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PLAN OF ACTION TO COMBAT
DESERTIFICATION IN THE ECWA REGION

(Note by the Executive Secretary)



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Plan of Action to Combat Desertification in the ECWA Region

The United Nations Conference on Desertification (UNCOD) convened at Nairobi, Kenya, in September 1977, adopted a Plan of Action to Combat Desertification (A/CONF.74/36). The Plan of Action was endorsed by the General Assembly in resolution 32/172, which inter alia:

"5. Recommends that subregional co-operation be initiated or intensified, as considered necessary, among countries affected by desertification, with the required assistance from the United Nations Environment Programme and other organizations concerned, with a view to formulating specific joint programmes and requests for development assistance for implementation of the Plan of Action;

6. Requests the regional commissions to undertake intensified and sustained action in support of national efforts to combat desertification, to assist Governments, at their request, in the implementation of the Plan of Action to Combat Desertification and to convene as appropriate, in co-operation with interested Governments and regional organizations, inter-governmental regional meetings, technical workshops and seminars to consider the immediate implementation of the recommendations contained in section V of the Plan of Action;"

In the implementation of the Plan of Action the regional commissions have thus been entrusted with important responsibilities. Regional commissions have responsibility for co-ordinating, catalysing and executing (within the scope of their competence) intraregional programmes adopted by the member States concerned. In carrying out these tasks, the United Nations regional commissions should work in close contact with the regional offices of UNEP as well as with governmental and non-governmental organizations and institutions at the national and regional levels which are of relevance in combating desertification.

As more than 95 per cent of the ECWA region consists of arid and semi-arid areas, problems of desertification and desert development are intimately intertwined with almost every facet of economic and social development in the ECWA countries. In this respect, the Economic Commission for Western Asia is expected to actively participate in activities aimed at combating desertification and at desert development.

In follow-up to the arrangements for implementation of the Plan of Action and as a contribution to the forthcoming session of the Working Group on Desertification, the ECWA secretariat has prepared for consideration by the Commission a document (Annex I). This document should be viewed only as a preliminary stocktaking of current and planned ECWA involvement in activities to the relevant recommendations of the Plan of Action. It is based on the 1978-1979 work programme and the general ideas contained in the 1980-83 Medium-Term Plan. A comprehensive and detailed plan will be worked out during the 1980-1981 biennium.

Considering the issue of desertification and the implementation of the Plan of Action to Combat Desertification (in compliance with recommendation 23 of the Plan of Action and General Assembly Res. 32/172), the Commission may wish to:

1. Express support for regional and international action to combat desertification.

In this connexion, and upon consideration of the document reproduced in Annex I, the Commission may also set priorities for ECWA's Plan of Action and assistance and advance possibilities for intercountry programmes and projects. Areas already identified by the secretariat include the following:^{1/}

- (a) Monitoring of desertification processes;
- (b) Land-use planning and management and related activities, particularly training;
- (c) Monitoring of the human condition in arid and desertic areas;
- (d) Strengthening of activities in the field water resources development and use.

^{1/} These areas are in line with the priorities for action identified from the general survey undertaken by ECWA: Some Aspects of Desertification and their Socio-economic Effects in the ECWA Region, submitted to the United Nations Conference on Desertification, Nairobi, 29 August - 9 September 1977, p.35.

2. Consider ways and means to ensure the full and speedy implementation of the recommendations
Research (IFSR) International Expert Consultation on Irrigation and Agricultural Development, held at Baghdad, Iraq, from 24 February through 1 March 1979, (Annex II).

RECOMMENDED ACTION

3. Call on member States and concerned regional and international organizations to provide all possible assistance (financial, technical and advisory), for the organization of the regional post-UNCOD meeting on agricultural (natural) resources conservation and conservation policies in the ECWA countries, planned to be convened by ECWA (in co-operation with concerned organizations) during the third quarter of 1980. ECWA extrabudgetary resources have already been earmarked to cover part of the cost of the meeting.

