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DEVELOPMENT OF ARID LAND

Report by the Secretary-General on the Activities of the United Nations and the Specialized Agencies

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INTRODUCTION

1. The present report is being submitted in response to resolution 402(V) of the fifth session of the General Assembly, adopted on 20 November 1951:

"The General Assembly,

Considering that:

(a) One of the basic reasons for the low standard of living in certain under-developed countries is the inadequate extent of the areas at present under cultivation,

(b) The continual increase in the populations of these countries requires the adoption of appropriate and urgent measures for the development of their resources,

(c) It is essential in the above circumstances, if the equitable distribution of land is to be promoted and the standard of living raised, that, among other measures, the areas at present under cultivation be increased by the development of arid zones,

(d) The Economic and Social Council, in resolution 324 D(XI) of 9 August 1950, has recommended an intensification of scientific research to promote the economic and social progress of mankind and has recognized the necessity for co-ordinating the efforts of the various competent bodies of the United Nations and the specialized agencies in order to study the problems of the arid zones both in their scientific and in their practical aspects.

1. Recommends that the Secretary-General prepare, in collaboration with the competent specialized agencies, a report on the practical measures adopted for the study of the problems of arid zones and on the technical and financial means employed by the specialized agencies for this purpose;

2. Invites the Secretary-General to submit his report on this matter not later than to the fourteenth session of the Economic and Social Council;

3. Calls upon the Economic and Social Council to examine the report and, with a view to facilitating and encouraging the development of arid land, to consider such measures as:

(a) Devoting sufficient technical and financial means to the study of the relevant scientific and practical problems;

(b) Promoting and co-ordinating the activities of the United Nations and the specialized agencies to that end;

/(c) Furnishing

- (c) Furnishing appropriate technical assistance to the governments concerned."

2. This report also takes into account the following request contained in resolution 346(XII) of the twelfth session of the Economic and Social Council, which

"Requests the Secretary-General to take into consideration in preparing this report, the entire field of water control and utilization as it is related to the problem of arid zones ..."

3. The principal sources of information for the preparation of this report are the official documents^{1/} of the United Nations and of its specialized agencies. These documents include: (a) resolutions adopted by the various bodies of these organizations,^{2/} together with the related budget provision; (b) annual reports and progress reports on their work; (c) reports of the various councils and their subsidiary organs, reports and studies by groups of experts or survey missions; and (d) official records of meetings and proceedings of scientific conferences. An additional source of information were the statements^{3/} submitted by a number of the specialized agencies for use by the Secretary-General in preparing the report on "International Action with regard to Water Control and Utilization" in response to the request contained in resolution 346(XII).

4. The specialized agencies concerned have reviewed a preliminary draft of the present report and their comments and suggestions have been taken into account.

- 1/ A list of official documents issued by the United Nations and the specialized agencies concerning the problem of arid zones appears in annex A.
- 2/ The texts of the resolutions adopted by the principal bodies of the United Nations and the specialized agencies relating to problems of arid zone research appear in annex B of this report.
- 3/ See annex C of document E/2205 for texts of these statements.

/Occurrence of

Occurrence of Arid Zones

5. There is no universally accepted definition of arid zones, nor agreement as to their precise location. Such terms as "desert", "semi-desert", "absolute desert", "extreme desert", "true desert", "hot desert", "cold desert", have been given different meanings by various authors.

6. A set of homoclimatic maps of the arid zones of the world commissioned by the United Nations Educational, Scientific and Cultural Organization under its arid zone research programme,^{1/} were presented with the following explanation of the classifications employed:

"It is recognized that selection of a climatic classification is affected by the intended use. A system to be used primarily for studying human health problems, for example, might stress atmospheric humidity and temperature. The present classification is oriented toward agricultural potentialities: rainfall and temperature are of outstanding importance. Because of the correlation of other factors with rainfall and temperature, it is believed that this classification will also serve for 'general' purposes.

"In the present study, the dry climates are divided first into arid and semi-arid ("A" and "S" on the maps) corresponding to desert and steppe of many authors. Culturally, the arid areas are those in which the rainfall on a given piece of land is not adequate for crop production. In the semi-arid lands, rainfall is sufficient for certain types of crops, and grass is an important element of the natural vegetation unless overgrazing has replaced it with brush." 2/

7. These maps show that the arid areas of the world occur in five great dry provinces: the North African-Eurasian, North American, the South African, the Australian and the South American.^{3/} These are briefly described in this study as follows:

"The North Africa-Eurasia dry province is larger than all the remaining dry areas of the world combined. It includes the

1/ For a reproduction of these maps see the addendum to this report (E/2191/Add.1).

2/ "World Distribution of Arid and Semi-Arid Homoclimates" by Peveril Meigs, UNESCO document NS/AZ/37, page 2. See this document for further details regarding the definitions and methods employed in preparing the maps, including definitions of "extreme arid", "arid", "semi-arid" homoclimates.

3/ Ibid, pages 6 and 7.

world's largest desert, the Sahara, and a series of other hot deserts and semi-arid areas, continuing eastward through the Arabian Peninsula and along the Persian Gulf to Pakistan and India. To the north lie the mild or cool summer-dry areas of the Mediterranean coast and Iran, while farther northward and eastward lie the vast deserts and steppes of the U.S.S.R., Chinese Turkestan, and Mongolia, with subfreezing winters and warm or hot summers. To the south is the semi-arid tropical belt of the Sahel, which here agrees well with the Sahelo Soudanais area of Aubreville. The East African offshoot includes the intensely hot lowlands of the 'horn' area (Lugh Ferrandi, in Italian Somaliland, has the highest mean annual temperatures of any weather station in the world), and the somewhat cooler uplands.

"The South African dry province consists chiefly of the narrow elongated coastal desert of the Namib and Luanda, the Karoo and Kalahari desert and steppe uplands.

"The North American dry province resembles the North Africa-Eurasia province in variety of sub-division types, though the sub-divisions are much smaller in America. Dry upland areas analogous to those of Iran, Turkestan, and upland Arabia make up much of the province in the United States and Mexico, leaving only a small area bordering the Gulf of California and its northward extension in California and Arizona to compare with the hot Saharan climate. The Great Plains of the United States and Canada find their climatic analogues in the Russian steppes.

"The South American dry province is confined to an attenuated strip resulting from the form of the continent and the existence of the Andean barrier along the west coast. The world's driest desert borders the west coast almost to the equator. In the south, the eastern side of the continent, Argentine Patagonia, is dry. In the central Andean plateaus a chilly upland desert region forms a link between the western and eastern dry lands. Along the northern coast of Venezuela and the neighbouring islands of Curacao, and in the Caatinga area of eastern Brazil, there are small semi-arid and even genuinely arid tropical areas in about the latitude of Somaliland.

"The Australian dry province occupies the entire continent except for a small fringe. Hot climates prevail in the northern half of the province, mild climates in the south, with cool winters appearing in southern uplands."

8. The countries and territories listed below are those reported on the homoclimatic maps as possessing arid homoclimates. They are grouped in this list according to the proportion of arid land to total land area. Groups I and II list countries in which extreme arid and semi-arid land together comprise more than one-third of the total land area. Groups III, IV, and V contain countries in which extreme arid and arid land together comprise less than

/one-third

one-third of total area and in which semi-arid land has also been taken into account.^{1/}

Group I. Extreme Arid and Arid Comprise 67 per cent or more of total area:

Spanish North Africa, Egypt, Libya, Aden, Kuwait, Oman, Saudi Arabia, Yemen, Pakistan, French North Africa, Iraq and Jordan.

Group II. Extreme Arid and Arid Comprise from 33 to 66 per cent of total area:

Somaliland, Iran, Israel, French West Africa, Anglo-Egyptian Sudan, South West Africa, Afghanistan, Eritrea, Australia, and Chile.

Group III. Extreme Arid, Arid and Semi-Arid Comprise 33 per cent or more of total area (in addition to Groups I and II):

Syria, Bechuanaland, Ethiopia, Kenya, Mongolia, Union of South Africa, Argentina, Mexico, French Equatorial Africa, India, China, Turkey, and United States.

Group IV. Extreme Arid, Arid and Semi-Arid Total from 10 to 32 per cent:

Spain, Bolivia, Nigeria, Angola, Tanganyika, U.S.S.R., Madagascar, Peru, and Mozambique.

Group V. Extreme Arid, Arid and Semi-Arid Total under 10 per cent:

Southern Rhodesia, Brazil, Cameroons, Canada, Greece, Italy, Lebanon, Dominican Republic, Haiti, Puerto Rico, Venezuela, Gold Coast, English and French Togoland, and Dahomey.

9. Although every geographic area possesses its particular set of natural conditions, including climate, topography and soil, water, and mineral resources which provide particular opportunities and create special problems for its economic development, the development of arid areas involves one common problem: the deficiency in water supplies. Without water, neither population, agriculture nor industry can survive and therefore scarcity of water imposes serious limitations upon economic development. In some arid areas the problem is to protect the population against drought and to plan the best use of limited water. In other territories which contain no water supplies the problem is to find water and make the area habitable.

10. Many methods have been used over the centuries to increase water supplies. Water works have ranged from well drilling, water spreading devices and cistern building to the diversion of large rivers and the construction of

^{1/} Countries are grouped in descending order of magnitude of percentages, according to estimates furnished by Dr. Beveril Meigs, author of the maps contained in E/2191/Add.1.

vast storage dams. Today, some 80 million hectares of otherwise uncultivable land are being irrigated; notably in Asia these furnish the principal food supplies for many millions of families.

11. The nomadic peoples represent an adjustment to certain arid areas, under which the meagre vegetation brought by rain is successively followed and eaten over. Another approach to the problem of the water shortages is to reduce the requirements of water for agricultural production and for other purposes. Careful selection of species and breeding experiments have yielded plants which need little water. Biological and agricultural research can help to condition soils, maintain fertility, prevent erosion, and limit the salinity of soils which frequently increases under irrigation. Breeding of suitable strains of livestock and the control of grazing are also of importance.

12. The development of energy resources may be second only in importance to meeting the deficiency in water supplies and closely related to the latter, since irrigation, whether from surface or ground water, frequently requires power consumption for pumping water. The harnessing of rivers for irrigation purposes may often, though not always, be accompanied by the harnessing of the same stream for the generation of electric power, a portion of which, in turn, may be employed for driving irrigation pumps. Where hydro-electric power is not available, mineral fuels, such as the petroleum of the Middle East, may be used to provide power for irrigation, as well as for other energy applications. In the absence of other energy resources, wind and solar energy could be used. Interest in the exploitation of these heretofore little used energy sources has been increasing. Their exploitation frequently is favoured by the climatic conditions of arid areas and they are, unlike minerals, inexhaustible.

