temps = 11 mortalité
- dans 144 minutes nous donnent à 100 % de mortalité

III test DDT à 4 % contact 18 moustiques tous des anophèles.

- dans 2 heures du temps mortalité 17
- dans 24 heures du temps mortalité est à 100 %

N.B. Test temoin (contrôle); contact 18 moustiques
- dans 2 heures du temps nous donnent néant
- dans 24 heures du temps nous donnent 3 mortalité

Signale Nous vous signalons que DDT à 4 % pour cent nous donne les meilleurs résultats au cours de la desinsectisation (spray domiciliaire) à la collectivité de Ngidinga et Malele.

Fait à Ngidinga le 24/5/80

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1) Nous avons capturé des adultes des :

Anophèles	128	89 %
- Culex	12	8 %
- Aëdes	1	1,43 %
- Mansoncides	2	1,37
Total	143	

2) Nous avons découvert des gîtes larvaires pour :

- les anophèles	=	1
- Culex	=	4
- Autres	=	néant
- Simulium	=	1

Voilà, Citoyen Médecin Directeur, le rapport complet de la mission lequel j'ai bien voulu mettre à votre connaissance pour vous permettre d'avoir des renseignements précis et objectifs sur le déroulement des opérations qui peuvent nourrir la recherche dans le domaine entomologique.

Je serai toutes fois reconnaissant aux notations tant encourageantes que vous aurez à porter sur le rapport de nos travaux de terrain.

Veuillez agréer citoyen Médecin Directeur, nos très sincères collaborations.

= MAYANDI - MATUNDA =

Infirmier A/Laboratin.

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Appendix E

PROJET DE STRATEGIE NATIONALE DE LUTTE CONTRE LE PALUDISME

REPUBLIQUE DU ZAIRE
DEPARTEMENT DE LA SANTE PUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

MOUVEMENT POPULAIRE DE LA REVOLUTION

PROJET DE STRATEGIE NATIONALE DE LUTTE CONTRE LE PALUDISME

I. PROGRAMME (PILOTE) DE LUTTE ANTIPALUDIQUE (PLAP).

I. INTRODUCTION.

La République du Zaïre, notre pays, est entièrement impaludé.

En effet, des analyses préliminaires ont révélé que les taux excessivement élevés de mortalité et de morbidité, surtout chez les jeunes enfants et les nouveaux-nés, étaient dus à la malaria et à la rougeole; maladies infectieuses les plus importantes, mais susceptibles d'être contrôlées.

Pour lutter contre ces fléaux afin de permettre à nos populations de fournir des efforts nécessaires au développement économique du Pays, le Conseil Exécutif signa en 1976, avec le Gouvernement Américain, un Accord de Projet afférant à la lutte préventive contre les maladies endémiques graves à savoir, la malaria et la rougeole.

Pour la concrétisation de cette Convention, le Programme pilote de lutte préventive contre le paludisme fut élaboré et est en train de fonctionner depuis 1977 dans la ville de Kinshasa (expérience en milieu urbain) et en 1980 dans la zone de Madimba, Région du Bas-Zaïre (pour le milieu rural).

A ce programme pilote furent assignés les objectifs ci-dessous :

a) - Créer le Bureau du Paludisme.
   - Former le personnel Zaïrois capable d'élaborer, mettre au point et exécuter des programmes de lutte préventive contre le paludisme dans les milieux urbains et ruraux.

b) Etablir et mener à bonnes fins un Projet pilote de lutte préventive contre le paludisme dans la région de Kinshasa (milieu urbain) et dans une région avoisinante facilement accessible (milieu rural); ayant pour résultat du point de vue de la statistique, une diminution importante du taux de mortalité et de morbidité, plus particulièrement chez les jeunes enfants.

c) Appliquer et intégrer les principes et les pratiques de lutte contre les maladies portées par vecteurs à la méthode de développement permanent d'apport de la santé des zones de développement de la Santé Publique.

2. REALISATIONS.

a) Le bureau du paludisme a été créé. Le personnel de cadre désigné et affecté (voir l'organigramme en annexe I).

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b) Depuis sa création en 1970, le bureau du paludisme a élaboré et mis en exécution un programme pilote de lutte antipaludique dans la ville de Kinshasa (la région pilote étant composée des zones de Masina, Ndjili et Kimbanseke); et dans la zone rurale de Madimba (région du Bas-Zaïre).

Ce programme pilote se déroule de manière scientifique (suivant les normes de l'O.M.S.), et conformément au plan et calendrier prévu dans l'Accord du Projet.

A. DANS LA REGION PILOTE DE KINSHASA.

1) La reconnaissance géographique est réalisée en détail; simultanément, nous faisons la distribution de la chloroquine à 100 mg base en dose unique selon l'âge à tous les cas de paludisme suspectés ou confirmés.

Cette médication s'adressait aux âges de 0 à 15 ans, aux femmes enceintes à la deuxième moitié de la grossesse et celles allaitante

2) Nous avons organisé un service de cartographie qui réalise en détail toutes les cartes géographiques dont nous avons besoin.

3) Des tests de sensibilités de l'Anophèle à l'insecticide (DDT 75 % WDP) ont été concluants.

4) Trois campagnes de pulvérisations intradomiciliaires ont été planifiées et exécutées avec succès à intervalles réguliers de six mois.

5) Notre service d'épidémiologie est le thermomètre de nos activités. Il est doté d'un laboratoire de parasitologie qui s'équipe lentement, mais sûrement.

6) a) Les gouttes épaisses et frottis sanguins sont prélevés au laboratoire.

b) Des relevés de cas fébriles sont effectués dans les dispensaires de la région pilote.

c) Les enquêtes entomologiques sont effectuées de façon continues.

7) Le service d'éducation sanitaire existe de façon permanente. Mais il n'est pas encore bien organisé avec satisfaction par manque du personnel qualifié et du matériel didactique adéquat.

B. DANS LA REGION PILOTE RURALE (depuis 1980)

Cette région est composée de 50 villages de la Collectivité locale de Malele, zone de Madimba, Sous-Région de la Lukaya, Région du Bas-Zaïre

1) Des études prospectives ont été effectuées préalablement en vue de choisir la région pilote.

2) Après le choix, des enquêtes épidémiologiques de base ont été réalisées.

3) La reconnaissance géographique a été faite.

4) Une campagne de désinsectisation intradomiciliaire planifiée et exécutée avec succès.

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3. PREVISIONS.

a) Actuellement, nous sommes en train d'organiser le service d'éducation sanitaire qui semble être encore le point faible de notre organisation.

b) Deux campagnes de pulvérisations sont prévues :
- l'une dans la zone pilote urbaine de Kinshasa (de décembre 1980 à janvier 1981);
- l'autre dans la zone pilote rurale de Malela (vers février-mars 1981).

c) L'évaluation de l'ensemble des activités du PLAP est prévue pendant le mois de novembre prochain par une équipe externe tripartite composée d'un représentant de la République du Zaïre (Département de la Santé Publique), un représentant du Gouvernement Américain et un représentant de l'O.M.S.

II. PROJET DE STRATEGIE NATIONALE DE LUTTE ANTIPALUDIQUE.

1. PREAMBULE.

Dans son discours du 4 février 1980, le Président Fondateur du M.P.R., Président de la République, le Citoyen Mobutu Sese Seko, a mis l'accent particulier sur le développement de la médecine préventive.

Maintenant que le P.A.M., notre programme de redressement économique (branche privilegiée du Plan Mobutu) est entré dans sa phase d'exécution, il est plus que temps pour le Département de la Santé Publique de poser sa pierre angulaire destinée à supporter le poids de tout l'édifice. Oui, la santé, tout le monde le sait, est un puissant moteur de développement économique.

Dans le cadre de la médecine préventive, nous proposons un Projet de stratégie nationale de lutte contre le paludisme.
La prévalence du paludisme dans les populations varie suivant les régions en fonction du climat. Souvent elle varie entre 50 et 75 %.

Pour montrer l'importance du paludisme au Zaïre, voilà les quelques données statistiques se rapportant aux années 1977, 1978 et 1979 en annexe II.

La lutte contre le paludisme dans le plan national se fera par étape et devra prendre en considération en priorité les régions à vocation agricole dans le cadre P.A.M.

2. OBJECTIFS A ATTEINDRE.

a) Reduire le taux de mortalité, le temps de souffrance et l'incapacité imputables au paludisme.

b) Protéger les populations des agglomérations rurales, surtout celles des collectivités à importance économique par l'application des mesures de lutte préventive contre le paludisme.
Les méthodes de lutte seront sélectives suivant les exigences de chaque région concernée.