Apart from the technical component concerned with major issues of conservation of agricultural (natural) resources, the meeting would also discuss the implementation of the Plan of Action at the regional level and define regional programmes and projects more precisely with a view to enhancing their preparation and implementation.

4. Call on the member States, concerned regional and international organizations and the ECWA secretariat to give high priority to the implementation of the recommendations made by the ECWA/Iraqi FSR International Expert Consultation on Irrigation and Agricultural Development, Baghdad, 1979.

Plan of Action to Combat Desertification in the ECWA Region

The United Nations Conference on Desertification (UNCOD) was held between 29 August and 9 September 1977 and adopted a number of resolutions, the most important being a comprehensive Plan of Action to Combat Desertification^{1/}. Below are summarily reviewed the objectives and principles, and recommendations of the Plan of Action^{2/}:

Objectives and principles

The immediate goal of the Plan is to prevent and arrest the advance of desertification and, where possible, to reclaim desertified land for productive use. The ultimate objective is to sustain and promote, within ecological limits, the productivity of arid, semi-arid, sub-humid and other areas vulnerable to desertification in order to improve the quality of life of their inhabitants.

The Plan of Action presents a set of recommendations for initiating and sustaining a co-operative effort on the scale required to combat desertification. This co-operative effort should reinforce and integrate the national, regional and global actions against desertification. The goal is to implement the Plan of Action by the year 2000. The seven-year period 1978-1984 has been chosen for the implementation of the short-term and medium-term plans to combat desertification. This period of time is believed to be required before a first general assessment of progress can be made.

A central theme of the Plan of Action is the immediate adaptation and application of existing knowledge, particularly in the implementation of urgent corrective measures against desertification, in educating people and the affected communities to an awareness of the problem, and instituting training programmes in collaboration with the international organizations which already have programmes in this area. Improved land use, based on assessment, planning and

1/ United Nations, United Nations Conference on Desertification, Round-up, Plan of Action and Resolutions, 29 August - 9 September 1977, New York, 1978, 43 pages.

2/ Abstracted from, UNEP, Desertification Control Bulletin, Vol. 1, No. 1, 1978.

sound management through the application of known ecological principles to areas subject to desertification, is a key to success in combating desertification.

The Plan of Action is to be carried out as an effective, comprehensive and co-ordinated action programme against desertification. It envisages the building-up of local and national scientific, technological and administrative facilities in the areas concerned. All the recommended measures are to be primarily directed towards the well-being and development of the peoples affected by, or vulnerable to, desertification. Everything done should be consistent with, and form part of, wider programmes for development and social progress.

Recommendations for action

The recommendations for action are divided into three parts:

(a) Recommendations for national and regional action, consisting of the following main groups:

- evaluation of desertification and improvement of land management;
- the impact of industrialization and urbanization on desertification;
- corrective anti-desertification measures;
- socio-economic effects of desertification;
- insurance against the risk and the effects of drought;
- strengthening the science and technology at the national, subregional, and regional levels for combating desertification;
- and,
- integration of anti-desertification programmes into comprehensive development plans.

These recommendations are to be carried out by the Governments, with international support.

(b) Recommendations for international action and co-operation. Among others, the governing bodies of the United Nations regional commissions are requested to support international action to combat desertification in the context of the Plan of Action, and to make appropriate provisions and allocations in their programmes (recommendation 23). The implementation of this recommendation requires a set of actions, including:

- review and evaluation of current activities related to the problems of arid zones, and to the problems of desertification in particular, with a view to adjusting and co-ordinating these activities to conform with the Plan of Action (in the framework of ACC). Priority should be given to application of existing knowledge and to ensuring that on-going and planned activities are sufficiently financed;
- planning of advisory, financial and technical support for the Plan of Action in fields detailed in paragraph 89 of the Plan of Action; and,
- co-operation with ACC to prevent overlapping and duplication of effort.

(c) Recommendations for immediate initial action (at national, regional and international levels).

