STEERING COMMITTEE 1977
PROGRESS REPORT AND BUDGET

STEERING COMMITTEE FOR ONCHOCERCIASIS CONTROL
IN THE VOLTA RIVER BASIN AREA

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ONCHOCERCIASIS CONTROL PROGRAMME IN THE VOLTA RIVER BASIN AREA

PROGRESS REPORT FOR 1977

AND

BUDGET FOR 1978

CONTENTS

In accordance with Section 4.04(a) of the Onchocerciasis Fund Agreement and Section B.i(ii) of the Memorandum of Understanding, a progress report for 1977, a Plan of Action and an estimated budget for 1978 are submitted for review by the Joint Coordinating Committee. This document is completed by annexes on research, training and transport.

In line with the discussions of the last meeting of the JCC in Ouagadougou, a report on socio-economic development[1] within the OCP area, a report on "extensions"[2] and a paper on biomedical criteria for resettlement[3] are also presented.

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[1] Document JCC4.-

[2] Document JCC4.-

[3] Document JCC4.-

I PROGRESS REPORT FOR 1977

(i) The Onchocerciasis Control Programme was initiated in 1974 to control the blackfly vector of onchocerciasis in order to free the riverine areas in participating countries of this disease and permit population resettlement and economic exploitation.

(ii) The participating countries in West Africa are Benin, Ghana, Ivory Coast, Mali, Niger, Togo and Upper Volta. The Programme is executed by the World Health Organization (WHO) in collaboration with the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP) and the World Bank. Financial support for the Programme is provided by donor countries and international organizations through a Special Fund managed by the World Bank. Medical research and training are separately financed by UNDP.

(iii) Programme strategy involves weekly aerial applications of insecticide to blackfly breeding sites. The execution and effectiveness of this activity is determined by the rates of river flow, the examination of breeding sites, the behaviour of the vector fly population and the transmission of the disease as reflected by medical examination of affected populations.

(iv) In view of the complexities involving mainly logistics, infrastructure, staff training, Programme operations have been phased in over a three-year period[1].

(v) In 1974, the Programme Director's Office and administrative services were installed in Ouagadougou. The physical and personnel infrastructure for the Phase I area in Upper Volta, Ghana, Ivory Coast and Mali was put in place and the gathering of baseline entomological data was completed.

(vi) In February 1975, aerial spraying began in Phase I and the Programme infrastructure was expanded into Phase II in Upper Volta and Ghana. Epidemiological evaluation of infected villages was also begun in the Phase I area.

(vii) Work was performed under contracts signed late in 1974 and early 1975 for research in the epidemiology and chemotherapy of onchocerciasis, the evaluation of new insecticide formulations, the susceptibility of the vector to insecticides, the development of population sampling methods for both larvae and adults, the cytotaxonomy of the S.damnosum complex, environmental surveillance and the wind movement of S.damnosum.

(viii) In January 1976, aerial spraying began in Phase II. In May, the physical and personnel infrastructure was completed in Phase III, extending the Programme in Mali, Ivory Coast, Benin and Niger and epidemiological evaluation continued in the Phase II and III areas.

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[1] See map included as Appendix IX

(ix) Research activities continued as in 1975, particular attention being paid to vector ecology, vector control and environmental protection.

(x) In January 1976, the Economic Development Unit came into operation.

(xi) The development of the Programme over the period 1974 - 76 could be summarized as follows:

INFRASTRUCTURE DEVELOPMENT, INSECTICIDE CONSUMPTION, FLIGHT HOURS AND EPIDEMIOLOGICAL EVALUATIONS: 1974-1976

	1974	1975	1976	TOTAL
No. Sectors	3	1	3	7
No. Sub-Sectors	8	6	10	24
Litres/insecticide	-	90,000	130,000	220,000
Helicopter Hours	-	2,783	4,265	7,048
Fixed-wing Hours	-	541	614	1,11[illegible]
No. villages examined (EPI)	-	74	129	203
No. persons examined (EPI)	-	19,623	30,960	50,583

1. 1977 was for the Programme a very active year. It was marked, in particular by the launching of the spraying operations in the Phase III zone, the installation of the new aerial contractor and the completion of the first round of preliminary epidemiological evaluation surveys.

2. In the field of research, the Chemotherapeutic Research Centre at Tamale came into operation and the testing of available drugs has now begun. The study of the S.damnosum complex was, of course, pursued and an extensive field trial of an alternative insecticide, chlorphoxim, was started in July. A total of 18 research agreements were negotiated or renewed for a global amount of $435,600.

3. A large share of our attention was devoted to the preparation of several documents including the annual report on socio-economic development for which, at the request of the Joint Coordinating Committee, we assumed responsibility for the first time this year. Further to the discussions at the last session, we have undertaken a study of the requests for extension and have prepared separate reports on the problems of professional training and research. The Programme also drew up several papers which served as a basis for the work of the Scientific Advisory Panel which gave its attention to the problem of the definition of biomedical criteria for resettlement. Likewise, at the request of the Steering Committee, we have prepared a special paper on the organization of the transport services.

4. In line with the reorientation of the Programme structures decided at the end of last year, several meetings were organized and held at Ouagadougou and in the Programme area. One of these was the first joint meeting of National Onchocerciasis Committees; another, a seminar for officials of rural radio of the participating countries. Also the Programme actively contributed to the workshop which was organized in Accra by the West African College of Physicians. Among the meetings of the statutory groups which took place this year at Programme Headquarters were those of STAC, EDAP and EP.

5. Finally, on the financial side our activities were carried out with emphasis on careful management of the resources at our disposal and the execution of the 1977 budget shows economies of $2 million in relation to budget allocations.

6. Moreover, we have initiated a detailed logistical survey of our operations to be followed by a cost-effectiveness analysis.

VECTOR CONTROL

7. The Vector Control Unit (VCU) continued its activities in the two complementary fields of aerial spraying operations and entomological evaluation of the insecticide treatments.

8. In the field of aerial operations the major event was the change-over of contractor. In early December 1976, Viking Helicopters Limited arrived in Upper Volta with 6 helicopters and 2 fixed-wing aircraft to replace Evergreen Helicopters Inc. The new company was initially installed at the aerial base at Tamale, Ghana. During the month of December Viking personnel carried out the treatment in Phase II accompanied by Programme personnel. This enabled the equipment to be fully tested under the surveillance of OCP staff who also gave instruction in larviciding techniques. In this way the new company was gradually phased into the contract work. In early January, following the departure of Evergreen, Viking installed their second base at Bobo-Dioulasso, Upper Volta, and took over the treatment of Phase I. Thus the actual changeover covered a period of approximately 5 weeks; it occurred at a time when there was least risk of a failure of treatment and the transition was relatively smooth.

9. Since mid-April 1977, the aerial fleet has been composed of 8 helicopters and 2 fixed-wing aircraft with one helicopter and one fixed-wing aircraft as standby. A total of 17 personnel have been assigned by the contractor, of these the Project Manager, 5 pilots, the Chief engineer and 2 other engineers are based at Bobo-Dioulasso and five pilots and 3 engineers are based at Tamale.

10. Generally, Viking equipment has operated satisfactorily. However, on 16 June 1977 during a treatment circuit, one helicopter had to make a forced landing at Samorosoni near Sikasso, Mali, due to a mechanical failure. There were no injuries and no disruption of treatment occurred.

11. The new aerial spraying contract involves the Canadian Commercial Corporation (CCC), the main contractor, Viking Helicopters Limited to whom CCC have contracted the operations 100%, and, finally, United Helicopters who are under contract to Viking. From 17 - 20 December 1976 discussions were held in Ouagadougou with both CCC and Viking. Agreement was reached on the type of organization that would best ensure communications and logistic support from Ottawa, and also flexibility for the Field Project Manager in Upper Volta. The need for a well-qualified and experienced person on the field was recognized. A new Project Manager was appointed. Also, an initial fuel programme was drawn up.

12, Further discussions between representatives of CCC, Viking Helicopters, United Helicopters and the Programme took place on 28 and 30 May in Ottawa to review problems related to importation of equipment, staffing, and most particularly the interpretation of "flying hours", specifically, whether these should be based on engine time, or actual airborne time. At the date of this report, arrangements had been made by Viking for a transit agent in Ouagadougou to handle clearance of equipment. The issue of "flying hours" was still under discussion.

A programme of future meetings was agreed. In late August the CCC regional representative visited Ouagadougou and a team composed of representatives of CCC, Viking and United Helicopters was expected in early October.

13. The change-over of aerial contractor provided a good opportunity to develop an improved insecticide release mechanism for helicopters. Viking helicopters are now fitted with a dual system whereby the pilot can select either the "rapid release system", as with Evergreen Helicopters, or can select the new "restrictor system" where a jet of insecticide is emitted through an alternative nozzle under pressure. In the dry season, this system is used to obtain a better distribution of small quantities of insecticide at difficult breeding sites with improved results.

14. As regards control of the vector, in view of the good results obtained, treatment was interrupted for periods varying from 5 - 17 weeks on river courses in Phase I including the major part of the Black Volta basin, the Upper Comoë and the Banifing. This voluntary suspension of treatment represented a substantial economy in flight hours (86 hours) and insecticide (1,700 litres of Abate). From January, treatment was also interrupted on an experimental basis on part of the Grechan site on the Leraba in order to study repopulation, dispersal and migration of Simulium and, after recommencement of treatment, regression. A similar experiment was conducted at Toukoro on a tributary of the Black Volta. Although the results continued to be favourable, treatment of these areas recommenced at the end of the dry season in order to prevent any mixing of local Simulium populations with flies which were likely to reinvade the area at the end of April.

15. Taking into account the natural decrease in the numbers of breeding sites during the dry season, treatment of Phase II, which reached the maximum of intensity in September 1976, gradually dropped from December 1976 and was maintained only on the lower stretch of the White Volta. The difficulty encountered in treating two permanent sites on the White Volta at Sugu and Wawa prevented the cessation of spraying operations over the whole of the Phase II area.

16. The interruption of spraying on the permanent river courses, as well as the progressive decrease in breeding sites in the dry season on temporary water courses, resulted in a considerable reduction in the length of river treated from 9,000 kms a week during September 1976 to 1,000 kms a week during March 1977.

17. Following meetings of Programme personnel held in Lama-Kara (Togo) and Bamako (Mali) to finalize flight plans, treatment began on 22 March 1977 in Phase III East and on 29 March 1977 in Phase III West.

18. In March only the Pendjari/Oti basin was treated in the East due to the fact that the tributaries of the Niger river were not flowing.

19. Treatment began in mid-August when the Mekrou and Alibori rivers were treated by fixed-wing aircraft. On its first treatment flight, this aircraft visited Niamey where a demonstration treatment release was done on the Niger river.

20. In Phase III West, treatment of the whole area was undertaken without difficulty and was extended, on an experimental basis, to the breeding sites of Markala and Koulikoro, Bamako, on the Niger as well as two breeding sites situated on the Bafing.

21. The flight hours economized during the dry season were utilized for the prospection of areas adjacent to the treated zone to locate potential sources of reinvasion.

22. Aerial operations were delayed by one day in July when an ASECNA[1] strike occurred in Upper Volta from 11 - 20 July and aircraft were not allowed to fly in view of the lack of air traffic control. After discussions with ASECNA officials permission was finally granted for OCP aircraft to use the airports at Ouagadougou and Bobo-Dioulasso.

23. The total flight hours and insecticide utilized from October 1976 to September 1977 were:

- Insecticide: 126,600 litres
- Flight hours:
  - Helicopters: 4,500
  - Fixed-wing: 632 Total: 5,132

24. Entomological evaluation of the treatment continued in Phase I and II areas on well-known circuits, with experienced teams. Following the installation of facilities for the sectors of Phase III East and West in June/July 1976 the work of collecting pre-treatment data continued until end March 1977, thus assembling valuable if not always fully adequate information on transmission levels.

25. The results obtained in Phase I and Phase II were generally very good throughout the dry season (December to April).

26. As mentioned earlier, insecticide treatments were interrupted experimentally on a section of the very large Grechan breeding site on the Leraba river to study recolonization, dispersal and regression.

27. During most of the period of the experiment severe harmattan conditions were experienced. Possibly as a result of the adverse meteorological situation repopulation was very slow to occur, the first nulliparous fly being caught 23 days after the cessation of the treatment. Daily biting rates only exceeded 10 per man/day 27 days after the interruption of treatment. Thereafter densities increased steadily exceeding 100 per man/day 58 days after interruption of treatment. There was no significant dispersal away from the rapids area and flies did not reach any of the surrounding inhabited districts. The fly population declined rapidly on resumption of control, all nulliparous flies had disappeared by the 7th day and the parous fly population was reduced to less than 5% of the pre-treatment level after three weeks.

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[1] Agence pour la Securité de la Navigation aérienne en Afrique et à Madagascar

28. Valuable data was obtained and it seems likely that with the right meteorological conditions, breeding sites in wilderness areas could safely be left untreated during parts of the dry season.

29. A large-scale dispersal of flies took place in November and December which caused temporary reinfestation of some breeding sites. This appears to be a widespread phenomenon occurring also in Nigeria and Cameroun.

30. From the end of April, and more particularly end May, reinvasion appeared in the same areas of the Leraba and Bandama for the third consecutive year as well as in the southern region of Mali.

31. In readiness for the study of this phenomenon, Dr C.G. Johnson, Consultant, visited the area in February to set up at four locations a series of suction traps loaned by Rothamsted Experimental Station (UK). In March a meteorological station was installed at the Leraba bridge. Aluminium plate traps were also set up at the Leraba bridge and monitored by Dr Bellec who carried out a scientific examination of the flies caught. In mid-April a meeting was held at the Institut de Recherches sur l'Onchocercose at Bouaké between OCCGE and Programme personnel, to finalize a plan of work.

32. Dr Garms, entomologist, was recruited as consultant for 11 weeks from 10 April to participate in this study.

33. From mid-April to September sixteen catching stations were manned on a daily basis providing invaluable data on day-to-day fluctuations in the vector population which could be related to synoptic meteorological information, hydrological data and data from the Bellec and Johnson traps. Nine extra catching stations were manned at regular intervals in areas adjacent to the reinvasion zone. Forty additional vector collectors were engaged. IRO[1] workers also carried out catches at four points outside the Programme area relaying the results by radio to the reinvasion headquarters at Bobo-Dioulasso.

34. Simulium females were collected for cytotype identification, using the Quillévéré method, and larvae were collected for cytotaxonomic classification. Specimens were also collected for transmission to Bennett Analytical X-Ray Ltd., Canada, for fluorescent spectroscopy.

35. As a result of these studies the Upper Marahoué and the Upper Sassandra were treated experimentally, starting on 22 June and 5 July respectively. The preliminary results suggest:

(a) The reinvading simulium belong to the savanna cytotypes;

(b) the results obtained with Bellec traps show that most females lay their eggs on arrival and then take a blood meal;

(c) the flies caught in Johnson traps are still under study; a few simulium (not damnosum) were reported in the early samples;

(d) other watercourses situated outside the treated area, but not flowing during the initial period, were also reinvaded;

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[1] Institut de Recherches sur l'Onchocercose

(e) during the same period (April/May) the Upper Sassandra represents the nearest source of migrating females;

(f) experimental treatment of the Marahoué and Sassandra rivers appears to have resulted in the reduction of the fly population in part of the reinvasion zone.

36. Several papers were prepared by the Programme for the Scientific Advisory Panel (SAP) working group on Biomedical Criteria for Resettlement which brought together in June seven members of the international scientific community. The Programme proposed to the Group entomological criteria based on the number of flies biting in a year, i.e. an Annual Biting Rate (ABR) and an Annual Transmission Potential (ATP). After careful analysis and full discussion of the material presented, the Group adopted an ABR of 1000 bites/man/year and an ATP of 100 infective stage larvae/man/year. Although at this stage of the Programme the scientists were unwilling to accept higher levels, they did not rule out that these figures could be relaxed when further data become available.