13. Not only the provision of water, food and energy supplies, but also of building materials, transport facilities and other supplies and facilities essential to economic development may present special difficulties in particular arid zones. These additional problems, although their solution is important, are not, however, universal for arid zones.

14. The efforts to overcome the difficulties involved in the development of arid land - whether in the form of practical projects, scientific research, the study of basic techniques or the assembly of basic data - have, in the past, been made principally at the national or local level, by both public and private organizations. They have resulted in substantial achievements and the accumulation, on the part of individual countries, research institutions, and operating agencies, of invaluable experience and information. No internationally co-ordinated programme, however, has been followed.

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PRINCIPAL ACTIVITIES OF THE UNITED NATIONS
AND SPECIALIZED AGENCIES

15. The problems of the development of arid land are dealt with by the United Nations and the specialized agencies under a number of regular programmes and the Expanded Technical Assistance Programme, although there are few projects which are directed solely to problems of arid zones. Many of the programmes for economic development, improvement of agriculture, health, and the co-ordination and promotion of scientific research and of education include activities directed towards the development of arid zones. The most important relevant programmes are summarized under each agency. This summary is followed by a more detailed country-by-country description of the agencies' activities under the Expanded Technical Assistance Programmes. In this description an effort was made to overcome so far as possible the difficulty involved in isolating the relevant projects and measures from the context of the broader programmes of which they form a part.

United Nations

16. The Scientific Conference on the Conservation and Utilization of Resources, organized by the United Nations in co-operation with a number of specialized agencies, dealt with a number of problems encountered specifically in the development of arid and semi-arid regions. These related to irrigation, groundwater supplies, windpower, dew estimation, artificial rain, soil erosion, soil conservation and plants adapted to semi-arid regions. Other papers dealt with the general but related problems of appraisal of resources such as control, conservation and utilization of water; comprehensive river basin development; and soil conservation and improvement of soil productivity.^{1/}

17. The Economic Survey Mission for the Middle East,^{2/} because of the

1/ This Conference was held at Lake Success during the period from 17 August to 6 September 1949 and the proceedings are being published as E/Conf.7/7. A large number of the papers submitted in connexion with the Conference contain information relating to the development of arid land. A full list of papers considered at the Conference is available in E/Conf.7/7/Add.1.

2/ This mission was established on 23 August 1949 by the Conciliation Commission for Palestine pursuant to paragraphs 10, 11 and 12 of General Assembly resolution 194 (III) of 11 December 1948. The purpose of the mission was to examine economic conditions in the Middle East, and to make recommendations for action to meet the dislocation caused by hostilities. The countries covered by the mission were Arab Palestine, Iraq, Israel, Jordan, Lebanon and Syria.

predominance of phenomena associated with arid land in this area, dealt at some length with arid zone development, setting forth the limitations which were encountered and making a number of recommendations concerning the development of land and husbandry of water. The mission also reviewed one hundred development projects envisaged by the governments of that area and after a field survey and discussion of the problems with experts and officials of each country, recommended four pilot demonstration projects: the Wadi Zerqa project in Jordan, the Wadi Qilt Project in Arab Palestine, the Litani River investigation project in Lebanon and the Ghab Valley project in Syria. Of these projects, three are directly related to river valley development in arid areas and the fourth, in Syria, to swamp drainage. Much of the experience gained and the scientific and statistical data gathered in executing such projects, the Mission pointed out, would be of assistance in putting into effect techniques for the development of similar lands in the Middle East.

18. Among the works projects of United Nations Relief and Works Agency for Palestine Refugees in the Near East^{1/} are some which are closely connected with the problem of arid zones. For example, under the works projects programme authorized by General Assembly Resolution 302(IV), some \$272,320 were spent on a programme of afforestation and soil conservation, covering approximately 4,031 hectares of semi-arid and rocky land in Syria, Jordan and to a lesser extent in Lebanon. This also included the construction and improvement of forest roads and the building of check dams across creeks. By the end of February 1952, a total of 100,000 seedlings grown in the UNRWAPRNE nursery had been handed over at various times to the Lebanon Government for afforestation in the mountain area near the Cedars and another 94,000 seedlings remained in the nursery at the time of the take over by the Government. This public works programme was halted towards the middle of 1951 and its place was taken by a programme of works leading towards reintegration, authorized by General Assembly Resolution 393(V). With this end in view, the Agency has constantly explored the possibilities of bringing into use new land on the fringe of cultivation, or of increasing the absorptive capacity of existing agricultural areas. Those in the Near East turn on the question of water. Two large scale

^{1/} Created by General Assembly resolution 302(IV) to take over the work of the United Nations Relief for Palestine Refugees and to transform the existing programme of direct relief into programmes of work projects, following the recommendations of the Economic Survey Mission for the Middle East (General Assembly Official Records: Sixth Session Supplement No. 16 A/1905 and Add.1)

water resources surveys have been undertaken in the Shera'a, an arid region in South Jordan, and in the Sinai Desert.^{1/} No water has been found to date in the former region, although the survey is still in progress; while the latter operation has recently been abandoned, as none of the thirteen boreholes sunk yielded anything but very small quantities of brackish water. Exploratory drilling for water has also been carried out in the Jordan Valley and 16 boreholes were sunk but only at one spot has fresh water been found; two wells have been sunk there and it is hoped to settle a number of families. A good supply of sweet water has also been found at Azrak in Jordan, some 60 miles due east of Amman. Other preliminary researches, surveys and analyses are continuously in progress.

19. The missions sent by the United Nations to review conditions in Trust Territories encountered problems of arid land development in the visits to Tanganyika in 1948 and 1951 to Somaliland under Italian Administration in 1951 and the visits to the four Cameroons and Togoland Trust Territories in 1949. All of these territories in Africa include arid or semi arid land and the problems of these areas were included in the on-the-spot surveys of economic and social conditions. For example, the mission to Tanganyika in 1948 noted in its report the generally poor and primitive nature of peasant agriculture. The mission, while appreciating the vast and complex problems facing the Administration of Tanganyika in its attempt to open new land and to improve conditions in present areas, through anti-erosion measures, provision of water supplies, etc., felt that more technicians and facilities could be made available to intensify the agricultural development of these territories.^{2/} The Visiting mission to the Trust Territory of the Cameroons under British Administration during its survey

^{1/} Ibid. The Director and Advisory Commission of UNRWAPRNE in a special report to the General Assembly in November 1951 proposed a three-year re-integration programme which would require \$200 million, half of which sum would be used for agricultural projects on arid land which would be mainly irrigated and would provide for 50,000 families. Another substantial part of the expenditure would be used to settle families on partly irrigated and partly rain-fed land.

^{2/} Trusteeship Council, Official Records, Fourth Session, Supplement 3, page 24. The needs for development of arid lands as well as other resources in Tanganyika were brought out by the report of the Secretariat on The Population of Tanganyika (Document St/SGA/Series A. No. 2, Rev.1). In that report the trends of population in the Territory were examined in relation to the areas of cultivated and potentially cultivable land and to the technical and other problems of improving agricultural output. A similar report on the population of Ruanda-Urundi is in preparation.

in 1949 noted the possibilities of expanding the growing season in the semi-arid Dikwa division in the far north of the territory through irrigation. In spite of the shortness of the growing season, the area is already self-sufficient, but it is reported that if ground water sources for irrigation could be found, an enormous increase in production would be possible.^{1/}

20. Other problems of arid land development in the Trust Territories are considered by the Trusteeship Council in its examination of the annual reports from Trust Territories and in its consideration of petitions. The Trusteeship Council's Committee on Rural Economic Development of the Trust Territories, established in accordance with General Assembly Resolution 438(V), is now engaged in a study of land problems, including land utilization.

21. In the administration of Libya before its establishment as an independent state, the United Nations was concerned with the development of a country which has no rivers and consists almost entirely of arid land. In addition to providing general guidance on its development the United Nations and the specialized agencies helped arrange for a number of types of aid under the Technical Assistance Programme.

22. Under the Technical Assistance Programme the United Nations has extended facilities to a number of countries with arid areas to meet such specific problems as location or appraisal of water resources as well as to provide more general economic or technical guidance. (See paragraphs 48 to 61, especially 49).

23. The problems of development of arid land are also considered in connexion with various studies undertaken by the United Nations in economic and social fields. For example, the Secretariat is examining the demographic aspects of the problems of arid zones, as a part of the studies of relationships between population trends and social and economic factors, which were recommended by the Population Commission. These studies provide the basis for estimating the prospective increases of population in those areas where aridity at present hinders the extension of agriculture, and thus for arriving at quantitative evaluations of the needs for development of arid lands in different parts of the world.

United Nations Educational, Scientific and Cultural Organization

24. The Arid Zone Programme of UNESCO functions primarily within the scientific field and had its origins in the consideration of a proposal to establish a comprehensive system of international research laboratories under the United Nations. The Director-General of UNESCO, in a report on the question

1/ Trusteeship Council, Official Records, Seventh Session, Supplement 2, page 34.

2/ See paragraph 57.

of United Nations Research Laboratories and Observatories dated 20 February 1947 suggested that comprehensive international laboratories for the arid zone should be established as part of a United Nations system of international laboratories.^{1/} The International Union of Theoretical and Applied Mechanics, in a letter from its President on 17 October 1947 stated that it would welcome the establishment of an "Arid Zone Research Laboratory for Fluid and Soil Mechanics".^{2/} The General Conference of UNESCO, at its third session in December 1948, adopted a resolution proposed by the Indian Delegation which instructed the Director-General of UNESCO to investigate these proposals.^{3/}

25. During the United Nations Scientific Conference on the Conservation and Utilization of Resources, UNESCO formed an Informal Arid Zone Group composed of experts in the field from seven countries, namely: Belgium, Egypt, France, Mexico, Saudi Arabia, United Kingdom and USA. A meeting of the group was held at Lake Success on 21 September 1949 and was attended by representatives of the United Nations and FAO. The Group studied the three communications received by UNESCO from the International Union of Biological Sciences,^{4/} the International Union of Geodesy and Geophysics,^{5/} and the International Union of Theoretical and Applied Mechanics,^{6/} respectively. The Study Group recommended in its report^{7/} the establishment of an international body dealing with the arid zone problems and outlined a possible structure. The subjects for study by that international body would include the following: (a) Compilation and classification of existing information; (b) Soil science studies, especially on non-alluvial soils; (c) Studies of plants found in arid regions; (d) Absorption by certain plants of moisture from the atmosphere and the availability of water from the capture of dew; (e) Establishment of meteorological stations in

1/ United Nations Publication No. 1949 IV.1, p.44.