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On pourra appliquer soit :

1) La Chimiourophylaxie en administrant la chloroquine à 100 mg base en dose unique selon l'âge à tous les cas suspects ou confirmés du paludisme;
2) la lutte insecticide par la destruction des vecteurs, Anophèles adultes par les pulvérisations intradomiciliaires d'insecticides.
3) la lutte antilarvaire par la neutralisation ou la négatiation des gîtes larvaires d'Anophèles, ou par la manipulation du biotope

3. PROGRAMME.

a) Les régions concernées en priorité sont les suivantes :

1) Shaba : Zones de Kolwezi, Likasi, Kipushi, Kasenga, Kalemie, Kongolo, Kabalo, Pweto, Kambove, Sakania.
2) Kasaï-Oriental : Zones de Mwene-Ditu, Gandajika, Kabinda, Lubao, Kanji, Miabi.
3) Kasaï-Occidental : Zones de Tshimbulu, Ilebo, Mueka, Demba, Luebo Dibaya, Luiza.
4) Bas-Zaïre : Zones de Kasangulu, Madimba, Kimvula, Mbanza-Ngungu, Songololo, Tshela, Lukula, Seke-Banza, Luozi.
5) Bandundu : Zone de Popo-Kabeka, Kasongo-Lunda, Feshi, Bandundu, Kenge.
6) Equateur : Zones de Bikoro, Lisala, Bumba, Busingo, Gemena.
7) Haut-Zaïre : Zones de Irumu, Mambasa, Mahagi, Aru, Dungu, Faradje Dungu, Niangara.
8) Kivu : Zones de Beni, Kabambare, Kabare, Kalebe, Kasongo, Kuenga, Ruthuru, Rive Ouest du Lac Tanganyika, Sud-Kibombo.

III. PLAN D'OPERATION.

1. PREMIERE PHASE (9 mois)

a) Réquisition de médicaments antipaludéens, charroi, insecticides, appareils pulvérisateurs et autres matériels de première nécessité (voir l'état de besoin en annexe III).

b) Formation du personnel.
Rechercher et octroyer des bourses d'études pour la formation en matière de lutte contre le paludisme des cadres dirigeants du Programme au Centre de formation de Lomé (Togo), de Lagos (Nigéria) ou ailleurs où pareil enseignement est organisé.
Assurer la formation du personnel subalterne sur place par l'organisation des seminaires ou/et des sessions de recyclage.

2. DEUXIEME PHASE (1 mois)

Organisation du Service du paludisme sur le plan national

a) L'actuel Bureau du Paludisme devient le Service National du Paludisme (SENAPA) ayant pour attribution la conception, la planification, la consultation et la décision soit directement, soit par délégation (du Commissaire ou Secrétaire d'Etat à la Santé Publique)

...../.....

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b) Création des 3 Régions du paludisme suivantes :

1) Région de Kinshasa composée du Bas-Zaïre, Bandundu et Ville de Kinshasa.
2) Région de Kisangani composée de l'Equateur, le Haut-Zaïre et le Kivu
3) Région de Lubumbashi composée de Shaba, Kasaï Oriental et Kasaï Occidental.

c) Installation à la tête de chaque Région du paludisme d'une équipe chargée de la supervision et l'approvisionnement réguliers des équipes périphériques.

L'équipe régionale sera composée de :

1 Médecin ou Ingénieur Sanitaire Chef d'équipe.
- 1 Technicien d'Assainissement pour les Opérations du terrain et logistique.
- 1 Infirmier diplomé pour l'épidémiologie.
- 2 Commis.
- 1 Huissier.
- 3 Chauffeurs.
- 1 Mécanicien.

d) Installation et équipement au niveau périphérique (Région administrative) d'une équipe permanente du paludisme composée de :

- 1 Technicien d'Assainissement Chef d'équipe chargé des Opérations du terrain.
- 1 Infirmier diplômé chargé de l'épidémiologie secondé par :
  - 1 Infirmier auxiliaire (parasitologie),
  - 1 Aide entomologiste (entomologie),
  - 5 microscopistes,
  - 1 Commis,
  - 1 Planton,
  - 1 Mécanicien,
  - 5 Chauffeurs.

Il y aura donc 9 équipes périphériques.

Tandis que d'autres catégories du personnel sont saisonnières et occasionnelles tel que les applicateurs d'insecticides, les agents de reconnaissance géographique, etc...

3. <u>TROISIEME PHASE</u> (6 mois)

a) Enquêtes de base entomologiques et paludométriques terminées.
b) Reconnaissance géographique et réalisation des cartes géographiques sommaires terminées.
c) Simultanément, distribution de la chloroquine à 100 mg en dose unique au cas de paludisme suspectés ou confirmés. Les doses de chloroquine sont variables selon l'âge du sujet.

...../.....

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4. QUATRIEME PHASE (4 mois)

a) Etudes des données de base au niveau Régional et au niveau Central terminées.

b) Mesures de lutte antipaludique appropriées à la région choisies et planifiées.

c) Tous les mécanismes préalables mis en train.
Mesures de lutte appliquées et terminées.

d) Les éléments d'évaluations collectés (= évaluation interne effectuée).

5. CINQUIEME PHASE (1 mois)

a) L'évaluation de tous les aspects de la lutte par une équipe du niveau Central terminée.

b) Tout action ultérieure dépendra des conclusions de cette première évaluation.

IV. CONCLUSIONS.

1. Le Département de la Santé Publique possède un service de lutte antipaludique organisé et expérimenté. En effet, ce service a acquit l'expérience dans l'élaboration et la mise en exécution des programmes de lutte antipaludique dans les milieux tant urbains que ruraux.
2. Le projet pilote financé conjointement par le Conseil Exécutif et l'USAID a déjà démontré d'une manière probante la possibilité de diminuer le paludisme par les méthodes de lutte préventive.
3. La santé des populations rurales doit être protégée et améliorée pour assurer la réussite du P.A.M.
4. Il y a intérêt pour le Département de la Santé Publique de rendre un pourcentage de son Budget National disponible pour l'extention du Programme de lutte Antipaludique sur le plan National.
Le reste de l'argent, le Département de la Santé Publique peut trouver en s'addressant à d'autres partenaires étrangers (USA, France, Belgique, Allemagne, Japon).
5. Le Programme pilote de lutte contre le Paludisme du Département de la Santé Publique possède les matériels ci-après :
   - 120 pompes de pulvérisation à pression préalable "HUDSON" avec un lot de pièces détachées.
   - 1 appareil de pulvérisation aérienne.
   - 1 camion de 3,5 tonnes (chevrolet).
   - 5 pick up (tout terrain) chevrolet.
   - 2 jeeps sont attendues incessament venant des USA.
   - 4 mobylettes en bon état.

.....//.....

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- 1 Laboratoire de parasitologie en voie d'équipement.
- Des mobiliers de bureau et quelques fournitures non consommables.
- Des bâtiments administratifs sont en train d'être aménagés sur l'avenue de la Justice.

Fait à Kinchasa, le 22 octobre 1980.-

LE MEDECIN DIRECTEUR DU PROGRAMME
DE LUTTE ANTIPALUDIQUE
=. Dr. MALINGO BIBONSA .=

Chef de Division.-

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REPUBLIQUE DU ZAIRE
DEPARTEMENT DE LA SANTE PUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

Annexe III.

COUT ESTIMATIF MINIMUM ANNUEL POUR LA LUTTE ANTIPALUDIQUE AU ZAIRE.