37. A review of the data available on the possible extension[1] zones to the south of the Programme area was made by staff of the Programme and small-scale investigations were carried out within the capacity of the Vector Control Unit. The most important of these was experimental treatment of the Upper Marahoué and the Upper Sassandra in Ivory Coast, undertaken to determine whether these rivers were the source of reinvading flies. Valuable data were acquired concerning treatment, fly numbers, transmission levels and the cost of control in that area.

38. In Ghana important studies were undertaken to the south of the Programme area in the Volta region which revealed an exceptionally high level of transmission of onchocerciasis. A considerable amount of data was collected on the distribution, man-biting behaviour and vectorial capacity of the different cytotypes.

39. In the Ouéme river basin, Benin, four or five points are being visited regularly to obtain information on biting rates and transmission potential. This work is continuing.

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[1] Document JCC4.

EPIDEMIOLOGICAL EVALUATION

40. During the year, 28,453 persons in 123 villages were examined in basic surveys, bringing the total examined since the beginning of the Programme to 69,539 in 290 villages. On the other hand, surveys done by institutions other than OCP bring the amount of data to about 80,000 subjects in more than 300 villages.

41. Detailed surveys were conducted in 22 villages representing 5,924 people. In connection with the preparation of the report on extension and the collection of data on a tolerable level of transmission a number of villages outside the Programme area were also examined in Benin, Togo and in Ivory Coast. In the Upper Sassandra basin in Ivory Coast, part of the area proposed for extension, a very severe onchocerciasis focus was found with the highest prevalence of ocular onchocerciasis ever recorded by the Programme.

42. Details of the activities carried out as well as the total amount of data collected[1] are given in the following table.

Country	No. of villages						No. of examinations						Total	
	DS		BS		Total		DS		Of which ophth.ex		BS			
Togo	5	5	18	18	23	23	1508	1508	934	934	7685	7685	9193	9193
Mali	7	10	38	51	45	61	1180	1868	861	1441	7364	10233	8544	12101
Upper Volta	3	13	14	84	17	97	597	3315	768	2786	2833	16688	3430	20003
Ivory Coast	3	10	11	35	14	45	842	2458	693	2235	1668	8857	2510	11315
Niger	4	4	11	11	15	15	799	799	524	524	1406	1406	2205	2205
Benin	-	-	9	9	9	9	-	-	-	-	2571	2571	2571	2571
Ghana	-	6	-	34	-	40	-	1969	-	1531	-	10182	-	12151
Total	22	42	101	212	123	290	5924.	11917	4180	9251	23527	57622	28453	69539

Numbers in the lefthand corner refer to the period under review, those in the righthand corner to totals since the beginning of the Programme.

DS = Detailed survey

BS = Basic Survey

[1] The epidemiological evaluation in Benin, which was due to start in February 1977, had to be postponed until early June. Shortly thereafter, the Minister of Health personally visited villages in the region of Porgo, Atakora and Borgou. The evaluation was completed by the end of 1977.

43. After having been checked and analyzed, all data obtained were forwarded to WHO Headquarters for computer storage and further analysis.

44. Apart from evaluation, a number of incidental research activities were undertaken.

45. The rare occurrence of D.streptocerca was studied in some villages near the southern border of the Programme in Togo. Most of the patients were also infected by O.volvulus; the microfilariae were easily distinguishable. In order to determine a tolerable level of transmission, a study was undertaken of the relation between the amount of transmission as measured by the Annual Transmission Potential over a number of years with the amount of blindness and severe eye lesions. A working paper on this subject was prepared for the SAP Working Group which met in Geneva from 6 - 8 June.

46. A study of clinical and epidemiological features of skin lesions was made, based on clinical description, photographic documentation, histology and parasitology.

47. A study of the occurrence of in utero transmission was carried out in Bawku Hospital, Upper Region, Ghana. The epidemiological significance of this phenomenon is still under investigation.

48. The Unit continued its participation in the chemotherapeutic trials undertaken by Centre Muraz, Bobo-Dioulasso, on behalf of OCP. These trials concerned DEC alone, and with Levamisol. Clinical trials of Nifurtimox were planned but were not carried out due to its high toxicity. The use of this drug in trials is under consideration by the WHO Committee concerned with ethical requirements. Similar trials started in June at the Tamale Chemotherapeutic Centre and arrangements were made for an ophthalmologist working with the Royal Commonwealth Society for the Blind team to assist these trials for a few months.

49. A study was made of the relation between the amount of parasitism of the anterior segment of the eye and the risk of development of severe eye lesions. This study showed that severe ocular lesions in the cornea and the iris are usually associated with very high numbers of microfilaria in the eye; however this is not necessarily the case with lesions in the retina and the optic nerve which may be found in lightly infected cases. This finding had important significance for the establishment of a tolerable level of transmission.

50. The Unit participated in a study on the efficacy of nodulectomy under conditions of highly reduced transmission which was undertaken in the Gaoua area, Upper Volta, by a team from the Institute of Tropical Medicine, Hamburg, Federal Republic of Germany, led by Dr Büttner. A total of 70 persons were operated. However, to draw sound conclusions would require additional cases and it is hoped to complete this work in 1978 in cooperation with the Hamburg Institute. Annual return visits are planned to follow up the cases.

51. The Epidemiological Evaluation Unit forwarded biological specimens to various scientific institutions under contract to OCP for serological, histological and parasitological studies.

52. The sociological activities of the Unit were mainly concentrated on the training of four census clerks to take over sociological work, such as the completion of index forms for each village to facilitate the work of the evaluation teams during subsequent visits; so far nearly 300 such forms have been established. A paper concerning the health and social factors of development in the OCP area was also prepared.[1]

53. In mid-July the Chief of the Unit took part in a meeting in Lomé with representatives from the Technical Cooperation Services of the Federal Republic of Germany, and Togolese Government officials concerning the establishment of an onchocerciasis research unit at the Ernst Rodenwaldt Institute, Lomé.

ECONOMIC DEVELOPMENT

54. Follow-up action on the discussions and views expressed at the session of the Joint Coordinating Committee in December 1976 was initiated. The principal matter concerned the passage from UNDP to the Economic Development Unit of responsibility for the preparation of the annual report on the economic development aspects and activities in the Programme area. Arrangements were quickly made for work to begin on the preparation of the report including internal transfer of personnel and recruitment of an agro-economist and assignment of the Unit's personnel on a country basis. Other follow-up actions included dispatch of letters to sponsoring agencies, donor countries and beneficiary countries to request information about development projects being carried out or planned by them in the Programme area.

55. Also, several visits were made during the year by the Unit's staff to various countries of the Programme area. During these visits contacts were made with Government officials, members of NOCs, representatives of sponsoring agencies and representatives of bilateral and other multinational aid and financing agencies.

56. A team from African Development Bank visited the Programme in late 1976 in connection with the implementation of the USAID-financed landsat studies of Benin, Ghana and Upper Volta. A sociologist of the Programme is expected to join a World Bank's oncho-related economic mission to Benin in October.

57. A consultant from the Department of Tropical Community Health in the Liverpool School of Tropical Medicine, UK, visited Ghana and Upper Volta in August and September to draw up a cost-effective method of organizing health promotion services in rural areas and training health auxiliaries, with particular reference to the economic development projects which will be undertaken in the Programme area.

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[1] Document JCC4. - Annex I

58. An Australian team of consultants consisting of the veterinary surgeon and project manager of the proposed Northern Region Cattle Development Project of Ghana called to exchange views on the economic development of the Northern Region of Ghana.

59. Officials of the Forestry Department of FAO had discussions with the Unit on a UNEP/FAO pilot project for the monitoring of forest cover in Benin, Togo, Nigeria and Cameroun.

60. The Project Officer for the USAID Regional Onchocerciasis Area Planning (ROAP) Project at the USAID Regional Economic Development Services Office in Abidjan, discussed possible projects for funding under the ROAP special studies project. A research project on migration towards Ivory Coast from other countries of the Programme area was discussed with the Ford Foundation.

61. Members of the consulting firm of BEI-AGRER, charged with the preparation of the five-year plan (1978-81) for the second phase of activity of the Upper Volta Development Authority for the Volta Valleys, visited the unit for discussions and to obtain information.

62. The Programme was regularly represented at meetings of Chiefs of Missions and Directors of United Nations Projects in Upper Volta, and at meetings of representatives of regional organizations based in Upper Volta, chief among which were: Liptako-Gourma Integrated Development Authority (ALG), Inter-State Committee for the Campaign against Drought in the Sahel (CILSS), Inter-African Centre for Hydraulic Studies (CIEH), West African Economic Community (CEAO), Economic Community for Cattle and Meat (CEBV), Inter-State School for Rural Engineers (EIER), and the Organization for Coordination and Cooperation in the Campaign against the Major Endemic Diseases (OCCGE)

63. The Programme was also represented at the Informal Working Group on Socio-Economic Research of WHO's Special Programme on Research and Training in Tropical Diseases which met at the World Bank in March; at the meeting of the Permanent Committee of Coordination of Financing Sources of the Upper Volta Development Authority for the Volta Valleys in May 1977, and at the CILSS meeting held in Ottawa at the end of May.

APPLIED RESEARCH

Vector Ecology

64. In the area of research in vector ecology six contracts amounting to $152,100 were established with institutions in Belgium, Canada, France, the Federal Republic of Germany and the United Kingdom for a range of studies on the vector. At a meeting organized in Geneva in November 1976 in association with the WHO Division of Vector Biology and Control it was decided that the cytotypes of the S.damnosum complex common to the OCP area should in future be designated species. A research scientist subsequently published a provisional key for the morphological identification of the females of the different species. This is most useful for the Programme entomologists and enables studies to be pursued on the ecology and vectorial capacity of each species. A more detailed morphological study is being undertaken of the larvae, pupae and adults of the various species. Studies of enzyme polymorphisms in the species of the S.damnosum complex have indicated the potential use of certain enzymes in differentiating the adults of certain species. Progress has been made in the development of sampling devices. Aluminium sheet traps were tried successfully alongside vector collectors on the Leraba river catching gravid flies in particular, as well as other physiological stages. Studies are underway to determine whether the filarial larvae developing in Simulium vectors can be differentiated

65. Research on the rearing of S.dammosum has been concentrated in West Africa and is carried out by the Programme research entomologists. Also, a German scientist has continued his research on rearing techniques with emphasis on artificial blood feeding and mating mechanisms.

66. The Programme cytotaxonomist has assisted with the identification and maps the distribution of the species of S.dammosum complex inside and around the periphery of the Programme area.

67. The entomologists of the Programme assisted by the four consultants, have carried out an extensive study of the reinvasion phenomenon (see paras. 31-35).

Vector Control

68. To continue the research on insecticides and formulations four contracts for a total of $60,500 were drawn up with Institutions in Canada, France, United States of America and Upper Volta. Emphasis has been given to finding an alternative to the Abate emulsifiable concentrate currently in use to enable its replacement if so required in future. A large-scale trial has been taking place with chlorphoxim for which a consultant was recruited for 11 man months. Particular attention is being paid to the effect of the various insecticides and formulations on the aquatic organisms. In this regard, micro-encapsulated formulations have been found to be very selective in killing Simulium larvae and research is continuing with Reldan. A floating cage method for testing the various products on a small scale has been successfully developed and tried in Ivory Coast. Using this method, initial trials have taken place with a range of products including Methoxychlor 20%, OMS 1825 20%, Reldan 10-10 and Dinulin 10%. The effectiveness of different formulations of Abate was found to relate to their ability to adsorb on to particles and their time of application to the river before contact with the Simulium larvae. A comparison of the effect of Abate and Methoxychlor on Simulium larvae in the laboratory showed that the latter caused detachment in 15 minutes compared with 4 hours with Abate.

Epidemiological, medical and parasitological aspects

69. Research is being carried out under four agreements established with institutions in France, Federal Republic of Germany, Italy and UK at a cost of $130,000 of which the longitudinal studies being pursued in the savanna area of northern Cameroun represent the greatest part. As a result of the entomological studies commenced in 1976 some useful information is being collected on biting levels, transmission levels and intensity of disease in hypo-, meso- and hyper-endemic villages. Data have been collected from a number of villages of different endemicity on the prevalence of microfilariae in the cornea and in the anterior chamber of the eye as well as the prevalence of eye lesions by age and village. Several years of entomological data are required to correlate it satisfactorily with the parasitological, clinical, ophthalmological and epidemiological data already collected.

70. Histological examinations were carried out of skin snips from the Programme area to assist in the identification and classification of skin lesions due to onchocerciasis.

71. A study is in progress of the different Onchocerca species found in domestic and wild animals and transmitted by species of the S.damnosum complex in the OCP area.

72. The in vitro culture of O.volvulus microfilariae in the United States of America was supported by OCP until February 1977 when it was taken over by TDR. Progress has been made to the extent that microfilariae could be kept viable for 259 days.

Chemotherapy

73. Two contracts were drawn up in 1977 for a total amount of $62,500 with the Government of Ghana and an institute in UK for the establishment of the Chemotherapeutic Research Centre at Tamale, Ghana. Initial studies are currently underway with Metrifonate. Diethylcarbamazine (DEC) and suramin will later be introduced to study their mode of action, followed by other drugs as they become available.

74. Work continued under two agreements signed in 1976 with institutions in Upper Volta and France. In an area in Upper Volta where the vector is under control and microfilarial density remained low 6 months after treatment. Trials with suramin in Mali have shown that drug to produce side effects irrespective of the regimen of treatment administered.

75. Some chemotherapeutic trials were carried out under the agreement with the UK institution (para. 64). It was found that suramin is better tolerated if patients are first treated with DEC. It appears that Lampit may have a macrofilaricidal effect.

76. While the research programme has, in general, followed in 1977 a similar pattern to previous years, close coordination was maintained by OCP with the WHO Special Programme for Research and Training in Tropical Diseases (TDR) which includes research on onchocerciasis. Such coordination is achieved through a Research Coordinating Committee which, in addition to OCP and TDR includes the Division of Malaria and Other Parasitic Diseases, the Division of Vector Biology and Control and the Regional Office for Africa. Meetings of the RCC usually take place in conjunction with STAC meetings. It met in March this year. Another meeting will take place in November.

ENVIRONMENTAL PROTECTION

77. The aquatic monitoring programme is undertaken under agreements with institutes in France and Ghana, and a hydrobiologist and an ichthyologist in Upper Volta at a cost of $112,000. A joint meeting of the groups was held in Ouagadougou in January 1977 to review methods and results and to collaborate in the identification of the invertebrate fauna.

78. The data obtained is computerized in Geneva and results so far indicate that the aquatic fauna has remained stable under the weekly application of Abate to the rivers. A more pronounced initial effect was observed on two rivers which were treated for the first time in 1977.

79. Fish are also studied under these agreements. Records from a wide range of rivers reveal little change if any in the fish population with reproduction apparently unaffected.

80. In addition ORSTOM provides a substantial research input to the study to lead to a better understanding of the fauna in West African rivers.

TRAINING

81. Information was sent to each of the participating governments advising them of the training grants available in 1977.

82. An agreement is being established with OCCGE for the training of entomological technicians at IRO, Bouaké, prior to their recruitment by the Programme.

83. In November 1976 a fellowship was provided to a Togolese doctor to study tropical ophthalmology at the University of Dakar.

84. A general review was made of the training requirements of the Programme and the use which could be made of its facilities to train staff from the participating and other countries.[1]

IMPLEMENTATION

85. Under the direct authority of the WHO Regional Director, the Programme Headquarters in Ouagadougou has now been entrusted with full responsibility for all activities related to the execution of the Programme. Very close contact is maintained with WHO HQ which continues to assist through the secondment of personnel, scientific and legal expertise and generally through the handling of all matters for which neither Ouagadougou nor Brazzaville is equipped in manpower or facilities.

86. The Office of the Programme Director has been enlarged by the transfer from the former support unit in Geneva of additional personnel; office space was reorganized; document reproduction facilities were extended; arrangements were made to set up a central filing and mail distribution service, thus enabling the office to deal with its additional activities.

87. Such activities include the preparation of the Budget and Plan of Action, management of the Programme Budget, execution of the aerial contract, research and organization of meetings.

