

UNITED NATIONS
ECONOMIC
AND
SOCIAL COUNCIL



DISTR.
LIMITED

E/ICEF/L.1103
30 July 1957

ORIGINAL: ENGLISH

UNITED NATIONS CHILDREN'S FUND

Programme Committee

Recommendation of the Executive Director for an Allocation

LEBANON

Malaria Eradication

1. The Executive Director recommends an allocation to the Lebanon of \$25,000 to provide 41 tons of DDT 75 per cent to assist in continuation over a three-year period (1958-1960) of the anti-malaria campaign which was converted in 1956 into a malaria eradication programme. The balance of insecticides required in this period will be provided by the Government. The total estimated cost to the Government for the three-year period covered by this recommendation would be equivalent to approximately US\$265,000.
2. Allocations totalling \$32,000 (excluding freight) have been approved for this programme at previous sessions of the Board, (E/ICEF/R.355, E/ICEF/L.576 and E/ICEF/L.910) the most recent of these in March 1956. The Board at that time gave its approval in principle to continue UNICEF aid for the completion of the campaign. Although it is expected that the additional allocation of \$25,000 as requested in this paper will fulfil the requirement for UNICEF aid, it is understood that the Government may call upon the Fund for additional aid in case of unforeseen developments.
3. As described in the Annex to this paper, malaria is now "in full retreat" in the Lebanon. The Annex also describes the work of the surveillance teams which began in 1956 and the plan for a complete, well organized, surveillance administration to be established at an early date, integrating and consolidating

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the present organization of semi-mobile survey teams. A WHO assessment team will visit the Lebanon in 1958 to help in setting up this surveillance administration and to determine the areas in which spraying operations may be discontinued. Residual spraying operations protected 440 villages in 1956 with a population of 172,338; an estimated 200,000 persons will be protected in 1957. Gradual discontinuance of spraying is envisaged to begin in 1959, and total interruption of spraying is anticipated for 1961 except for small scale emergency sprayings as required.

Palestine refugee camps

4. In an effort to assume the entire task of anti-malaria activities in the country, the Government has gradually taken over from voluntary, bi-lateral and other agencies, the responsibility for the limited spraying operations which these agencies were carrying out in certain areas. The United Nations Relief and Works Administration for Palestine Refugees (UNRWA) has, however, continued its anti-malaria work in the Palestine refugee camps as explained to the Board in document E/ICEF/L.910. At the request of UNRWA, the Government in 1957 assumed responsibility for the spraying of these camps, which involves the protection of some 15,000 persons, and will continue this spraying as long as necessary as a part of the nation-wide eradication programme.

Plan of operations

5. The plan of operations for the five-year eradication programme, in which the Government, WHO and UNICEF are participating, is awaiting ratification by the country's legislative body. Meanwhile, the Government has confirmed in writing to WHO and UNICEF that, pending the action of the legislative body, the plan is being adhered to by the authorities concerned.

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6. In the main, the amendments to the plan of operations necessitated by the programme's recent developments are the following:

a) Target protection figures:

In line with the programme's agreed long-term plan for the gradual interruption of the spraying operations, it is now calculated that spraying operations will protect the following numbers of persons in the next four years:

1958	200,000
1959	100,000
1960	50,000
1961	Nil, except for instances where limited emergency sprayings might be ordered by the surveillance administration.

b) Coverage of Palestine refugee camps:

The above target protection figures include about 15,000 Palestine refugees living in camps in potentially malarious regions, i.e.:

Nahr-el-Bared Camp in North Lebanon
Jisr-el-Pasha Camp in Mount Lebanon
Buss/Rashidieh Camps and adjacent settlements in South Lebanon.

DDT requirements

7. The residual spraying operations with DDT in the form of water dispersible powder has encountered increased opposition from the population over the past few years in some areas because of its effect on furniture and on the better finished walls of dwellings. In some instances, the resistance of the population to the spraying work has endangered the course of the programme, and it was often necessary to resort to the use of a five per cent solution of technical DDT in kerosene in order to avoid gaps in the protection operations. However, this procedure was costly and involved serious transport and other problems. The Government has, therefore, decided to include DDT 25 per cent emulsion concentrate among the insecticides used in the programme, and has agreed to provide the

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30 metric tons (8,000 gallons) of 25 per cent emulsion concentrate which will be needed for the programme during the period 1958/1960. The Government will also continue larvacidal measures in certain areas lacking proper drainage and will provide the 100 per cent technical DDT for this purpose. The DDT 75 per cent water dispersible powder required for the same period would be provided by UNICEF. With respect to other supply requirements there are no problems for the time being, but it is understood that further assistance from UNICEF may be requested by the Government as unforeseen developments may require.