At the regional level, the United Nations regional commissions, may in consultation with the countries concerned, wish to come forward with regional plans to specific proposals for the implementation of the Plan of Action. Immediate post-conference actions at the regional level may include inter alia:

- the convening of regional post-conference technical workshops or seminars by the United Nations regional commissions to discuss the implementation of the plan at the regional level and to define regional programmes more precisely;
- interregional consultations and studies on selecting sites for the establishment of regional centres (anti-desertification, training, biosphere reserves, etc.); and,
- organizing and co-ordinating the implementation of the transnational regional project outlined in the feasibility study on major regional aquifers of North-East Africa and the Arabian Peninsula (A/CONF.74/24).

The issues of combating desertification and desert development are of extreme importance to all ECWA countries. Indeed, it is recalled here that more than 95 per cent of the ECWA region consists of arid and semi-arid areas. Consequently, problems of desertification and desert development are intimately intertwined with almost every facet of economic and social development in the ECWA countries.

The Executive Secretary has taken prompt action and made arrangements at ECWA for follow-up to and active involvement of ECWA in the implementation of the Plan of Action. As per request of the Working Group on Desertification, the ECWA secretariat prepared for discussion at its forthcoming meeting a contribution to the phased implementation of the Plan of Action to Combat Desertification by the agencies and bodies of the United Nations system (see below). ECWA's contribution should be viewed only as a preliminary stock-taking of current and planned involvement in activities related to the relevant recommendations of the Plan of Action. It is based on the 1978-1979 work programme and the general ideas contained in the 1980-1983 Medium-Term Plan. Because of the particular characteristics of the ECWA region, many of the on-going and planned activities of ECWA's work programme are in one way or another related to problems of desertification, and thus, to the Plan of Action. However, only the most significant activities have been singled out and incorporated here. The present contribution to the phased implementation of the Plan of Action to Combat Desertification will associate ECWA with the organization-wide effort to implement the Plan of Action.

It is also noted, that several of the ECWA inputs in the phased implementation of the Plan of Action to Combat Desertification relate to possibilities for co-operation and indications of interest which are yet to be investigated in detail, possibly with UNEP, other organizations of the United Nations system and regional organizations. ECWA has initiated contacts with several organizations on possibilities for co-operation and co-ordination of activities in this respect.

PRELIMINARY ECWA PLAN OF ACTION FOR THE IMPLEMENTATION
OF BOTH SHORT AND LONG-TERM OBJECTIVES OF THE PLAN OF
ACTION TO COMBAT DESERTIFICATION^{1/}.

Plan of Action to Combat Desertification: Phased Implementation^{1/}

Section of the Plan of Action	Recommended action by the organizations and bodies of the United Nations system	Action taken or planned by ECWA
1	2	3
A. LONG-TERM OBJECTIVES		
Para. 88	To support, in their respective fields, international action to combat desertification in the context of the present Plan of Action, and to make appropriate provisions and allocations in their programmes.	It is planned to consider the issue of desertification and follow-up to UNCOD at the 6th session of the Commission (April 1979).
Para. 89 (a)	To review and evaluate current activities related to the problems of arid zones, and to problems of desertification in particular, with a view to adjusting and co-ordinating these activities to conform with the Plan of Action.	The Joint ECWA/FAO Agriculture Division was designated by the Executive Secretary as focal point at ECWA. Review and preliminary evaluation of ECWA's activities in relation to follow-up to UNCOD has been completed.
Para. 101	It is further recommended that the regional commissions of the United Nations have responsibility for co-ordinating, catalysing and executing (within the scope of their competence) intraregional programmes adopted by the member States concerned. It is also recommended that with respect to co-ordination and implementation of programmes to combat desertification, the regional commissions should actively participate in the ECB.	Decision has been taken by ECWA to actively participate in the Consultative Group on Desertification Control and, to accept responsibility for co-ordinating, catalysing and executing intraregional programmes which may be adopted by the member States concerned (within its scope of reference and available resources).

^{1/} Only the paragraphs of the Plan of Action directly relevant to action taken or planned by regional commissions have been quoted and reproduced here.