88. Several meetings[2] were organized during the year.

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[1] Plan of Action and Budget for 1978, Annex B Training

[2] Aerial contract and research are dealt with elsewhere

89. The Steering Committee for Onchocerciasis Control in the Volta River Basin area held its nineteenth session in Ouagadougou in December 1976 and its twentieth and twenty-first sessions in June and September 1977 respectively. The Committee continues to serve as a useful forum for free interchange of views between the sponsoring agencies, thus ensuring coordination of action. At the June session, which was the first after the introduction of the new structures, a comprehensive review of Programme activities was undertaken. Among the diverse issues considered during the year, particular attention was given to the role and composition of each of the advisory bodies and ways in which they could best contribute to the Programme.

90. Following the fourth meeting of the Scientific and Technical Advisory Committee (STAC) which took place from 2 - 4 November 1976, the membership of STAC was reviewed and various changes introduced to bring its composition in line with the development of the Programme. From 1 - 4 March 1977, a joint meeting of the Committee and the Ecological Panel (EP) was held in Ouagadougou. This afforded the groups, and particularly the newly-appointed STAC members, an opportunity to become better acquainted with the Programme personnel and working conditions. Following a comprehensive briefing on the activities of the Programme, the meeting was opened by the Minister of Health of Upper Volta. The role and function of STAC and EP were debated at length and it was recommended that the Panel identify priority areas for discussion at each meeting. In line with the proposal made at the previous STAC meeting, the team leaders of WHO schistosomiasis and trypanosomiasis projects in the Programme area were invited to attend the meeting to brief the Committee on these diseases with particular reference to resettlement of oncho-free areas. In collaboration with the Government of Upper Volta, an excursion was arranged to the AVV development zone at Mogtedo on the White Volta. Participants were also received by the President of the Republic of Upper Volta. A further meeting of the Committee will take place at WHO Headquarters from 8 - 10 November 1977.

91. The membership of the Ecological Panel has been modified to include an aquatic biologist, an epidemiologist and a terrestrial biologist.

92. A three-day meeting of the Economic Development Advisory Panel (EDAP) was opened in Ouagadougou by the Minister of Commerce, Industrial Development and Mines of Upper Volta on 8 March 1977. Following a visit to the development zone at Kaibo, the Panel considered a number of topics including the role of migration in the development of oncho-controlled areas, the public health problems involved, the planning of agro-industries and the contribution of women to rural development. The Panel also heard a detailed report by the Director-General of the Autorité des Aménagements des Vallées des Volta (AVV) regarding development zones in Upper Volta, which gave rise to a discussion on the respective merits of spontaneous migration and organized settlement. With regard to the functions of EDAP it was suggested that members be consulted individually about specific problems, and that the group as a whole focus on a particular topic, or country at each meeting. A further meeting took place in Rome from 29 - 31 August.

93. As far as possible, a representative from each advisory body attends meetings of the other groups to ensure coordination. Programme personnel participate in meetings of the groups concerning their field of activity, and prepare relevant documentation.

94. In line with the recommendation of STAC, more use is being made of Scientific Advisory Panel members mainly through informal consultations. During the period under review three such meetings took place: in October 1976 a group met to review the results of the research on reinvasion carried out in 1976; in November 1976 a meeting was sponsored jointly by OCP and the WHO Divisions of Malaria and Other Parasitic Diseases, and Vector Biology and Control, to consider species complexes and insector vectors of disease. The meeting convened a group of specialists covering fields of theoretical and applied research bearing on the taxonomic resolution of vector species complexes and related problems. A further SAP meeting took place from 4 - 6 June 1977 to draw up biomedical criteria for resettlement.

95. Due to the nature of the operations of the Programme which involve frequent staff travel and the large area covered, diffusion of information within the Programme itself was an integral and important part of activities during the year.

96. Starting in January 1977, monthly staff meetings have taken place in Ouagadougou to which all Headquarters personnel and Sector Chiefs are invited on a rotational basis. The reports of such meetings, at which recent events are reviewed, are distributed throughout the Programme, to WHO offices in Geneva and Brazzaville and to the sponsoring agencies.

97. In February 1977, a seminar for the Sector Chiefs and Sector clerks was held in Ouagadougou. At this meeting the roles of both the Sector Chief and clerk were reviewed and an inventory was made of all problems, administrative and other. It was recognized that the work of the Sector Chief has a large administrative component and that he represents the Programme in his country of assignment; he is thus required to be well informed on all aspects of Programme activities, particularly those related to his area. Arrangements were made to ensure a better flow of information out to the Sector Chiefs, including a feedback on results of missions undertaken in the area, similarly, arrangements were made for s/Chiefs to participate in turn in meetings held in the Programme area. Additional training is being organized for the clerks whose role has evolved into that of an administrative assistant. It was decided to hold such meetings on a regular basis, if possible twice a year. It is planned that the Sub-sector Chiefs will participate in a future seminar.

98. Other activities aimed at improving internal communications, in addition to the monthly and quarterly reports, this year included a weekly news bulletin and staff participation in Information Days organized on the occasion of visits to the Programme (para. 121).

Cooperation with participating countries

99. During 1977 efforts have been made to ensure greater cooperation with participating countries.

100. The main event in this field was the first joint meeting of the National Onchocerciasis Committees which took place in Abidjan from 1[illegible] - 17 June.

101. The National Onchocerciasis Committees were, from the outset, considered the most positive way of providing a coordinating machinery for the Programme at the national level and a link between each Government and the Programme Headquarters.

102. At the 1974 Paris conference of donor and participating Governments, the suggestion was made that these Committees should meet together at some future date. This first meeting which was organized in collaboration with the Government of Ivory Coast, was attended by high-level delegations from all the participating countries, the Chairman of STAC, representatives from the World Bank, WHO Headquarters, and the WHO Regional Office, in addition to Programme personnel. It was opened by the Major of Abidjan in the presence of Ivory Coast Government Officials and the diplomatic corps and provided an opportunity for frank and constructive discussion on subjects of mutual concern. The topics of research and training attracted particular attention as did the extension of the Programme area. In this connection the opportunity was taken by the Programme to explain the present financial situation and the implications of the requests for extension. The value of such an interchange of views, particularly in improving coordination and communication between the Committees and between the Programme and the Committees, was unanimously agreed. An invitation was extended to the Programme by the Minister of Health of Benin to hold a similar meeting in Cotonou in 1978.

103. Another noteworthy event was the organization of a seminar for officials responsible for rural radio in the seven participating countries. It was felt that while the Programme continued to attract the interest of international mass media, additional efforts were required to sensitize rural populations to the vector control campaign, facilitate its own direct participation in the future and stimulate its interest in the economic development projects to be undertaken.

104. This seminar, which took place in Ouagadougou from 4 - 6 May 1977, grouped together 57 specialists from the fields of rural radio, television, communications, economic and rural development. It was the result of a decision taken during the 17th General Assembly of URTNA[1] at Dakar in January, when the role of radio and television in national campaigns, with the onchocerciasis control campaign as theme, was proposed as the topic for discussion at the 1978 URTNA General Assembly to be held in Lomé. During the 3-day meeting participants were briefed on Programme activities. A programme of action for rural radio was outlined. The recommendations made by the seminar include the holding of a National Onchocerciasis Week in each of the seven countries, and the inclusion of a rural radio official in each National Onchocerciasis Committee. To ensure follow-up and coordination, a permanent unit was created. Responsibility for the work of the unit was entrusted to the Rural Radio of Upper Volta.

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[1] Union des Radios et Télévisions Nationales d'Afrique

105. Other action aimed at strengthening cooperation included several visits by Programme personnel to the participating countries.

106. From 21 - 26 March, a mission from the Programme visited the Ivory Coast in connection with the Government's request for an extension of the Programme area on which a comprehensive file of background information had been prepared by the Government. During the week-long visit various meetings took place with the Minister of State for Public Health, Population and Social Affairs and other Government officials. The mission also met with the National Onchocerciasis Committee to review the state of knowledge available on all aspects of onchocerciasis in the areas concerned.

107. From 17 - 20 May the Director visited Benin in connection with the extension of spraying operations to that country, and to discuss in particular measures to be taken to ensure the safety and free movement of Programme personnel, particularly those engaged in aerial operations. The Government was extremely cooperative. It fully appreciated the problems facing the Programme and arrangements were made to issue individual Laissez-Passers to all personnel for use at frontiers. Problems related to the supply of aircraft fuel were also reviewed and authorization was received to import drums of fuel from Niamey which would be refilled in Benin.

108. In July a delegation from the Programme visited Accra to [illegible] participate in a Workshop on Onchocerciasis organized by the West African College of Physicians in Accra. A general presentation of the Programme was made and papers were presented by OCP staff on the pathology and general features of onchocerciasis in the Programme area, the present status of drug treatment of onchocerciasis, the biology and control of the vectors of human onchocerciasis with special reference to West Africa and the development aspects of the Programme. The meeting was attended by about 100 persons, including members of the WACP from Liberia, Gambia, Nigeria and Ghana, as well as a large number of medical students from the Medical School of the University of Ghana.

109. Other meetings of regional interest included, at the invitation of the CILSS Regional Coordinator, the second meeting of the Club des Amis du Sahel which took place in Ottawa on 25 - 26 May. At this meeting the structure and organization of the Programme were presented. A recommendation of the meeting requested that the Onchocerciasis Control Programme take all the necessary measures to ensure better coordination between the activities of the National Onchocerciasis Committees and the CILSS National Committees. In September the Programme participated in a meeting organized by CILSS in Bamako, concerning research in the Sahel and the launching of the Institute of the Sahel. The Programme will participate in a further meeting on this subject to take place in Ouagadougou in October.

110. As to Administration, a review was made of the management [illegible] of costs in the vector control operations with emphasis on the logistic support system.

111. As a result of this review a number of proposals were made regarding the larviciding and surveillance operations which, when fully implemented could lead to budgetary savings between $500,000 and $1,000,000 annually. These proposals concerned (1) a new treatment strategy using an 8-day treatment cycle during the rainy season and hot, dry season, and possibly a nine-day cycle during the dry, cold season, instead of the currently employed 7-day cycle: this would reduce the annual number of cycles from

52 - 45 with proportional savings in insecticide and flying hours; interruption of treatment which would result in a reduction in flight hours and a small saving in insecticide; (2) the optimal utilization of contractual flying hours, for example, if the minimum number of flying hours in the contract were not exceeded, budgetary savings would be made totalling $206,000 in 1977, and $776,000 for 1978-79; (3) the determination of air fleet requirements and the effectiveness of different fleet configurations prior to the award of the next aerial contract. N. B.

112. With regard to surveillance, the proposals include a reduction in network size and surveillance frequency, particularly in respect of capture points; the re-structuring of the sector and sub-sector organization, and research on improved surveillance technology. A cost-effectiveness analysis will be carried out before these recommendations are implemented.

113. In addition, the Administrative Services Unit has continued to provide back-up support to the operational units of the Programme, as well as to assure the appropriate management of Programme resources.

114. The logistical, material and personnel infrastructure for the Programme having been put in place in previous years, efforts in 1977 turned towards improving the efficiency of the structure established; particularly the improved control of the contractor's compliance with the terms of the aerial contract; vehicle maintenance, spare parts and the purchase of gasolene; Programme inventories and communications, including the introduction of a mail delivery system throughout the Programme area.

115. Recruitment was undertaken to fill one additional professional post and 46 general service posts, bringing Programme-wide post occupancy rates to 88% for professional and 95% for general service posts. Three posts of Transport Officer were created in order to provide more adequate supervision and in-service training to sector garage mechanics. A new Personnel Officer and a new Budget Officer were appointed in June and September respectively.

116. With regard to in-service training, language classes for personnel continued. The Programme radio technician spent one month at WHO Headquarters for practical training in interpretation equipment and stencil machines. Training requirements for all categories of personnel and investigating training possibilities have been explored[1].

117. Offices and a warehouse for general Programme supplies were constructed in Ouagadougou and the Tamale Sector Office building was terminated in February. Negotiations were completed for the transfer from OCCGE to the Programme of title to a property in Ouagadougou on which the Programme Headquarters building will be constructed. The contract for construction of this two-storey building was awarded in August to a local contractor at a cost of CFA. F. 49 million. The work, which is scheduled to begin in late 1977 is expected to take one year. Regular visits to Ouagadougou are made by the Building and Transport Officer of the WHO Regional Office to draw up specifications and supervize the preparation of plans.

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[1] Document JCC4. Annex B

118. Following the introduction by the Government of Ivory Coast of a requirement for all importers to use a certified agency for clearance of goods through customs, OCP, which was faced with substantial additional costs, was specifically authorized by the Government to negotiate with a transit firm in Abidjan for a symbolic payment per shipment. The terms agreed, thanks to the Government's support, were CFA.F. 5,000 for transactions up to CFA.F. 280,000 and CFA.F. 15,000 for amounts exceeding that.

Information coverage

119. Throughout the year, and more particularly on the occasion of meetings and visits of members of the Programme to the participating countries, the press, radio and television of these countries, through articles, press releases, interviews and televised or recorded round-table discussions, have contributed greatly to the sensitization of national authorities and the public to the activities and objectives of the Programme.

120. From 1 - 7 March a Programme team participated in the National Onchocerciasis Week which was organized in Benin. The activities included visits to different parts of the country to present the problem and the Programme, round-table discussions and a meeting with the National Onchocerciasis Committee.

121. "Information Days", including film shows, question and answer sessions and field trips, were organized for visitors to the Programme such as Deputy Charles C. Diggs, Chairman of the Sub-Committee for Africa in the United States Congress, during his visit to Ouagadougou on 7 April, and for Drs Sopronov, Lysenko and Chkzomov from USSR during their visits to Bobo-Dioulasso and Ouagadougou on 17 - 18 May 1977. Arrangements were made for a showing of the World Bank film at the United States Embassy during the evening of 1 April for Deputies Charles W. Whalen and Stephen J. Solarz, and Programme personnel were on hand to reply to questions.

122. In addition to the technical contribution to the Workshop on Onchocerciasis organized in Accra from 6 - 8 July by the West African College of Physicians (para. 108), a large exhibition was mounted including maps and photographs illustrating the activities of the Programme, and a laboratory demonstrating research work on the establishment of S.damnosum colonies. The World Bank film was also shown.

123. A film entitled "Country of the Blind" produced by the BBC in November-December 1976 in the Programme area, was presented on 13 February on the BBC 2 channel of British television. It is also planned to present this film in October at Milan during the Assembly of the European Broadcasting Union.

124. The British company Cygnet Guild Communications Ltd., is making a film, sponsored by the firm Cyanamid, mainly concerned with economic development in the Programme area. The Programme has also agreed to the making of a documentary film on Programme activities by Canadian television.

125. Arrangements were made to produce an Arabic version of the World Bank film "A Plague on the Land", and an English version of the Bernard Lefait film "Onchocerciasis".

II. PLAN OF ACTION FOR 1978

131. The main activities planned for 1978 are as follows.

VECTOR CONTROL

132. The Vector Control programme is based upon the aerial application of insecticide to blackfly breeding sites. An entomological evaluation network has been established to provide weekly information concerning the fly population, river flow rates and the status of breeding sites. Weekly flight plans are formulated on the basis of information provided through this network.

133. To facilitate the positioning of aircraft as well as the organisation of the entomological surveillance network, the Programme area is divided into two zones - East and West - with headquarters respectively in Tamale, Ghana and Bobo-Dioulasso, Upper Volta[1].

134. Based on experience gained to date which shows a definite seasonal impact on the utilization of aircraft, the aerial fleet will require two fixed-wing aircraft for the entire year plus 6 helicopters from January through April ; increasing to 8 helicopters from May through November and decreasing to 6 in December. This represents a reduction over 1977 of 2 helicopters from December to April. Three or four helicopters and one fixed-wing aircraft will operate in each of the two zones from the main bases at Tamale and Bobo-Dioulasso[2].

135. At the start of the rains in May, six helicopters will be required in spraying configuration. Two will remain in passenger configuration for surveying and prospection work. When the flow of the rivers starts to lessen after the cessation of the rains, some of the helicopters will be reconverted into passenger configuration for the intensive surveillance necessary during the period of change from the wet season to the dry season.

136. Flight hours[3] have been calculated on the basis of 60 hours per month per helicopter and 50 hours per month per fixed-wing aircraft as compared with 65 hours per month per helicopter and 55 hours per month per fixed-wing aircraft in 1977.