LIBELLE	QUANTITE A COMMANDER	PRIX UNITAIRE	COUT TOTAL
I. MATERIELS.			
1. Pompes à pression préalable	120/Région administrative = 960 (Kinshasa non comprise)	350,00	336.000,00
2. Seaux gradués en plastique	120 x 9 = 1.080	16,00	17.280,00
3. Salopettes	120 x 9 = 1.080	47,00	51.300,00
4. Chapeaux de paille à larges bords	120 x 9 = 1.080	5,00	5.400,00
Sous-Total	.....	.....	409.980,00
II. PRODUITS.			
5. DDT 75 % WP	1.200 tonnes	7.000/tonne	8.400.000,00
6. Chloroquine à 100 mg	70.000 boîtes de 1000 cés	138,50/boîte	12.635.000,00
7. Phenergan cés 25 mg	3.000 boîtes de 500 cés	8,90/boîte	26.700,00
8. Trousse d'urgence	forfaitaire x 9	500,00	4.500,00
Sous-Total	.....	.....	11.126.200,00
III. LABORATOIRE.			
9. Microscopes binoculaire	5 pièces x 8 = 45 (Kinshasa non comprise)	2.500,00	112.500,00
10. Microscopes binoculaires entomologiques	2 pièces x 9 (région non comprise)	2.500,00	40.000,00
11. Thermomètres	10 pièces x 9 = 90	15/pièce	1.350,00
12. Lames porte-objets	120.000 pièces	5/100 pièces	6.000,00
13. Lampes à alcool	30 pièces	15,00	450,00
14. Trepied pour lampe à alcool	30 pièces	10,00	300,00
15. Rechaud à pétrole à 1 bec	9	150,00	1.350,00
16. Giensa colorat	150 flacons de 50 ml	8,00	1.200,00
17. May Grünwald colorant	150 flacons de 50 ml	8,00	1.200,00
18. Huile de cedre pour microscopes	150 flacons de 100 gr	5,00	750,00
19. Blouses blanches	150 pièces	47,50	7.125,00
Sous-Total	.....	.....	32.225,00
IV. ENTOMOLOGIE.			
20 Lampes torches	10 x 9 = 90	25,00	2.250,00
21. Piles torches	180 douzaines/an	30/dz	5.400,00
22. Boîtes à insectes	30	Forfaitaires	500,00
23. Ouates	200 Kg	12,00	2.400,00
24. Binoculaires stéréoscopiques	24	3.500,00	84.000,00
25. Divers	Forfaitaires 1500,00	500,00	4.500,00
Sous-Total			139.050,00

...../.....

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LIBELLE	QUANTITE A COMMANDER	PRIX UNITAIRE	COUT TOTAL
V. TRANSPORTS.			
26. Camions moyens 3,5 tonnes à traction avant	24	75.000,00	1.800.0000,00
27. Pick up chevrolet à traction avant	16	55.000,00	880.000,00
28. Essence et Huiles	a) 40 véhicules à raison de 30 litres d'essence/jour = 432.000 l/an	4,00	1.728.000,00
	b) Huile forfaitaire	500 Z./Région	4.500,00
29. Entretien et réparation	Forfaitaire	500 Z./Région	4.500,00
Sous-Total	.....	.....	4.417.000,00

R E C A P I T U L A T I O N

I. Matériels pour terrain	400.980,00
II. Produits	11.126.200,00
III. Matériels pour laboratoire	132.225,00
IV. Matériels d'entomologie	139.050,00
V. Transports	4.417.000,00
Total général :	16.224.455,00

Nous disons : ZAIRES SEIZE MILLIONS DEUX CENT VINGT QUATRE MILLE QUATRE CENT CINQUANTE CINQ.-

Fait à Kinshasa, le 22 octobre 19[illegible].-

LE MEDECIN DIRECTEUR DU PROGRAMME
DE LUTTE ANTIPALUDIQUE
=. Dr. MATUMO BIGONDA .=

Chef de Division.-

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Appendix F

PROJECT AGREEMENT BETWEEN
USAID AND THE GOVERNMENT OF ZAIRE

AID 1020 1
(9-68)

PRO AG

PROJECT AGREEMENT

BETWEEN THE DEPARTMENT OF STATE, AGENCY FOR INTERNATIONAL DEVELOPMENT (AID), AN AGENCY OF THE GOVERNMENT OF THE UNITED STATES OF AMERICA, AND

MINISTRY OF PUBLIC HEALTH

AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF [illegible]

The above-named parties hereby mutually agree to carry out a project in accordance with the terms set forth herein and the terms set forth in any annexes attached hereto, as checked below:

- [X] PROJECT DESCRIPTION ANNEX A
- [ ] FOREIGN CURRENCY STANDARD PROVISIONS ANNEX
- [X] STANDARD PROVISIONS ANNEX
- [ ] SPECIAL LOAN PROVISIONS ANNEX

This Project Agreement is further subject to the terms of the following agreement between the two governments, as modified and supplemented:

	DATE
[ ] GENERAL AGREEMENT FOR TECHNICAL COOPERATION	
[ ] ECONOMIC COOPERATION AGREEMENT	
[ ] (other)	

1. PROJECT/ACTIVITY NO. 560-11-530-000

PAGE 1 OF ___ PAGES

2. AMENDMENT NO. 76-5

3. [X] ORIGINAL OR REVISION NO. ___

4. PROJECT/ACTIVITY TITLE

Enteric and Communicable Disease Control

5. PROJECT DESCRIPTION AND EXPLANATION

(See Annex A attached)

6. AID APPROPRIATION SYMBOL: 72-11510/06

7. AID ALLOTMENT SYMBOL: 636-50-660-00-69-61

8. AID FINANCING [ ] DOLLARS [ ] LOCAL CURRENCY	OBLIGATION TOTAL (A)	INCREASE (B)	DECREASE (C)	TOTAL TO DATE (D)
(a) Total		400,000		400,000
(b) Contract Services		230,000		230,000
(c) Commodities		142,000		142,000
(d) Other Costs		28,000		28,000
9. COOPERATING AGENCY FINANCING - DOLLAR EQUIVALENT $1.00 =				
(a) Total				
(b) Technical and other Services				
(c) Commodities				
(d) Other Costs				

10. SPECIAL PROVISIONS (See Additional Continuation Sheets if Necessary)

See Continuation Sheet.

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11. DATE OF ORIGINAL AGREEMENT: June 30, 1976

12. DATE OF THIS REVISION

13. INCLUDING THIS CONTRIBUTION DATE: [illegible]

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Block 10

SPECIAL PROVISIONS

1. The Cooperating Government Agency agrees to execute an assignment to AID, upon request, of any cause of action which may accrue to the Cooperating Government Agency in connection with or arising out of the contractual performance by a party to a direct contract with AID financed in whole or in part out of funds provided by the United States Government under this agreement.

2. The provisions of AID Handbook 19, chapter 1(D)(3)(a), covering the submission of PIO/C and PIO/P documents, are hereby waived for a period of six months from the date of this agreement for an amount of $170,000. The provision covering the submission of PIO/P documents is hereby waived for a period of two months for an amount of $230,000.

5
ANNEX A

PROJECT DESCRIPTION AND EXPLANATION

A. Background

A priority objective of Zaire's current five-year National Health Plan (1975-1980) is to initiate control programs against the major endemic diseases. Seventy-five per cent of all morbidity in Zaire is caused by ten diseases, all of which are preventable. Death rates in infants and young children are excessive. Infant mortality rate is 150 or more per 1000 live births; death rates during the preschool period are estimated at 350 per 1000. Most of these avoidable deaths are due to acute infectious diseases, mainly malaria, measles, diarrheas, and respiratory infections, often intensified by malnutrition. In 1975 the Manifesto of the Health and Welfare of the People of Zaire (an official policy paper of the National Health Council) gave priority to improvement of the health and well-being of infants and preschool-age children, with specific focus on the reduction of the serious endemic diseases in these target populations. Preliminary analysis revealed that malaria and measles were the most important infectious diseases that were susceptible to control. A decision was reached to initially attack these two diseases while concurrently developing the Department of Health's capability to control other serious endemic diseases. This project was designed to assist in the implementation of that decision.

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3. Purposes

1. To strengthen the capability of the Government of Zaire to monitor and control infectious diseases.

2. To reduce the morbidity and mortality caused by pan-endemic diseases with focus on selected diseases which cause many deaths in young children.

3. To provide an experience base and to develop operational cadres, organizational infrastructure, and methodologies for the prevention and control of selected communicable diseases.

C. Conditions Existing at End of Project (Five Years)

1. The establishment and operation of an effective malaria control program in the Kinshasa Region and in one nearby rural area (total population coverage about 2.5 million).

2. The establishment and operation of a permanent measles control program by immunizing at least 80 per cent of all children 9 months to 3 years old in Kinshasa and 15 other major urban areas with a total population of about 4.5 million and the protection of an estimated 500,000 children.

3. The extension and integration of these and other endemic disease programs into the health delivery systems of five developmental zones with an estimated additional population of one million. These activities will be carried out in coordination with the Health Systems Development Project No. 660-057 and the planned Basic Family Health Project No. 660-067.

4. The training and development of a cadre of Zairian Health Workers competent to plan and execute endemic disease control programs.

5. The development of an epidemiological capability within the GOZ Department of Health for assessing, monitoring, and evaluating endemic disease problems and programs.