Para. 104 (c) The following forms of financing are recommended for consideration:

Consultative group/club or group-type financing. The Executive Director of UNEF should, immediately after the adoption by the General Assembly of the Plan of Action, convene a consultative group comprising representatives from organizations referred to in paragraph 102 (c) (ii) above, from such other organizations as might be required, including major donors, both traditional and new, and multilateral financing agencies, and from developing countries having a substantial interest in combating desertification. The group, which would meet as and when required, would also assist in the co-ordination of activities undertaken with the resources mobilized by it. It would be serviced by the staff mentioned in paragraph 103 above, which should include persons with professional competence to deal with financial and related matters.

Bearing in mind the above para. (101), and considering ECWA's present and future activities, additional resources will be required to successfully implement the programme to combat desertification. Consultative group/club or group-type financing is to be considered and investigated as a possible source of financing intercountry projects and programmes in the ECWA countries.

B. MEDIUM-TERM OBJECTIVES

Para. 23 (a) 1. To implement the regional schemes suggested by studies on the feasibility of regional or trans-national co-operation in the monitoring of desert processes and related natural resources, including the establishment of regional desertification monitoring centres for groups of countries that are particularly vulnerable to desertification and share ecological conditions.

2. To assist in the co-ordination of national programmes.

3. To organize the maximum use of expertise available in the region.

Para. 23 (b) To organize a continuous system for the exchange of information gained from the monitoring among countries of the region concerned.

Para. 26 (a) To strengthen the existing regional institutes for economic and social development and planning, as well as other appropriate regional institutes for the training of land-use planners and managers.

Para. 26 (b) To strengthen the natural and human resources survey institutions in the countries concerned, upon their request, on a regional basis, and with international support.

ECWA will investigate the feasibility of regional and transnational co-operation in the monitoring of desert processes in the ECWA region (eventually to be considered at a post-UNCOD meeting). Identified as an area for priority action.

Assistance in the co-ordination of national programmes will be provided in co-operation with the UNEP regional office.

Initiatives in this regard will be supported and co-operation extended, when requested. This matter could be discussed at a post-UNCOD meeting.

The possibility of introducing training in land-use planning in the activities of the Arab Planning Institute, for which ECWA is the executing agency, will be considered.

At present, activities towards the achievement of this objective have been initiated in a number of areas within the 1978-79 Programme Budget, e.g. regional survey on social development and social welfare services, training resources and requirements (on-going); programme for fulfilling the manpower. Educational and training needs in the field of water resources and, study on the establishment and strengthening of legal and administrative infrastructures for water resources (on-going) and, assistance to institutions in the (on-going) field of demography and population problems.

Para. 26 To organize pilot projects for the implementation of comprehensive land-use plans in each of six major regions affected by or vulnerable to desertification in co-operation with or in addition to national pilot projects in West Asia.

(c) Para. 26 To organize short-term training courses on the implementation of comprehensive land-use plans for extension officers of the countries concerned.

(d)

Identified as an area for priority assistance and action by ECWA. The planned studies and regional action on integrated development of range, dryfarming and livestock and, on conservation of agricultural resources, would provide a good starting ground for organizing pilot projects. Could also be considered at a post-UNCOD meeting.

The possibility of holding regional short-term training courses for extension personnel will be investigated (Arab Planning Institute, ICARDA, ACSAD MAO).

Para. 33 To undertake regional action on improvement water resources management, including as appropriate:

- (a) Transnational projects for studying, screening, processing, interpreting, and integrating available data and for defining management guidelines for rational, economical and sustained exploitation of regional aquifers;
- (b) Shared use and management of shared water resources which transcend national boundaries, with emphasis on areas where the supply of water is endangered in terms of quality, quantity and availability;
- (c) Establishing regional data banks, water resources institutes and training and research institutes for water specialists or strengthening those that exist;
- (d) Supporting and establishing regional bodies, when needed, through which international co-operation could be achieved in the collection, standardization and exchange of data.

Action in this area will be supported. Studies on institutional arrangements and on national water policies (planned).

Establishment of a data bank to facilitate the exchange of economic and technical data on water resources development and research activities (planned).