2/ United Nations Publication No. 1949 IV.1, p.137.

3/ UNESCO Publication 252, Resolutions 3.71, 3.72.

4/ UNESCO/NS/IIAZ/1

5/ UNESCO/NS/IIAZ/2

6/ UNESCO/NS/IIAZ/3

7/ UNESCO/NS/IIAZ/4

desert regions; (f) Conservation and utilization of available water supplies; (g) History of deserts based on the work of anthropologists, geomorphologists, paleontologists and geologists; (h) Wind erosion and dune control studies; (i) Wind and solar energy studies; (j) Studies of human physiological problems in arid regions; (k) Need for accurate maps of arid regions; (l) Problems of applying to arid regions agricultural methods found suitable under other conditions (problems of transfer of techniques).

26. In December 1949 a committee of experts was convened in Paris to make detailed proposals for a UNESCO Arid Zone Programme. The Committee was of the opinion that the time was not ripe to create an International Institute of the Arid Zone, and recommended instead the setting up of an Arid Zone Research Council. The recommendations of this Committee were sent to Member States for comment, and in accordance with these recommendations and comments an Interim International Arid Zone Research Council was convened in Paris in November 1950. The seven members of this Council were selected by the Director-General from nominations received from the Governments of India, Israel, Egypt, France, the United Kingdom, the United States of America and Mexico. The present UNESCO Arid Zone Programme was drawn up by this Interim Council^{1/} and was put into operation immediately following its meeting. This completed its work.

27. A standing Advisory Committee on Arid Zone Research, composed of seven members from the same seven countries, was set up by the Director-General and held its first session at Algiers in April 1951.^{2/} The second session of the Advisory Committee was held in Paris in September 1951. The United Nations, the specialized agencies concerned, and interested international scientific non-governmental organizations were represented both at the meeting of the Interim Council in November 1950 and the first and second sessions of the Advisory Committee in 1951, and these bodies will be invited to send representatives to all future sessions of the Advisory Committee. At the third session, which is being held in Turkey in April 1952, members from Australia and Peru are being added to the Committee.

28. The purpose of the UNESCO Arid Zone Programme which is being carried out under the guidance of the Advisory Committee is to provide assistance to scientific research for the solution of arid zone problems through:

(a) dissemination of scientific knowledge; (b) dissemination of information of research institutions and workers and on research in progress; (c) limited

^{1/} Document UNESCO/NS/83.

^{2/} Document UNESCO/NS/85.

financial aid to specific research and development projects; (d) provisions of advisory services upon request.

29. The Committee has studied a detailed programme for the coming two years and reviewed a number of research projects for which UNESCO might give financial support.^{1/} It established plans for special studies and symposia and recommended the establishment by UNESCO of a number of international panels of honorary consultants for the principal fields of arid zone research. The first steps entail the formation of four panels for: (a) hydrology and hydro-geology; (b) biology; and (c) climatology; and (d) energy resources and use.

30. The Committee has taken the view that the development of UNESCO work on Arid Zone Research should be gradual so as to include one new subject at a time. The 1951 programme gave particular emphasis to hydrology. In 1952 studies on plant ecology are being introduced. In 1953 the programme will include "Source and Use of Energy in Arid and Semi-Arid Regions with Special reference to Wind and Solar Energy"; in 1954 it will be extended to include the "Ecology of Man and Animals in Arid Zones". If more funds are available, the following four other subjects will be covered; (a) evolution of arid areas in the past and present; (b) utilization of salt water; (c) utilization of dew; and (d) artificial rain.

31. As one of its first activities under the Arid Zone Programme, UNESCO, in 1950, commissioned an expert for the preparation of the maps on world distribution of arid and semi-arid homoclimates reproduced in this report. Also in 1950, UNESCO commissioned eight hydrologists to review the research carried out in selected arid and semi-arid regions of the world on hydrology, especially on problems of underground water and fluid mechanics. Their reports, on the basis of available literature, completed in 1951 and in process of publication in 1952, contain an extensive bibliography. These reports will serve as background information for the symposium on the arid zone hydrology, with special reference to underground water (see paragraph 33). Other studies being assisted under the Arid Zone Programme include a world land-use survey which is being carried out by the International Geographical Union; a study of the underground flow of Wadi-Saoura between Abadla and Kerzaz by the Saharan Research Centre, Seni-Abbes; an investigation of the mechanics of underground water movements in calcareous mountains by the Research Council of Israel; and

/publication of

publication of a study of the flora of Djebel Druze in Lebanon by Rev. Paul Mousterde of Beirut.

32. Under its Arid Zone Programme, UNESCO has joined in sponsoring and supporting a number of conferences and symposia on various scientific problems connected with arid zones. UNESCO has usually subsidized these to the extent of assisting in the publication of proceedings. The meetings which have been supported to date include:

A symposium on the ecological foundations of the regeneration of vegetation in arid zones arranged in connexion with the International Botanical Congress in 1950.

A symposium on the effects of wind evaporation phenomena and surface hydrology in arid regions arranged by the Centre National de la Recherche Scientifique held at Algiers in April 1951 in conjunction with the first session of the Advisory Committee on Arid Zone Research.

A symposium on zoogeography of the Middle East, sponsored by the Turkish Society of Physical and Natural Sciences, held at Istanbul in July 1951.

A symposium on the hydrology of flood, water deficiency areas and arid zones and influences affecting the extent and character of world snow and ice fields was held in August 1951 in connexion with the general assembly of the International Union of Geodesy and Geophysics.

33. Arrangements have been made to support the following three conferences during 1952:

A conference on biology and productivity of hot and cold deserts to be held in London and to be arranged by the Institute of Biology of the United Kingdom.

A symposium on arid zone hydrology with special reference to underground water jointly sponsored by UNESCO and the Government of Turkey to be held in Ankara in conjunction with the third session of the Advisory Committee on Arid Zone Research.

A symposium on the scientific aspects of land utilization to be held in March 1952 in Pakistan and to be arranged by the Pakistan Association for the Advancement of Science.

A symposium on desert research to be held in Jerusalem which is being arranged by the Government of Israel.

34. The following additional symposia are expected to be supported during the years 1953 and 1954:

A symposium on plant ecology of the arid zones to be convened jointly by UNESCO and a government of a Latin American country in 1953.

A symposium on wind and solar energy in the arid zones to be convened jointly by UNESCO and a government of a South Asia country.

35. UNESCO is also associating with its Arid Zone Programme selected research centres dealing with the problems of arid zones and encourages them to accept visiting scientists and fellowship holders from other countries, to exchange their personnel, and to co-ordinate their activities. A survey of institutions carrying out research on arid zone problems and a more detailed survey of institutions, scientists and engineers working on arid zone hydrology is being undertaken by means of questionnaires. Directories of arid zone research institutions and their principal research staffs based on these surveys will be published. A list of research projects falling within a co-ordinated programme of fundamental arid zone research is being compiled with a view to giving financial and other assistance to approved institutions in carrying out these projects.

36. Under the exchange programme, UNESCO awarded two fellowships in 1950 for studies of problems related to arid zones, and similar fellowships are being awarded each year. In its mass communication activities and fundamental education programmes, UNESCO is directing attention to problems of arid zones. Under its general support of scientific activities and scientific organizations, it is promoting co-operation among various scientific organizations such as the International Union of Geodesy and Geophysics which are concerned with fundamental aspects of water.

Food and Agriculture Organization

37. The FAO in its report "FAO Activities in the Broad Field of Water Control and Utilization"^{1/} makes the following statement with reference to the organization's interest in the development of arid land:

"Agricultural development in arid zones is, of course, a part of FAO regular activities. The discovery and efficient use of water supplies in arid regions is a primary concern of FAO and all requests of Member Governments for assistance in such developments are met by FAO. Several FAO experts are working on water supplies for agriculture in Iran and Syria and it is

^{1/} FAO/51/10/300. Most of this report is reproduced in Doc. E/2205.

anticipated that other countries will request assistance as a result of a forthcoming visit of an FAO officer in other Near East countries. The Sub-Commission on Mediterranean problems of the European Forestry Commission, at its last session in Algiers in 1950, gave particular attention to the problem of water utilization in arid countries. It studied the possibilities afforded by modern methods of economical soil storage of water and moisture, not only for facilitating afforestation, but also for relieving the forest from the pressure of grazing and shifting cultivation by the establishment of improved pastures or orchards and the reclamation of agricultural lands. Since FAO activities in relation to water extend to all regions and to all its production activities, FAO is represented at the meetings of the "UNESCO Advisory Committee on Arid Zone Research".

38. This report notes that special studies are being made by FAO on subjects such as tapping underground water, storage of surface and underground water and irrigation development. All are of the utmost importance to the solution of arid zone problems. To assist in promoting the correct utilization and conservation of land and water resources, and to resolve conflicts in the use of land and water within countries, the Fifth Annual Conference of FAO made two recommendations, one requesting Member Governments to examine their legal powers and administrative machinery and, if necessary, to seek further powers and the second, instructing the Food and Agriculture Organization: (a) to provide, on request, assistance to governments in carrying out of this work; and (b) to promote inter-governmental consideration of problems in this field which affected more than one country. The reports that the governments having arid zones will present to FAO under this resolution will undoubtedly contain information concerning their arid land.

39. Among the missions FAO has sent to carry out agricultural surveys, one, composed of three experts, was sent to the Middle East countries, which have large arid areas. The group of experts visited Egypt, Iraq, Lebanon and Syria to consult on irrigation, drainage and alkali problems in connexion with potential irrigation schemes or schemes already established. They outlined irrigation, drainage and salt land reclamation projects which would greatly increase agricultural production in each country. Following the work of this group, Egypt sent three engineers to the USA in 1949 to study, under the guidance of FAO, the advanced techniques and modern equipment used in such projects.

40. Under its regular programme, FAO organized training centres and training courses designed to promote better water utilization in various regions

/of the world.

of the world. The centre which was organized in the Middle East included a course on project development and was of benefit to countries having arid regions. It is expected that training centres on the efficient use of water in agriculture may also be arranged in 1952.

41. Advisory assistance on agricultural development has been given by FAO at the request of a number of governments which have arid land in their territories. In this connexion, mention should be made of the irrigation and drainage experts sent by FAO to Pakistan to advise that country on the development of water resources, including underground water resources. Further information on FAO activities in this field are described in the section of the Expanded Technical Assistance Programme.^{1/}

42. The FAO has prepared and published technical studies concerning land and water problems related to agricultural development. The following deal with some aspects of the problem of the development of arid land; Soil Conservation - An International Study; Water Laws of USA; Essential Considerations in Irrigation Development; and Essential Considerations for Development of Underground Water Resources. Other FAO documents of interest in relation to arid zone problems are listed in Annex A.