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AID 1020-1 (3-72) PRO AG CONTINUATION SHEET ANNEX A	PROJECT AGREEMENT BETWEEN AID AND DEPARTMENT OF PUBLIC HEALTH AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	1. Project/Activity No. 660-11-531-058	PAGE 1 of 11 PAGES
		2. Agreement No. 76-5	3. [X] Original or Revision No.
		3. Project/Activity Title Endemic and Communicable Disease Control	

D. Commitments During Life of Project

1. For Malaria Control Component

AID

AID support for malaria control is planned for first five years subject to major joint evaluation of process after two years. AID is responsible for furnishing long-term technical advisory services in epidemiology and malaria control field operations. It will also provide participant training, a part of commodity needs, and short-term consultants. Projected commitments are:

	Estimated Cost (Life of Project)
Technical Assistance (Long-term)	
One contract technician in malaria control operations for 5 years beginning approximately October 1976	$ 500,000
One contract technician, epidemiologist, for 2 years beginning approximately October 1979	200,000
Short-term Consultants	
Approximately 9 work-months for transportation/logistics, special problems, and periodic assessments	45,000
Participant Training	
Approximately 10 work-years of short- and long-term training in fields related to control of malaria and other vector-borne diseases	105,000
Commodities	
Vehicles and spare parts, insecticides, sprayers and spare parts, antimalaria drugs, microscopes and other laboratory and entomological equipment and supplies	480,000
Other	
Special studies, international travel for conferences, etc.	22,000
TOTAL	$1,352,000

For the Government of Zaire:	For the Agency for International Development:
Dr. Nguete Kikhela	Fermino J. Spencer

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AID 1330-1A (6-70) PROAG CONTINUATION SHEET ANNEX A	PROJECT AGREEMENT BETWEEN AID AND THE REPUBLIC OF PUBLIC [illegible] AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	1. Project/Activity No. 660-11-530-050 / 2. Agreement No. 70-5 / 3. Project/Activity Title: Endemic and Communicable Disease Control	PAGE 5 of [illegible] / 5. Original or Revision No.

GOZ

The GOZ is responsible for the overall direction and operation of the program including the furnishing of administrative, laboratory, and warehouse facilities, local currency operating costs including the salaries/allowances of local staff, and the cost of in-country training and a part of the commodity needs. This responsibility will be carried out through the National Malaria Service. Projected commitments are:

		Estimated Cost $U.S. Equivalent (U.S.$1.00 = 60.86)
Administrative, Laboratory, Storage, and Other Facilities		
Estimated value of $4,000 per month x 60 work-months		$ 240,000
Salaries and Allowances for Local Staff, National Malaria Service		
Estimates are based on following anticipated functional allocations:		600,000
Office of Director including Director, administrators, clerks, and top supervisory staff	(150,000)	
Laboratory personnel	(75,000)	
Entomology personnel	(75,000)	
Field staff (general workers, drivers, spray men, et al.)	(300,000)	
General local operating expenses including office supplies, utilities, gas, oil, and repairs of vehicles, transportation, printing, communication		200,000
Commodities, vehicles, insecticides, sprayers, spare parts, and other imported items		460,000
Local training, in-country and international travel, per diem, and other		100,000
TOTAL		$1,600,000

For the Cooperating Government or Agency	For the American Embassy of Development
Dr. Nguete Rikhela	Terrine C. Spencer
SIGNATURE	SIGNATURE / DATE
TITLE: Minister of Health	TITLE: Director, USAID

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PRO AG CONTINUATION SHEET ANNEX A	PROJECT AGREEMENT BETWEEN AID AND DEPARTMENT OF PUBLIC HEALTH AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	1. Project Identification No. 660-11-531-050 / 2. Project No. 76-5 / 2. Project Activity Title: Enteric and Communicable Disease Control

In addition, the GOZ agrees to:

(1) Request the assistance of a WHO malaria team to assist in performing a malaria base-line survey for the Kinshasa Region.

(2) Request the assistance of UNDP in providing commodities for extension of the malaria control program.

(3) Request WHO for continued technical assistance in the form of a full-time malariologist and entomologist.

(4) Permit AID and WHO technicians full access to all technical and administrative records and documentation concerning the malaria control activities.

2. Measles and Other Endemic Diseases

AID

AID support to measles control is planned for three years subject to major joint evaluation of progress after two years.

AID is responsible for furnishing technical advisory services in epidemiology and communicable disease control, participant training, short-term consultants, and a part of the commodity needs. Projected commitments are:

For the Cooperating Government or Agency	For the Agency for International Development
Dr. Nguete Kiyhela	Fermino C. Spencer
SIGNATURE:	SIGNATURE:
TITLE: Minister of Health	TITLE: Director, USAID

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PROJECT AGREEMENT BETWEEN AID AND		[illegible]	[illegible]
PTO A2 CONTINUATION SHEET	DEPARTMENT OF PUBLIC HEALTH	76- 5	[illegible]
ANNEX A	AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	Endemic and Communicable Disease Control	

	Estimated Cost (Life of Project)
Technical Assistance	
One PASA epidemiology/disease control technician for 3 years beginning approximately October 1976	$300,000
Approximately 12 work/months of short-term consultants in assessment/evaluation and special problems plus technical support services in testing of vaccine potency, sero-agglutination sampling, and other specialized techniques including biostatistics	80,000
Participant Training	
Approximately 10 work-years of participant training in areas such as epidemiology, communicable disease control, statistical analysis, bacteriology, parasitology, etc.	100,000
Commodities	
Vehicles, vaccines, jet-injectors and spare parts, calculators and [illegible] equipment, health education equipment, etc.	[illegible]
Other	
Special surveys, international [illegible] conferences, etc.	[illegible]
TOTAL	[illegible]

GOZ

GOZ is responsible for the overall direction and operation of the program including the training and [illegible] of the local staff, local currency [illegible], the [illegible] of facilities as [illegible] and [illegible] the commodity [illegible] [illegible] but enough the [illegible]

Dr. Ngwete Kimbuta

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Nationale pour Eradication de la Variole). Projected commitments are:

	Estimated Cost (U.S. Equivalent) (U.S.$1.00 = 40.86)
Provision of facilities, office space, storage areas, and other physicial facilities including costs of utilities, repairs, maintenance, etc.	Existing as part of CNEV infrastructure
Salaries and allowances for additional local staff to be added to existing CNEV organization	$100,000
Local operating costs including gas and oil, automotive repairs, insurance, general supplies, printing of forms, transportation of vaccines, etc.	235,000
Commodities: vaccines, vehicles, Ped-o-Jets, megaphones, health education equipment, refrigerators etc.	300,000
TOTAL	$635,000

The GOZ also agrees to:

(1) Provide office space [illegible] epidemiologist/disease control [illegible].

(2) Participate in planning [illegible] and evaluation of the measles control program.

(3) Provide all funds for vaccines beginning in CY 1978 and thereafter.

E. Planned Accomplishments for First Year

1. Malaria

a. Baseline data assessment completed [illegible] Regional Office.

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b. Plan of Operations for Malaria Control Kinshasa completed.

c. National Malaria Service established with designation of Director and supervisory staff.

d. Malaria Support Laboratory established, equipped, and staffed.

e. Initial training of operational staff completed.

f. Vehicles and first tranche of commodities ordered.

g. Malaria control program initiated for Kinshasa City area.

h. Two participants started long-term training.

2. <u>Measles and Other Endemic Diseases</u>

a. Measles vaccination program operating in Kinshasa City area with at least 500,000 immunizations completed.

b. Initial joint assessment of program completed.

c. Plan of Operations established for extension of measles immunization program to at least five other urban centers.

d. Vehicles and first tranche of commodities ordered.

e. Endemic disease control unit established in Department of Health and cadre of staff designed.

f. Plan established for long-range training of Zaire's staff in Communicable Disease Control/Epidemiology.

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For the Government of Zaire:
Dr. Tshute Kimpele
Minister of Health

For the United States International Development Agency:
Lawrence D. Egbert
Mission Director

(3-70) PRO AG CONTINUATION SHEET ANNEX A	BETWEEN AID AND DEPARTMENT OF PUBLIC HEALTH AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	1. Project/Activity No. 660-11-[illegible] 2. Agreement No. 76-5	PAGE 1 of [illegible] 3. Grant or Advance No.
		4. Project/Activity Title Endemic and Communicable Disease Control	

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Estimated Budget for First Year

USAID Contribution		$400,000
1. Contract for Technical Services		330,000
a. Long-Term	($200,000)	
1 malaria field operations 1 epidemiologist/disease control specialist for measles component		
b. Short-Term	(30,000)	
6 man-months		
2. Participant Training		28,000
3. Commodities		142,000
GOZ Contribution		$407,000
1. Operating Expenses		227,000
2. Commodities (vaccines, jet sprayers, vehicles, etc.)		160,000
3. Other, including in-country training, travel, and communications		20,000

Notes: $35,000 was previously obligated by Project Agreement SA 6-165 for Endemic Disease Control. These funds will be used to pay part of costs of operating expenses for measles control in Kinshasa.