ECWA took the initiative to propose the establishment of a regional water resources Council. The second Regional Meeting on Water Resources Development, held in December 1978 in Riyadh, decided to further discuss and study the possibility of establishing a regional water resources council with concerned organizations and ECWA member States.

- (e) Creating regional teams of experts, at the request of the interested Governments, to carry out in adjacent countries common studies of water demand, groundwater and surface water assessment, reconnaissance of dam sites, etc., to enable the countries to work together over an extended period of time and under similar technical conditions;
- (f) Developing and strengthening regional activities concerning the assessment of surface and ground water resources, particularly within the framework of UNESCO's IHP and WMO's OHP.

Possibilities for action in this area to be considered.

Survey and assessment of the region's water resources (on-going); support and participation in on-going regional activities.

Para. 36

(a)

To employ regional research centres and other suitable national or local institutions, such as universities, in the task of developing drought-resistant, high-yield and nutritious forage plants and of organizing mechanisms for their widespread distribution. Such centres should also apply themselves to research and activities directed toward the improvement and adaptation of livestock and wildlife.

The scope and possibilities for action are to be considered in the light of initiatives taken by FAO and the International Centre for Agricultural Research on Dry Areas (ICARDA).

Para. 36

(c)

To strengthen and promote the implementation and development of the regional pilot projects proposed under MAB projects 3 and 4 and the EMASAR programme relevant to arid and semi-arid rangelands.

Possibilities for co-operation with FAO and UNESCO are being investigated.

Para. 40 To develop, at the regional level, through national and regional institutions such as universities and research establishments, improved agricultural techniques which resist desertification and drought-resistant crop varieties. This action will include the establishment of regional programmes for the application of soil conservation techniques in conjunction with the programmes of FAO.

Para. 46 To undertake regional action for the production and distribution of the plants necessary for the vast programmes of revegetation and the institution of the measures proposed in the feasibility studies of transnational co-operation.

Para. 49 To arrange regional co-operation in respect of fauna and flora protection and management, particularly on the fringes of national parks and where a certain ecosystem extends across international boundaries.

Survey and regional action on conservation of agricultural resources and seminar on agricultural resources conservation policies (planned). Co-operative action to be investigated with ICARD (planned).

Possibilities for regional co-operation to be investigated and, eventually, action programmes are to be promoted and implemented.

- Para. 65 To arrange for regional co-operation and exchange of information on:
- (a) Traditional and new experience in the design of settlements, housing units and other structures;
 - (b) Available building materials and their environmental appropriateness;
 - (c) Regional research programmes involving national machinery for science and technology.
- Para. 70 (c) To establish a system for the continuous exchange of information gained from the national monitoring of the human condition among the countries of the regions concerned.
- Para. 70 (c) To establish an experimental monitoring area in one or more countries of the region in order to elaborate and improve the suggested systems for monitoring the human condition, to make them consistent with the particular conditions of each of the regions concerned, and to disseminate the experience so gained among the countries of the region.

Regional co-operation will be arranged for through the recently established Arab Urban Development Institute, Riyadh, which is planned to become operational beginning 1980.

Study and action on rural settlement planning (planned).

Study of demonstration projects in human settlements technology and the development of regional networks for human settlements technology (planned, in co-operation with UNEP), see para. 89 B (ii) (14).

Identified as an area for priority assistance and action by ECWA. Possible integration through adjustment of planned activities, particularly in the area of social development.

Survey of bedouins (planned); study on quantitative evaluation of basic needs for the lowest income groups (planned).

Para. 73

To arrange for regional co-operation in facilitating the movement of people across national boundaries during crisis periods. As the temporary migration of people out of the areas and countries suffering from severe drought conditions into less adversely affected areas represents a form of insurance against further loss, international efforts to facilitate these movements should be advanced. This recommendation also implies regional and international co-operation in evaluating remedial and disasterrelief programmes with a view to their playing a greater role in ensuring improved water management, thereby improving the livelihood of people, preventing desertification, and reducing the impacts of drought.

Para. 76
(a)

Reinforce and support existing regional scientific institutions and programmes related to combating desertification, and promote, where necessary, the establishment of new scientific institutes in areas subject to desertification.