World Health Organization

43. The seventh session of the Executive Board of the World Health Organization considered on 24 January 1951 the General Assembly's resolution 402(V) on the development of arid land together with the UNESCO programme on arid zone research.^{2/} It was noted that while the development of arid land was primarily the concern of the United Nations and of UNESCO, certain aspects of the problem, such as the movement of population, the production of food, the prevalence of malaria and other conditions due to irrigation systems, were connected with health. The WHO would therefore be consulted and be asked to provide technical experts to advise on the health aspect of the projects. The Executive Board pledged its support to UNESCO in accomplishing its task in this field and emphasized the importance of adequate health measures in developing arid zones.

44. The Fourth World Health Assembly considered on 24 May 1951 the question of arid zones and noted^{3/} the General Assembly Resolution 402(V) together with

^{1/} Beginning with paragraph 48.

^{2/} WHO: EB7/Min./4.Rev.1, p.13.

^{3/} E/2020/Add.5, page 20, WHO A4/244.

ECOSOC resolution 346(XII) on water control and utilization. The Assembly recommended to Governments of Member States of WHO that plans for the control or utilization of water and the development of arid land should be so framed as to include measures to prevent the introduction or aggravation of disease. The Director-General of the Organization was requested to provide technical assistance in this respect to Governments on request and to co-operate with the United Nations and other specialized agencies concerned with such projects.^{1/}

World Meteorological Organization

45. At the First Congress of the World Meteorological Organization^{2/} which was held in Paris March-April 1951 the WMO noted the General Assembly's resolution 402(V) on the development of arid land, the ECOSOC resolution on water control and utilization and the UNESCO programme on arid zone research. The Congress directed the Executive Committee of the WMO to keep informed on programmes in this field and to provide advice on meteorological problems connected with the programmes as required by the United Nations and the specialized agencies concerned.^{3/} The Executive Committee, in its Meeting in October, 1951, passed Resolution No. 17 (EC-11) which noted the activities being conducted in Arid Zone Research, and decided that the WMO's participation in this activity fell largely within the responsibility of the Commission for Agricultural Meteorology. The President of that Commission has therefore been requested to accept the responsibility for WMO arid zone activity, including examination and evaluation of the homoclimatic maps received from the Advisory Committee on Arid Zone Research.

^{1/} See in this connexion Annex B.3 which includes a summary of the recommendations made with regard to bilharziasis by the Joint OIHP/WHO study Group on Bilharziasis in Africa. The spreading of malaria, like bilharziasis, is a hazard of irrigation schemes. Today it is easier to prevent malaria than it was heretofore. The policy of WHO is not to discourage undertakings but to arrange that steps be taken in time to prevent malaria hazards when irrigation schemes are being established. Haiti, Iran, Pakistan and Saudi Arabia, which are receiving technical assistance for irrigation, are also receiving guidance from WHO as to the control of malaria.

^{2/} The WMO is a successor organization to the International Meteorological Organization which was established in 1878. The members of this organization were the directors of meteorological services in various countries and territories throughout the world. The organization has played an important part in developing the basic meteorological data for arid and semi-arid areas which are essential for many types of scientific study of their problems.

^{3/} WMO resolution 13(I).

International Bank for Reconstruction and Development

46. The Bank has granted several loans listed below to help finance practical projects for the development of arid and semi-arid areas.

In 1950 a loan of \$12,800,000 was granted to Iraq, a country possessing large semi-arid regions, for the construction of a dam across the Tigris River which will direct excess flood water to the unpopulated and arid depression of the Wadi Thartar.^{1/}

The Bank authorized a loan on October 11, 1951, of \$10,000,000 to assist in the financing of the ten-year plan for the development of the southern part of Italy. The total plan anticipates the expenditure of the equivalent of \$1,600,000,000, nearly one-half of which is to be devoted to reclamation and irrigation of land along the coast and in the river valleys, to reforestation of mountain areas and to farm improvements.

In 1950 the Bank approved a loan of \$18,500,000 to the Government of India to assist the development of the Damodar River Valley. This is a comprehensive river basin development which includes flood control, power and irrigation. The largest part of the proceeds of the loan are to be used to purchase electrical equipment for generation of power, a portion of which will be used for irrigation purposes. Part of the loan will also be used for the water works connected with flood control and irrigation.^{2/}

In 1951 a loan of \$1,300,000 was made to Chile for the development of underground water resources. This project consists, first, of surveys and tests for the purpose of obtaining a reasonably accurate estimate of the amount of water which may be safely withdrawn from the alluvium of the Rio Elqui Valley for irrigation, and second, for the installation and placing into operation of permanent electric pumps for the wells which are likely to prove productive.^{3/}

47. In the case of all the above loans the Bank made preliminary investigations as to the economic and technical feasibility of the particular projects for which financial assistance was provided. Such surveys include some study of the problems of development of the particular arid area concerned.

1/ Loan Agreement No. 26 IRO. June 15/50.

2/ IBRD Sixth Annual Report 1950-1951, p.29.

3/ Loan Agreement No. 49 CH, 10 October 1951.

In addition the Bank has sent various missions to investigate requests for loans and to help Governments plan the development of their economic resources. While none of these missions has been concerned exclusively with problems of development of arid land, a number of them have been sent to countries in which extensive arid zones exist, and have included among other subjects problems of the development of arid land. Relevant missions other than those for projects already mentioned include those sent to Egypt, Iran, Lebanon, Pakistan, Peru, Syria and Turkey.

REVIEW OF ACTIVITIES UNDER THE EXPANDED TECHNICAL ASSISTANCE PROGRAMME.^{1/}

48. Under the Expanded Programme of Technical Assistance a large number of requests have been received, which though not all termed "arid zone" projects are directly concerned with the development of such areas. In the review of activities which follows, reference is made to such projects and also to a number of more general projects which include activities related to arid land development. The review does not cover the technical assistance programme of the International Bank for Reconstruction and Development as that programme is organized separately from the Expanded Technical Assistance Programme of the United Nations and has been reviewed in the preceding paragraphs. It should be noted, however, that the Bank has co-operated with a number of other organizations in joint projects and reference will be made below to such joint projects. The following summary of activities is made on the basis of countries alphabetically listed.

Afghanistan

49. In this predominantly arid country the problems of arid land development have thus far been considered in connexion with a number of projects such as the exploratory and comprehensive technical missions conducted jointly by the United Nations and FAO during 1950 and various projects for assistance to agriculture which at the end of 1951 employed the services of five experts. A project has recently been negotiated under which the United Nations is to furnish a team of four experts together with equipment to assist in appraising and developing the country's water resources. The Afghanistan Government has indicated that it desires the following: (1) Assistance in setting up a water division in the appropriate ministry to handle water resource.

^{1/} In preparing the present report extensive use was made of the Third Report of the Technical Assistance Board (Document E/2054) which covers the operation of the Expanded Technical Assistance Programme through the middle of 1951. The Fourth Report which covers activities through the end of 1951 and is being submitted to the fourteenth session of the Council was not then available. Nevertheless an effort was made to review in this section the most important pertinent activities carried out or negotiated since the middle of 1951. The review also covers the Technical Assistance Programme initiated in 1948 and financed by the regular budget of the United Nations.

investigations as a framework for continuing work in the bringing of the water resources of Afghanistan under a controlled and planned use; (2) Investigation by the team of a water supply for an oil drilling camp and the carrying out by the team of well drilling operations near the site of the first proposed oil well; (3) That the team work, in co-operation with FAO experts, on the location of water for stock on the plateau, unused at present; (4) That specific studies be made in the Helmand Valley and other valleys of possible underground water resources which can be used for water supply for villages, irrigation, and other purposes. A number of technical assistance experts had recommended that the development of the Helmand Valley be given high priority and that a development authority be established for this purpose.

Chile

50. The northern part of Chile includes extremely arid, arid, and semi-arid land, and the problem of their more effective use has been considered under agricultural assistance projects which included advice on the overall utilization of the country's agricultural resources. FAO, jointly with the Bank, in 1951 completed a comprehensive mission on agricultural development for which each organization furnished two experts. One of the results of this survey was the request for and the granting by the Bank of the loan to Chile for the development of its water resources which was noted above. As of the end of 1951, FAO had in operation a mission on agricultural problems under which six experts were authorized and four were in the field. This project included among other subjects consideration of problems of irrigation.

Egypt

51. The entire territory of Egypt falls into an arid zone and the greatest part of it is extremely arid. Projects in operation and approved projects deal with problems of economic development and agriculture, including rural agriculture, but none are specifically directed to the development of arid land. Under consideration is a request for a small team of experts to conduct a survey and advise on tapping under-ground potable water in the eastern desert. UNRWAPRNE in its concern with the settlement of refugees in the Sinai Peninsula employed a geophysicist and financed well boring without however developing any new sources of water.

Haiti

52. The development of the Artibonite Valley, an arid area, has become a focal point for technical assistance activities and the United Nations and a number of specialized agencies have been concerned with its economic and social development. In the arid Marbial Valley UNESCO has been carrying out a pilot project of fundamental education assisted by FAO in demonstrations of improved agricultural methods and agricultural extension work.

Iran

53. The technical assistance which has been furnished this country, the largest part of which is located in an arid zone, has included assistance furnished by FAO for a project on agricultural development which, among other subjects, considered problems of land and water utilization (nine experts) and the extension and improvement of irrigation. This latter problem will be dealt with more intensively under a recently authorized project which calls for the provision by FAO of eight experts and six fellowships. Two other pertinent projects are a survey of resource development, which was carried out by three experts provided by the United Nations, and guidance on the development and utilization of the country's forests, which is being provided through FAO by three experts and four fellowships. An approved project not yet in operation at the end of 1951, which will deal with specific techniques relevant to the development of arid land, is in response to a request to the United Nations for experts on problems of water supply and cartography.

Iraq

54. This country lies almost entirely in an arid zone and the development of its arid land has been one of the major concerns of the present Government. FAO, UNESCO and WHO joined with the Bank to undertake a general survey of the country's economic potentialities and to make recommendations as to the lines along which an appropriate development programme can be effected.^{1/} This survey has emphasized the importance of the use of arid land and made recommendations thereon. UNESCO's assistance to the programme of fundamental education in the Dujailaha Land and Developments Scheme is also pertinent.

^{1/} See also paragraphs 46 and 47.