The GOZ estimated contribution to this project during the life of the project is at least 25 per cent of the total cost of the project.

For the Cooperating Government or Agency Dr. Nguete Kikhela SIGNATURE DATE TITLE Minister of Health	For the Agency and Less Developed Country Terrence J. Spencer SIGNATURE DATE 6/29/76 TITLE Director USAID

AID 1330-1A (8-70) PRO AG CONTINUATION SHEET ANNEX A	PROJECT AGREEMENT BETWEEN AID AND DEPARTMENT OF PUBLIC HEALTH AN AGENCY OF THE GOVERNMENT OF THE REPUBLIC OF ZAIRE	1. Project Agreement No. 660-11-521-050 / 2. Amendment No. 76-5 / 3. Project/Activity Title: Endemic and Communicable Disease Control	Page 11 of 11 Pages / [X] Original or Revision No.

Other Contributions (Not part of this Project Agreement--subject to separate agreements)

WHO	$105,000
1. Technicians for base-line survey, Malaria Control	40,000
2. In-country technical advisors	50,000
3. Other (limited commodities and in-country training)	15,000
UNDP	$ 20,000
1. In-country training	10,000
2. Socio-economic surveys	10,000

For the Cooperating Government or Agency	For the Agency for International Development
Dr. Kiguete Kikhela	Fernando M. Spencer
SIGNATURE: [signature] DATE: 29/6	SIGNATURE: [signature] DATE: 6/29/76
TITLE: Minister of Health	TITLE: Director, USAID

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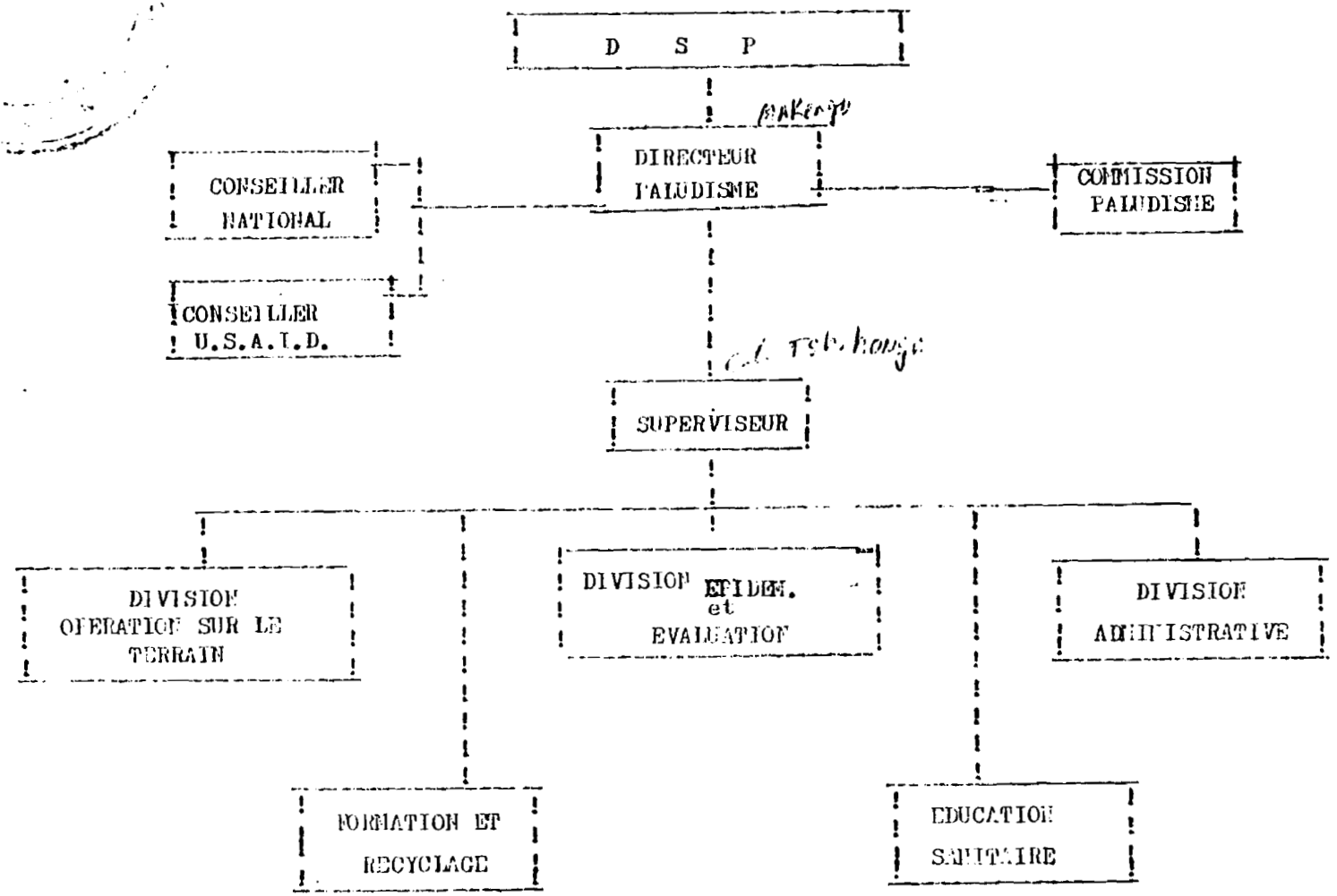
Appendix G

PROJET D'ORGANIGRAMME

PROJET D'ORGANIGRAMME



As of Nov. 8

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Appendix H

TRANSMISSION RAPPORT: LABO. ENTOMOLOGIE

REPUBLIQUE DU ZAIRE
VILLE DE KINSHASA
SERVICE TECHNIQUE
HYGIENE.-

Kinshasa, le 26 mai 1980

Labo. entomologie

N° 771.4/06 / Ent /Hyg./Ville

Transmis pour Information
au Citoyen Médecin Directeur
du Programme de la lutte
Antipaludique de et
à KINSHASA/GOMBE

= OBJET =

Transmission rapport

Citoyen Médecin Directeur,

J'ai l'honneur de vous transmettre par la présente le résultat de la mission que nous, MAKUNDA, SALAMBAU, MWANZA et le technicien monsieur Turneur avons effectué au Bas-zaïre dans le cadre de l'enquête entomologique.

a) - Nous étions à quatre dans ce voyage, arrivés à Ngidinga, la journée du 22 /5/80 était marquée par la capture nocturne sur l'homme à partir de 18 h 30 jusqu'à 21 heures 30 ' à l'interieur comme à l'exterieur des maisons. Le résultats n'a positif qu'à l'exterieur.

b) - La veille c.à.d le 23.5.80 de 6 heures 30 ' à 10 h 30 nous avions repris la capture dans les maisons du même quartier de la localité de Ngidinga, où nous avi visité 38 maisons au total dont 15 maisons étaient négatives et le reste posit

c) - Ces spécimens nous ont permis de faire nos tests de sensibilité à l'insecticide D.D.T à 4 % sur le papier imprégné du l'O.M.S le résultat de test, vous trouve sur le tableau III en annexe.

d) - Le 23.5.80 à partir de 10 h 30 " jusqu'à 12 h 45 ' nous étions en route pour l collectivité de Malele pour faire le sondage en depassant le pont de la rivière Ikisi qui située à environ 35 kilomètres de Ngidinga. Notre demande de renseignement nous avait permis de faire la recherche des larves aquatiques dans des m au bord de la dite rivière, et également au bord de la rivière Misele situé à kilomètres de la rivière Ikisi. Le résultat n'était que des larves avec siphon leur identification est fixée dans le tableau IV. La soirée de la même journée de 18 h à 21 h nous avait permis d'operer encore la capture nocturne sur l'hom

e) - dans le camp des professeurs de Ngidinga, où nous n'avion eu toujours des posi externes dont le résultats en annexe dans le tableau V.

e) - Le matin du 24.5.80 nous avions procédé à la capture des adultes dans les m au camp des professeurs et il y avait des 3 positifs dont l'identification des espèces vous est en annexe voir tableau VI.