137. Interruptions of treatment will be continued. Limited experimentation with periodic cessation of treatment in the northern areas of the Programme zone during the rainy season and a reduction in treatment during the dry season in some of the most prolific breeding areas further south were carried out in 1977. These trials have shown that during the dry season and even during the wet season in areas of low vector density, the weekly treatment cycle may be interrupted without adverse effect.

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[1] See Appendices VII and VIII

[2] See map, Appendix VII

[3] Flight hours required vary according to the amount of rainfall (which strongly influences river flow) and because of the difficulty in predicting meteorological conditions these requirements as stated must be considered tentative.

EMENA Region

Country Economic and Sector Work
(Manweeks)

	No	Unit	Total
Economic Work - Formal			
Carryovers Completed	6	12.1	72.4
New Starts Completed	5	61.1	305.3
In Process End FY	8	57.9	463.0
			840.7
Economic Work - Informal			
Carryovers Completed	2	5.6	11.3
New Starts Completed	4	31.9	127.7
In Process End FY	-	-	-
			139.0
Other Economic Work	31	18.4	574.6
Dropped			44.7
Subtotal			1599.0
Sector Work - Formal			
Carryovers Completed	3		241.5
New Starts Completed	1		146.9
In Process End FY	3		133.7
			407.0
Sector Work - Informal			
Carryovers Completed	1	2.0	2.0
New Starts Completed	3		146.9
In Process End FY	1	6.1	6.1
			155.0
Other Sector Work			305.0
Subtotal			867.0
CPP			177.0
Total Economic & Sector Work			2643.0

138. Experiments will be conducted with a view towards analyzing the possibility of extending the interval between larviciding applications from 7 days to 8, 9 or 10 days according to the seasons. In addition, an attempt will be made to further reduce the dosage of larvicide considered necessary to obtain desired results. It is hoped that the financial implications of a successful conclusion to these experiments could be reflected in the 1979 budget, at least for insecticides.

139. Two hundred and twenty-five thousand litres of insecticide will be used during 1978. This insecticide will be shipped to the ports in coastal countries participating in the Programme from where it will be transported to the 80 refilling points which have been established throughout Programme area. Similarly, an estimated 4 000 drums of fuel will be transported from the eight main distribution depots in the Programme area to these same refilling points.

140. Approximately 300 catching points, the same number as in 1977, will be utilized to cover the Programme area. Some of these will be visited more than once and some less than once a week, depending upon the amount of vector activity anticipated. As in 1977, a total of 86 vector collection teams will be operating in the Programme area in 1978. However, it is planned to experiment with reductions in the density of the surveillance network as well as the frequency with which fly catching points are manned. In addition, the possibility of geographically realigning certain sub-sectors, taking into consideration changing requirements as a result of control activities to date, will be further studied. The results of these experiments could be reflected in the Plan of Action for 1979.

EPIDEMIOLOGICAL EVALUATION

141. The purpose of the epidemiological evaluation is to assess the impact of the vector control operations on the incidence of the disease and to measure the evolution of the epidemiological situation resulting from the interruption or reduction of disease transmission. The collection of baseline data on Phases I, II and III will be completed by the end of 1977, resulting in a total of 73,500 persons examined[1].

142. Two types of examinations were performed : basic and detailed. The basic examination, performed in most of the villages surveyed, consists of taking two skin snips to determine the prevalence of the disease by age and sex, and the density of infection ; searching for the presence of head nodules and measuring visual acuity. The detailed examination, performed on about 15% of 73,500 persons surveyed, consists of a more specific physical examination, the recording of the number and distribution of nodules, the identification and classification of skin lesions and a complete ophthalmological examination for a precise diagnosis of ocular lesions and the degree of ocular parasites.

143. The number of persons examined represents approximately twice the size of the original target. This was found necessary in order to assure a sufficiently large reference group, to facilitate the relocation in subsequent years of adequately large numbers of persons, and to provide statistically reliable results.

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[1] See Appendix 10

144. With this large body of data it has become important to devise and apply the epidemiologic, ecologic and socio-economic parameters - and their relative degree of representation - to be used in defining the characteristics of the population constituting the epidemiologic evaluation network.

145. It will not be necessary in 1978 to retain all of the persons who had been examined during the first series of examinations, and from the total group of examinees now on record, consideration will be given to :

- eliminating all villages where a large proportion of the inhabitants work during a considerable part of the year away from the village. These represent villages having usually only a sporadic incidence of onchocerciasis ;

- eliminating the majority of hypoendemic villages which are generally poor short-term indicators of transmission rates as determined through parasitological evaluation and very poor indicators of ophthalmological consequences of onchocerciasis ;

- keeping in every river basin and epidemiologic/ecologic zone, the most representative hyper- and meso-endemic villages, taking into consideration their accessibility and probable future socio-economic role in the area ;

- keeping the majority, if not all, of the villages having been submitted to a detailed evaluation.

146. Following the redefinition of the sample size, the second passage in Phase I will put emphasis on less extensive but more highly qualitative data and will allow a first measurement of the impact of vector control on human onchocercal infection and disease. About fifty villages will be visited and an estimated 15,000 persons will be examined in the Phase I area of Upper Volta, Ivory Coast and Ghana. This represents about 75% of the sample examined during the first passage in Phase I in 1975[1]. In some villages, random samples of the population will be examined in order to collect further information on the occurrence of other filarial infections in the Programme area, particularly D.streptocerca ; on the distribution of forest and/or savanna strains of the parasite using enzymatic coloration method ; and on the prevalence of microfilariae in the urine.

147. Treatment trials with Metrifonate in the field will be conducted as well as field trials on the diagnostic value of immunological methods, especially the Enzyme-linked immuno-absorbent assay (ELISA) as soon as a suitable antigen becomes available. Close liaison will be maintained with the Chemotherapeutic Centre in Tamale.

148. Exploitation of the data gathered during the initial round of ophthalmological examination will assist in the establishment of an epidemiologic base and perhaps the development of criteria for the selection of patients for treatment in an eventual therapeutic campaign.

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[1] See Appendix XI

149. In collaboration with the Economic Development Unit, the Epidemiological Unit will assist in the definition of the public health implications of development projects under review by participating countries. The Unit will also assist in identifying the existence of blind populations so that appropriate rehabilitation schemes may be considered within the overall context of the development projects proposed by participating Governments.

ECONOMIC DEVELOPMENT

150. The Economic Development Unit serves as a focal point for the exhange of information in respect of national actions in the development aspects of the Onchocerciasis Control Programme. This unit will continue to : collect base-line data in the Programme area through visits by its staff to development projects ; from discussions with ministries, bilateral and multinational aid and financing agencies, and through the use of questionnaires ; maintain a list of development projects and actions in the Programme area and assist in the establishment of a socio-economic data bank by FAO through making available the base-line data collected ; advise on development projects visited in the Programme area, with a balanced emphasis on social, health and economic aspects of development ; liaise, coordinate and disseminate information relating to development activities in the Programme area for the benefit of beneficiary countries, donor countries, sponsoring agencies and interested and multinational aid and financing agencies ; assist in preparing missions and visits to the Programme area.

151. The many-sided task of developing the area where the disease of onchocerciasis has been, and is being, controlled is basically a task for each of the beneficiary countries of the Programme. Most of these countries, in accordance with their respective national development plans and objectives, make the necessary arrangements for financing and implementing the development projects.

152. There are, however, regional implications to many of the national projects. For example, projects for the development and marketing of livestock may involve animal health and disease control measures on an international basis ; agricultural developments in one country may attract migrant labour from another ; differential pricing and marketing arrangements for agricultural products in one country may affect the availability and marketing of similar products in another country; and so on. These are matters which have to be kept in view and on which the Programme can usefully continue to render advice.

153. The basic guidelines for development established at the creation of the Programme gave need to avoid within the Programme area, a laisser faire approach to agricultural development such as had brought about adverse ecological effects in the past - soil exhaustion, denudation of forest cover and the southward advance of the process of desertification, lowered water tables, altered climatic conditions, etc. At the same time it was clearly envisaged that the process of development would involve : resettlement and colonization projects in the river valleys, respectively for those who had escaped to the highlands from the ravages of the disease and for settlers from other parts beyond the oncho zone ; large-scale agricultural exploitation of food and industrial crops - sugar, rice, maize, millet, groundnuts, sorghum, cotton, kenaf, etc. - and livestock development ;

agricultural processing industries and other development projects for the creation of added value and employment alternatives.

154. These major lines of development carry various social and ecological implications, particularly in regard to types and costs of settlement projects ; population movements, large plantations of single crops ; construction of dams and irrigation networks, all of which come into prominence as the oncho zone enters into, or continues in, the development phase.

155. In the light of these considerations, and in view of the experience already acquired by the Programme, it may become necessary to orient the work of the Economic Development Unit so as to assist the development efforts of the member States as well as to anticipate major development problems which could otherwise frustrate those efforts. It might be that the best contribution which the Programme could make in this direction at the moment is to identify major development problem areas for special study in the report on socio-economic development.

156. These studies could be financed by special allocations outside the regular Programme Budget and may well constitute the object of special funding by UNDP, foundations and other sources.

157. Three or four of these studies would be undertaken every year, using the services of consultants and part-time researchers to augment the capacity of the Programme. The following topics would be investigated as priority items :

(1) Labour migration between countries of the Programme (with special reference to migration towards the Ivory Coast) and its implications for development and socio-economic policies in the Programme area.

(2) A comparative study of settlement projects in the Programme area and the experiences acquired.

(3) Low-cost health delivery systems for the onchocerciasis zone.

(4) Socio-economic aspects and implications of proposed extensions of the current limits of the Onchocerciasis Control Programme.

158. From the first study it is hoped to arrive at conclusions regarding the presence or absence of spread effects from the development efforts of Ivory Coast to the labour-sending countries, the implications for socio-economic policies and for alternative development models and strategies for the oncho zone.

159. The second study should throw some light on possible approaches to viable settlement effort in the oncho zone by making available in comparative form the experiences acquired in the settlement projects which have been attempted in the Programme area.

160. As the development process proceeds in the oncho zone public health problems assume increasing urgency, and it becomes necessary to devise means of delivering health services effectively and economically to the population. This study, which should lead to conclusions on this all-important subject, is being carried out.

APPLIED RESEARCH

Entomological Research

161. The research activities undertaken or sponsored by the Programme are closely related to its changing and developing needs. The main objective is to develop appropriate technology for the implementation of the operations. The OCP Research Coordinating Committee reviews the research programme twice per year, ensures there is no duplication of interest and recommends those scientists and institutions who can best undertake the different studies called for by the research programme.

162. Vector ecology : Since the inception of the Programme, attention has been paid to the identification and distribution of the different species of the S.damnosum complex both inside and outside the Programme area. Transmission potential can vary according to vector species. Most information to date has been obtained from the cytogenetic features of the larvae, but in order to permit species identification by the field entomologist, attention is being given to the determination of distinguishing external morphological characteristics of the adults, pupae and larvae. Similar emphasis is also being placed on the development of mechanical trapping devices for adult and riverine stages. Trapping is currently performed by human vector collectors with all of the implied difficulties. An effective mechanical trap would result in a tremendous simplification of the vector collection activity which forms a major part of the entomological evaluation exercise.

163. At present, research on S.damnosum is limited to what can be done in the natural habitat of the vector in Africa because of the inability to maintain a colony of any of the species in the laboratory. The Programme has therefore engaged a research entomologist in West Africa to concentrate upon the development of a method for rearing single generations of cytotypes of the S.damnosum complex. This work will continue in 1978.

164. In addition certain specialized studies have been, and will continue to be, promoted concerning the influence of meteorological conditions on vector migration

165. Vector control : Priority continues to be given to finding an alternative larvicide and formulation. To date, control operations depend upon the use of a single formulation of Abate and an alternative larvicide is necessary in the event of the development of resistance or any other contingency such as supply ruptures, etc. Research in 1978 will continue to emphasize the testing of the efficiency of new insecticides, in particular micro-encapsulated formulations, and their effects on non-target organisms, as well as seeking alternative means of control.

Medical Research

166. Medical research will continue to emphasize studies involving the epidemiology of the disease and the search for a safe and efficient therapeutic agent. Studies will continue to better correlate clinical and ocular findings, to better understand the dynamics of disease transmission in order to construct and test a mathematical model, to better identify and classify skin lesions due to onchocerciasis, and to better understand the relationship between human and animal onchocerciasis.

167. The Chemotherapeutic Research Centre in Tamale, will continue to receive support during 1978.

168. The Programme, aware of the need for suitable drugs for the mass treatment of onchocerciasis is supporting trials with currently prescribed drugs in an endeavour to find acceptable dosages minimizing side effects and is cooperating with the Special Programme for Research and Training in Tropical Diseases in trying to promote the development of new drugs. However, the reluctance of most pharmaceutical firms in committing resources to the synthesis of new drugs against onchocerciasis suggests that progress will not be rapid.

ENVIRONMENTAL PROTECTION

169. The Aquatic Monitoring Programme which obtains monthly data on a series of rivers in the OCP area has shown that the weekly application of Abate to the rivers is not having a detrimental effect on the non-target riverine organisms including fish. In 1978 this Programme will continue to obtain data on the quality and quantity of invertebrate and fish fauna in the rivers of the Programme area. Some trials will also be undertaken to determine the efficacy of environmental manipulation in reducing the amount of insecticide treatment by modifying some breeding sites. Following these experiments a SAP Working Group will be convened to determine the wider application of the method, especially to those areas where development and intensive settlement is taking place.

TRAINING

170. In 1977 a review was made of the training activities and needs. It was found that the personnel required in the different disciplines had been provided with the appropriate training, and that participating countries did not make full use of the fellowships available. One reason for the lack of African candidates, could be the absence of a career structure for certain types of personnel, especially medical entomologists and technicians, in the civil service of most African countries. The training programme to be undertaken envisages three objectives :

a) to improve the skills of personnel already employed

b) to prepare new personnel as may be required

c) to instruct personnel from other countries as requested in the procedure of survey, control and evaluation of onchocerciasis and its vectors.

171. The improvement of personnel already employed will be accomplished through on the job training, through enrolment in specialized courses or seminars and through visits to other projects. Training for new personnel will continue to be arranged. This training will utilize institutions in Africa, as well as in-service training. Training for personnel outside the Programme from participating and other African countries will emphasize entomological and/or medical activities and will consist primarily of field oriented experiences whereby the trainees are attached to one of the entomological or epidemiological operational units for specified periods of time. In addition, Programme entomologists or medical personnel will collaborate with various training institutions and Universities, particularly in the participating countries, and deliver lectures or take part in seminars.

172. Provision has been made for funds in 1978 to assist in training as follows :

(1) Strengthening of equipment and staffing of national and sub-regional institutions as required for training purposes.

(2) Selection and training of candidates from the Programme area (1 medical entomologist and 1 hydrobiologist to be trained abroad, each for 1 year, 2 entomologists (6 months) and 3 entomological technicians (4 months) to be trained locally).

(3) Training of one candidate in tropical ophthalmology with emphasis in onchocerciasis at Dakar University.

(4) Selection and training in the field of Public Health, as required for the planning and evaluation of onchocerciasis chemotherapy campaigns, of candidates proposed by the seven participating governments (1 medical officer for 1 year and seven laboratory assistants each for 3 months).

ADMINISTRATIVE AND OTHER SUPPORT SERVICES

173. In Ouagadougou, the administrative support takes the form of the following services: personnel - for the administration of general service staff contracts and the WHO Staff Rules and Regulations to all staff; budget and finance - for the administration of the Programme budget; supply - for satisfying all Programme supply needs; general administrative services - for all matters concerning travel, building acquisition and maintenance; and transport management.

174. During 1978, the Administrative Services will place emphasis on improving controls over compliance with the aerial contract and maximizing economies through improved controls over the utilization of Programme resources.

175. The personnel, equipment and material required for the execution of the Plan of Action, costed at $ 57,444,356, are given in the following budgetary presentation.