FAO is assisting the Government in its development of new arid land being brought under cultivation by extension of irrigation systems and 12 experts are being supplied under signed agreements.

Israel

55. With the rapid expansion of population in recent years, the Government of Israel has been especially concerned with the development of the arid lands in the southern part of its territory. Two technical assistance projects specifically related to the development of arid land are the expert services being provided by the United Nations for the development of water resources and the support of wind power research by UNESCO. Under the first project, the services of four experts are authorized and one was in the field at the end of 1951; under the second project, one expert was in the field and one fellowship had been awarded. Also relevant to the development of Israel's arid land is a completed project by the United Nations dealing with soil mechanics. The creation of new farm settlements is dependent on a constant supply of irrigation water during the greatest part of the year and an FAO team of five experts includes specialists in engineering, hydrology, soil conservation, and water run-off control works. Eight fellowships are being provided.

Jordan

56. The Kingdom of Jordan lies entirely in the arid zone and much of its land is semi-desert. The technical assistance which is being rendered in Jordan is largely connected with the integration of refugees from Palestine into the social and economic life of the country. UNRWAPRNE has been instrumental in arranging for a variety of forms of technical assistance and an UNRWAPRNE adviser is assisting the Government's economic projects.

Libya

57. Under Resolution 397(V) and 398(V) of the General Assembly, the United Nations and the specialized agencies were called upon to render technical assistance to Libya during the transitional period prior to the establishment of the independent state. In accordance with these resolutions, a substantial programme of technical assistance was initiated for this country

/which lies

which lies entirely in an arid zone. A small exploratory mission of the United Nations has first examined the question of technical assistance for Libya in a systematic manner in July 1950 and laid the basis for the selection of specific projects to be undertaken. Two survey missions were provided by FAO, the first comprising six experts in agronomy, artesian wells, livestock and range management. Projects in operation at the end of 1951 provided for fifty experts, of which thirty-nine were in the field. These deal with a wide range of problems including the relevant subjects of hydro-geology, irrigation and agricultural investigation and improvement. Of outstanding importance for the present survey is the project to be undertaken by FAO for converting the Sidi-Mesri Agricultural Centre into a research station which will serve as a national centre for Libya and may eventually serve as an international centre for the study of arid zone problems. The expansion of the Sidi-Mesri station was studied by a joint FAO/UNESCO mission in the summer of 1951 and is being undertaken by the FAO. It is expected that the investigation and improvement of Libya's agriculture, including the Sidi-Mesri project, will require an expenditure of \$600,000 in 1952. A request has been made to UNESCO by the Government of Libya for a hydrological team to be attached to the Natural History Museum in Tripoli. Four experts with equipment are envisaged at a cost in the first year of approximately \$50,000. It is expected that the project will be started during 1952.

Pakistan

58. Virtually all of Western Pakistan lies in an arid zone and irrigation is required for all cultivated crops except wheat grown on small foothill areas. The channeling of the immense quantities of water available from the Himalaya Mountains for irrigation purposes has been practised for centuries. However, there remain in West Pakistan vast areas of dry arable land while great quantities of unused flood water are discharged into the sea. FAO has under way a very comprehensive programme of technical assistance of which that in respect of the improvement and expansion of irrigation accounts for a substantial part. For example, under a project already in operation, FAO is providing assistance on the general question of land and water utilization. Under an additional project, approved but not yet in operation,

FAO is to provide the services of nine experts who will be especially concerned with problems of water resources, irrigation, and drainage. One of the important specific problems that is to be dealt with is the deterioration of irrigated lands through water logging and the accumulation of salts. In East Pakistan where farming is dependent on flood control during the brief winter and on irrigation during eight months of the year, an FAO engineer has helped to develop plans for a large multi-purpose scheme for harnessing the Ganges and Brahma-putra Rivers for irrigation, hydro-electric power and inland water transport. UNESCO is providing assistance connected with the department of Meteorology including an expert to study cloud physics.

Saudi Arabia

59. Technical assistance which has been furnished by FAO has been almost entirely concerned with the development of this country's arid land, including problems connected with the efficient use of surface waters, irrigation and special agricultural techniques suitable to arid land. At the end of 1951 FAO had six experts in the field for these purposes. Under a new agreement FAO will provide nine experts including hydraulic and irrigation engineers, for the further development of underground water, flood control and irrigation.

Syria

60. The major FAO project now in operation provides for the services of ten experts, of which six are in the field, and for nine fellowships, of which five have been awarded. Among other problems it deals with the location of underground water, range improvement and soil classification, for the utilization of the semi-arid and arid land, of which this country is largely composed. One important question which is being studied is the carrying capacity of natural pastures so as to avoid over-grazing during dry seasons; in this connexion the establishment of artificial pastures and the production of forage on irrigated land is also being studied. A relevant project which has been authorized and will shortly be put into operation is one under which FAO will provide the services of three experts to study and assist in re-forestation and soil conservation, both of which are typical problems of over-exploited semi-arid lands.

/Turkey

Turkey

61. A mission, organized by the Bank with participation from FAO studied the resources of Turkey in 1950, including better use of irrigation water in the semi-arid regions of the country. The mission advocated the development of numerous small-scale irrigation works based on earthen dams or on water from underground sources.

UNESCO has undertaken to advise the Government of Turkey on the establishment of a hydro-geological institute which will organize research and teaching in the country and co-ordinate the work of existing services and institutions. This institute will be especially concerned with various problems of use of under-ground water and is expected to contribute to the development of the central region of Turkey which is semi-arid.

/TECHNICAL

TECHNICAL AND FINANCIAL MEASURES AND THEIR CO-ORDINATION

62. Among the means currently employed to deal with the problems of development of arid lands it is possible to distinguish: (1) the loans being granted by the Bank to countries with arid lands for specific projects connected with the development of these lands; (2) the works programme being carried out by the United Nations Relief and Works Agency for Palestine Refugees in the Near East; (3) the exchange and analysis of relevant experience and information regarding economic, social and technical aspects through missions, studies, conferences, etc. which are carried out incidental to or as a part of regular programmes of the organizations surveyed; (4) the provision of economic, social, and technical guidance under the Expanded Technical Assistance Programme to Member Governments upon their request with reference to relevant problems including studies, ranging from comprehensive missions to the examination of particular projects; (5) the training and education of personnel from arid countries in fields specifically related to the development of arid land (carried out principally under the Expanded Technical Assistance Programme); and (6) the UNESCO programme for co-ordination and stimulation of scientific effort being carried out under the Arid Zone Programme.

63. As to the financial expenditures under these types of activity the available data do not readily permit the segregation of the costs of projects related to arid land development from other activities which are generally included in the same programmes. The total UNRWAPRNE works programme for the period May 1950 through June 1951 involved expenditures of approximately \$2,500,000. Of this total more than ten per cent was spent for afforestation in arid areas.^{1/}

^{1/} See paragraph 18 for additional details including information on proposed future work programme.

In the case of the Bank the pertinent loans listed in paragraph 46 amounted to \$42,300,000.^{1/} The expenditures of UNESCO under its Arid Zone Programme have been estimated as follows:^{2/}

| | <u>1950</u> | <u>1951</u> | <u>1952</u> |
|---|-------------|-------------|-------------|
| Staff | 10,500 | 22,700 | 27,000 |
| Fees | 4,200 | 8,500 | 5,500 |
| Travel of Committee Members | 4,000 | 10,000 | 10,400 |
| Travel of Experts to Scientific Symposia | - | - | 10,000 |
| Contractual Printing | - | 8,000 | - |
| Other Contractual Items | - | 600 | - |
| Contracts with non-governmental organizations | - | - | 13,500 |
| Totals | \$18,700 | \$49,800 | \$66,400 |

For the other forms of activity listed above it has not been possible to segregate costs sufficiently to make estimates; however, the most important illustrations have been summarized under the review of activities of individual organizations and the review of the Expanded Technical Assistance Programme.

64. As to co-ordination, the UNESCO Arid Zone Programme has begun to serve as a clearing house for informal co-ordination with respect to scientific matters arising from the relevant activities of the United Nations and specialized agencies, and other organizations. It functions under the guidance of a standing advisory committee whose meetings have been attended by representatives of these organizations. The present form of the programme has been adopted

^{1/} This includes a loan for the Damodar Valley Project in India, a portion of which is devoted to irrigation, not all of which, however, is concerned with arid land development. On the other hand, there are other Bank loans not listed, such as one to Mexico, portions of which relate to arid zone development.

^{2/} Data furnished by UNESCO. In addition to the above there are expenditures for relevant activities by UNESCO under the Expanded Technical Assistance Programme as well as relevant expenditures under the programme of subventions to international non-governmental scientific organizations.

/after extensive

after extensive consideration of the question by the General Conference of UNESCO and it is meeting a recognized need on the scientific and technical front for stimulation and co-ordination of scientific work in respect to the arid zones.

65. No comparable programme exists with respect to economic, social, and financial activities being carried out or for other technical questions. There is, however, continuing co-operation between agencies concerned as has been noted in connexion with a number of specific projects. The Technical Assistance Board provides a focal point for the establishment of such co-operation with regard to the work of the Expanded Technical Assistance Programme. Irrigation, which is one of the most important activities in arid land development receives continuing attention from FAO. The Economic and Social Council will have under consideration at the 14th session the question of the co-ordination of activities of international organizations in the general field of water control and utilization. Inasmuch as water use and control techniques are of vital importance to work in respect of arid zones, any measures for the development and co-ordination of these activities which may be adopted by the Council will represent simultaneously an important contribution to international work in respect of arid zones.