Support will be extended to regional institutions and programmes.

Para. 76
(c)

Support regional efforts to transfer technology.

At the initiative of ECWA, the feasibility for establishing a regional centre for the transfer of science and technology has been investigated. Further efforts have been made by the ECWA secretariat towards the establishment of an Arab regional centre for the transfer and development of technology, see ECWA Res. 61 (V), and follow-up.

Selected studies on adaptation aspects of agricultural technology to arid and semi-arid areas (on-going).

Possibilities and scope for action to be discussed at a post-UNCOD meeting (also, see para. 98 (a)).

C. SHORT-TERM OBJECTIVES

Para.30 To undertake steps within the framework of the programme and budget of UNEP, and in conjunction with UNDP, UNIDO and other appropriate United Nations organizations as well as interested countries, to:

- (a) Study and publicize positive and negative local and world-wide experience of the role which industrialization and urbanization play under different social and economic conditions in changing the ecological status of the environment and intensifying, preventing or eliminating the processes of desertification in arid areas.
- (b) Consider the feasibility of organizing and holding in the period from 1972 to 1980, under the auspices and at the expense of UNEP, several regional meetings and one general international meeting for the discussion of national, regional and world-wide experience of combining industrial development and urbanization in arid areas with crop and animal husbandry, irrigated farming, and forestry.
- (c) Provide arid-zone developing countries with regular scientific advice on studying and planning programmes in arid zones if the concerned countries so wish.
- (d) Publish review and monographs illustrating the successes of arid-zone countries in promoting economic and social development while preserving the environment.

In particular (a) and (b) are of great relevance to the ECWA countries and, of special interest to ECWA. Possibilities for ECWA's co-operation and participation in planned UNEP activities is to be explored (e.g. the USSR Project). The ECWA/UNEP Life Styles Project will investigate aspects of the issue spelled out in this paragraph.

An Environment Co-ordination Unit has been established at ECWA and will become operational during the first half of 1979. It will contribute towards the implementation of this, and other, recommendations.

Para. 89 B. (ii) To plan advisory, financial and technical support for the Plan of Action, including support from their existing budgets in the following fields:

(1) Organizing systems for monitoring desertification

(3) Land-use planning

(5) Implementing, on a continuous basis, the recommendations of the United Nations Water Conference relevant to the problems of desertification

(7) Organizing training courses in soil and water management at national and regional centres strengthened with international support

(8) Improving livestock, wildlife, and range-land management

Could best be achieved through initiating and implementing a regional project for monitoring desertification processes. ECWA will support and co-operate in a project in this area.

Agricultural sector studies, treating aspects of land-use planning, on Jordan (completed), Yemen and Democratic Yemen (on-going); planned for the countries of the Arabian Gulf.

The whole water resources programme in the Natural Resources, Science and Technology Division is in response to the recommendation of the United Nations Water Conference. On-going activities include, inter alia:

- introduction of an adequate system for collecting, compiling and analyzing water resources data;
- survey and assessment of the region water resources;
- development of a strategy for determining the economic use of water.

Possibilities for action to be considered.

Study on integrated livestock development and planning in selected ECWA countries (on-going); and, regional study and action for integrated development of range-lands and marginal dry-land farming with the

- (10) Improved and appropriate technology in irrigated agriculture; United Nations bodies now concerned with irrigation agriculture should be geared and coordinated to provide advice on the planning, design and construction of irrigation systems, the reclamation of waterlogged, salinized and alkalinized land, the investigation and monitoring of soil-salt-water relations and the control of water-related diseases.

- (14) Planning and research on human settlements.

Various aspects of irrigated agricultural development, including environmental aspects, were considered at the ECWA/Iraqi Foundation for Scientific Research International Expert Consultation on Irrigation and Agricultural Development, held at Baghdad from 24 February through 1 March 1979. In follow-up to the meeting, ECWA is pursuing the implementation of the fifteen recommendations adopted by the meeting.