III BUDGET FOR 1978

176. The budget for 1978 reflects a re-estimation of costs based on more accurate estimates of total costs for the year in the light of the experience gained during the first six months of 1977. This experience is most important since 1977 is the first year of full operation. Moreover, requirements for the entire 1977-79 period have been re-estimated on this basis. This re-estimation has resulted in a decrease of $ 3,006,000 over the period. Approximately $ 950,000 of this amount reflect a carry over to 1977 of economies realized during 1976. These economies were used at the end of that year to purchase in advance vehicles and insecticide required in 1977. It was felt preferable to transfer these economies to 1977 keeping them at the use of the Programme during a year predicted to be characterized by uncertainties, notably the changeover of aerial contractor and the inauguration of aerial treatment in Phase III.

177. The remaining estimated $ 2,056,000 decrease in requirements is distributed as follows :

	$
1977	1,209,000
1978	699,000
1979	148,000

1977

178. 1977 revised requirements represent a 16% decrease over the level anticipated in December, 1976. The categories of expenditure benefitting most noticeably from this decrease are as follows :

179. Personnel: It is anticipated that an 11% reduction in expenditure for this line will result in savings of $430,000. Forty-two per cent of this amount is due to professional post vacancies, 21% due to general service post vanancies and 37% is due to an over-estimation of general service payroll costs.

180. Operational Travel: An estimated 19% reduction in expenditure for this line, representing a saving of $ 143,000 will occur largely as a result of an over-estimation of time spent in travel status by general service staff.

181. Aerial Operations; An estimated 6% reduction of expenditure for this line, representing $ 150,000 is anticipated to occur as a result of experience gained to date resulting in only the minimum number of hours contractually guaranteed by the Programme to the contractor, being utilized.

182. Insecticide: An estimated 7% reduction of expenditure for this line, representing an economy of $ 84,000 is anticipated to result from the fact that a provision for cost encrease during 1977 was made and did not materialize.

183. Operations and Maintenance: An estimated 6% reduction of expenditure representing a saving of $ 90,000 is expected to occur from a reduction in vehicle operating costs resulting from improvement in the vehicle maintenance system.

184. Research and Training: An estimated 26% under-utilization in Research and Training funds is expected to result in an economy of $ 300,000. This under-utilization is primarily due to the fact that not enough qualified canditates have been able to take advantage of these allocations. To facilitate a comparison of current projections with past estimates, two columns of data are shown side by side in the tables which follow.

185. For 1976, actual expenditures are shown.

186. For 1977 the approved Budget (JCC, December 1976) is presented next to the revised estimates for expenditure in 1977. A third column, Estimated Savings or (overrun) for 1977 has been added for easy reference.

187. For 1978, the Original Budget (JCC, December 1976) is presented next to new budget estimates for 1978 as revised as of 30 June 1977.

188. For 1979, the Original Budget (JCC, December 1976) is presented next to the Revised Budget which was made end June 1977.

189. The summary tables presented are as follows :

Vector control
Epidemiological evaluation
Economic development
Environmental protection, Applied Research and Training
Office of the Programme Director and Administrative Support/Ouagadougou
Administrative support and Liaison Geneva/Brazzaville
Meetings

Joint Coordinating Committee

Office of the Independent Chairman
Meetings

Categories of expenditure
are broken down be into annual costs and capital costs.

Annual costs include :

Personnel services : all direct payroll cost and allowances

Operational Travel : cost of all transportation (except by project vehicle) and per diem for all Programme personnel

Consultants : all Consultant costs including salaries, travel and per diem

Accommodation and Utilities : rent, utilities and maintenance

Aerial operations : cost of flight hours (aerial contract)

Insecticide : cost of insecticide plus transportation from Europe to the Programme zone.

Supplies : all consumable supplies with the exception of vehicle related supplies and insecticide

Operations and

Maintenance : vehicle running costs including spare parts, communications, maintenance of technical equipment.

Capital costs include : buildings, furniture, vehicles, equipment[1].

190. For the period 1974-1979, the total estimated cost of the Programme is $ 57,444,356. It is anticipated that of this amount, 54,729,755 will be financed from the Onchocerciasis fund; $ 2,055,819 from UNDP[2], and $ 648,782 by participating African countries. For the year 1978, the requirements to be financed from the Fund are $ 12,100,000 ; from UNDP, $ 465,000 ; and from participating African countries, $ 320,000.

191. In the introduction for each chapter and preceding the tables, a comparison is made between the revised 1978 Budget and the original estimates for 1978 made in December 1976. Next, the revised 1978 Budget is compared to estimated expenditure for 1977.

Vector Control

192. The following tables show the estimated cost of vector control operations during the period 1976-1979, as well as the staff required. The total decrease in the cost of these activities in 1978 from the original budget approved in December 1976, is $ 1,364,500. This decrease was largely obtained from the following components :

(i) Personnel: A decrease in estimated personnel costs of about 7% resulted in a saving of approximately $ 200,000.

(ii) Aerial Operations: A revised estimate of required flight hours results in a 25% reduction for this line amounting to approximately $ 400,000.

(iii) Insecticides: Reduced cost increases when compared to original estimates result in a reduction of approximately $ 275,000 for this line.

(iv) Vehicles: A reduction for this line of more than $ 400,000 results from improved vehicle life due to better maintenance and the elimination of additions to the fleet for which provisions were originally made.

193. Annual costs reflect an increase of 15% over 1977 estimated expenditure representing anticipated price increases. Capital costs decreased by 35% as a result of the non-recurrence of costs attributable in 1977 to the headquarters building and to the investment made in garage equipment. Net increase from 1977 anticipated expenditure to 1978 is 11% or approximately $ 760,000.

(i) Personnel Services : No increase in professional posts is planned. Five general service posts have been transferred to the Administrative Support Services. However full recruitment for all posts is assumed and a 10% annual salary increase has been provided for.

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[1] Only items of more than $ 100.

[2] UNDP commitments for the period 1974-1979 are anticipated in the amount of $ 2,165,140.

(ii) Operational Travel: A 10% increase in travel costs has been provided for and is in line with the trend established during the last 3 years.

(iii) Aerial Operations: The number of helicopter flying hours estimated for 1978 is 5,160 representing a decrease of 180 hours over estimated flying time for 1977. This decrease is made possible as a result of improved knowledge of conditions in the Phase III area. Fixed-wing hours for 1978 are estimated at 1,200, the same as for 1977. The hourly flight cost is $ 394 for helicopter and $ 185 for fixed-wing.

(iv) Insecticides: No increase in quantities over 1977 are planned for 1978. However, a 7% price increase has been included as well as a financial reserve of 20% to take account of possible repercussions of eventual increase in cost of petroleum during the year.

(v) Operations and Maintenance: A provision for a 20% cost increase has been made.

BUDGET TABLE (P.2 of Tables)

	Personnel (VCU)						
	1976	Approved Budget 1977 (12/76)	1977 Revised (6/77)	Original 1978 (12/76)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
Professional	17	17	17	17	17	17	17
General Service	491	521	516	521	516	521	516

Epidemiological Evaluation Unit

194. The decreased cost of the revised Budget for 1978 when compared with original estimates prepared in December, 1976 is approximately $ 62,000 or 7%. This difference is almost entirely accounted for by a decrease in the number of vehicles planned for replacement.

195. The total increase in the estimated cost of Epidemiological Evaluation activities in 1978 compared to the estimated revised expenditure for 1977 is approximately $ 147,000 and is largely as a result of anticipating full occupancy of posts in 1978 and normal cost increases.

196. One professional post will be transferred to the Economic Development Unit in exhange for one general service post. No increase in the number of vehicles[1] is planned and none will be purchased.

[1] See our full report on Transport for further information on vehicles.

BUDGET TABLE (P.3 of Tables)

Personnel (EEU)

	1976	Approved Budget 1977 (12/76)	1977 Revised (6/77)	Original 1978 (12/76)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
Professional	8	8	8	8	7	8	7
General Service	30	33	33	33	34	33	34

Economic Development Unit

197. The budget for 1978 represents a 42% increase, or about $ 148,000, over the original estimates prepared in December 1976. This is in line with the JCC decision made in December 1976 that the responsibility for preparing an annual report on economic development projects of the oncho zone, previously assumed by UNDP, be transferred to the Programme. As a result, one professional post has been transferred into the Unit from EPI in exchange for one general service post and a post of agro-economist has been created and is being financed from funds previously allocated to FAO. The increase in the ECO budget as compared to original estimates therefore represents an attribution to this Unit of costs previously borne by other Programme activities and does not represent a real increase in the overall Programme Budget.

198. The increase in costs for 1978 as compared to revised estimated expenditures is due to the anticipated occupancy of all posts and the transfer to this Unit of one professional post from EEU.

BUDGET TABLE (P.4 of Tables)

Personnel (EDU)

	1976	Approved Budget 1977 (12/76)	1977 Revised (6/77)	Original 1978 (12/78)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
Professional	2	3	4	3	5	3	5
General Service	3	5	6	5	5	5	5

Environmental Protection, Applied Research and Training

199. For 1978, the presentation of research activities has been modified to show all entomologically related research under one chapter. In the past, research conducted by Programme staff as part of the vector control operations was shown separately.

200. In addition, medical research contracts, training and environmental protection are shown in this section, which is further divided into activities financed from the Onchocerciasis Fund and those financed by UNDP.

201. The 1978 Budget for environmental protection studies, applied research, and training, rests essentially unchanged from original estimates made in December 1976.

202. Compared to estimated expenditures for 1977, the revised Budget for these activities for 1978 represents a 48% increase. This is due to an anticipated increase in the utilization of these funds particularly in the area of training and entomological research.

BUDGET TABLE (P.5 of Tables)

203. Vector Control Unit staff research included personnel costs for two professional posts and 4 general service posts, as well as travel and vehicle operating expenses.

Personnel Establishment

	1976 Approved Budget 1977 (12/76)	1977 Revised (6/77)	Original 1978 (12/76)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
Professional	2	2	3	2	3	2	3
General Service	4	4	4	4	5	4	5

Office of the Programme Director and Administrative Support/ Ouagadougou

204. The 1978 revised Budget for this section reflects an $ 869,000 or 67% increase when compared to the original estimate for 1978 made in December, 1976. Most of this amount is due to the transfer from Geneva to the Director's Office of all technical programme support activities, i.e. 5 professional and 4 general service personnel posts, consultants and travel and the transfer from other units in Ouagadougou of 4 general service posts to this Office.

205. Compared to the estimated expenditures for 1977, the revised 1978 Budget represents an 85% increase for the same reasons as indicated above and also because of provision made in 1978 for full personnel post occupancy.

BUDGET TABLE (P.6 of Tables)

Personnel Office, Programme Director and Administrative Support

	1976	Approved Budget 1977	1977 Revised (12/76)	Original 1978 (6/77)	1978 Revised (12/76)	Original 1979 (6/77)	1979 Revised (12/76)
Professional	9	9	10	9	14	9	14
General Service	71	82	87	82	90	82	90

Administrative Support/WHO Geneva; the Regional Office for Africa, Brazzaville

206. In keeping with the africanization of the administrative structure of the Programme, which began in 1977, a post of Liaison Officer has been created in the African Regional Office at Brazzaville. This post was financed by the suppression of two general service posts.

207. Still remaining in this chapter for WHO Geneva are amounts for Data Processing, Supplies (shared general services) and 4 personnel providing routine support to the Programme in the Finance and Personnel Units for a total annual cost of $ 171,000.

WHO Technical/Administrative Support/Geneva

BUDGET TABLE (P.7 of Tables)

Personnel/WHO Regional Office Brazzaville/Technical/Administrative Support Geneva

	1976	Approved Budget 1977	1977 Revised (12/76)	Original 1978 (6/77)	1978 Revised (12/76)	Original 1979 (6/77)	1979 Revised (12/76)
Professional	6	5	5	5	1	5	1
General Service	14	11	8	11	4	11	4

WHO Liaison/Regional Office, Brazzaville

Annual Costs	Approved Budget 1977	1977 Revised	Original 1978	1978 Revised	Original 1979	1979 Revised
Personnel	-	45,000	-	48,750	-	50,250
TOTAL		45,000		48,750		50,250

FAO Support/Rome

208. Expenditures anticipated by FAO cover HQ staff travel and consultants in support of Economic Development Unit activities.

FAO Support/Rome

	1976	Approved Budget 1977(12/76)	1977 Revised (6/77)	Original 1978 (12/76)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
Annual Costs	31,391	-	90.612	-	20,000	-	20,000

209. Total costs for Support/Liaison in Geneva, Brazzaville and Rome represent less than 3% of the Programme Budget.

Meetings

210. The estimated requirements cover the cost of meetings of the Scientific and Technical Advisory Committee (STAC), of the Ecological Panel (EP), of working groups of the Scientific Advisory Panel (SAP) and for other meetings such as the joint meeting of the National Onchocerciasis Committees.

211. The 1978 revised amount for meetings is in excess of the original estimate made in December 1976 as a result of additional costs involved in holding these meetings in Africa and has been revised upwards on the basis of experience gained during 1977.

212. The 1978 revised amount approximates the amount spent in 1977.

1976	Approved Budget 1977(12/76)	Est. Expend. 1977	Est.Savings (overrun) 1977(6/76)	Original Budget 1978 (12/76)	1978 Revised (6/77)	Original 1979 (12/76)	1979 Revised (6/77)
60,819	70,000	130,000	(60,000)	70,000	140,000	70,000	150,000

JOINT COORDINATING COMMITTEE

Office of the Independent Chairman

213. This estimate, pursuant to Article D2 (ii) of the Memorandum of Understanding, provides for remuneration for the Independent Chairman and expenses incurred by him in the discharge of his duties including, inter alia, the salary of a secretary, travel costs and common services as follows:

Annual Costs	1976	Approved Budget 1977	Est. Expend. 1977	Est.savings (overrun) 1977	Original 1978 Budget 1978	Revised	Original 1979	Revised
Personnel Services	50,669	52,300	54,300	(2,000)	57,000	57,000	59,300	59,300
Operational Travel	5,527	11,000	11,000	-	12,100	12,100	13,300	13,300
Supplies	1,836	3,700	3,700	-	3,800	3,800	4,000	4,000
TOTAL	58 032	67,000	69,000	(2,000)	72,900	73,000	76,600	76,600

Personnel establishment

	1976	Approved Budget 1977 (12/76)	Est. Expend. 1977 (6/777)	Original Budget 1978 (12/76)	Revised Budget 1978 (6/77)	Original Budget 1979 (12/76)	Revised Budget 1979 (6/77)
Independent Chairman	1	1	1	1	1	1	1
General Service	1	1	1	1	1	1	1
	2	2	2	2	2	2	2

Meetings

214. Estimates for meetings cover travel expenses, language and other secretarial services needed.

Annual Costs	1976	Approved Budget 1977	Est. Expend. 1977	Est.Savings (overrun) 1977	Original Budget 1978	1978 Revised	Original 1979	1979 Revised
Meetings of the JCC	21,966	10,000	30,000	(20,000)	30,000	30,000	10,000	30,000
TOTAL	79 998	77,000	99,000	(22,000)	102,900	103,000	86,000	107,000

FINANCING

Source of Funds

215. The estimated costs of the Programme will be provided as follows:

	1974 $	1975 $	1976 $	1977 $	1978 $	1979 $	Total $
Special Fund	2639062	5795280	9835001	10627912	12100000	13732500	54729755
UNDP	205080	106070	464369	350300	465000	465000	2055819
Special a/c (Beneficiary Countries)	-	131739[1]	113043[2]	-	320000[3]	94000	658782
TOTAL	2844142	6033089	10412413	10978212	12885000	14291500	57444356

[1]Ghana ¢ 140,000 at ¢ 1.15/$1.00

[1]Ivory Coast F.CFA 6,114,072 at 247 CFA/$1.00

[2]Ghana ¢ 130,000 at ¢ 1.15/$1.000

[3]Include 1975 - 1977 contributions for all 7 countries at 247 CFA/$1.00

Cash Requirements

216. Actual payment for many items provided for in the budget estimates takes place after delivery; as a result the cash requirements may differ from the budget estimates. The cash requirement foreseen for the 18 months from 1 January 1977 through 30 June 1978 are as follows:

1978	First quarter	3,200,000
	Second quarter	3,200,000
	Third quarter	3,400,000
	Fourth quarter	3,400,000
1979	First quarter	3,400,000
	Second quarter	3,400,000

TABLE I - TOTAL PROGRAMME REQUIREMENTS 1974-1979 BY PROGRAMME ACTIVITY

ANNUAL COSTS	1974 - $ (Actual)	1975 - $ (Actual)	1976 - $ (Actual)	1977 - $ (Estimated)	1978 - $ (Estimated)	1979 - $ (Estimated)	TOTAL - $
VECTOR CONTROL OPERATIONS	561 362	3 031 000	5 293 776	6 683 500	7 705 000	8 239 000	31 513 638
EPIDEMIOLOGICAL EVALUATION	58 199	423 280	519 970	561 300	746 000	819 000	3 127 749
ECONOMIC DEVELOPMENT	-	-	-	185 500	339 000	373 000	897 500
APPLIED RESEARCH	431 095	390 729	458 823	463 800	741 700	716 000	3 202 147
MEDICAL RESEARCH & TRAINING UNDP	205 080	106 070	464 369	350 300	465 000	465 000	2 055 819
PROGRAMME DIRECTOR & ADM SUP/OUAGA	491 028	875 501	1 019 108	1 105 600	2 048 250	2 228 750	7 768 237
MEETINGS	20 000	35 169	60 819	130 000	140 000	150 000	535 988
TECHNICAL & ADMINISTRATIVE SUPPORT	300 228	598 389	693 041	535 600	171 000	177 000	2 475 258
TECHNICAL SUPPORT FAO	3 341	36 716	31 391	96 612	20 000	20 000	202 060
REGIONAL LIAISON	-	-	-	45 000	48 750	50 250	144 000
SUB-TOTAL - ANNUAL COSTS	2 070 333	5 496 854	8 541 297	10 151 212	12 424 700	13 238 000	51 922 396
JOINT COORDINATING COMMITTEE	5 400	81 738	79 998	99 000	103 000	107 000	476 136
GRAND TOTAL - ANNUAL COSTS	2 075 733	5 578 592	8 621 295	10 250 212	12 527 700	13 345 000	52 398 532
CAPITAL ITEMS							
BUILDINGS	24 135	138 085	303 566	447 000	48 000	82 000	1 042 786
FURNITURE	87 887	6 446	14 675	15 200	7 000	7 000	138 208
VEHICLES	465 769	263 783	1 204 403	28 000	135 300	683 500	2 780 755
TECHNICAL EQUIPMENT	190 618	46 183	268 474	237 800	167 000	174 000	1 084 075
TOTAL - CAPITAL ITEMS	768 409	454 497	1 791 118	728 000	357 300	946 500	5 045 824
TOTAL	2 844 142	6 033 089	10 412 413	10 978 212	12 885 000	14 291 500	57 444 356
OF WHICH :							
ONCHOCERCIASIS FUN	2 639 062	5 795 280	9 835 001	10 627 912	12 100 000	13 732 500	54 729 755
UNDP FUNDS	205 080	106 070	464 369	350 300	465 000	465 000	2 055 819
BENEFICIARY COUNTRIES	-	131 739	113 043	-	320 000	94 000	658 782

WHO ONCHOCERCIASIS CONTROL PROGRAMME

TABLE II - TOTAL PROGRAMME REQUIREMENTS 1974-1979 BY CATEGORY OF EXPENDITURE

	Actual 1974	1975	1976	Estimates 1977	1978	1979
PERSONAL SERVICES	706 324	2 188 816	3 113 420	3 941 112	5 022 000	5 537 000
AERIAL OPERATIONS	94 262	1 042 653	1 771 529	2 350 000	2 295 000	225 500
INSECTICIDES	166 585	615 508	1 256 148	1 075 700	1 375 000	1 512 000
RESEARCH & TRAINING	636 175	496 799	923 192	814 100	1 206 700	1 181 000
RENTAL SUPPLY & MAINTENANCE	199 062	691 695	919 914	1 272 400	1 580 000	1 724 000
CAPITAL ITEMS	768 409	454 497	1 791 118	728 000	357 300	946 500
OPERATIONAL TRAVEL	122 272	241 143	365 022	468 300	658 000	723 000
CONSULTANTS	125 653	185 071	131 243	99 600	148 000	156 000
MEETINGS	20 000	35 169	60 819	130 000	140 000	150 000
SUB-TOTAL	2 922 980	5 952 351	10 352 415	10 879 212	12 782 000	14 184 500
J C C	5 400	81 738	79 998	99 000	103 000	107 000
GRAND TOTAL	2 844 142	6 033 089	10 412 413	10 978 212	12 885 000	14 291 500
OF WHICH:						
ONCHOCERCIASIS FUNDS	2 639 062	5 795 280	9 835 001	10 627 912	12 100 000	13 732 500
UNDP FUNDS	205 080	106 070	464 369	350 300	465 000	465 000
BENEFICIARY COUNTRIES	-	131 739	113 043	-	320 000	94 000

WHO ONCHOCERCIASIS CONTROL PROGRAMME

TABLE III - SUMMARY OF OPERATIONAL AND SUPPORT COSTS

Past → | ← Estimates →

	1974	1975	1976	1977	1978	1979	TOTAL	
OPERATIONAL & RESEARCH ACTIVITIES	2 024 145	4 405 576	8 528 056	9 017 400	10 402 750	11 608 750	45 986 677	80
TECHNICAL & ADMINISTRATIVE SUPPORT & LIAISON :								
- WHO AND FAO	303 569	635 105	724 432	626 212	191 000	197 000	2 677 318	4
- PROGRAMME HEADQUARTERS, OUAGADOUGOU	491 028	875 501	1 019 108	1 105 600	2 048 250	2 228 750	7 768 237	13
OFFICE OF THE INDEPENDANT CHAIRMAN AND MEETINGS	25 400	116 907	140 817	229 000	243 000	257 000	1 012 124	1
TOTAL	2 844 142	6 033 089	10 412 413	10 978 212	12 885 000	14 291 500	57 444 356	10
OF WHICH :								
ONCHOCERCIASIS FUNDS	2 639 062	5 795 280	9 835 001	10 627 912	12 100 000	13 732 500	54 729 755	95
UNDP FUNDS	205 080	106 070	464 369	350 300	465 000	465 000	2 055 819	3
BENEFICIARY COUNTRIES	-	131 739	113 043	-	320 000	94 000	658 782	1

TABLE IV. PERSONNEL ESTABLISHMENT : OVERALL SUMMARY

	1977 (JCC)	1977 (Rev)	1978	1979
Professional				
Programme Director & Admin. support/Ouaga	9	10	14	14
Vector control	17	17	17	17
Epidemiological evaluation	8	8	7	7
Economic development	3	4	5	5
Applied research	2	3	3	3
Technical Admin. support - Geneva	5	4	-	-
Regional liaison Office	-	1	1	1
Subtotal	44	47	47	47
General Service				
Programme Director & Admin. Support/Ouaga	82	87	90	90
Vector control	521	516	516	516
Epidemiological evaluation	33	33	34	34
Economic development	5	6	5	5
Applied research	4	4	5	5
Technical/Admin. support - Geneva	11	8	4	4
Subtotal	656	654	654	654
JCC Independent Chairman	1	1	1	1
Office of the Independent Chairman	1	1	1	1
Total	702	703	703	703

An increase in the professional posts in the 1977 staffing list (revised) compared to the number originally approved, results from the creation of 1 post of Economist in the Economic Development Unit (funded from monies previously allocated to FAO headquarters support), 1 post of Technical Officer for the Chemotherapeutic Centre, Tamale (funded from previously allocated UNDP research monies) ; and 1 post of Regional Liaison Officer in Brazzaville (funded from monies previously allocated for two general service posts in the technical and administrative support unit in Geneva).

A decrease in 2 general service posts for 1977 (revised) results from the suppression of 2 posts in Geneva as described above.

TABLE IV B PERSONNEL ESTABLISHMENT

POSTS AUTHORIZED FILLED as of 31.7.77 = ( )

	Professional		General Services	
Direction	3	(3)	6	(5)
ECO	4	(2)	6	(6)
ADM	7	(5)	81	(79)
VCU	10	(9)	19	(16)
VCU (AR)	2	(2)	4	(4)
Ouaga Sector	1	(1)	67	(66)
Tamale Sector	1	(1)	86	(83)
Bobo Sector	1	(1)	70	(69)
Korhogo Sector	1	(1)	83	(81)
Bamako Sector	1	(1)	83	(74)
Iona-Kara Sector	1	(1)	47	(45)
Natitingou Sector	1	(1)	61	(58)
EPI	8	(6)	33	(31)
Medical Research	1	(1)	-	-
Headquarters Sup.	4	(3)	8	(7)
Regional Liaison	1	-	-	-
Total Programme	47	(38)	654	(621)
Office of the Independent Chairman	1	(1)	1	(1)
GRAND TOTAL	48	(39)	655	(622)

TABLE V

SUMMARY DISTRIBUTION OF PROFESSIONAL STAFF
BY GRADE AND NATIONALITY (AS OF 1 MAY 1977)

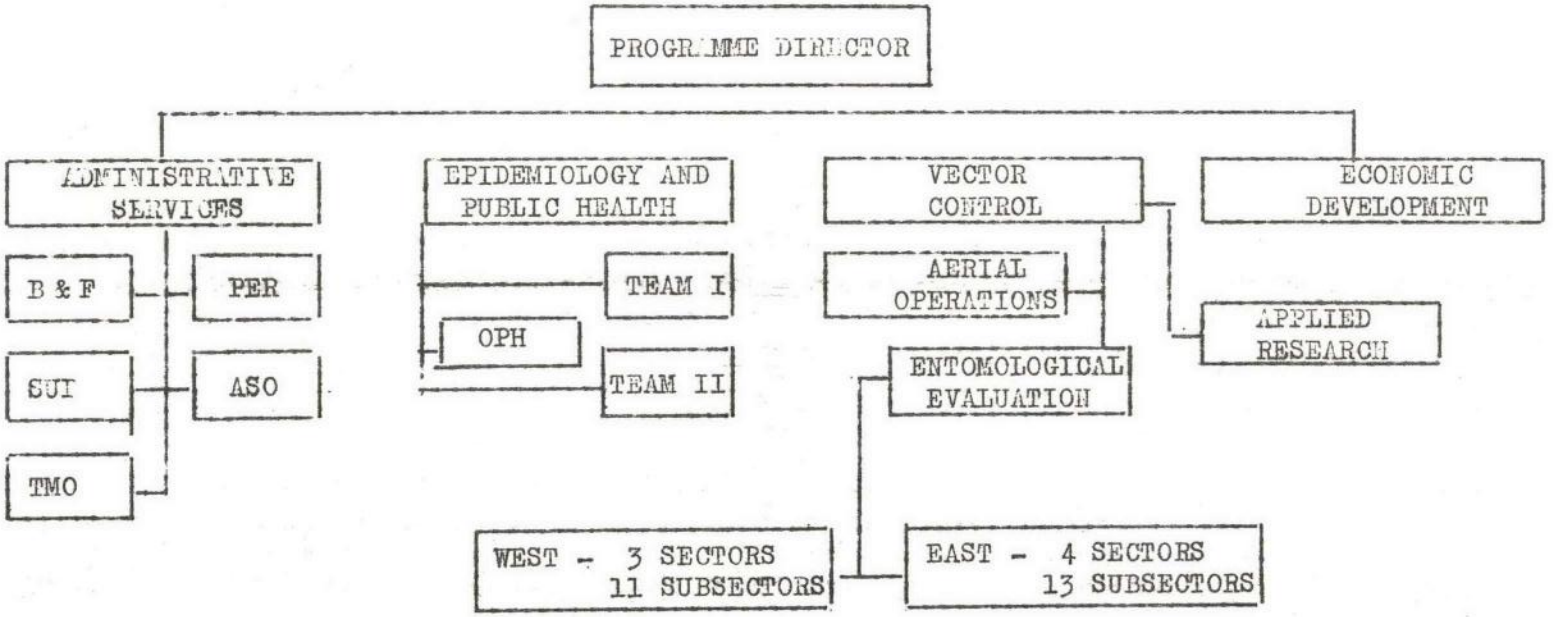
	PROFESSIONAL CATEGORY							
Participating Countries	D2	D1/P6	P5	P4	P3	P2	P1	Total
Benin					1			
Ghana					2			
Ivory Coast					1			
Mali					1			
Niger							1	
Togo					1			
Upper Volta					3			
Total					9		1	10
Other African Countries								
Egypt					1			
Madagascar				1				
Nigeria					1			
Sierra Leone		1						
Somalia					1			
Total		1		1	3			5
Other Countries								
Germany			2					
Belgium				1	1	2		
United-States			1					
France		1	2			1		
Greece						2		
Haïti	1							
United Kingdom			3	1		1		
Sweden			1					
Switzerland						1		
Total	1	1	9	2	1	7		20
TOTAL	1	2	9	3	13	7		35

TABLE VI

PERCENTAGE DISTRIBUTION OF STAFF BY
NATIONALITY AND EMPLOYMENT CATEGORY

DISTRIBUTION BY NATIONALITY	PERCENTAGE DISTRIBUTION BY EMPLOYMENT CATEGORY	
	PROF & ABOVE	GENERAL SERVICES
Participating Countries:		
Benin	2.6	10.4
Ghana	5.3	14.3
Ivory Coast	2.6	13.2
Mali	5.3	11.2
Niger		2.5
Togo	2.6	8.4
Upper Volta	7.9	38.7
Total:	26.3	98.7
Other African Countries:		
Egypt	2.6	
Ethiopia	2.6	
Madagascar	2.6	
Nigeria	2.6	
Sierra Leone	2.6	
Somalia	2.6	
Total:	15.6	
Other Countries:		
Belgium	7.9	
Denmark		.2
France	13.3	.4
Germany	5.3	
Greece	2.6	
Haïti	2.6	
Holland		.3
Italy	2.6	
Sweden	2.6	
Switzerland	5.3	.2
United-Kingdom	13.3	.2
United-States	2.6	
Total:	58.1%	1.3
GRAND TOTAL	100 %	100 %

I.1 PROGRAMME STRUCTURE



APPENDIX I

APPENDIX II.1

STAFFING SUMMARY FOR OFFICE OF THE PROGRAMME DIRECTOR (DIR) ECONOMIC DEVELOPMENT UNIT (ECO), VECTOR CONTROL UNIT (VCU), EPIDEMIOLOGICAL EVALUATION UNIT (EPI), ADMINISTRATIVE SERVICES UNIT (ADM) APPLIED RESEARCH (APL/RES), REGIONAL OFFICE (AFRO) AND HEADQUARTERS/GENEVA (HQ/GVA) - 1978

		Unit							
PROFESSIONAL	Category	DIR	VCU	EPI	ECO	ADM	APL RES.	AFRO	TOTAL
Programme Director	D.2	1							1
Entomologist/Chief of unit	P.6		1						1
Medical Officer/Chief of unit	P.5			1					1
Economist/Chief of unit	P.5				1				1
Administrator/Chief of unit	P.5					1			1
Ophthalmologist	P.5			2					2
Parasitologist	P.5			2					2
Sociologist	P.5			1					1
Scientist/Medical Officer	P.5	3			1			1	5
Entomologist	P.5		2						2
Scientist-Aerial Ops	P.5		1						1
Sociologist	P.4				1				1
Economist	P.4				1				1
Entomologist	P.4						1		1
Budget & Finance Officer	P.4					1			1
Personnel Officer	P.4					1			1
Transport Management Officer	P.4					1			1
Entomologist	P.3		8				1		9
Administrative Services Officer	P.3					1			1
Supply Officer	P.3					1			1
Technical Officer	P.3		1				1		2
Statistician	P.3	1							1
Technical Officer	P.2		3	1					4
Administrative Officer	P.2	2							2
Finance Officer	P.2					1			1
Technical Officer	P.1		1		1				2
Total		7	17	7	5	7	3	1	47

GENERAL SERVICE	GS Grade	Unit							
		DIR	VCU	EPI	ECO	ADM	HQ/GVA	APL/RES	TOTAL
Transport Officer	SRG					3			3
Mechanic						2			2
Administrative Asst.		3		1		4			8
Asst. Sector Chiefs	6-7		7						7
Subsector Chiefs			24						24
Senior Secretary					1			3	4
Sub-total									48
Technician				1					1
Clerk/Secretary	5		8	1		7	1	1	18
Mechanic						6			6
Sub-total									24
Typist/Clerk		3	2	1		6	1		13
Mechanic-Driver			6						6
Nurse/Lab. Technician	4			2					2
Storeman						3			3
Sub-total									24
Typist/Clerk		1	6	2	2	6			17
Asst. Mechanic-Driver			22			3			25
Lab. Auxiliary	3		30	8				1	39
Census Clerk				2					2
Storeman						1			1
Radio Operator			18						18
Sub-total									103
Driver		1	143	14	2	20		3	183
Typist/Clerk	2					2			2
Storeman			6			2			8
Sub-total									193
Vector Collector			197						197
Guard	1		47			10			57
Labourer				2		6			8
Sub-total									262
TOTAL		8	516	34	5	81	5	5	654

APPENDIX III.