f) - Le même jour du 24.5.80 nous étions dans la prolongation du nord de Ngidinga de la localité de Kimasa II à 20 kilomètres de Ngidinga pour la connaissance où TURNEUR a trouvé bon de mesurer une maison en dimension moyenne. Nous avions visité en plus 6 maisons pour capture des adultes et toutes ces maisons étaient positives avec foule anophèles dont 50 anophèles adultes dans 5 maisons sur 1 de la localité générale de Kimasa II .
Après cette opération, il nous était possible de chercher leur gîte de production d'où on a poursuivi jusqu'à 500 mètres de l'habitation dans la rivière Fina au nord - est de Kimasa II de résultat nous avons rien depisté. En poursuivant en de quelques 300 mètres de l'habitation de Kimasa II au sud - Est vers la source de même rivière, nous n'avons rien despisté jusque là comme gîte larvaire des phèles mais par contre je vous signale que nous avions découvert quelques lar et nympho de similie, dont la determination des espèces nous confirme l'espèce de similium damnosum et 1 crustacé (crabe). Je vous assure qu'il n'y avait eu d'incovenient au cours de notre voyage entomologie. Bref, en ce qui concerne le résultat , général , je vous resume comme suit :

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PUBLIQUE DU ZAIRE
ILLE DE KINSHASA
ERVICE TECHNIQUE
HYGIENE

Labo. Entomologie.-

RECOLTE DE LARVES DE MOUSTIQUE AQUATIQUE/LOCALITE-NGDINGA.-

	Point de capture	Nature de gîte	Nombre d'épuisettes	Nombres de larves avec siph	Nombres de larves sans-sip	Total	Identification des es
.80	rue du Centre N.D.	r flaque d'eau	~~xxxxxxx~~ 5x5 = 25	nombreux	+ nomb.	Nomb.	Anophèles-gambiae Culex - duttoni Culex - tigripes Culex - fatigans
tal		-	25	Nombreux	+ Nombr.	Nombr	

ombre de capteurs: 4 personnes
eures de capture : 45 minutes

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Date : 23.05.1920

Localité : Kalele

Nombre de Capteurs : 4

Heures de 10 h 30 à 12 h 45

Fiche de prélevement de Larves Aquatique.

nº Grd.	Point de capture	Nature de gîte	Nombre d'épuisetes	Nombre de larves + siphon	Nombre de larves - siphon	Total	Identification des espèces	observation
1	Kalele	Marais au bord de la rivière Ikini	5	2	-	2	culex decens	sont transformé en nymphe éclos = culex decens
2		Trous de Chikwanga au bord la Rivière Kisele	5	1	-	1	culex tigripes	
		Trous de [illegible] au bord [illegible] Kisele						
			10	3	-	3		

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Fiche de capture

Date de 22.05.80

Nombre de captures 4 Personnes

Tableau A.

Fiche pour la capture nocturne des adultes sur l'homme.

Heure du Travail	Interieur	exterieur	Total	S P. A	S P. B.	S P. C	S P. D.	S P. E.
18 h - 18h30	-	3	3	A. gambiae 2	Culex duttoni 1			
18 h 30 - 19h	-	-	-					
19 h - 19h30	-	2	2	A. gambiae 2				
19 h 30 - 20h	-	-						
20 h - 20h30	-	-						
20 h 30 - 21 h	-							
21 h - 21h30	-	2	2	A. gambiae 2				
21 h 30 - 22 h	-							
22 h - 22h30								
22 h 30 - 23 h								
23 h - 23h30								
23 h 30 - 24 h								
Total	-	7	7	6	1			

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R..UBLI UE DU ZAIRE
VILLE DE KINSHASA
SERVICE TECHNIQUE
HYGIENE

Tableau VI.

Labo.Entomologie-Environnement.-

R/Bas-Zaïre
lect.Ngidinga
t de capt.Camp-Professeur
bre de capteurs:4 personnes
de capture:24/5/1980.-

CAPTURE DES MOUSTIQUES ADULTES SUR LES OBJETS.-

Identification des espèces	Nombres de maisons visiter	Nombres de maisons positive	Sexes M	F	G	Gravide	Total	Remarques
Anophèles gambiae	4	3	2	-	7	-	9	
Anophèle nili			-	-	1	-	1	-
Mansonoïdes-uniformis			-	-	1	-	1	
Total	4	3	2	-	9	-	11	

Tableau VII.-

LOCALITE KINASA II DU 24.5?.1980.-

Détermination des espèces	Nombres de maisons visiter	Nombres de maisons positives	Sexes M	F	G	Gravide	Total	Observation.-
Anophèle gambiae	6	6	2	1	37	-	40	-
Total	6	6	2	1	37	-	40	

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Point de capture : Localité [illegible]
Date : du 2[illegible].05.[illegible]6

Nombre de capteur : 4

[illegible] lieu : V

Profondeur

Fiche pour le capture nocturne des adultes sur l'homme.

Heure du travail	interieur	exterieur	Total	S F.A	S F. B	S F C.	[illegible]	[illegible]
18 h - 18 h 30	-	4	4	A. gambiae 1	culex tigripes 2	Aedes [illegible]	Mansonia unif.	
18 h 30 - 19 h	-	-	-					
19 h - 19 h 30	-	-	-	-	-	-	-	-
19 h 30 - 20 h	-	2	2	A. gambiae 1 A. [illegible] 1				
20 h - 20 h 30	-							
20 h 30 - [illegible] h	-	6	6	A. [illegible] 1 A. paludis 1	[illegible] 1			
[illegible] h - [illegible]	-	-		-	-		-	-
[illegible] h - [illegible] h	-	-	-	-	-	-	-	-
[illegible] h - [illegible]	-	-	-	-	-	-		-
[illegible] h 30 - [illegible] h	-	-	-	-	-	-		-
[illegible] - [illegible]	-	-	-	-	-	-	-	-
[illegible] h [illegible] - [illegible]	-		-	-	-	-	-	-
Total	-	12	12	8	3	1	-	-

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Appendix I

MEMORANDUM:

REVISION DU PROGRAMME DE DARAPRIM
AU DISPENSAIRE DE MALELE
SUR LES ENFANTS A L'AGE PRE-SCOLAIRE EN 1980

AUX	:	Dr. MAKENGO - BIGONSA	, Médecin Directeur
		Cit. TSHIBANGU	, Superviseur
		Mr. R. L. TURNER	, Conseiller
DE	:	Dr. JOHN D. SEXTON	, Epidémiologiste

SUJET : REVISION DU PROGRAMME DE DARAPRIM AU DISPENSAIRE DE MALELE SUR LES ENFANTS A L'AGE PRE-SCOLAIRE EN 1980.-

Le dispensaire de Malele a été visité le 3 septembre 1980 pour revoir leurs fiches sur la distribution du Daraprim aux enfants de l'Age pré-scolaire. En effet, bien que ce programme ait été pour les âges de 3 à 4 ans, seulement les fiches de 1980 ont été revisées comme les fiches de l'année antérieures n'étaient pas valable.

La procédure utilisée au Dispensaire est d'appeler chaque enfant de l'âge pré-scolaire de visiter le dispensaire une fois. A chaque visite, l'enfant est soumis à un examen médical, état de santé pour la revision mensuelle préalable, pesé et finallement reçoit aussi du Daraprim. Chaque maman en reçoit aussi avec les instruction d'en donner à l'enfant après 15 jours. De cette manière, un enfant recevra le daraprim chaque 15 jours.

Mon intérêt dans ce programme de Daraprim est basé sur le fait que le Programme de lutte Antipaludique emploi la même région (Malele , Sadi-Kisanga et Ngidinga) comme Région pilote rural .
Ces quelques questions soulevées au sujet du Programme de Daraprim aux enfants de l'âge pré-scolaire ;

(1) De tous les enfants de l'âge pré-scolaire de cette région, combien sont protégées par le Programme de Daraprim ?

(2) Combien d'enfants enregistrés par le Programme ont visité le Dispensaire chaque mois ?

(3) De tous les enfants qui ont visité le dispensaire sur une base régulière, combien ont présenté un cas de malaria ?

(4) Est-ce que la distribution du Daraprim aux enfants de l'âge pré-scolaire a un effet sur l'évaluation du PLAP dans cette région ?