A joint UNEP/ECWA survey on sub-regional research and demonstration centres in the ECWA region has been completed. This project would eventually lead to a study of demonstration projects in human settlements technology and the development of regional networks for human settlements technology (planned). Report on the assessment of traditional rural settlements, viability and adaptation; and Manual and guidelines on planning and management of human settlement for environmental quality (on-going).

- (vi) Organizing the training of land-use planners and survey specialists at existing training centres, with the assistance of the United Nations University.

The organization of training courses, particularly at the Arab Planning Institute, for which ECWA assumes executing agency responsibility, is to be investigated. Possibilities for co-operation to be investigated with regional institutions, FAO and UMJ.

(xi) Developing interdisciplinary research and pilot projects with a view to promoting the rational management of arid and semi-arid rangelands, dry-land farming, and irrigated agricultural systems, including all socio-economic, health and human aspects.

(xvi) Providing financial and technical support to programmes designed to ease the transition of dry-land rural migrants into urban areas and the sedentarization of nomads.

(xix) Provide financial and technical support of programmes for the development of proper human settlements in areas subject to desertification.

(xxi) Carrying out research into the use of alternative energy sources, especially wind and solar energy, in the dry-lands; such research should be keyed to producing, testing, and publicizing simple, inexpensive and efficient devices for the use of dryland people.

Socio-economic and human aspects of such research and pilot project of particular interest to ECWA. Co-operation and participation in initiatives in this field will be ensured, whenever possible through adjustment and integration of on-going and planned activities (see above paragraphs related to this subject).

A survey has been completed on sedentarization and settlement of the nomadic populations in selected countries of the ECWA region, as part of on-going programmes in this area.

See same para.(ii) (14).

Study on possibilities for introducing non-conventional and renewable sources of energy for rural and desert development (planned).

Para. 98

At the regional level, the United Nations regional commissions, as well as relevant intergovernmental and non-governmental organizations, may, in consultation with the countries concerned, wish to come forward with regional plans or specific proposals for the implementation of the Plan of Action to Combat Desertification. These plans or proposals should be co-ordinated at the international level to avoid any duplication of activities. They may include inter alia the following immediate post-conference actions at the regional level:

- (a) The convening of regional post-conference technical workshops or seminars by the United Nations regional commissions, in co-operation with the regional organizations and governments concerned to discuss the implementation of the Plan of Action at the regional level and to define regional programmes more precisely.
- (b) Interregional consultations and studies on selecting sites for the establishment of the regional centres proposed in paragraph 99(e) below.
- (c) Organizing and co-ordinating the implementation of the transnational regional projects outlined in the feasibility studies on the major regional aquifers of the Arabian Peninsula, etc.

A regional post-Conference seminar is planned to be organized by ECWA, in close co-operation with UNEP and other concerned organizations, during the third quarter of 1980.

Consultations are underway with UNESCO.

Co-operation will be extended, when requested particularly within the Consultation Group on Desertification Control.

Para. 99(e) Arrange for, and where necessary co-ordinate the preparation of, a programme of work, designs of specific projects and strategies for financing and implementing anti-desertification programmes, including:

(ii) The establishment of regional networks of biosphere reserves by upgrading national reserves selected to achieve a representative range of environments and phenotypes. Management of reserves should be co-ordinated at the regional level in conjunction with regional centres for remote-sensing, and the reserves could serve as baseline stations for monitoring desertification and training the necessary specialists.

Consultations have been initiated with UNESCO on possibilities for co-operation.

RECOMMENDATIONS

International Expert Consultation
on Irrigation and Agricultural Development

24 February-1 March 1979

Baghdad, Iraq

Because of the shortage of land and water resources in most countries of the region, the high costs of developing new irrigated land, and the rapidly rising demand for food and feed, very high priority needs to be given to raising the productivity of irrigated land in the Mediterranean and Western Asia.