INSECTICIDES

The amount of insecticide (20% emulsifiable concentrate) required for 1978 is 225 000 litres to be distributed as follows:

River basins	Quantity (litres)
Black Volta	25 000
Comoé	20 000
Banifing	5 000
Bandama	15 000
White Volta	30 000
Red Volta	20 000
Pendjari	35 000
Niger tributaries	30 000
Baoulé	20 000
Bagoé	10 000
Sankarani	15 000
Total	225 000

ESTIMATED VALUE OF INSECTICIDE STOCK AS OF 30 JUNE 1977

ZONE	QUANTITY	ESTIMATED VALUE*
West	105,500 ltrs.	$560,479
East	167,500 ltrs.	$871,922
Total	273,000 ltrs.	$1,432,401

* Purchase and Transportation costs to port of entry in Programme area

APPENDIX IV

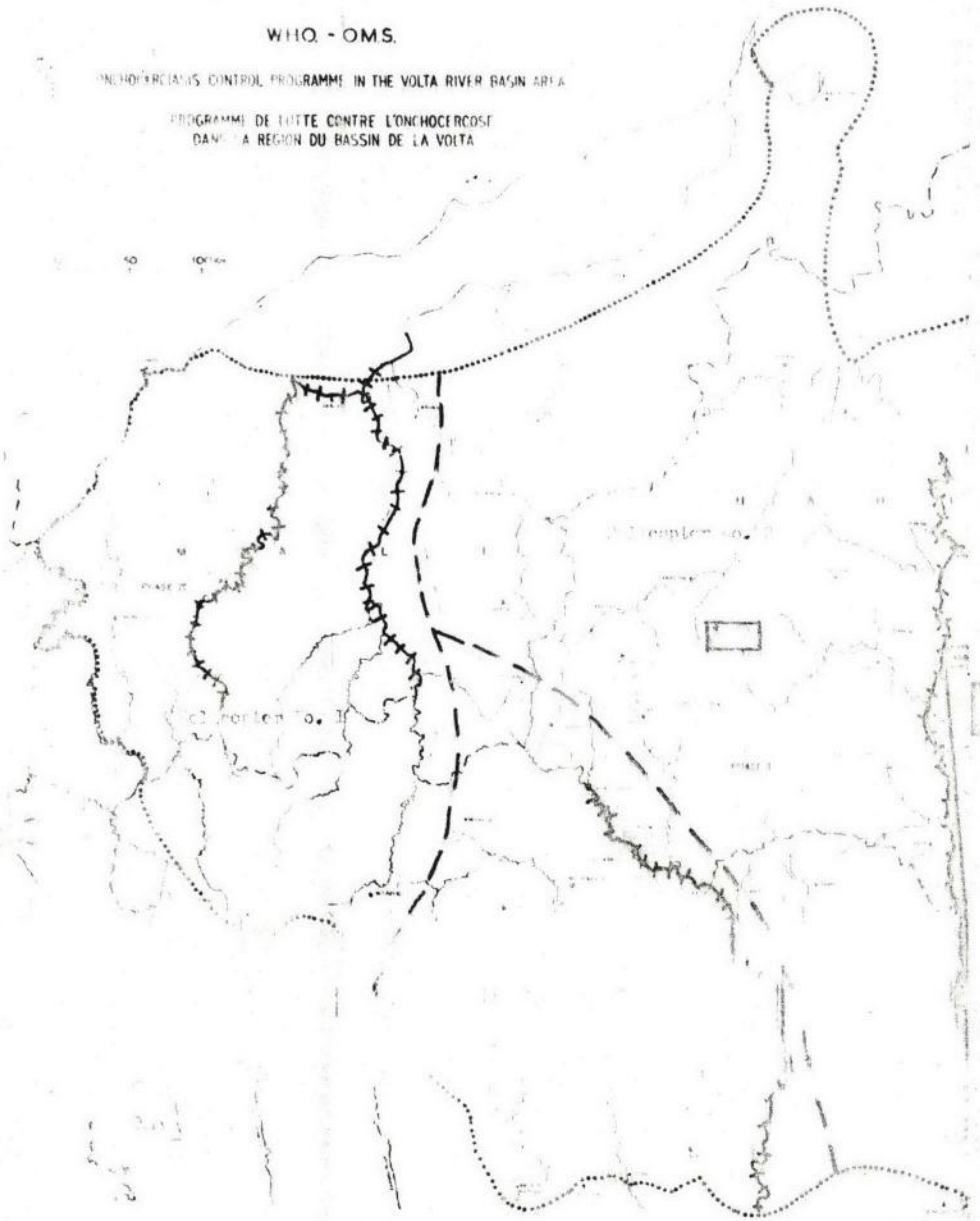
BUILDING SCHEDULE - 1978

Workshops : Bouaké, Niamey	$ 8,000
Improvements central garage and enlargement parts warehouse Ouagadougou	30,000
Improvements garage ; Bobo-Dioulasso	8,000
Improvements garage ; Bougouni	2,000
	$48,000

WHO - OMS

ONCHOCERCIASIS CONTROL PROGRAMME IN THE VOLTA RIVER BASIN AREA

PROGRAMME DE LUTTE CONTRE L'ONCHOCERCOSE
DANS LA REGION DU BASSIN DE LA VOLTA



I.3 SECTORS AND SUBSECTORS BY OPERATIONAL ZONE

The Programme area has been divided into two operational zones :

(a) Zone West is based in Bobo-Dioulasso, Upper Volta, and includes the following sectors and subsectors:

UPPER VOLTA

1. Bobo-Dioulasso sector
   - 1.1 Bobo-Dioulasso subsector
   - 1.2 Banfora subsector
   - 1.3 Diébougou subsector

MALI

2. Bamako sector
   - 2.1 Bamako subsector
   - 2.2 Bougouni subsector
   - 2.3 Sikasso subsector
   - 2.4 Koutiala subsector (worked from Bougouni)

IVORY COAST

3. Korhogo sector
   - 3.1 Korhogo subsector
   - 3.2 Dabakala subsector
   - 3.3 Bondoukou subsector
   - 3.4 Odiénné subsector

(b) Zone East is based in Tamale, Ghana, and includes the following sectors and subsectors.

GHANA

1. Tamale sector
   - 1.1 Tamale subsector
   - 1.2 Yendi subsector
   - 1.3 Bolé subsector
   - 1.4 Bolgatanga subsector

UPPER VOLTA

2. Ouagadougou sector
   - 2.1 Ouagadougou subsector
   - 2.2 Léo subsector
   - 2.3 Tenkodogo subsector
   - 2.4 Niamey subsector (Niger)

TOGO

3. Lama-kara sector
   - 3.1 Lama-kara subsector
   - 3.2 Dapaon subsector

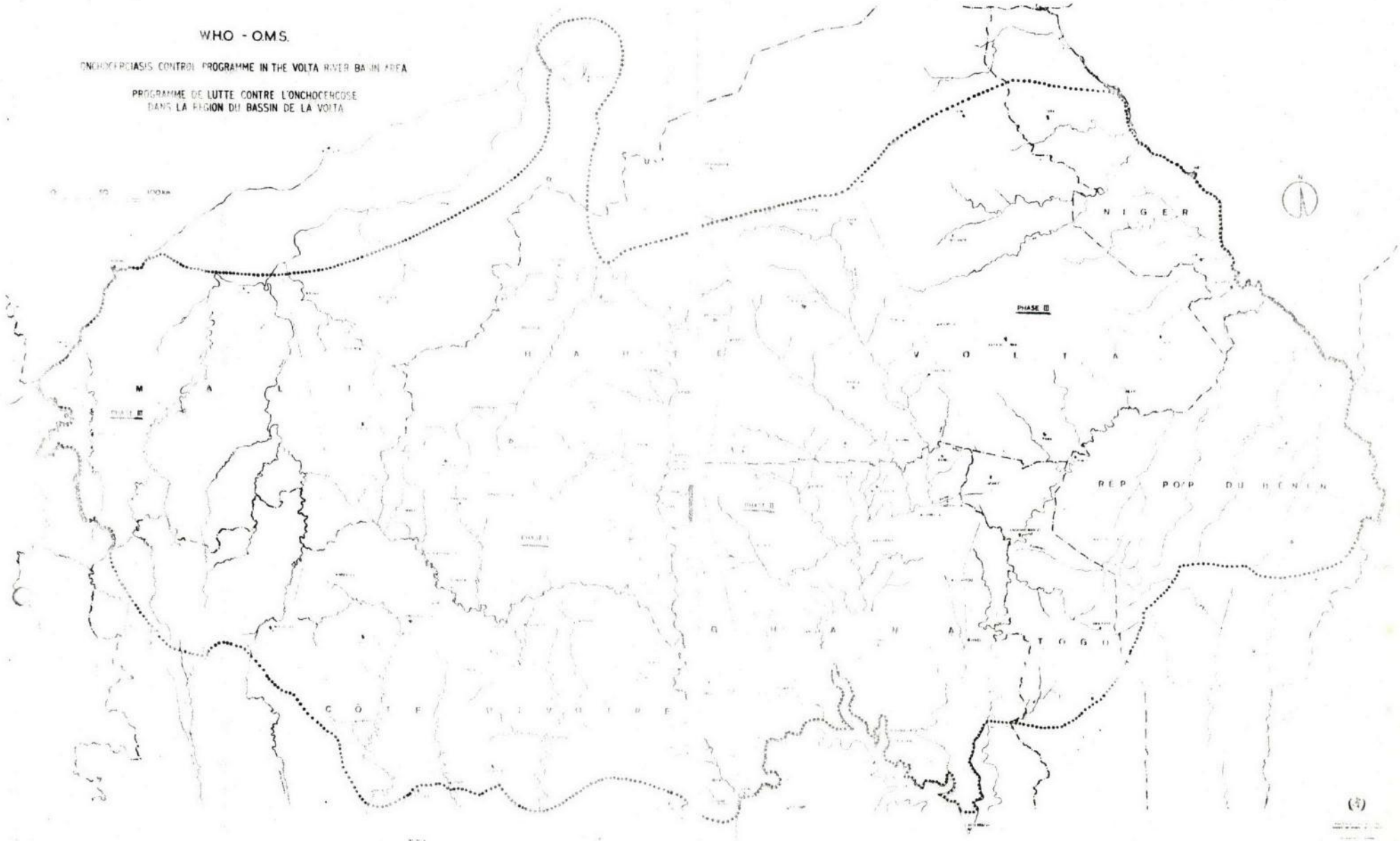
BENIN

4. Natitingou sector
   - 4.1 Natitingou subsector
   - 4.2 Kandi subsector
   - 4.3 Porga subsector (worked from Natitingou)

WHO - O.M.S.

ONCHOCERCIASIS CONTROL PROGRAMME IN THE VOLTA RIVER BASIN AREA

PROGRAMME DE LUTTE CONTRE L'ONCHOCERCOSE
DANS LA REGION DU BASSIN DE LA VOLTA



WHO - O.M.S.