UNICEF commitments

8. UNICEF would provide the following for the three-year continuation of the programme:

	<u>US\$</u>
a) <u>DDT</u> , 75 per cent water dispersible powder	20,800
b) <u>Contingencies</u>	2,100
Total supplies	<u>22,900</u>
c) <u>Freight</u>	2,100
Total recommended allocation	<u>25,000</u>

WHO participation and technical approval

9. WHO's formal technical approval is anticipated. A WHO assessment team will visit the Lebanon in 1958 to help in the setting up of the surveillance administration and in the preparation of a schedule for the gradual discontinuation of the spraying operations.

Government commitments

10. The Government commitments relative to premises, personnel, transport and other requirements of the programme were outlined in the latest recommendation presented to the Board in connexion with this programme. (E/ICEF/L.910.) As indicated above (paragraph 7), the Government would provide a total of 30 metric

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tons (8,000 gallons) of DDT 25 per cent emulsion concentrate which (in addition to the proposed UNICEF contribution of DDT) would cover the programme's requirements through 1961. The emulsion concentrate will be required as follows:

1958	16	metric	tons
1959	8	"	"
1960	4	"	"
1961	2	"	"

The cost to the Government for this quantity would be equivalent to approximately US\$9,000. In addition, the Government will provide the relatively small quantity of DDT 100 per cent technical which will be required for the larval work to be continued during the period 1958/1960 at the same rate as heretofore in areas lacking proper drainage.

11. Based on the expenditures recorded for 1956, the cost to the Government would be as follows for 1958 and slightly lower for each of the following years:

	<u>Lebanese Pounds</u>	<u>Lebanese Pounds</u>
a) <u>Personnel</u>		
i) <u>Permanent and long-term personnel:</u>		112,000
1 malarialogist, LL8,300 per annum	8,300	
1 entomologist, LL7,200 per annum	7,200	
1 sanitary engineer, LL6,200 per annum	6,200	
4 public health nurses, LL3,000 (average) per annum	12,000	
16 sanitarians and technicians, LL2,400 per annum	38,400	
3 administrative clerks, LL2,400 per annum	7,200	
2 servants, LLL,850 per annum	3,700	
12 drivers, LLL,800 - 2,500 per annum	29,000	
ii) <u>Temporary and seasonal personnel,</u> including 40 foremen/recorders, 40 carriers/ mixers, 80 spraymen, 10 supervisors, 4 mechanics and 4 storekeepers		110,000
b) <u>Allowances</u> for the above personnel		18,000
c) <u>Premises</u> for the Beirut Headquarters and centres in Tripoli, Zahle and Saida		16,000
d) <u>Fuel, repairs, maintenance and stationery</u>		35,000
e) <u>Insecticides</u> (paragraphs 7 and 10 above)		25,000
Total annual cost		<u>316,000</u>

equivalent to approximately US\$100,000

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12. Because of the gradual reduction in the labour force anticipated for 1959 and 1960, a certain economy may appear in the programme's budget during these two years, although this economy will be partially counter-balanced by the cost of the surveillance set-up which will then be increasing steadily. Taking this into account, the cost of the programme to the Government for these years is calculated at L271,000 for 1959 and L250,000 for 1960 which, when added to the L316,000 earmarked for 1958, would bring the total cost during the three-year period to L837,000 or approximately US\$265,000.

ANNEX

Lebanon - Progress of the Malaria Eradication Campaign

Malaria in full retreat

1. Malaria has been on a declining trend in Lebanon since 1952/1953 when, with the assistance of a WHO demonstration and training team, a full-protection coverage of the country's malarious areas was achieved mainly through the residual spraying with DDT of dwellings, shelters and caves. A report recently published on the subject by Professor G. Livadas^{a/} who visited Lebanon in March 1956 as a WHO short-term consultant, corroborates this fact in the following terms:

"From the study of (available) data, in conjunction with our personal impressions gained from inspection tours throughout the country as well as from examinations made during these tours of a number of children, it would be safe to assume that malaria in Lebanon is in full retreat, and in certain areas, as in the district of Beqaa, the transmission of the disease has now been discontinued or is at a vanishing point."