1. Continued emphasis on infrastructural investment for irrigation and agricultural development (both physical and institutional) is required. Each government needs to consider and evaluate its present strategy for development of irrigated agriculture. Given the specific conditions and outlook in each country, decisions have to be made on priority of development of new lands versus reclamation or improvement of existing irrigation systems. Priority should be assigned to completion (including on-farm development) of all projects which have been left unfinished. It is essential that a sound balance is maintained between major infrastructural works and small scale projects. Whenever possible a divisible approach allowing phased development of projects should be adopted. A major effort should be made to shorten costly delays in the project formulation and planning process, both by governments and external assistance agencies.
2. There is a need to develop appropriate and flexible social structures and institutions in parallel with physical infrastructure to ensure the successful management of the projects along with the community involvement of the cultivators. Research is needed on the type of social organization compatible with national income and employment goals which best fits the requirements of successful irrigated production. It is recommended that ECWA co-operates with countries of the region and with financing institutions to work out improved criteria for project financing, which would meet the social objectives of development (rural development, income distribution, etc.) and which would better suit the socio-economic environment and conditions of the ECWA countries.
3. More precise assessment of surface and groundwater resources is required by the governments. For this, hydrological survey should be strengthened.
4. Governments and international financing agencies should encourage the local manufacture of irrigation and drainage materials and equipment; possibilities for regional co-operation in this respect should be explored.

5. Practical irrigation and drainage training needs to be expanded and interaction developed among engineers, agronomists, extension workers, and water users for the purpose of introducing improved methods of executing and operating irrigation projects at the farm level. Farmers training should aim at more efficient irrigated crop production, which both economizes on water use and avoids crop and soil damage that results from excessive water application.
6. Projects goals at the field level should, through suitable analyses, be translated into quantities of water per unit land area, and the schedules for delivery. The quantities of water per unit area will best be determined by analyses of water production functions which show crop yield responses at different irrigation levels.
7. As water is a particularly scarce resource in the countries of the region, measures to reduce percolation losses in irrigation systems, operation losses and field losses should be given special attention. Farmers should be motivated to economize in water use (for example, through instituting water charges, granting bonuses, etc.).
8. Systems design should be compatible with the technical and social level of development of the users. Because of rapidly changing economies and agricultural labour costs and availability in several countries of the region, irrigation projects or improvements should be planned to provide maximum flexibility so as to allow variation in farm size to maintain adequate farm income and to facilitate changes in cropping patterns, mechanization, etc. Care should be taken in siting and designing projects to avoid built-in physical or institutional constraints on flexibility.
9. The establishment of a regional centre for research and training on water resources development and management is recommended.
10. Questions which require special consideration for study or research include:
 - energy implications of irrigation development;
 - establishment of formulae and criteria in the field of irrigation and drainage adapted to the local conditions of the region;

- standardization of definitions and methodologies;
 - better understanding of crop-soil-water relationships, including fertilizer technology, because of the need to use more difficult soils and water of lower quality. Particular attention should be paid to the management of problem soils for irrigation, for instance gypsiferous soils and sandy soils;
 - salinization;
 - mechanized technology, its role in relation to employment, and productivity and social changes, and the design of appropriate mechanization for small and large-scale irrigated enterprises;
 - techniques for the production of high-value horticultural crops, including green house culture.
11. Because of the increasing scarcity of good land and water for agriculture, urban development should be planned wherever possible to avoid competing for high quality arable land.
12. Because public policy plays such an important role in irrigation development, strengthening policy research and monitoring systems to provide national planners and policy-makers with a better basis for decision-making is crucial. Research should be undertaken both at the farm and project levels (micro-level) and at the national or regional levels (macro-level), and the two should be regarded as a continuum involving interdisciplinary co-operation.
13. It is recommended that in evaluating projects in the ECWA region the economic evaluation criteria of benefit/cost and internal rate of return be modified to take into consideration the social, organizational, cultural and environmental conditions of the region and the pressing need of the countries of the region for development.
14. It is recommended that special attention be given to extension in irrigated agriculture and to the establishment of simple operational rules and manuals to be given to farmers and operators of irrigation and drainage systems.
15. Higher priority in research and planning needs to be given to identifying opportunities for closer integration of rainfed and irrigated land, particularly with respect to cereals, forage, and livestock production.