ONCHOCERCIASIS CONTROL PROGRAMME IN THE VOLTA RIVER BASIN AREA

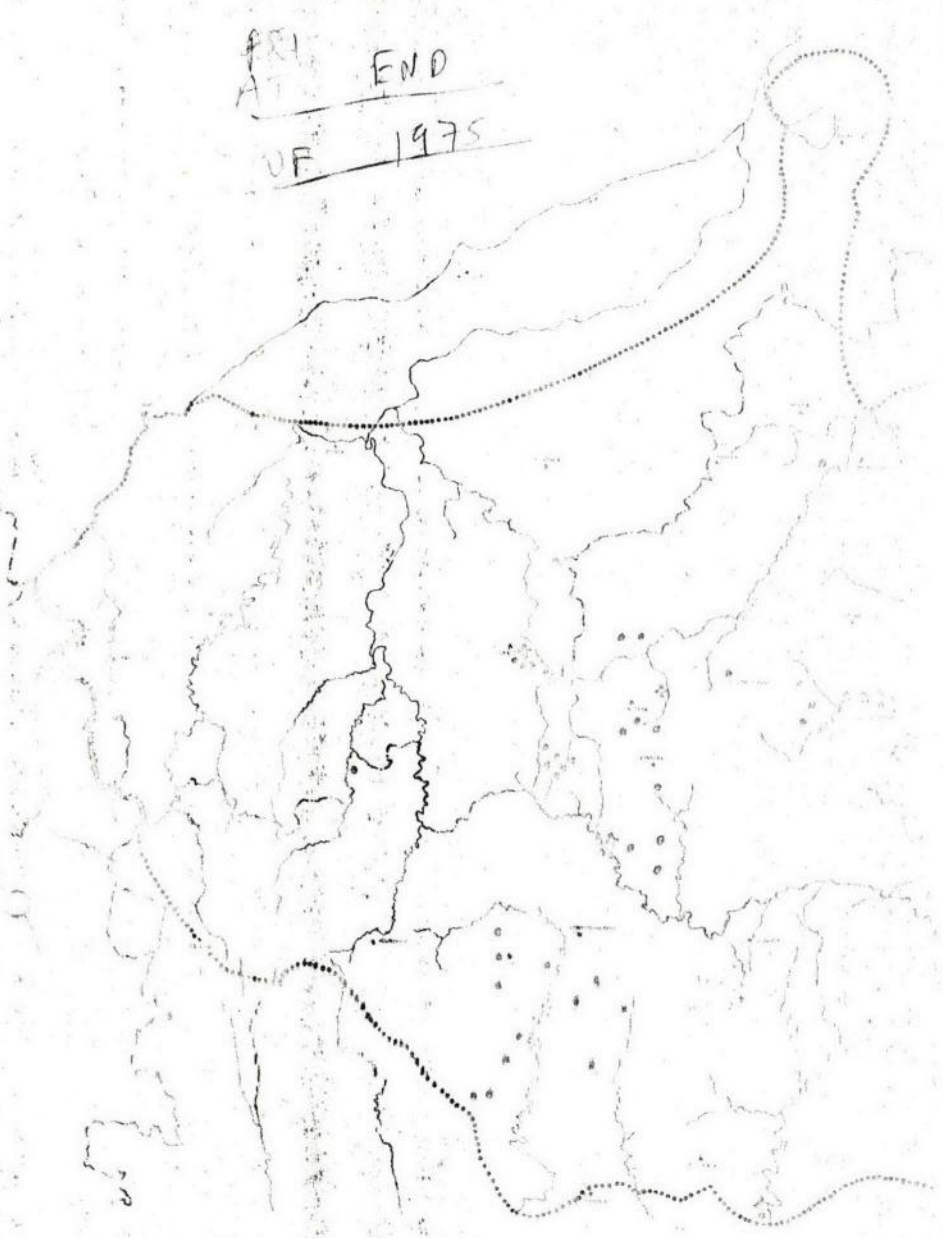
PROGRAMME DE LUTTE CONTRE L'ONCHOCERCOSE
DANS LA REGION DU BASSIN DE LA VOLTA

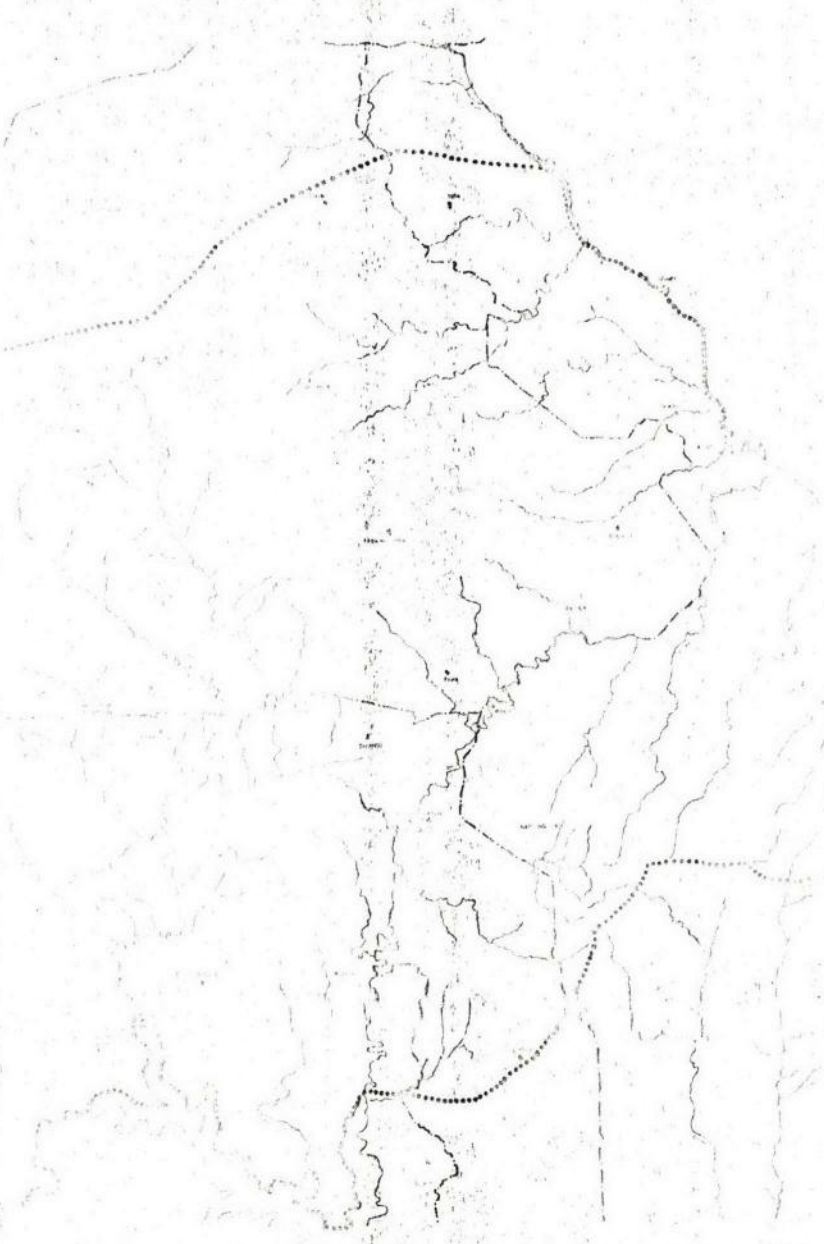
ANNEX V

Villages where entomological surveys were carried out

▲ Detailed surveys

○ Simple surveys





• Simple surveys 1975 = 51

TOTAL OCP PROGRAMME 1976-1979

	EXPENDITURE 1976	APPROVED BUDGET 1977 (DEC.76)	ESTIMATED EXPENDITURE 1977 (JUNE 77)	ESTIMATED SAVINGS OR (OVERRUN) 1977	ORIGINAL BUDGET 1978 (DEC.76)	REVISED BUDGET 1978 (JUNE 77)	ORIGINAL BUDGET 1979 (DEC. 76)	REVISED BUDGET 1979 (JUNE 77)
OFFICE OF THE PROGRAMME DIRECTOR AND ADMINISTRATIVE SUPPORT/OUAGADOUGOU	1 183 751	1 356 500	1 293 200	63 300	1 291 300	2 159 550	1 414 900	2 389 250
VECTOR CONTROL OPERATIONS	6 888 065	8 740 400	7 143 800	1 596 600	9 272 900	7 908 400	9 881 600	8 875 300
EPIDEMIOLOGICAL EVALUATION	552 156	763 700	628 600	135 100	837 600	775 200	905 800	961 700
ECONOMIC DEVELOPMENT	-	210 500	198 300	12 200	204 900	352 400	219 400	380 000
VECTOR CONTROL = RESEARCH COMPONENT	93 975	138 100	114 100	24 000	153 900	241 700	163 800	216 000
TOTAL FIELD PROGRAMME	8 717 947	11 209 200	9 378 000	1 831 200	11 760 600	11 437 250	12 585 500	12 822 250
MEETINGS	60 819	70 000	130 000	(60 000)	70 000	140 000	70 000	150 000
REGIONAL LIAISON	-	-	45 000	(45 000)	-	48 750	-	50 250
TOTAL FIELD OPERATIONS	8 778 766	11 279 200	9 553 000	1 726 200	11 830 600	11 626 000	12 655 500	13 022 500
APPLIED RESEARCH	364 848	548 000	349 700	198 300	548 000	500 000	548 000	500 000
MEDICAL RESEARCH & TRAINING-UNDP	464 369	573 000	350 300	222 700	400 000	465 000	400 000	465 000
TECHNICAL SUPPORT - WHO HQS	693 041	424 600	318 700	105 900	451 800	-	488 400	-
ADMINISTRATIVE SUPPORT - WHO HQS	-	235 400	216 900	18 500	251 200	171 000	260 600	177 000
FAO TECHNICAL & ADMINISTRATIVE SUPPORT	31 391	-	90 612	(90 612)	-	20 000	-	20 000
OFFICE OF THE INDEPENDENT CHAIRMAN	79 998	67 000	69 000	(2 000)	72 900	73 000	76 600	77 000
MEETINGS OF THE JCC	-	10 000	30 000	(20 000)	30 000	30 000	10 000	30 000
SUB-TOTAL	1 633 647	1 858 000	1 425 212	432 788	1 753 900	1 259 000	1 783 600	1 269 000
TOTAL OCP PROGRAMME	10 412 413	13 137 200	10 978 212	2 158 988	13 584 500	12 885 000	14 439 100	14 291 500
OF WHICH: ONCHOCERCIASIS FUNDS	9 835 001	12 564 200	10 627 912	1 936 288	13 184 500	12 100 000	14 039 100	13 732 500
UNDP FUNDS	464 369	573 000	350 300	222 700	400 000	465 000	400 000	465 000
BENEFICIARY COUNTRIES	113 043	-	-	-	-	320 000	-	94 000

ANNUAL COSTS	1976	APPROVED BUDGET 1977 (DEC. 76)	ESTIMATED EXPENDITURE 1977 (JUNE 77)	ESTIMATED SAVINGS OR (OVERRUN) 77	ORIGINAL BUDGET 1978 (DEC. 76)	REVISED BUDGET 1978 (JUNE 77)	ORIGINAL BUDGET 1979 (DEC. 76)	REVISED BUDGET 1979 (JUNE 77)
PERSONAL SERVICES	1 399 530	2 428 900	2 100 000	328 900	2 700 000	2 513 000	2 970 000	2 798 000
OPERATIONAL TRAVEL	231 841	392 600	280 000	112 600	431 800	409 000	475 000	450 000
CONSULTANTS	5 757	13 100	10 000	3 100	14 500	26 000	15 900	28 000
AERIAL OPERATIONS	1 771 529	2 500 000	2 350 000	150 000	2 700 000	2 295 000	2 700 000	2 255 000
ACCOMMODATION & UTILITIES	48 769	61 000	61 000	-	67 100	55 000	73 800	61 000
INSECTICIDES	1 256 148	1 250 000	1 075 700	174 300	1 650 000	1 375 000	1 800 000	1 512 000
SUPPLIES	54 340	81 800	71 800	10 000	90 000	103 000	99 000	113 000
OPERATIONS & MAINTENANCE	525 862	804 400	735 000	69 400	939 800	929 000	1 033 800	1 022 000
TOTAL - ANNUAL COSTS	5 293 776	7 531 800	6 683 500	848 300	8 593 200	7 705 000	9 167 500	8 239 000
CAPITAL ITEMS								
BUILDINGS	237 162	181 000	220 000	(39 000)	16 000	28 000	17 600	72 000
FURNITURE	13 253	6 000	6 000	-	6 600	3 000	7 300	3 000
VEHICLES	1 105 949	759 100	18 400	740 700	554 200	68 400	601 900	452 300
EQUIPMENT	151 257	212 500	183 100	29 400	52 900	54 000	37 300	59 000
HYDROLOGICAL STATIONS	86 668	50 000	32 800	17 200	50 000	50 000	50 000	50 000
TOTAL - CAPITAL ITEMS	1 594 289	1 208 600	460 300	748 300	679 700	203 400	714 100	636 300
TOTAL	6 888 065	8 740 400	7 143 800	1 596 600	9 272 900	7 908 400	9 881 600	8 875 300

EPIDEMIOLOGICAL EVALUATION UNIT

ANNUAL COSTS	1976	APPROVED BUDGET 1977 (DEC.76)	ESTIMATED EXPENDITURE 1977 (JUNE 77)	ESTIMATED SAVINGS OR (OVERRUN) 77	ORIGINAL BUDGET 1978 (DEC.76)	REVISED BUDGET 1978 (JUNE 77)	ORIGINAL BUDGET 1979 (DEC.76)	REVISED BUDGET 1979 (JUNE 77)
PERSONAL SERVICES	399 985	498 700	398 700	100 000	527 500	554 000	587 900	610 000
OPERATIONAL TRAVEL	64 128	74 400	69 400	5 000	81 900	62 000	90 100	68 000
CONSULTANTS	-	-	12 000	(12 000)	-	16 000	-	20 000
ACCOMMODATION & UTILITIES	9 218	11 700	11 700	-	12 800	10 000	14 100	8 000
SUPPLIES	16 330	31 300	31 300	-	36 400	23 000	41 900	24 000
OPERATIONS & MAINTENANCE	30 309	68 200	38 200	30 000	75 000	81 000	82 500	89 000
TOTAL - ANNUAL COSTS	519 970	684 300	561 300	123 000	733 600	746 000	816 500	819 000
CAPITAL ITEMS								
BUILDINGS	-	34 300	45 000	(10 700)	-	-	-	-
FURNITURE	482	1 200	1 200	-	1 300	-	1 500	-
VEHICLES	17 868	32 400	9 600	22 800	90 000	17 200	73 900	132 700
EQUIPMENT	13 836	11 500	11 500	-	12 700	12 000	13 900	10 000
TOTAL - CAPITAL ITEMS	32 186	79 400	67 300	12 100	104 000	29 200	89 300	142 700
TOTAL	552 156	763 700	628 600	135 100	837 600	775 200	905 800	961 700

ECONOMIC DEVELOPMENT UNIT

ANNUAL COSTS	1976	APPROVED BUDGET 1977 (DEC.76)	ESTIMATED EXPENDITURE 1977 (JUNE 77)	ESTIMATED SAVINGS OR (OVERSPENT) 1977	ORIGINAL BUDGET 1978 (DEC.76)	REVISED BUDGET 1978 (JUNE 77)	ORIGINAL BUDGET 1979 (DEC.76)	REVISED BUDGET 1979 (JUNE 77)
PERSONAL SERVICES	-	167 100	164 100	3 000	177 500	280 000	188 500	308 000
OPERATIONS TRAVEL	-	4 500	14 500	(10 000)	4 800	32 000	5 100	35 000
SUPPLIES	-	3 400	2 400	1 000	3 600	5 000	4 000	6 000
OPERATIONS & MAINTENANCE	-	16 500	4 500	12 000	19 000	22 000	21 800	24 000
TOTAL - ANNUAL COSTS	-	191 500	185 500	6 000	204 900	339 000	219 400	373 000
CAPITAL ITEMS								
FURNITURE	-	-	-	-	-	2 000	-	2 000
VEHICLES	-	19 000	11 800	7 200	-	6 400	-	-
EQUIPMENT	-	-	1 000	(1 000)	-	5 000	-	5 000
TOTAL - CAPITAL ITEMS	-	19 000	12 800	6 200	-	13 400	-	7 000
TOTAL	* -	210 500	198 300	12 200	204 900	352 400	219 400	380 000

* Expenditure included in Office of the Programme Director and Administrative Support/Ouagadougou.-

WHO ONCHOCERCIASIS CONTROL PROGRAMME

ENVIRONMENTAL PROTECTION, APPLIED RESEARCH AND TRAINING

	1976 EXPENDITURES	APPROVED BUDGET 1977 (DEC. 76)	1977 ESTIMATED EXPENDITURES (JUNE 77)	ESTIMATED SAVINGS OR (OVERRUNS) (JUNE 77)	ORIGINAL BUDGET 1978 (DEC. 76)	1978 REVISED BUDGET (JUNE 77)	ORIGINAL BUDGET 1979 (DEC. 76)	1979 REVISED BUDGET (JUNE 77)
ENVIRONMENTAL PROTECTION	82 414	200 000	102 000	98 000	200 000	200 000	200 000	200 000
ENTOMOLOGICAL RESEARCH								
Vector Control Unit - Staff Research	93 975	138 100	114 100	24 000	153 900	241 700	163 800	216 000
Vector Ecology - Contractual Research	177 367	110 000	58 200	51 800	110 000	100 000	110 000	100 000
Vector Control - Contractual Research	105 067	238 000	189 500	48 500	238 000	200 000	238 000	200 000
TOTAL - ENTOMOLOGICAL RESEARCH	376 409	486 100	361 800	123 900	501 900	541 700	511 800	514 000
MEDICAL RESEARCH & TRAINING	464 369	573 000	350 300	222 700	400 000	465 000	400 000	465 000
TOTAL COSTS	923 192	1 259 100	814 100	445 000	1 101 900	1 206 700	1 111 800	1 181 000

OFFICE OF THE PROGRAMME DIRECTOR & ADMINISTRATIVE SUPPORT/OUAGADOUGOU

ANNUAL COSTS	1976	APPROVED BUDGET 1977 (DEC.76)	ESTIMATED EXPENDITURES 1977 (JUNE 77)	ESTIMATED SAVINGS OR (OVERRUN) 1977	ORIGINAL BUDGET 1978 (DEC.76)	REVISED BUDGET 1978 (JUNE 77)	ORIGINAL BUDGET 1979 (DEC.76)	REVISED BUDGET 1979 (JUNE 77)
PERSONAL SERVICES	744 622	749 600	770 000	(20 400)	825 800	1 506 250	889 800	1 648 750
OPERATIONAL TRAVEL	45 177	73 300	73 400	(100)	80 700	155 000	89 000	170 000
CONSULTANTS	22 743	15 000	15 000	-	16 600	106 000	18 300	108 000
ACCOMMODATION & UTILITIES	53 834	79 200	65 200	14 000	87 200	43 000	95 900	39 000
SUPPLIES	32 197	38 700	50 000	(11 300)	42 600	51 000	46 800	56 000
OPERATIONS & MAINTENANCE	120 535	128 000	132 000	(4 000)	140 000	187 000	153 100	207 000
TOTAL - ANNUAL COSTS	1 019 108	1 083 800	1 105 600	(21 800)	1 192 900	2 048 250	1 292 900	2 228 750
CAPITAL ITEMS								
BUILDINGS	66 404	164 300	182 000	(17 700)	4 000	20 000	4 400	10 000
FURNITURE	940	2 000	8 000	(6 000)	2 200	2 000	2 400	2 000
VEHICLES	80 586	94 000	(11 800)	105 800	84 600	43 300	109 200	98 500
EQUIPMENT	16 713	12 400	9 400	3 000	7 600	46 000	6 000	50 000
TOTAL - CAPITAL ITEMS	164 643	272 700	187 600	85 100	98 400	111 300	122 000	160 500
TOTAL	1 183 751	1 356 500	1 293 200	63 300	1 291 300	2 159 550	1 414 900	2 389 250