RESULTATS DE LA REVISION DE MALELE

(1) Un rapport par " Zone de Santé Rurale de Madimba " indique que la population des villages protégés par le Centre de Santé de Malele est de 3.261. Le nombre d'enfants de l'âge pré-scolaire (0 - 5 ans) représentés dans cette population est inconnue mais représente probablement 22 % de la population. Le chiffre 22 % a été obtenue par l'Etude de Nutrition mis en exécution à Kinshasa en 1978 - 1979. Ceci doit exiger 717 enfants de l'âge pré-scolaire dans une population de 3.261 à Malele. Le tableau montre un total de 430 enfants enregistrés au Dispensaire ou 60 % du chiffre exigé. Je suis optimiste sur le sens que nous seront capable de vérifier le pourcentage des enfants de l'âge pré-scolaire qui sont à Malele et les deux autres localités mais la meilleure estimation valable est que 60 % seulement des enfants à Malele sont protégés par le Programme du Daraprim.

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(2) La fréquence des visites au Dispensaire de Malele pour 1980 e est donnée au tableau 1. Il peut être promptement vu que pour ces 357 enfants enregistrés avant Février 1980 , 41% a quitté Malale, est mort ou n'a jamais visité le dispensaire en 1980. Du reste de 211 enfants qui pouvaient visiter le dispensaire 8 fois pendant la période janvier - août 1980 , 9 enfants seulement l'ont fait. Ces 9 enfants représentent 43% du nombre total d'enfants enregistrés sur 4,3% de 211 enfants restant. 37% seulement de 211 enfants restant ont visité le dispensaire 6 fois ou plus pendant les 8 mois.
Pour les nouveaux enfants enregistrés pendant le mois de février jusqu'en Août 1980, il peut être remarqué sur le tableau que cependant le mois d'août seulement que tous les enfants ont visité le dispensaire. Il était exigé comme s'il était leur visite d'enregistrement. Entièrement comme les mois s'écoulent petit à petit, les enfants viennent au dispensaire chaque mois. C'est seulement un pourcentage faible des enfants qui sont mensuellement sous le support de daraprim.Même ceux qui viennent périodiquement, un autre point inconnu est ; Combien de mères donnent actuellement du Daraprim aux enfants 15 jours après la visite ?
La réponse à cette question ne sera jamais connue. J'espère être capable de revoir les cartes de santé des enfants à quelque prochaine date. Ceci fournira une histoire de santé des enfants et les fiches en cours nous donnent une indication sur le nombre de cas cliniques de malaria ou si les gouttes épaisses ont été prélevées, combien ont confirmé des cas de malaria.

Finalement, se basant sur la revision de Malele, je ne pressent pas que la distribution du Daraprim par les Dispensaires n'affectera pas notre évaluation sur le Programme de désinsectisation à Malele.
Encore, je prépare un plan beaucoup plus en profondeur sur l'Etude du Dispensaire de Ngidinga tant que leurs fichent font un retour de quelques années.

Avec les fiches de Ngidinga et Malele, plus une revision des fiches individuelles des enfants, nous seront capable de faire un état définitif quant à la valeur du Programme de Daraprim et l'effet de ce programme sur l'évaluation de notre programme de santé rural.

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TABLEAU 1. TOTAL DE VISITES DES ENFANTS DE L'AGE PRE-SCOLAIRE AU DISPENSAIRE DE MALELE

PENDANT LA PERIODE DE JANVIER - AOUT 1980.-

	Nombre d'Enfants	Nombre de visites possible au disp. Janv-aout80	Nombre d'Enf. qui ont quitté, morts ou jamais visité le Dispensaire	% du Total qui a quitté	Nombre d'enfants qui ont visité le Dispensaire 1 - 8 fois et le % qu'ils représentent sur le total d'Enf.															
					1	%	2	%	3	%	4	%	5	%	6	%	7	%	8	%
1. Enfants enregistrés avant février 1980	357	8	146	41	27	8	20	6	25	7	28	8	33	9	44	12	25	7	9	3
2. Nouveaux enfants enregistrés en févr. 80	2	7	0	0.0	0	0.0	1	50	1	50	-	-	-	-	-	-	-	-	-	-
3. Nouveaux enfants enregistrés en mars 80	15	6	2	13	-	-	1	7	6	40	3	20	2	13	1	7	-	-	-	-
4. Nouveaux enfants enregistrés en avril 80	15	5	1	7	1	7	1	7	7	47	4	27	1	7						
5. Nouveaux enfants enregistrés en mai 80	8	4	1	13	1	13	-	-	4	50	2	25	-	-	-	-	-	-	-	-
6. Nouveaux enfants enregistrés en juin 80	7	3	1	14	1	14	3	43	2	29	-	-	-	-	-	-	-	-	-	-
7. Nouveaux enfants enregistrés en juil. 80	17	2	0	0.0	8	47	9	53	-	-	-	-	-	-	-	-	-	-	-	-
8. NOUVEAUX enfants enregistrés en août 80	9	1	0	0.0	9	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	430																			

* Tous les pourcentages ont été arrondis.

Appendix J

QUELQUES OBSERVATIONS CONCERNANT L'EVALUATION DU PROGRAMME DE LUTTE ANTIPALUDIQUE

REPUBLIQUE
DEPARTEMENT DE LA - REPUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

QUELQUES OBSERVATIONS CONCERNANT L'EVALUATION DU PROGRAMME DE LUTTE ANTIPALUDIQUE.-

Après analyses du Programme et enquête menée sur le terrain, il ressort que les résultats obtenus sont satisfaisants. Toutefois, pour pouvoir les améliorer, il faudrait tenir compte des observations ci-dessous qui me semblent d'une importance capitale, avant de pouvoir étendre le P L A P sur une grande échelle.

1. La population intérrogée au cours de notre enquête a manifesté, dans l'ensemble, sa satisfaction quand à la réduction des moustiques et même des cas de fièvre dans les familles.
   Elle a cependant regretté que le Programme ne vise que les Anophèles au lieu d'une lutte générale contre toutes les nuisances.
   (c-à-d les autres insectes : blattes, liques, punaises, etc...).

   Que compte faire le P L A P à ce propos ?

2. Le Département d'Environnement a aussi un Programme de lutte contre les moustiques vecteurs des maladies et ceux qui sont à l'origine de nuisance.
   Existe - t - il une coordination entre le P L A P et l'environnement à ce sujet ?
   Si oui, pourrait-on en connaître les résultats ?
   Si non, pourquoi ne pas amorcer une concertation dans ce sens; surtout que les mesures d'assainissement constituent une des armes de lutte contre les moustiques.
   Il faudrait donc conjuguer les efforts plutôt que de travailler en ordre dispersé.
   Ce qui mettrait aussi la population à l'abri des tracasseries surtout dans l'application du Spray domiciliaire.

3. Le P L A P ne redoute - t - il pas un refus de la population au cas où la seconde phase de désinsectisation aurait les mêmes effets que la première ? (c-à-d lutte axée uniquement contre les Anophèles).
   A - t - il pris des précautions pour parer à toute éventualité ?

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TABLEAU 1. TOTAL DE VISITES DES ENFANTS DE L'AGE PRE-SCOLAIRE AU DISPENSAIRE DE MALELE

PENDANT LA PERIODE DE JANVIER - AOUT 1980.-

	Nombre d'Enfants	Nombre de visites possible au disp. Janv-août	Nombre d'Enf. qui ont quitté, morts ou jamais visité le Dispensaire	% du total qui a quitté	Nombre d'enfants qui ont visité le Dispensaire 1 - 8 fois et le % qu'ils représentent sur le total d'Enf.															
					1	%	2	%	3	%	4	%	5	%	6	%	7	%	8	%
1. Enfants enregistrés avant février 1980	357	8	146	41	27	8	20	6	25	7	28	8	33	9	44	12	25	7	9	3
2. Nouveaux enfants enregistrés en févr. 80	2	7	0	0.0	0	0.0	1	50	1	50	-	-	-	-	-	-	-	-	-	-
3. Nouveaux enfants enregistrés en mars 80	15	6	2	13	-	-	1	7	6	40	3	20	2	13	1	7	-	-	-	-
4. Nouveaux enfants enregistrés en avril 80	15	5	1	7	1	7	1	7	7	47	4	27	1	7						
5. Nouveaux enfants enregistrés en mai 80	8	4	1	13	1	13	-	-	4	50	2	25	-	-	-	-	-	-	-	-
6. Nouveaux enfants enregistrés en juin 80	7	3	1	14	1	14	3	43	2	29	-	-	-	-	-	-	-	-	-	-
7. Nouveaux enfants enregistrés en juil. 80	17	2	0	0.0	8	47	9	53	-	-	-	-	-	-	-	-	-	-	-	-
8. NOUVEAUX enfants enregistrés en août 80	9	1	0	0.0	9	100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	430																			

* Tous les pourcentages ont été arrondis.