ANNEX A

LIST OF SELECTED DOCUMENTS OF THE UNITED AND THE SPECIALIZED AGENCIES
RELATING TO THE DEVELOPMENT OF ARID LAND

A. UNITED NATIONS

(1) GENERAL ASSEMBLY

Official Records of the General Assembly, Fifth Session, Second Committee, 129th, 134th and 135th meetings

Ibid., Annexes, Agenda item 28: Economic Development of Under-Developed Countries: report of the Economic and Social Council:

A/C.2/L.36 - Poland: draft resolution (17 October 1950)

A/C.2/L.51 - Egypt: amendment to the draft resolution submitted by Poland (A/C.2/L.30) (30 October 1950)

A/C.2/L.60 - Report of Sub-Committee 4 (3 November 1950)

A/1524 - Report of Second Committee (7 November 1950)

Resolution 402(V) adopted by the General Assembly at its 312th meeting on 20 November 1950 (A/1543)

(2) ECONOMIC AND SOCIAL COUNCIL

(a) United Nations Research Laboratories

E/620 - Report of the Secretary-General on Establishing United Nations Laboratories (23 January 1948)

Publication: The Question of Establishing United Nations
(Sales No.: Research Laboratories
1949, IV.1)

E/CONF.9/PC/SR.1 to 11 - Committee of Scientific Experts on International Research Laboratories - Summary Records of the meetings (16-24 August 1949)

E/1694 - Report of the Committee of Scientific Experts on International
E/1694/Add.1 - Laboratories (19 May 1950)

E/1699/Rev.1 - Second Report by the Secretary-General on the Question of Establishing United Nations Research Laboratories (8 June 1950)

- E/SR.410 - Summary Record of the 410th meeting of the Economic and Social Council (14 August 1950, 11th session)
- E/SR.411 - Summary Record of the 411th meeting of the Economic and Social Council (14 August 1950, 11th session)
- E/1839 - United Nations Research Laboratories - Resolution adopted by the Economic and Social Council on 14 August 1950

(b) United Nations Scientific Conference on the Conservation and Utilization of Resources (17 August to 6 September 1949)

- E/CONF.7/7/Add.1 - List of Proposed Addresses and Contributed Papers
- E/CONF.7/7 - Proceedings of the Conference, Vol. 1-8

(c) Coordination of Specialized Agencies

- E/AC.24/SR.65 - Economic and Social Council, Coordination Committee - Summary Record of the 67th Meeting (21 July 1950)
- E/AC.24/SR.69 - Economic and Social Council, Coordination Committee - Summary Record of the 69th Meeting (25 July 1950)
- E/SR.405 - Economic and Social Council, Official Records of the 405th Meeting (9 August 1950)
- E/1810/Corr.1 - Relation with and Coordination of Specialized Agencies: Report of the Coordination Committee (5 August 1950)
- E/1841 - Relation with and Coordination of Specialized Agencies: Resolution adopted by the Economic and Social Council on 9 August 1950

(d) International Cooperation on Water Control and Utilization

- E/1894 - International Cooperation on Water Control and Utilization Note by the United States of America (17 August 1950)
- E/1894/Add.1 - International Cooperation on Water Control and Utilization Amendment to U.S. Draft Resolution (17 August 1950)
- E/AC.6/SR.99-101 - Economic and Social Council, Economic Committee - Summary Record of the 99th to 101st Meetings, 12th session
- E/1945 - International Cooperation on Water Control and Utilization - Resolution of 9 March 1951
- E/2205 - Report on International Action with regard to Water Control and Utilization

(e) Technical Assistance Programme

- E/2054 - Expanded Programme of Technical Assistance - Third
Add.1/Rev.1 Report of the Technical Assistance Board to the
Add.2 Technical Assistance Committee (19 July 1951)
- E/ - Expanded Programme of Technical Assistance - Fourth
Report of the Technical Assistance Board to the
Technical Assistance Committee (in preparation)

(3) TRUSTEESHIP COUNCIL

- T/218 - Report of the United Nations Visiting Mission to East
Africa on Tanganyika (8 November 1948)
- T/461 - Report of the United Nations Visiting Mission to the
Trust Territory of the Cameroons under British
Administration (13 February 1950)
- T/833 - Terms of Reference of the Committee on Rural Economic
Development on the Trust Territories (6 February 1951)
- T/AC.36/SR.1-7 - Committee on Rural Economic Development of the Trust
Territories - Record of the Meetings (first to seventh)
(March to July 1951)
- T/926 - Progress Report of the Committee on Rural Economic
Development of the Trust Territories (19 June 1951)

(4) UNITED NATIONS CONCILIATION COMMISSION FOR PALESTINE

- A/AC.25/6 - Final Report of the United Nations Economic Survey
Mission for the Middle East (2 volumes) (28 December 1949)
- A/1905 & Add.1 - Report of Director and Advisory Commission of the United
Nations Relief and Works Agency for Palestine Refugees
in the Near East from May 1950 to June 1951

(5) UNITED NATIONS COMMISSION IN LIBYA

- A/1405 & Rev.1 - First Annual Report of United Nations Commission in
Libya (1950)
- A/1949 - Second Annual Report of United Nations Commission in
Libya (1951)

B. FOOD AND AGRICULTURE ORGANIZATION

DOCUMENTS

- Conf.2/Gen.4 - First Annual Report of the Director-General to the
FAO Conference
- C 47/19 - Second Annual Report of the Director-General to the
FAO Conference
- C 48/10 - Work of FAO 1947/48 - Report of the Director-General to
the Fourth Session of the Conference of FAO
- C 49/8 - Work of FAO 1948/49 - Report of the Director-General
to the Fifth Session of FAO
- Work of FAO 1949/50 - Fifth Annual Report
- C 51/21 - The Work of FAO 1950/51 - Report of the Director-General
- CL 2/11 - FAO Regional Conference for the Near East (Report by the
Director-General)
- C 49/11/10 - National Programs for Land and Water Utilization and
Conservation (3 December 1949)
- FAO/51/9/2122 - Summary of Article XI, Reports by FAO Member Countries
on Legal and Administrative Aspects of Activities in
Land and Water Development
- FAO/51/6/713 - Essential Considerations in Irrigation Development
- FAO/51/10/300 - FAO Activities in the Broad Field of Water Control and
Utilization
- Compilation of Water Laws of Italy and Near East FAO
Member Countries (in preparation)
- Essential Considerations for Development of Underground
Water Resources (in preparation)

PUBLICATIONS

- Soil Conservation - An International Study (English, French and Spanish)
(Agricultural Study No. 4)
- Water Laws of U.S.A. (English) (Agricultural Development Paper No. 2)
- Efficient Use of Fertilizers (English, French and Spanish)
(FAO Agricultural Studies, No. 9)

C. UNESCO

(1) GENERAL CONFERENCES

(a) Third General Conference

- 3C/5 - The Programme of UNESCO (recommended by the Executive Board)
- 3C/20 - International Institute of the Arid Zone (draft resolution submitted by the delegation of India)
- 3C/44 - Resolution of the Sub-Commission on Natural Sciences: International Institute of the Arid Zone
- 3C/98 - The Programme of UNESCO in 1949 (p. 23)
- 3C/105 - Resolutions adopted on the Report of the Programme and Budget Commission (p. 28)
- 3C/PRG/5.5 - Report of the Rapporteur on the Second Meeting, held on Tuesday, 23 November 1948, at 3:30 p.m.
- 3C/110 - Records of the General Conference of the United Nations Educational, Scientific And Cultural Organization, Third Session - Beirut, 1948
 - Volume I - Proceedings (pp. 332-333)
 - Volume II - Resolutions (p. 23)

(b) Fourth General Conference

- 4C/3(II) - Report of the Director-General on the Activities of the Organization in 1949 presented to the Fourth Session of the General Conference (September-October 1949) (p. 25)
- 4C/5 Rev. - Draft Code of Amendments to UNESCO's Programme (p. 18)
- 4C/6 - Budget Estimates for the Financial Year 1950 (p. 105)
- 4C/27 - Proposal Concerning an International Institute of the Arid Zones (Revision of Resolution 3.7, Chapter 3, Natural Sciences) (Submitted by the U.S. delegation)
- 4C/Proceedings - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Fourth Session, Paris, 1949. Proceedings (pp. 285, 336, 346-347)

4C/Resolutions - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Fourth Session, Paris, 1949. Resolutions (p. 20)

(c) Fifth General Conference

- 5C/3 Add. - Report on Activities from October 1949 to March 1950 presented by Mr. Torres Bodet, the Director-General, as a Supplement to Document 5C/3 (Part B, p. 42)
- 5C/5(I) (Rev.) - The Programme of UNESCO Proposed by the Executive Board (revised text) (pp. 11-37) (June 1951)
- 5C/5(II) - Budget Estimates for the Financial Year 1951 (p. 135)
- 5C/6 - Work Plan for Execution of the 1951 Programme (p. 19)
- 5C/64 - Resolutions and Amendments Submitted by the Delegation of the United States on the Programme in Natural Sciences (26 May 1950)
- 5C/PRG/19(III) - Report of the Programme and Budget Commission (Part III); Programme for 1951 (p. 14)
- 5C/BUD/1 - Interim Report of the Budget Committee on the Estimate for the Financial Year 1950 (Annex II)
- 5C/Proceedings - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Fifth Session, Florence, 1950 (pp. 369-370, 487, 515)
- 5C/Resolutions - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Fifth Session, Florence, 1950 (p. 38)

(d) Sixth General Conference

- 6C/3 - Report by the Director-General on the Activities of the Organization from 1 April 1950 to 31 March 1951 (p. 49)
- 6C/5(I) - Programme of UNESCO for 1952 presented by the Executive Board (p. 36)
- 6C/5(II) - Budget Estimates for the Financial Year 1952 (pp. 124, 126)
- 6C/PRG/8 - Report on the Establishment of an International Arid Zone Research Council (7 May 1951)
- 6C/Proceedings - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Sixth Session, Paris, 1951

/6C/Resolutions -

6C/Resolutions - Records of the General Conference of the United Nations Educational, Scientific and Cultural Organization, Sixth Session, Paris, 1951 (p. 16)

(2) ARID ZONE PROGRAMME

(a) Informal Arid Zone Study Group

UNESCO/NS/IIAZ/1 - Reports pertaining to an IIAZ submitted to UNESCO by the International Union of Biological Sciences (10 August 1949)

UNESCO/NS/IIAZ/2 - Recommendations of the International Union of Geodesy and Geophysics on a Proposed International Institute of the Arid Zone (2 August 1949)

UNESCO/NS/IIAZ/3 - Preliminary Report on the Proposed IIAZ Submitted to UNESCO by the International Union of Theoretical and Applied Mechanics (17 August 1949)

UNESCO/NS/IIAZ/4 - Provisional Summary Report of Discussions by the (Prov.) Informal Arid Zone Study Group (30 September and 24 August 1949)

UNESCO/NS/IIAZ/4/VR.1 (prov.) - Provisional Verbatim Records of the First Meeting held at the United Nations, Lake Success, on Wednesday, 31 August 1949, at 10:00 a.m.

UNESCO/NS/IIAZ/4/VR.2 (prov.) - Provisional Verbatim Record of the Second Meeting held at the United Nations, Lake Success, on Wednesday, 31 August 1949, at 2:30 p.m.