2. Malarimetric investigations carried out by Dr. G. R. Shildrawi^{b/}, national entomologist who has been largely responsible for anti-malarial operations in the country, show that the parasite indices are now very low; thus:

	Number examined in 1956	Positive cases in 1956	Number examined first half 1957	Positive cases first half 1957
Infants under 1 year	1,094	1	597	-
Children 1 to 12 years	14,735	51	15,286	27
Adults	2,181	14	2,289	12

3. Among the 18,010 persons examined in 1956 (total population 450,000) in 549 villages for spleen and parasite indices, 360 had enlarged spleens (2%) while 66 were positive for malaria parasites (.36%). The rate dropped considerably further in the first half of 1957. The localities where the infection

^{a/} WHO/EM/Mal/26 - December 1956 (MH/EM/8.57)

^{b/} Dr. Shildrawi studied under a WHO Fellowship at the London School of Hygiene and Tropical Medicine in 1955.

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was encountered (21 villages only) were the same as in 1954 and 1955, namely the vicinities of the hydro-electric works of Nahr-el-Bared in the north, Nahr-Ibrahim in Mount Lebanon and the area of Sarafand village in the south where a number of positive cases were found in the camps of Palestinian refugees. The greater number of the positive cases detected, however, are believed to be relapses. There was, in fact, no tangible evidence that any of these cases resulted from a fresh transmission, especially as no positive vectors could be found in the areas where the infection was discovered. Further, it is noted that most of the cases occurred among children and adults and almost none among infants, which seems to indicate that these cases are more likely to be relapses than newly transmitted cases. Even more convincing in this respect was the fact that during 1956 only Plasmodium vivax was found.

4. The entomological surveys undertaken during the 1956/1957 period covered by the latest allocation to this programme indicate that the main threat of transmission comes from A. superpictus, a wild anopheles which finds suitable breeding places in the fresh waters of the country's numerous ponds, shallow streams and river beds. A. sacharovi and A. sergenti are also found in small numbers and constitute a lesser danger as potential vectors. At one time, it was feared that A. sacharovi was giving signs of resistance to chlorinated insecticides in Lebanon, but a careful study recently made by a qualified national entomologist, who graduated from the London School of Hygiene and Tropical Medicine under a WHO fellowship, seems to indicate that this fear was not justified. Further studies in this field have also established that the larvae of the above mentioned species did not give signs of existence until June/July, and that the climax of breeding is reached somewhere between August and September of every year.

First steps towards surveillance

5. The epidemiological and entomological surveys referred to above are now carried out on a year-round basis by four semi-mobile teams in the country's four provinces as envisaged in the programme's plan of operations. Each team consists of one public health nurse and her assistant, one insect collector and one laboratory technician/microscopist. Four malaria centres with laboratory and storage facilities are established as field stations for these teams respectively in Tripoli for North Lebanon, Saida for South Lebanon, Zahle for the Beqaa area and Beirut for Mount Lebanon, the latter centre being located within the premises of the headquarters of the Malaria Eradication Office. The four survey teams hold regular working conferences on Monday and Saturday of each week at the Beirut headquarters where they report on their findings, exchange views on the surveys done during the previous week in their respective areas and agree on the plans for future operations. It is expected that these teams will be able to accomplish during 1957 the 50,000 spleen and blood examinations set for them as a yearly target.

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6. Some progress has been achieved during 1956 and 1957 in the way of orienting the activities of the teams referred to above towards a beginning of surveillance work. In fact, while making the best use of the malaria notification system, which is still in its early phase of implementation, the survey teams endeavour to detect and examine all suspicious cases with their own means and through contacts with district medical officers, private practitioners, school teachers and "mukhtars" (village mayors). For any microscopically confirmed positive case, the age of the patient and other pertinent data are recorded, and extensive enquiries are made with a view to establish if the infection is autochthonous or imported, and if it falls within the primary or secondary categories. Entomological investigations are also undertaken in the area concerned to determine if the disease was transmitted by a local vector. At the same time, anti-malarial drugs are administered to the patient or patients whose progress towards recovery is kept under close observation.

7. Although the basic elements for an epidemiological control set-up are taking shape in the country, as could be seen from the above paragraph, there is still ample room for the consolidation of these elements and for their integration into a well organized surveillance system. Actually, since Lebanon is getting very close to the point of eradicating the disease, the Government is now keen to see such a system firmly established at an early date. Tangible progress in this direction is anticipated for 1958, when a WHO assessment team will visit the country with a view to helping in the setting up of an efficient surveillance administration, and in determining the areas where protection operations ought to be discontinued in the future.