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REPUBLIQUE DU ZAIRE
DEPARTEMENT DE LA SANTE PUBLIQUE
PROGRAMME DE LUTTE ANTIPALUDIQUE
VILLE DE KINSHASA

Annexe III.

COUT ESTIMATIF MINIMUM ANNUEL POUR LA LUTTE ANTIPALUDIQUE AU ZAIRE.

LIBELLE	QUANTITE A COMMANDER	PRIX UNITAIRE	COUT TOTAL
I. MATERIELS.			
1. Pompes à pression préalable	120/Région administrative = 960 (Kinshasa non comprise)	350,00	336.000,00
2. Seaux gradués en plastique	120 x 9 = 1.080	16,00	17.280,00
3. Salopettes	120 x 9 = 1.080	47,00	51.300,00
4. Chapeaux de paille à larges bords	120 x 9 = 1.080	5,00	5.400,00
Sous-Total			409.980,00
II. PRODUITS.			
5. DDT 75 % WDP	1.200 tonnes	7.000/tonne	8.400.000,00
6. Chloroquine à 100 mg	70.000 boîtes de 1000 cés	38,50/boîte	2.695.000,00
7. Phenergan cés 25 mg	3.000 boîtes de 500 cés	8,90/boîte	26.700,00
8. Trousse d'urgence	forfaitaire x 9	500,00	4.500,00
Sous-Total			11.126.200,00
III. LABORATOIRE.			
9. Microscopes binoculaires	5 pièces x 8 = 45 (Kinshasa non comprise)	2.500,00	112.500,00
10. Microscopes binoculaires entomologiques	2 pièces x 8 (région non comprise)	2.500,00	40.000,00
11. Thermomètres	10 pièces x 9 = 90	15/pièce	1.350,00
12. Lames porte-objets	120.000 pièces	5/100 pièces	6.000,00
13. Lampes à alcool	30 pièces	15,00	450,00
14. Trepied pour lampe à alcool	30 pièces	10,00	300,00
15. Rechaud à pétrole à 1 bec	9	150,00	1.350,00
16. Giensa colorat	150 flacons de 50 ml	8,00	1.200,00
17. May Grünwald colorant	150 flacons de 50 ml	8,00	1.200,00
18. Huile de cedre pour microscopes	150 flacons de 100 gr	5,00	750,00
19. Blouses blanches	150 pièces	47,50	7.125,00
Sous-Total			32.225,00
IV. ENTOMOLOGIE.			
20 Lampes torches	10 x 9 = 90	25,00	2.250,00
21. Piles torches	180 douzaines/an	30/dz	5.400,00
22. Boîtes à insectes	90	Forfaitaires	500,00
23. Ouates	200 Kg	12,00	2.400,00
24. Binoculaires stéréoscopiques	24	3.500,00	84.000,00
25. Divers	Forfaitaires 1500,00	500,00	4.500,00
Sous-Total			139.050,00

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LIBELLE	QUANTITE A COMMANDER	PRIX UNITAIRE	COUT TOTAL
V. TRANSPORTS.			
26. Camions moyens 3,5 tonnes à traction avant	24	75.000,00	1.800.0000,00
27. Pick up chevrolet à traction avant	16	55.000,00	880.000,00
28. Essence et Huiles	a) 40 véhicules à raison de 30 litres d'essence/jour = 432.000 l/an	4,00	1.728.000,00
	b) Huile forfaitaire	500 Z./Région	4.500,00
29. Entretien et réparation	Forfaitaire	500 Z./Région	4.500,00
Sous-Total	.....	.....	4.417.000,00

R E C A P I T U L A T I O N

I. Matériels pour terrain	409.980,00
II. Produits	11.126.200,00
III. Matériels pour laboratoire	132.225,00
IV. Matériels d'entomologie	139.050,00
V. Transports	4.417.000,00
Total général :	16.224.455,00

Nous disons : ZAIRES SEIZE MILLIONS DEUX CENT VINGT QUATRE MILLE QUATRE CENT CINQUANTE CINQ.-

Fait à Kinshasa, le 22 octobre 1980.-

LE MEDECIN DIRECTEUR DU PROGRAMME
DE LUTTE ANTIPALUDIQUE
=. Dr. MAKIMO BISONGA .=

Chef de Division.-

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Appendix K

REQUEST FOR THREE-DAY EXTENSION OF ASSIGNMENT,
DR. NAJJAR

UNCLAS KINSHASA 13439

YZCZCKII *
RR RUEHC
DE RUEHKI #3439 324 **
ZNR UUUUU ZZH
R 191054Z NOV 80
FM AMEMBASSY KINSHASA
TO SECSTATE WASHDC 6048
BT
UNCLAS KINSHASA 13439

CLASS: UNCLASSIFIED
CHRGE: AID 11/18/80
APPRV: DIR:NLSWEIT
DRFTD: PHO:RLTURNER:CC
CLEAR: (1)PHO:JWJACOBS
(2)PHO:CBILCHER
(3)PRM:WBOEHM
DISTR: AMB DCM AID2
CHRON 10/MC

AIDAC

FOR: SUSAN OLDS, AMERICAN PUBLIC HEALTH ASSOCIATION
PHONE (202)789-5697

E.O. 12265 N/A
SUBJECT THREE DAY EXTENSION OF ASSIGNMENT, DR. NAJJAR,
APHA NO. 583053, MALARIA PROJECT

1. MISSION REQUESTS SUBJECT CONSULTANT EXTEND ZAIRE VISIT THROUGH NOVEMBER 29 TO ALLOW A MORE COMPREHENSIVE EVALUATION.

2. PLEASE ADVISE MRS. NAJJAR, PHONE NO. (404)633-1161, OF SUBJECT EXTENSION.OAKLEY
BT
#3439

NNNN

UNCLAS KINSHASA 13439

Dr. Najjar's copy
BC
11/30/80

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Appendix L

MEMORANDUM:
REGION DE CONTROLE POUR LE PROJET PILOTE RURAL

Le 3 octobre 1980.-

Aux : Dr. MAKENGO - BIGONSA , Médecin Directeur

Cit. TSHIBANGU , Superviseur

De : Dr. JOHN SEXTON , Epidémiologiste

Sujet : Région de contrôle pour le Projet Pilote rural

Le 1er besoin immédiat du Programme est de choisir une région de contrôle dans le Bas - Zaïre similaire à la Géographie et à la population (estimation 8.000) comme la région désinsectisée.-

Selon moi, la région de contrôle devra :

(1) Contenir les villages qui lient l'intérieur des limites du Centre de Santé de Kimpemba le long de la route allant de Ngidinga vers Lemfu. La limite du Sud devra être la Rivière Mfidi et la limite Nord, le village de Kinsendi

Les 14 villages (y compris Kimpemba) le long de la route contiennent approximativement 1033 maisons et 4.130 habitants.

(2) Le reste de la Région de contrôle pourrait être dérivé de ces villages qui sont sur les routes suivantes :

(a) La route entre Kimpemba et Zomfi aussi longtemps que la route est passable pendant la saison de pluie

(b) La route entre Kimpemba et Kiyengo pour aussi longtemps que la route est passable pendant la saison de pluie.

En suivant ces 3 routes, le Programme pourra être capable d'installer une région de contrôle approximativement de la même manière que la région désinsectisée.

HORAIRE RECOMMANDE

Le 8 octobre 1980 : Le Superviseur TSHIBANGU , MATESO WAY et MOI-MÊME contrôlleront les villages et la population le long des routes allant de Kimpemba à Kiyengo et de Kimpemba à Zomfi. Les villages et les maisons allant de la rivière Mfidi à Lemfu ont déjà été comptés. Nous visiterons aussi les dispensaire à Kimpemba et si les routes sont convenablement considérées, les dispensaires de Kiyengo et Zomfi. Nous aurons aussi besoin de parler aux Autorités Civiles et médicales de cette région. Nous aurons besoin de la permission du Chef de Cercle Médical pour employer les fiches du dispensaire et de demander aux dispensaires de prélever les gouttes épaisses pour le Programme.

Du 13 - 17 octobre : L'Equipe Epidémiologique composé de : MATESO WAY, SALA-BIAKU, NZEKELE KIBAZOLA et MUAMBA MUTATAY visiteront les dispensaires choisis pour revoir les fiches des dispensaires et installer le système de la collection des gouttes épaisses dans les dispensaires. Le nombre de jours pour ce travail dépendra du nombre des dispensaires choisis.

Du 20 - 26 octobre : L'Equipe Epidémiologique visitera alors chacun des villages choisis et prendra les gouttes épaisses provenant approximativement de 20 % de la population par groupe d'âge et par sexe.-

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