(b) Committee of Experts

UNESCO/NS/IIAZ/5 - Background Paper for the Expert Committee on the Possible Establishment of an International Arid Zone Institute (25 October 1949)

UNESCO/NS/IIAZ/6 - Suggestions for the Research Programme of the Proposed International Institute of the Arid Zone submitted to UNESCO by Dr. Peveril Meigs for the International Geographical Union (27 October 1949)

UNESCO/NS/IIAZ/7 - Resolution passed by African Regional Scientific Conference (26 November 1949)

UNESCO/NS/IIAZ/8 - First List of Organizations working on Problems related to the Arid Zone (10 January 1950)

UNESCO/NS/IIAZ/9 - Recommendations on the International Institute of the Arid Zone submitted by the International Union of Pure and Applied Physics (25 October 1949)

UNESCO/NS/IIAZ/10 - Report of the Committee of Experts (17 December 1949)

(c) Interim International Arid Zone Research Council

UNESCO/NS/IIAZ/11 - Report on the Arid And Semi-Arid Regions of North Africa by Louis Emberger (28 April 1950)

UNESCO/NS/IIAZ/12 - Soils of the Semi-Arid Areas of Africa and Their Development by M. G. Aubert, submitted to UNESCO by the International Union of Agricultural Sciences (31 August 1950)

UNESCO/NS/IIAZ/15 - Working Paper for Session of the Interim International Arid Zone Research Council (27 October 1950)

UNESCO/NS/IIAZ/16 - Draft resolutions concerning a proposed Advisory Committee on Arid Zone Research (17 November 1950)

UNESCO/NS/IIAZ/17 - Revised Provisional Agenda (15 November 1950)

UNESCO/NS/83 - UNESCO Arid Zone Project - Interim International Arid Zone Research Council - Report of Session of 20-23 November 1950, UNESCO House, Paris

(d) Advisory Committee on Arid Zone Research

1. First Session

UNESCO/NS/IIAZ/18 - First Information Circular Concerning First Session of Advisory Committee on Arid Zone Research, Algiers, April 1951

UNESCO/NS/AZ/19 - Working Paper for the First Session of the Advisory Committee on Arid Zone Research (5-7 April 1951)

UNESCO/NS/AZ/20 - Proposed Agro-Ecological Studies (23 March 1951)

UNESCO/NS/AZ/21 - Sidi Mesri Research Station, Tripoli, Libya (23 March 1951)

UNESCO/NS/AZ/22 - Resolution of the United Nations Economic and Social Council Concerning Water Control and Utilization (20 March 1951)

UNESCO/NS/AZ/23 - First Session of Advisory Committee on Arid Zone Research (Revised Provisional Agenda) (5-7 April 1951)

2. Second Session

- UNESCO/NS/AZ/24 - Draft Rules of Procedure of the Advisory Committee on Arid Zone Research (8 May 1951)
- UNESCO/NS/AZ/25 - Information Required by UNESCO on Research Projects Proposed for Financial Assistance (8 May 1951)
- UNESCO/NS/AZ/26 - The Hydrology of Arid and Sub-Arid Australia with Special Reference to Underground Water by E. Sherbon Hills, Professor of Geology, University of Melbourne (2 July 1951)
- UNESCO/NS/AZ/27 - Physiology of Desert Animals (28 August 1951)
- UNESCO/NS/AZ/28 - A Report on the Hydrologic Problems of the Arid and Semi-Arid Zones of United States and Canada by Ray K. Linsley, Stanford University (4 July 1951)
- UNESCO/NS/AZ/29 - Hydrological Research in the Arid and Semi-Arid Regions of India and Pakistan by R. D. Dhir, I.S.E., Director (Hydrology), Central Water and Power Commission, New Delhi (5 July 1951, 27 August 1951)
- UNESCO/NS/AZ/30 - Flora of the Djebel Druze (9 July 1951)
- UNESCO/NS/AZ/31 (Rev.) - Revised Provisional Agenda (1 September 1951)
- UNESCO/NS/AZ/32 - Research in Hydrology and Fluid Mechanics and Development of Underground Water in the Arid Regions of North East Africa by Y. M. Simaika, Deputy Inspector General, Nile Control, in charge of Hydraulic Researches, Ministry of Public Works, Egypt (18 July 1951)
- UNESCO/NS/AZ/33 - Information on Jaswant College, Jodhpur (7 August 1951)
- UNESCO/NS/AZ/34 - Beni-Ounif Saharan Biology Station (7 August 1951)
- UNESCO/NS/AZ/35 - Symposium on Desert Research of the Research Council of Israel (7 August 1951)
- UNESCO/NS/AZ/36 - The Problems of Water Resources in North-West Africa
- UNESCO/NS/AZ/37 - World Distribution of Arid and Semi-Arid Homoclimates by Peveril Meigs (13 August 1951)
- UNESCO/NS/AZ/38 - Arid Zone Programme for 1953 and 1954 (29 August 1951)
- UNESCO/NS/AZ/39 - Hydrological Research in Arid and Semi-Arid Areas in the Union of South Africa and Angola, by H. F. Frommurge, D.Sc. Assistant Director, Geological Survey, Pretoria, South Africa

- UNESCO/NS/AZ/40 - List of Arid and Semi-Arid Countries, regionally grouped (20 August 1951)
- UNESCO/NS/AZ/41 - A report on Hydrology and Utilization of Hydraulic Resources in the Arid and Semi-Arid Zones of Latin America (first part) by Guillermo A. Fernandez De Lara, Mexico, D. F. (22 August 1951)
- UNESCO/NS/AZ/42 - First List of Members of Arid Zone Panels (31 August 1951)
- UNESCO/NS/AZ/43 - Study of the Underground Flow of the Wadi Saoura between Abadia and Kerzaz (30 August 1951)
- UNESCO/NS/AZ/44 - Information on the Saharan Research Centre, Beni-Abbes, Algeria (30 August 1951)
- UNESCO/NS/AZ/45 - List of documents (1 September 1951)
- UNESCO/NS/AZ/46 - Provisional List of Participants (31 August 1951)
- UNESCO/NS/AZ/47 - Renseignements concernant l'Association de recherches pour la Zone Marocaine Aride (A.R.Z.A.M.) par Pierre Harlé (3 September 1951)
- UNESCO/NS/AZ/48 - Plant Reactions as Indicators of Irrigation Requirements by Prof. H. R. Oppenheim (25/9/51) E. only
- UNESCO/NS/AZ/49 - Second session of the Advisory Committee on Arid Zone Research, Statement made by Dr. J. H. de Haan, representative of the Food and Agriculture Organization (FAO), on 3 September 1951
- UNESCO/NS/AZ/50 - Development of the Rajasthan Desert, India (11/9/51) E. only
- UNESCO/NS/AZ/50
Addendum I - Development of the Rajasthan Desert, India: request for Technical Assistance from Unesco (22/10/51) E. only
- UNESCO/NS/AZ/51 - Provisional Second List of Organizations working on Problems related to the Arid Zone (25/10/51) E. only
- UNESCO/NS/AZ/52 - The Desirability of Studying the Underground Course of the Saoura between Abadia and Ksabi and the Geographical Importance of the Wadi Saoura in the North-West Sahara by M. A. Reymond (21/12/51)

- UNESCO/NS/AZ/53 - Report on a Visit to the Bahrain Islands, Persian Gulf, by Prof. R. O'D. Good (10/11/51) E. only
- UNESCO/NS/AZ/54 - Report on Hydrological Research in the Middle East by Nazmi Karatekin (3/3/52)
- UNESCO/NS/AZ/55 - First List of Persons invited to read papers at the Unesco-Turkey Symposium on Arid Zone Hydrology (24/10/51) E. only
- UNESCO/NS/AZ/56 - A Note on the Climate and Vegetation of the Arid Zone of Ceylon (10/12/51)
- UNESCO/NS/AZ/57 - Water Deficiency Areas and Arid Zones in the British Colonies by F. Dixey, C.M.G. (4/2/52) E. only
- UNESCO/NS/AZ/58 - Subterranean Water-Supply Investigation in the British Colonies by F. Dixey, C.M.G. (4/2/52) E. only
- UNESCO/NS/AZ/59 - Preliminary Information on the Unesco-Turkey Symposium on Hydrology of the Arid Zone, with special reference to underground water, Ankara, Turkey, 25, 26, 28 and 29 April 1952 (15/1/52)
- UNESCO/NS/AZ/60 - Provisional Agenda - Third Session (7/1/52)
- UNESCO/NS/AZ/61 - The Demineralization of Brackish Water (31/1/52) E. only
- UNESCO/NS/AZ/62 - Considerations of the Procedure of Associating Research Centres and other Bodies with the Arid Zone Programme (12/2/52)
- UNESCO/NS/AZ/63 - Research Centres and other Bodies suggested by Member States for Consideration by the Advisory Committee for Associated Status (26/3/52)
- UNESCO/NS/AZ/65 - Consideration of the Question of giving transportation assistance to Scientists desiring to make Field Studies (20/2/52)
- UNESCO/NS/AZ/66 - Consideration of Reports to be commissioned on Arid Zone Energy Sources and Use (15/2/52)
- UNESCO/NS/AZ/67 - Information on the Institut Français d'Afrique Noire (5/3/52)
- UNESCO/NS/AZ/69 - Tohum Islah ve Deneme Istasyonu, Eskişehir, Turkey (22/2/52) (Seed Improvement Station, Eskişehir, Turkey)
- UNESCO/NS/AZ/70 - Survey of Research on Arid Zone Plant Ecology (4/3/52)

- UNESCO/NS/AZ/71 - Preliminary Plans for a Unesco Exhibition on Arid Zone Research for showing in the Middle East Region (6/3/52)
- UNESCO/NS/AZ/72 - Fen Fakültesi Botanik Enstitüsü
(Institute of Botany, Faculty of Science, University of Ankara, Turkey) (12/3/52)
- UNESCO/NS/AZ/73 - Additional Information on Jaswant College, Jodhpur, India (14/3/52)
- UNESCO/NS/AZ/74 - Project for a Study of the Vegetation of Nitrate and Sulphate Soils in South Algeria (5/3/52)
- UNESCO/NS/AZ/75 - Unesco-Turkey Symposium on Hydrology of the Arid Zone, with special reference to underground water, Synopses of Papers (20/3/52)
- UNESCO/NS/AZ/76 - Department of Botany, Hebrew University, Jerusalem, and Geobotanical Research Laboratory of the Negev (17/3/52)
- UNESCO/NS/85 - Report of the First Session of the Advisory Committee on Rural Zone Research (9 May 1951)
- UNESCO/NS/86 - Arid Zone Programme - Activities Report for the Period 15 April to 15 August 1951 (16 August 1951)
- UNESCO/NS/87 - Report on Activities of UNESCO Related to Arid Zone Research and Development (31 August 1951)
- UNESCO/NS/88 - Report of the Second Session of the Advisory Committee on Arid Zone Research (3-5 September 1951, Paris)
- UNESCO/NS/89 - Survey of Institutions primarily devoted to scientific and technical Research on Problems of Arid and Semi-Arid Areas (Questionnaire)
- UNESCO/NS/93 - Activities Report for the period 15 September 1951 to 25 March 1952)
- UNESCO/NS/96 - Second List of Members of Arid Zone Panels of Honorary Consultants (23/1/52)

D. INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Fifth Annual Report to the Board of Governors (1949-1950)

Sixth " " " " " " (1950-1951)

/Report of the

Report of the International Bank for Reconstruction and Development
to the Twelfth Session of ECOSOC (Statement on Principal activities
since 1 August 1950) (UN document E/1873/Add.1)

E. WORLD HEALTH ORGANIZATION

- A4/R.44 - Development of Arid Land and International Cooperation
in Water Control and Utilization (24 May 1951)
- EB 7/46 - Development of Arid Land, Decision of the General
Assembly in co-operation with the United Nations and
other Specialized Agencies (9 January 1951)
- EB 7/Min/4/Rev.1 - Executive Board, Seventh Session, Minutes of the
Fourth Meeting (24 January 1951)

F. WORLD METEOROLOGICAL ORGANIZATION

- EC/II/45 - Executive Committee, Arid Zone Research (4 October 1951)
- EC/II/58 - " " " " " (10 October 1951)

ANNEX B

RESOLUTIONS ADOPTED BY THE PRINCIPAL BODIES OF THE UNITED NATIONS
AND THE SPECIALIZED AGENCIES RELATING TO THE DEVELOPMENT OF
ARID LAND

1. UNITED NATIONS

A. Eleventh Session of the Economic and Social Council (9 August 1950)

Resolution 324 D (XI) on co-ordination of specialized agencies with respect to arid zone research:

The Economic and Social Council,

Having noted with satisfaction the interest of the United Nations Educational, Scientific and Cultural Organization in furthering research into the problems of arid zones,

Noting resolution 2.23 adopted by the General Conference of UNESCO, at its fifth session, concerning the International Arid Zone Research Council,

Considering that problems of the arid zones, both in their scientific and practical aspects, are of direct and urgent concern to certain specialized agencies and other bodies of the United Nations, particularly in connexion with developing programmes of technical assistance,

Recognizing the need for closely co-ordinated action in defining and meeting the inter-related problems of the development of the arid zones,

REQUESTS the Secretary-General, in consultation with interested specialized agencies, to ensure that, in the development and execution of programmes, including programmes of technical assistance, in arid zones, full consideration be given to all inter-related scientific, economic and social problems; and

INVITES UNESCO, in timing and implementing the programmes under resolution 2.23 above, to bear in mind the necessity for consultation with all interested bodies, including the Administrative Committee on Co-ordination and the Technical Assistance Board, with a view to avoiding duplication of effort and to attaining the maximum results for the benefit of the peoples of those areas.

B. General Assembly, Fifth Session (20 November 1950)

General Assembly resolution 402 (V) on development of arid land (see paragraph 1 for text).

/C. Economic and

C. Economic and Social Council, Twelfth Session (9 March 1951)

Resolution 346 (XII) on International co-operation on water control and utilization

The Economic and Social Council,

Considering the desirability that measures being taken internationally in the general field of water control and utilization should be co-ordinated, and that such co-ordination should be undertaken within the United Nations system, and

Considering that the General Assembly, in resolution 402 (V), has recommended that the Secretary-General prepare, for the examination of the Council at its fourteenth session, a report on the practical measures adopted for the study of the problems of arid zones and on the technical and financial means employed by the specialized agencies for this purpose,

1. REQUESTS the Secretary-General to take into consideration, in preparing this report, the entire field of water control and utilization as it is related to the problems of arid zones; and

2. FURTHER REQUESTS the Secretary-General, in consultation with the specialized agencies, to submit a report to the Council on the work being done by the specialized agencies and other international organizations, whether governmental, semi-governmental or non-governmental.

2. UNESCO GENERAL CONFERENCES

A - THIRD SESSION (Beirut, November-December 1948)

The Director-General is instructed:

- 3.71 to investigate in 1949 proposals for an International Institute of the Arid Zone, such as that forwarded to the Economic and Social Council of the United Nations by the International Union of Theoretical and Applied Mechanics;
- 3.72 to convene as soon as possible a committee of experts and delegates of other Specialized Agencies to report on the utility, programme and structure of an International Institute of the Arid Zone, with a view to an International Conference on the subject in 1950, or as soon thereafter as possible.

B - FOURTH SESSION (Paris, September-October 1949)

- 3.6 The Director-General is instructed to circulate to Member States the recommendations of the Committee of Experts called in 1949 on the proposal to set up an International Institute of the Arid Zone, inviting their comments, and, thereafter, if it appears desirable, to call a conference of delegates of interested countries and Specialized Agencies to discuss the possible establishment of such an Institute.

C - FIFTH SESSION (Florence, May-June 1950)

The Director-General is authorized:

-
- 2.23 To assist by means of financial aid and services the activities of the International Arid Zone Research Council in promoting international co-operation in scientific and technical research and development of arid and semi-arid areas;
- 2.231 To assist in sponsoring a symposium in Israel on "The Conquest of the Desert", in collaboration with the International Arid Zone Research Council, if it is established, provided that the expenses of the symposium be met outside the budget of Unesco;

D - SIXTH SESSION (Paris, June-July 1951)

The Director-General is authorized, in co-operation with Member States, the United Nations and its Specialized Agencies and appropriate international organizations:

-
- 2.25 To promote, with the aid of the Advisory Committee on Arid Zone Research, research on scientific and technical problems concerning the arid zone,

/and to this

and to this end,

- 2.251 To collect and disseminate information on research being carried out on problems of the Arid Zone and on the organizations, scientists and engineers engaged in such research;
- 2.252 To assist, financially and otherwise, institutions designated by the Advisory Committee on Arid Zone Research in carrying out specific projects approved or recommended by the Committee and forming part of a co-ordinated programme of fundamental arid zone research.
- 2.253 To organize, in collaboration with a Member State, a symposium on a specific group of these problems:
- 2.254 To have studies carried out, with the approval of the Executive Board on questions that may be submitted to him by one or more Member States, the United Nations or a Specialized Agency, provided that the funds for these studies can be found outside the regular budget of UNESCO.

3. THE WORLD HEALTH ORGANIZATION

The Fourth World Health Assembly on 24 May 1951

noting resolution 402 (V) on the Development of Arid Land adopted by the General Assembly of the United Nations on 20 November 1950 and the resolution on International Cooperation on Water Control and Utilization adopted by the Economic and Social Council on 9 March 1951;

(1) RECOMMENDS to Member Governments that plans for the control or utilization of water and the development of arid land should be so framed as to include measures to prevent the introduction or aggravation of disease;

(2) REQUESTS the Director-General:

(i) to provide technical assistance to governments on request in planning projects relating to the control or utilization of water and the development of arid land;

(ii) to co-operate with the United Nations and other Specialized Agencies concerned with such projects.

Note: Earlier (in 1949) the Joint OIHP/WHO Study Group on Bilharziasis in Africa had made recommendations with regard to the control of bilharziasis, a disease whose incidence and intensity may be increased by the introduction or development of irrigation schemes as well as by a change from basic to perennial irrigation. The severity of the infection may be such as to cause the abandonment of an irrigation scheme created at considerable expense. The above-mentioned Study Group recommended the following precautionary measures which might mitigate the sanitary risk involved in the introduction or development of irrigation schemes:

Administrative safeguards

1. Every irrigation scheme should be submitted at the earliest planning stage to the public-health authority for consideration.

2. Approval by the public-health authorities should be a condition of its authorization and financing from public funds.

3. Public-health authorities should be represented on the governing body of any irrigation scheme established or sponsored by governments or international organizations.

Technical safeguards

1. Each irrigation scheme should possess a medical and sanitary organization capable of:

/2. Examining

2. Examining and if necessary treating for bilharziasis the whole population of the area to be irrigated, prior to and during the irrigation, also all the labourers who may enter the area, together with their families; and
3. Controlling the vector snails in the streams and canals.
4. Villages should be established - or removed - away from streams and canals to reduce gross pollution of their waters and the use of the said waters for drinking, washing and bathing purposes.
5. For the same reason, villages should be provided with piped potable water, together with installations for washing, bathing and laundering. Houses and working camps should be provided with sanitary privies.
6. The study-group stressed the fact, that whatever the cost of the measures outlined above might be, it would be amply compensated by the maintenance of the health and of the productive power of the labourers and of their families in the irrigated areas.

4. THE WORLD METEOROLOGICAL ORGANIZATION

A. The First Congress, on 27 April 1951:

The Congress:

- noting (1) the United Nations General Assembly Resolution 402 (V);
- (2) the United Nations Economic and Social Council Resolution 324 (XI-D) on Relations with and Co-ordination of Specialized Agencies; and
- (3) the Resolution adopted by that Council at its Twelfth Session on 9 March 1951 pertaining to water control and utilization as it is related to the problems of arid zones;
- (4) the Arid Zone Programme of the United Nations Educational, Scientific and Cultural Organization and the establishment by that Organization of an Advisory Committee on Arid Zone Research;

directs the Executive Committee:

- (1) to keep itself informed on the Arid Zone Programme;
- (2) to provide advice on meteorological problems connected with the programme as required by the Secretary-General of the United Nations and the Specialized Agencies concerned;
- (3) to report any steps taken in this connexion to Members preferably through the medium of the bulletin of the Organization.

B. Second Session of the WMO Executive Committee, October 1951:

The Executive Committee,

- noting (1) The reports of the World Meteorological Organizations' representatives to the first and second sessions of the United Nations Educational, Scientific and Cultural Organization Advisory Committee on Arid Zone Research and the 6th General Conference of the United Nations Educational, Scientific and Cultural Organization;
- (2) That the activities of the Advisory Committee on Arid Zone Research fall largely within the terms of reference of the Commission for Agricultural Meteorology; and
- (3) That in the Documents on Arid Zone Research submitted to the First Congress in Paris the delineation of Arid Zones was not based purely on climate;

/DECIDES

DECIDES that all relevant documents on Arid Zone Research be forwarded to the President of the Commission for Agricultural Meteorology for his consideration and recommendation on further action;

REQUESTS the President of the Commission for Agricultural Meteorology to take into account paragraph (3) above in examining the homoclimatic maps received from the Advisory Committee on Arid Zone Research; and

DIRECTS the Secretary-General to bring this Resolution to the attention of the President of the Commission for Agricultural Meteorology.
